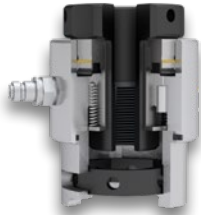


TENSIONERS

HIGH PERFORMANCE TENSIONERS

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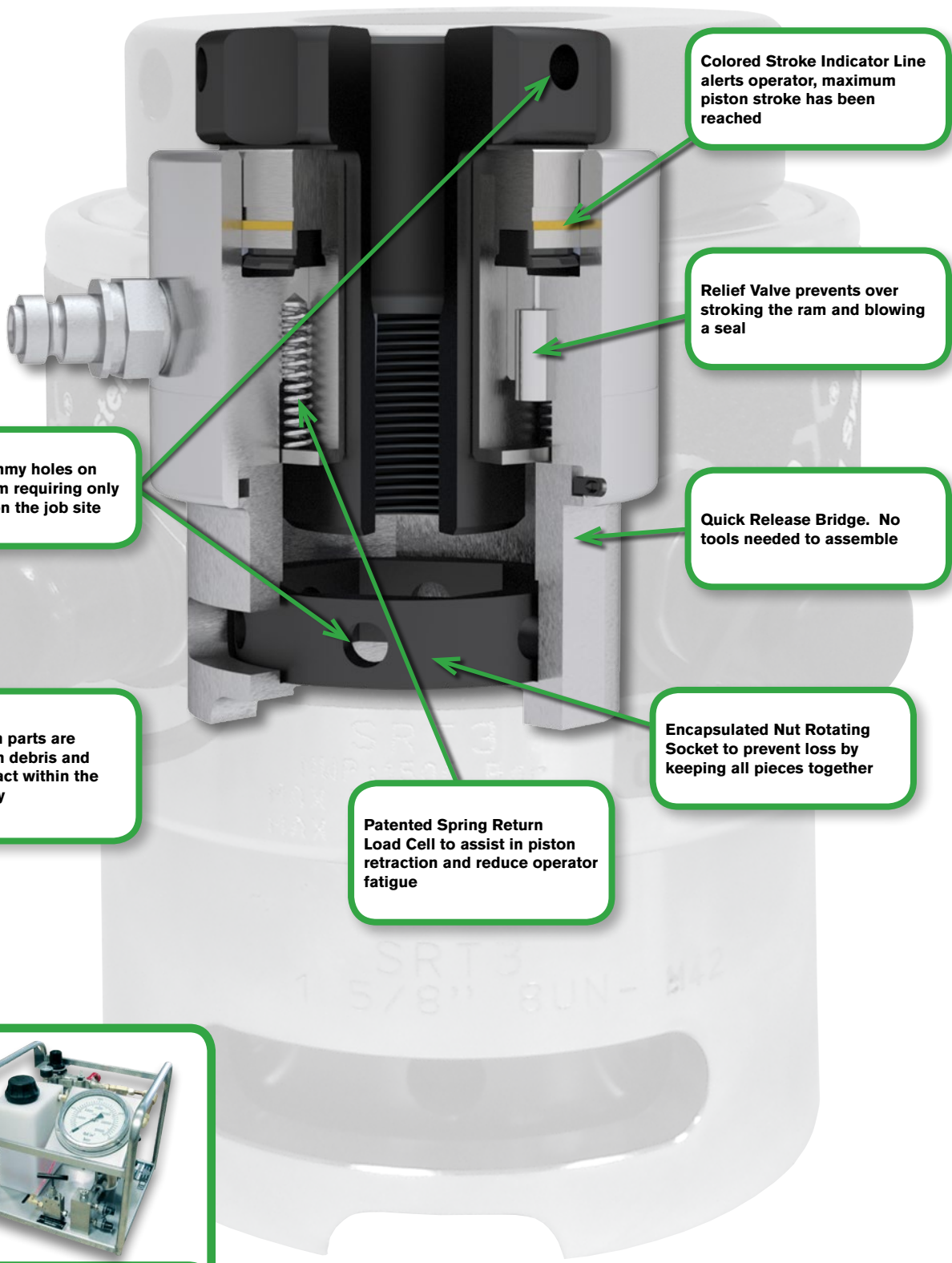


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Subsea Tensioners



Note: Certain tensioners may require minimum order quantity - consult factory for details.

SRT ADVANTAGES



Colored Stroke Indicator Line alerts operator, maximum piston stroke has been reached

Relief Valve prevents over stroking the ram and blowing a seal

Quick Release Bridge. No tools needed to assemble

Encapsulated Nut Rotating Socket to prevent loss by keeping all pieces together

Patented Spring Return Load Cell to assist in piston retraction and reduce operator fatigue

Same size tommy holes on top and bottom requiring only 1 tommy bar on the job site

All mechanism parts are protected from debris and operator contact within the tensioner body



Tensioner Pumps pages 91-99

SRT SPRING RETURN BOLT TENSIONER

The Spring Return design dramatically increases productivity and safety on the job site when compared to older technology manual return tensioners.

- Piston overstroke prevention
- Piston stroke indication
- Compatible with MRT Tensioner range
- Unique quick release bridge adaptation
- Piston/cylinder misalignment compensation
- Bolt coverage from 20 to 115 mm (3/4" to 4") with just 8 tools
- Designed to fit BS1560/ANSI B16.5/API flanges
- Fully enclosed load cell design eliminates entry of debris into piston retraction mechanism
- Piston over-stroke eliminator to prevent over stroking and blowing a seal
- Twin hydraulic couplings for multiple tool connections
- Requires stud to protrude above nut by 1 x bolt diameter
- Application specific tooling available. Contact factory for details.
- 10 mm piston stroke

Max tool pressure: 1,500 bar (21,750 psi)

Bolt protrusion above nut: 1 x bolt diameter (minimum)

BOLT TENSIONER

SPRING RETURN - SRT

Bolt coverage from 20 to 115 mm (3/4" to 4") with just 8 tools



BOLT TENSIONER

SPRING RETURN - SRT

Bolt coverage from 20 to 115 mm
(3/4" to 4") with just 8 tools



Piston stroke: 10mm

Max tool pressure: 1,500 bar (21,750 psi)

Bolt protrusion above nut: minimum 1 x bolt diameter

Specifications and Dimensional Data

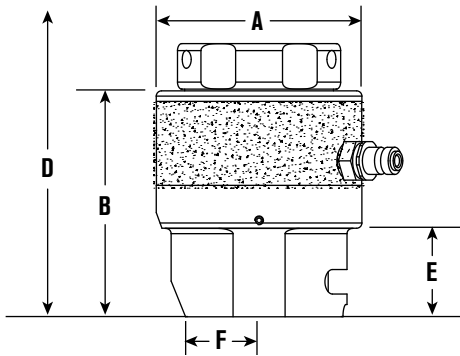
(Tool Reference)	Stud Diameter				Tool Load		Hydraulic Area		Approx Wt.		Minimum Bolt Protrusion Above Nut				
	Load Cell Order No.	Metric	Adaptor Kit Order No.	Imperial	Adaptor Kit Order No.	kN	Lbf	mm ²	in ²	kg	lb	Imp bolts		met bolts	
		mm		in								mm	in	mm	in
(SRT0) SRTAS000001	M20	SRTAS000006	3/4"	SRTAS000002	160	35,971	1,067	1.654	1.4	3.1	19	0.75	20	0.79	
	M22	SRTAS000008	7/8"	SRTAS000004							22	0.87	22	0.87	
(SRT1) SRTAS010001	M24	SRTAS010007	1"	SRTAS010003	280	62,950	1,867	2.894	2.7	6	25	0.98	24	0.94	
	M27	SRTAS010009	-	-							-	-	27	1.06	
(SRT2) SRTAS020001	M24	SRTAS020011	1"	SRTAS020003	450	101,169	3,001	4.652	4.1	9	25	0.98	24	0.94	
	M27	SRTAS020013	-	-							-	-	27	1.06	
	M30	SRTAS020014	1-1/8"	SRTAS020005							29	1.14	30	1.18	
	M33	SRTAS020015	1-1/4"	SRTAS020007							32	1.26	33	1.30	
	M36	SRTAS020016	1-3/8"	SRTAS020009							35	1.38	36	1.42	
(SRT3) SRTAS030001	M33	SRTAS030011	1-1/4"	SRTAS030003	660	148,381	4,401	6.822	5.4	11.9	32	1.26	33	1.30	
	M36	SRTAS030012	1-3/8"	SRTAS030005							35	1.38	36	1.42	
	M39	SRTAS030013	1-1/2"	SRTAS030007							38	1.5	39	1.54	
	M42	SRTAS030014	1-5/8"	SRTAS030009							41	1.61	42	1.65	
(SRT4) SRTAS040001	M39	SRTAS040014	1-1/2"	SRTAS040004	1000	224,820	6,668	10.335	8.4	18.5	38	1.5	39	1.54	
	M42	SRTAS040015	1-5/8"	SRTAS040006							41	1.61	42	1.65	
	M45	SRTAS040016	1-3/4"	SRTAS040008							44	1.73	45	1.77	
	M48	SRTAS040017	1-7/8"	SRTAS040010							48	1.89	48	1.89	
(SRT5) SRTAS050001	-	-	2"	SRTAS040012	-	-	-	-	-	-	51	2.01	-	-	
	M52	SRTAS050012	2"	SRTAS050004	1500	337,230	10,003	15.504	13.8	30.4	51	2.01	52	2.05	
	M56	SRTAS050013	2-1/4"	SRTAS050006							57	2.24	56	2.20	
	M60	SRTAS050015	-	-							-	-	60	2.36	
	M64	SRTAS050016	2-1/2"	SRTAS050008							64	2.52	64	2.52	
	M68	SRTAS050018	-	-							-	-	68	2.68	
M70	SRTAS050020	-	-	-							-	70	2.76		
(SRT6) SRTAS060001	-	-	2-3/4"	SRTAS050010	-	-	-	-	-	-	70	2.76	-	-	
	M72	SRTAS060014	2-3/4"	SRTAS060004	2500	562,050	16,671	25.84	23	50.7	70	2.76	72	2.83	
	M76	SRTAS060016	3"	SRTAS060006							76	2.99	76	2.99	
	M80	SRTAS060018	-	-							-	-	80	3.15	
	M85	SRTAS060020	3-1/4"	SRTAS060008							83	3.27	85	3.35	
M90	SRTAS060022	3-1/2"	SRTAS060010	89							3.50	90	3.54		
(SRT7) SRTAS070001	M90	SRTAS070010	3-1/2"	SRTAS070004	3200	719,424	21,339	33.076	32	70.5	89	3.50	90	3.54	
	M95	SRTAS070012	-	-							-	-	95	3.74	
	M100	SRTAS070014	3-3/4"	SRTAS070006							95	3.74	100	3.94	
	-	-	4"	SRTAS070008							102	4.02	-	-	
(SRT8) * SRTAS080001	M105	SRTAS080010	4"	SRTAS080004	4100	921,762	27,340	42.377	45	99.2	102	4.02	105	4.13	
	M110	SRTAS080012	-	-							-	-	110	4.33	
	M115	SRTAS080014	4-1/4"	SRTAS080006							108	4.25	115	4.53	
	-	-	4-1/2"	SRTAS080008							114	4.49	-	-	

Weight excludes puller sleeve
Need to order load cell and adapter kit to have complete tensioner
To convert to long tons, divide lbf by 2240. To convert to short tons, divide lbf by 2000.

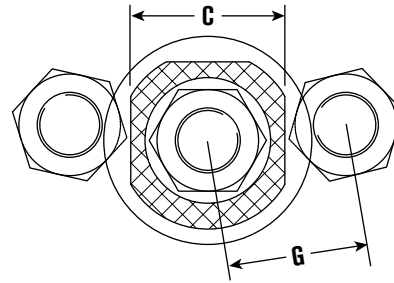
All bolt diameters ≤ 1" are UNC and all diameters > 1" are 8UN. All metric threads are Metric Coarse.

* Contact factory for ordering quantity requirement.

Specifications and Dimensional Data



* Toggle Bar data, see page 37



'D' includes an allowance for tool removal after bolt tightening with 10 mm tool stroke

A		B		C		D				E		F		G				Stud Diameter		(Tool Reference)
mm	in	mm	in	mm	in	Imp bolts		met bolts		mm	in	mm	in	Imp bolts		met bolts		Metric	Imperial	Load Cell Order No.
66	2.6	93	3.7	63	2.5	136	5.4	142	5.6	36	1.4	25	1	50.8	2	49.8	2	M20	3/4"	(SRT0)
		93	3.7	63	2.5	142	5.6	144	5.7	36	1.4	25	1	53.6	2.1	51	2	M22	7/8"	SRTAS000001
87	3.4	117	4.6	68	2.7	175	6.9	175	6.9	38	1.5	28	1.1	58.8	2.3	56.5	2.2	M24	1"	(SRT1)
		117	4.6	68	2.7	-	-	178	7	38	1.5	28	1.1	-	-	58.7	2.3	M27	-	SRTAS010001
		120	4.7	72	2.8	181	7.1	-	-	41	1.6	31	1.2	68.3	2.7	44.5	-	-	1-1/8"	-
103	4.1	117	4.6	75	3	175	6.9	175	6.9	38	1.5	30	1.2	65.2	2.6	64.5	2.5	M24	1"	(SRT2)
		117	4.6	75	3	-	-	178	7	38	1.5	30	1.2	-	-	66	2.6	M27	-	SRTAS020001
		120	4.7	80	3.1	181	7.1	184	7.2	41	1.6	30	1.2	67.6	2.7	67.6	2.7	M30	1-1/8"	-
		123	4.8	84	3.3	188	7.4	190	7.5	44	1.7	35	1.4	72.3	2.8	71.9	2.8	M33	1-1/4"	-
		126	5	89	3.5	195	7.7	196	7.7	47	1.9	38	1.5	78	3.1	77	3	M36	1-3/8"	-
118	4.7	123	4.8	88	3.5	190	7.5	192	7.6	44	1.7	35	1.4	75.9	3	76.5	3	M33	1-1/4"	(SRT3)
		126	5	96	3.8	197	7.8	198	7.8	47	1.9	38	1.5	81.1	3.2	80.8	3.2	M36	1-3/8"	SRTAS030001
		130	5.1	96	3.8	203	8	204	8	51	2	42	1.7	83.8	3.3	83.6	3.3	M39	1-1/2"	-
		133	5.2	105	4.1	209	8.2	211	8.3	54	2.1	41	1.6	91	3.6	91	3.6	M42	1-5/8"	-
140.5	5.5	132	5.2	112	4.4	211	8.3	212	8.3	51	2	42	1.7	91.8	3.6	91.6	3.6	M39	1-1/2"	(SRT4)
		135	5.3	114	4.5	217	8.5	218	8.6	54	2.1	45	1.8	95.6	3.8	95.5	3.8	M42	1-5/8"	SRTAS040001
		139	5.5	118	4.6	223	8.8	225	8.9	57	2.2	52	2	100	3.9	100	3.9	M45	1-3/4"	-
		142	5.6	114	4.5	230	9.1	231	9.1	60	2.4	51	2	101.1	4	101.3	4	M48	1-7/8"	-
		145	5.7	120	4.7	236	9.3	-	-	63	2.5	52	2	106.8	4.2	-	-	-	2"	-
175.5	6.9	148	5.8	120	4.7	246	9.7	248	9.8	63	2.5	52	2	114	4.5	115	4.5	M52	2"	(SRT5)
		154	6.1	138	5.4	259	10.2	258	10.2	70	2.8	58	2.3	121.3	4.8	119.1	4.7	M56	2-1/4"	SRTAS050001
		161	6.3	138	5.4	-	-	262	10.3	70	2.8	58	2.3	-	-	122	4.8	M60	-	-
		161	6.3	153	6	272	10.7	273	10.7	76	3	63	2.5	134.3	5.3	132.3	5.2	M64	2-1/2"	-
		161	6.3	153	6	-	-	283	11.1	76	3	63	2.5	-	-	135	5.3	M68	-	-
		161	6.3	153	6	-	-	287	11.3	76	3	63	2.5	-	-	135.2	5.3	M70	-	-
		167	6.6	156	6.1	284	11.2	283	11.1	81	3.2	70	2.8	141.3	5.6	-	-	-	2-3/4"	-
219	8.6	167	6.6	157	6.2	294	11.6	297	11.7	82	3.2	72	2.8	145.4	5.7	146.5	5.8	M72	2-3/4"	(SRT6)
		174	6.9	182	7.2	307	12.1	308	12.1	89	3.5	80	3.1	159.8	6.3	155.5	6.1	M76	3"	SRTAS060001
		174	6.9	182	7.2	-	-	312	12.3	89	3.5	80	3.1	-	-	158.4	6.2	M80	-	-
		180	7.1	190	7.5	320	12.6	323	12.7	95	3.7	84	3.3	169	6.7	165	6.5	M85	3-1/4"	-
		186	7.3	205	8.1	332	13.1	334	13.1	101	4	88	3.5	182	7.2	178.6	7	M90	3-1/2"	-
252	9.9	186	7.3	200	7.9	339	13.3	341	13.4	101	4	88	3.5	179.8	7.1	176.1	6.9	M90	3-1/2"	(SRT7)
		186	7.3	200	7.9	-	-	346	13.6	101	4	88	3.5	-	-	178.9	7	M95	-	SRTAS070001
		192	7.6	200	7.9	352	13.9	356	14	107	4.2	94	3.7	185.3	7.3	184.7	7.3	M100	3-3/4"	-
		199	7.8	210	8.3	364	14.3	-	-	114	4.5	114	4.5	186	7.3	-	-	-	4"	-
282	11.1	199	7.8	210	8.3	374	14.7	378	14.9	114	4.5	114	4.5	196	7.7	195	7.7	M105	4"	(SRT8) *
		199	7.8	210	8.3	-	-	383	15.1	114	4.5	114	4.5	-	-	197	7.8	M110	-	SRTAS080001
		205	8.1	224	8.8	387	15.2	394	15.5	120	4.7	114	4.5	208	8.2	208	8.2	M115	4-1/4"	-
		212	8.3	232	9.1	400	15.7	-	-	127	5	117	4.6	218	8.6	-	-	-	4-1/2"	-

* Contact factory for ordering quantity requirement.

Toggle Bar	10mm x 200mm	SRT/MRT (up to 1-7/8" - M48)	INTTB000010
	14mm x 200mm	SRT/MRT (2" - M52 and above)	INTTB000014

BOLT TENSIONER

MANUAL RETURN - MRT

Bolt coverage from 24 to 100mm (1" to 3-1/2") with just 6 tools



MRT MANUAL RETURN BOLT TENSIONER

Our economy range of bolt tensioners offer low-cost tensioning solutions.

Incorporating our unique quick-release bridge adaptation, a range of adapter kits provide maximum flexibility.

- Piston stroke limit indication
- Piston/cylinder misalignment compensation
- Bolt coverage from 25mm to 89 mm (1" to 3-1/2") with just 6 tools
- Designed to fit BS1560/ANSI B16.5/API flanges
- Unique quick-release bridge adaption
- Application specific tooling available. Contact factory for details.

Made to Order, Consult Factory

Note: Certain tensioners may require minimum order quantity - consult factory for details.

Specifications and Dimensional Data

(Tool Reference)	Stud Diameter				Tool Load		Hydraulic Area		Approx. Wt.		Minimum Bolt Protrusion Above Nut			
	Load Cell Order No.	Adaptor Kit Order No.	Adaptor Kit Order No.	Adaptor Kit Order No.	kN	Lbf	mm ²	in ²	kg	lb	Imp bolts		met bolts	
		Metric	Imperial	Metric							Imperial	mm	in	mm
(MRT1) * MRTAS010001	M24	MRTAS010004	1"	MRTAS010002	280	62,900	1,867	2,894	3	6.6	25	0.98	24	0.94
	M27	MRTAS010005	-	-							-	-	27	1.06
	-	-	1-1/8"	MRTAS010003							29	1.14	-	-
(MRT2) * MRTAS020001	M24	MRTAS020006	1"	MRTAS020002	450	101,100	3,001	4,652	4.5	9.9	25	0.98	24	0.94
	M27	MRTAS020007	-	-							-	-	27	1.06
	M30	MRTAS020008	1-1/8"	MRTAS020003							29	1.14	30	1.18
	M33	MRTAS020009	1-1/4"	MRTAS020004							32	1.26	33	1.30
	M36	MRTAS020010	1-3/8"	MRTAS020005							35	1.38	36	1.42
(MRT3) * MRTAS030001	M33	MRTAS030006	1-1/4"	MRTAS030002	660	148,300	4,401	6,822	5.9	12.98	32	1.26	33	1.30
	M36	MRTAS030007	1-3/8"	MRTAS030003							35	1.38	36	1.42
	M39	MRTAS030008	1-1/2"	MRTAS030004							38	1.50	39	1.54
	M42	MRTAS030009	1-5/8"	MRTAS030005							41	1.61	42	1.65
(MRT4) * MRTAS040001	M39	MRTAS040008	1-1/4"	MRTAS040003	1,000	224,700	6,668	10,335	8.5	18.7	32	1.26	39	1.54
	M42	MRTAS040009	1-5/8"	MRTAS040004							41	1.61	42	1.65
	M45	MRTAS040010	1-3/4"	MRTAS040005							44	1.73	45	1.77
	M48	MRTAS040011	1-7/8"	MRTAS040006							48	1.89	48	1.89
	-	-	2"	MRTAS040007							51	2.01	-	-
(MRT5) * MRTAS050001	M52	MRTAS050007	2"	MRTAS050003	1,500	337,200	10,003	15,505	14	30.8	51	2.01	52	2.05
	M56	MRTAS050008	2-1/4"	MRTAS050004							57	2.24	56	2.20
	M60	MRTAS050009	-	-							-	-	60	2.36
	M64	MRTAS050010	2-1/2"	MRTAS050005							64	2.52	64	2.52
	M68	MRTAS050011	-	-							-	-	68	2.68
	M70	MRTAS050012	-	-							-	-	70	2.76
	-	-	2-3/4"	MRTAS050006							70	2.76	-	-
(MRT6) * MRTAS060001	M72	MRTAS060007	2-3/4"	MRTAS060003	2,500	562,000	16,671	25.84	23	50.6	51	2.01	72	2.83
	M76	MRTAS060008	3"	MRTAS060004							76	2.99	76	2.99
	M80	MRTAS060009	-	-							-	-	80	3.15
	M85	MRTAS060010	3-1/4"	MRTAS060005							83	3.27	85	3.35
	M90	MRTAS060011	3-1/2"	MRTAS060006							89	3.50	90	3.54
(MRT7) * MRTAS070001	M90	MRTAS070006	3-1/2"	MRTAS070003	3,200	719,300	21,339	33	32	70.4	89	3.50	90	3.54
	M95	MRTAS070007	-	-							-	-	95	3.74
	M100	MRTAS070008	3-3/4"	MRTAS070004							95	3.74	100	3.94
	-	-	4"	MRTAS070005							102	4.02	-	-

* Contact factory for ordering quantity requirement.

To convert to long tons, divide lbf by 2240. To convert to short tons, divide lbf by 2000.

Specifications and Dimensional Data

Piston stroke: 15mm (excluding MRT1 - 10mm)

Max tool pressure: 1,500 bar (21,750 psi)

Bolt protrusion above nut: 1 x bolt diameter

'D' includes an allowance for tool removal after bolt tightening with 15mm tool stroke

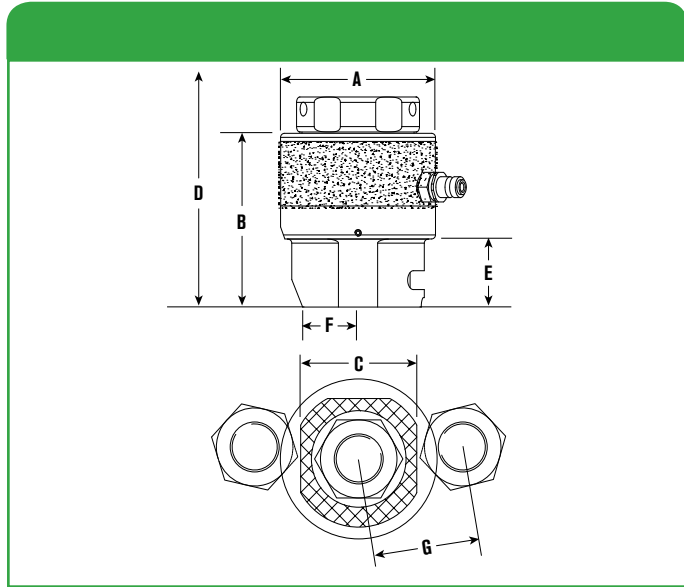
Weight excludes puller sleeve

To make a complete MRT Tensioner, choose an Adapter Kit and a Load Cell.

Semi-compatible with SRT tensioners. Only compatible with SRT Bridges; NOT puller sleeves. SRT Puller Sleeves cannot be used with MRT Load Cell.

Made to Order, Consult Factory

Note: Customization size available, consult factory for details.



Toggle Bar	10mm x 200mm	SRT/MRT (up to 1-7/8" - M48)	INTTB000010
	14mm x 200mm	SRT/MRT (2" - M52 and above)	INTTB000014

A	B	C		D				E		F		G				Stud Diameter		(Tool Reference) Load Cell Order No.		
		mm	in	mm	in	Imp bolts mm	in	met bolts mm	in	mm	in	mm	in	Imp bolts mm	in	met bolts mm	in		Metric	Imperial
85	3.35	97	3.8	68	2.7	166.8	6.6	155.4	6.1	38	1.5	28	1.1	59	2.3	56	2.2	M24	1"	(MRT1) * MRTAS010001
		97	3.8	68	2.7	-	-	158.4	6.2	38	1.5	28	1.1	-	-	59	2.3	M27	-	
		100	3.9	76	3	173.2	6.8	-	-	41	1.6	31	1.2	66	2.6	44	-	-	-	
108	4.25	102.5	4	75	3	181.8	7.2	180.4	7.1	38	1.5	30	1.2	68	2.7	67	2.6	M24	1"	(MRT2) * MRTAS020001
		102.5	4	75	3	-	-	183.4	7.2	38	1.5	30	1.2	-	-	69	2.7	M27	-	
		105.5	4.2	80	3.1	188.2	7.4	189.6	7.5	41	1.6	30	1.2	69	2.7	70	2.8	M30	1-1/8"	
		108.5	4.3	84	3.3	194.5	7.7	195.8	7.7	44	1.7	35	1.4	72	2.8	72	2.8	M33	1-1/4"	
147.5	4.9	111.5	4.4	89	3.5	200.9	7.9	201.9	7.9	47	1.9	38	1.5	78	3.1	77	3	M36	1-3/8"	(MRT3) * MRTAS030001
		108.5	4.3	88	3.5	196.5	7.7	197.8	7.8	44	1.7	35	1.4	79	3.1	80	3.1	M33	1-1/4"	
		111.5	4.4	96	3.8	203	8	204	8	47	1.9	38	1.5	81	3.2	81	3.2	M36	1-3/8"	
		115	4.5	96	3.8	209.2	8.2	210.1	8.3	50.5	2	42	1.7	84	3.3	84	3.3	M39	1-1/2"	
147.5	5.8	118	4.6	105	4.1	215.6	8.5	216.3	8.5	53.5	2.1	41	1.6	91	3.6	91	3.6	M42	1-5/8"	(MRT4) * MRTAS040001
		116	4.6	112	4.4	215.2	8.5	216.1	8.5	50.5	2	42	1.7	94	3.7	94	3.7	M39	1-1/4"	
		119	4.7	114	4.5	222	8.7	222	8.7	53.5	2.1	45	1.8	96	3.8	96	3.8	M42	1-5/8"	
		122.5	4.8	118	4.6	227.9	9	228.5	9	57	2.2	52	2	100	3.9	100	3.9	M45	1-3/4"	
		125.5	4.9	114	4.5	234.3	9.2	234.6	9.2	60	2.4	51	2	101	4	101	4	M48	1-7/8"	
180.5	7.1	128.5	5.1	120	4.7	241	9.5	-	-	63	2.5	52	2	107	4.2	-	-	-	2"	(MRT5) * MRTAS050001
		132	5.2	120	4.7	250.6	9.9	251.8	9.9	63	2.5	52	2	117	4.6	117	4.6	M52	2"	
		138.5	5.5	138	5.4	263.3	10.4	262.2	10.3	69.5	2.7	58	2.3	121	4.8	119	4.7	M56	2-1/4"	
		138.5	5.5	138	5.4	-	-	266	10.5	69.5	2.7	58	2.3	-	-	122	4.8	M60	-	
		145	5.7	153	6	276	10.9	276.5	10.9	76	3	63	2.5	134	5.3	132	5.2	M64	2-1/2"	
		145	5.7	153	6	-	-	280.5	11	76	3	63	2.5	-	-	135	5.3	M68	-	
227	8.9	145	5.7	153	6	-	-	282.5	11.1	76	3	63	2.5	-	-	135	5.3	M70	-	(MRT6) * MRTAS060001
		150	5.9	156	6.1	289	11.4	-	-	81	3.2	70	2.8	141	5.6	-	-	-	2-3/4"	
		151	5.9	157	6.2	298.7	11.8	300.9	11.8	82	3.2	72	2.8	149	5.9	151	5.9	M72	2-3/4"	
		158	6.2	182	7.2	311.4	12.3	311.2	12.3	89	3.5	80	3.1	160	6.3	156	6.1	M76	3"	
		158	6.2	182	7.2	-	-	315.2	12.4	89	3.5	80	3.1	-	-	158	6.2	M80	-	
252	10	164	6.5	190	7.5	324.1	12.8	326.6	12.9	95	3.7	84	3.3	169	6.7	165	6.5	M85	3-1/4"	(MRT7) * MRTAS070001
		170	6.7	205	8.1	336.8	13.3	337.9	13.3	101	4	88	3.5	182	7.2	179	7	M90	3-1/2"	
		173	6.8	200	7.9	346	13.6	347	13.7	101	4	88	3.5	180	7.1	176	6.9	M90	3-1/2"	
		6.8	0	7.9	173	-	200	13.9	-	101	351.9	88	3.5	-	-	179	7	M95	-	
7	0	7.9	179	14.1	200	14.3	358.5	107	363.3	94	3.7	185	7.3	185	7.3	M100	3-3/4"			
7.3	0	8.3	186	14.6	210	-	371.2	114	-	114	4.5	190	7.5	-	-	-	-	4"		

* Contact factory for ordering quantity requirement.

For smaller or larger sizes, see SRT product pages.

WIND TENSIONERS

WD/WS

1500 bar
G 1/4"
FF



WDD

WSS & WSL



WSD



Tensioner Pumps pages 91-99

WIND TENSIONERS

Our tensioners have quality designed in with standard features that enhance durability and efficiency to get the job done faster and safer:

Quality Means Lower Life-Cycle Costs:

- Achieves 90% proof load requirement for ISO 898 Grade 10.9 bolts
- Fully enclosed load cell eliminates debris in piston retraction mechanism
- Auto-Engaging Geared Nut Rotator
- Self-energizing, long life seals

Enhanced Usability:

- Piston stroke limit indication
- High pressure swivel coupling (swivel is optional on WSS & WSL)
- 1,350 bar (19,580 psi) maximum operating pressure
- Automatic piston retraction mechanism

Designed with Safety in Mind:

- Overstroke prevention for safe operation
- Anti-slip grip surface
- Tool lifting-strap as standard

Made to Order, Consult Factory

Note: Certain tensioners may require minimum order quantity - consult factory for details.



WIND TENSIONERS UP TOWER - WDD



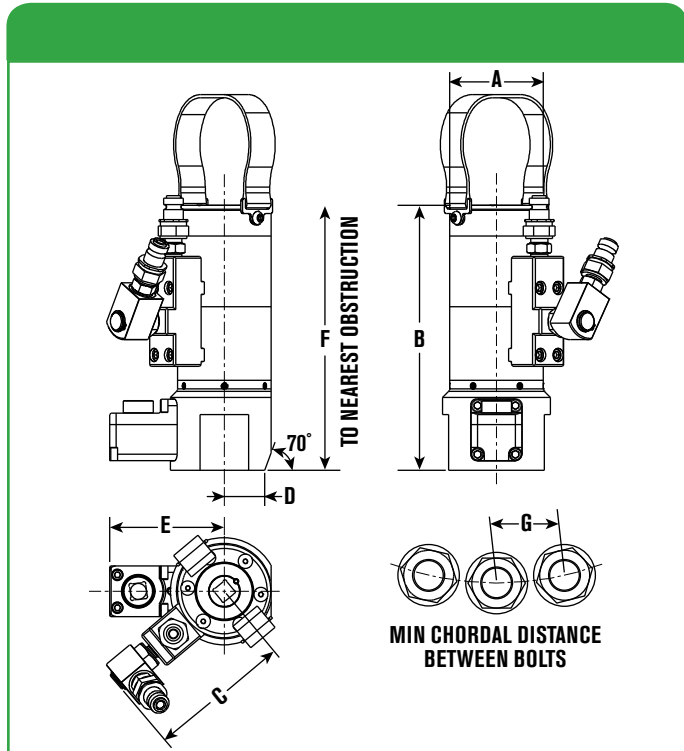
Specifications and Dimensional Data

WDD UP TOWER WIND TENSIONERS

- Robust Gearbox Drive
- Auto-Engaging Geared Nut Rotator
- Small diameter, high load 2-Stage hydraulic load cell
- Fast application using 1/2" drive
- Cycle counter optional (Add "A" to end of part number)
- Max Pressure: 1,350 bar (19,580 psi)
- Twin coupling optional (Add "TC" to end of part number)

Made to Order, Consult Factory

Note: Customization size available, consult factory for details.



Tool Ref	A		B		C		D		E		F		G	
	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In
WDD1-M30	74	2.9	210	8.3	112	4.4	37	1.5	91	3.6	290	11.4	64	2.5
WDD2-M33	79	3.1	214	8.4	115	4.5	39.5	1.6	93	3.7	298	11.7	70	2.8
WDD3-M36	85	3.3	239	9.4	117	4.6	42.5	1.7	96	3.8	332	13.1	76	3.0
WDD4-M39	92	3.6	249	9.8	121	4.8	46	1.8	99	3.9	348	13.7	79	3.1
WDD5-M42	98	3.9	255	10.0	124	4.9	49	1.9	102	4.0	360	14.2	90	3.5

Ordering Information

Order No.	Metric	Required Thread Protrusion		Stroke		Max Load		Hyd Area		Wt	
		mm	In	mm	In	kN	Lbf	sq. mm	sq.in	kg	lb
WDD1-M30	M30	63 - 70	2.5 - 2.8	7	0.3	467	104,900	3458	5.4	6.70	14.8
WDD2-M33	M33	67 - 74	2.6 - 2.9	7	0.3	569	127,900	4215	6.5	7.60	16.8
WDD3-M36	M36	71 - 80	2.8 - 3.1	10	0.4	671	150,800	4970	7.7	9.25	17.0
WDD4-M39	M39	72 - 86	2.8 - 3.4	10	0.4	801	180,000	5931	9.2	11.10	24.5
WDD5-M42	M42	80 - 92	3.1 - 3.6	10	0.4	926	208,100	6856	10.6	12.60	27.8

For twin hydraulic couplings (for multiple tool connection) add "TC" after part number. For cycle counter option, add "A" after code (eg. WDD1-M30A, WDD1-M30TCA)

WIND TENSIONERS

COMPACT TOWER - WSD



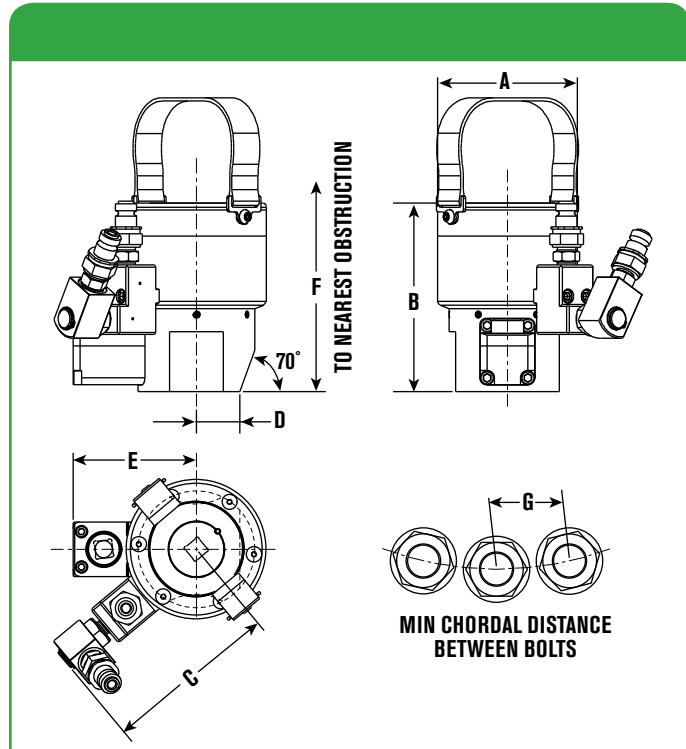
Specifications and Dimensional Data

WSD COMPACT TOWER WIND TENSIONERS

- Robust Gearbox Drive
- Auto-Engaging Geared Nut Rotator
- Low height hydraulic load cell
- Fast application using 1/2" drive
- Cycle counter optional (Add "A" to end of part number)
- Maximum operating pressure 1350 bar (19,580 psi)
- Twin coupling optional (Add "TC" to end of part number)

Made to Order, Consult Factory

Note: Customization size available, consult factory for details.



Tool Ref	A		B		C		D		E		F		G	
	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In
WSD1-M30	103	4.1	138	5.4	127	5.0	32	1.3	91	3.6	211	8.3	68	2.7
WSD2-M33	112	4.4	140	5.5	132	5.2	35	1.4	93	3.7	218	8.6	74	2.9
WSD3-M36	122	4.8	149	5.9	136	5.4	37	1.5	96	3.8	233	9.2	82	3.2
WSD4-M39	133	5.2	153	6.0	142	5.6	42	1.7	99	3.9	238	9.4	88	3.5
WSD5-M42	140	5.5	157	6.2	146	5.7	45	1.8	102	4.0	250	9.8	93	3.7

Ordering Information

Order No.	Metric	Required Thread Protrusion		Stroke		Max Load		Hyd Area		Wt	
		mm	In	mm	In	kN	Lbf	sq. mm	sq.in	kg	Lbs
WSD1-M30	M30	63 - 81	2.5 - 3.2	7	0.3	467	104,900	3458	5.4	6.60	14.6
WSD2-M33	M33	67 - 86	2.6 - 3.4	7	0.3	569	127,900	4215	6.5	7.60	16.8
WSD3-M36	M36	71 - 93	2.8 - 3.7	10	0.4	671	150,800	4970	7.7	8.80	19.4
WSD4-M39	M39	72 - 95	2.8 - 3.7	10	0.4	801	180,000	5931	9.2	11.20	24.7
WSD5-M42	M42	80 - 96	3.1 - 3.8	10	0.4	926	208,100	6856	10.6	12.20	26.9

For twin hydraulic couplings (for multiple tool connection) add "TC" after part number. For cycle counter option, add "A" after code (eg. WSD1-M30A, WSD1-M30TCA)

WSS & WSL FOUNDATION WIND TENSIONERS

- Suitable for ISO Metric threaded and all-thread bars
- Geared or Manual Nut Rotator
- Long & short stroke models
- Maximum operating pressure 1350 bar (19,580 psi)
- Uses standard system 'nut' for reaction
- Contact factor for optional swivel coupling

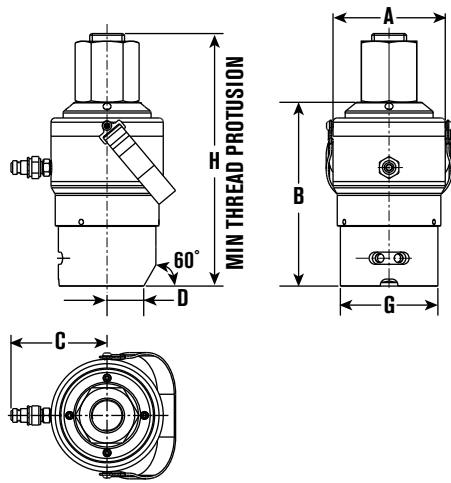


WIND TENSIONERS FOUNDATION - WSS & WSL

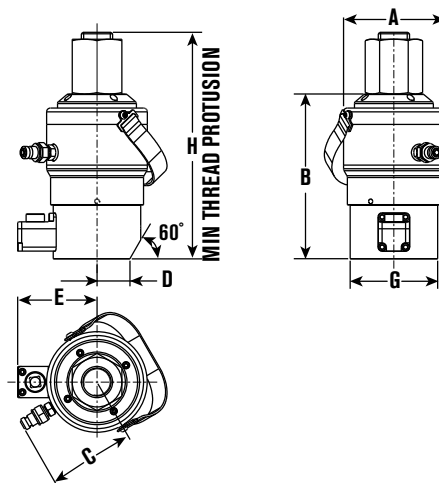
Made to Order, Consult Factory

Specifications and Dimensional Data

Manual Nut Rotation Version



Gearbox Nut Rotation Version



Tool Ref	A		B		C		D		E		G		H	
	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In
WSS1/WSS1-10	103	4.1	158	6.2	98	3.9	42	1.7	99	3.9	103	4.1	206	8.1
WSS1/WSS1-11	103	4.1	158	6.2	98	3.9	42	1.7	99	3.9	103	4.1	219	8.6
WSL1/WSL1-10	114	4.5	205	8.1	103	4.1	42	1.7	99	3.9	103	4.1	255	10.0
WSL1/WSL1-11	114	4.5	205	8.1	103	4.1	42	1.7	99	3.9	103	4.1	266	10.5
WSS2/WSS2-125	119	4.7	168	6.6	105	4.1	42	1.7	102	4.0	112	4.4	226	8.9
WSS2/WSS2-138	119	4.7	168	6.6	105	4.1	42	1.7	102	4.0	112	4.4	238	9.4
WSL2/WSL2-125	129	5.1	211	8.3	110	4.3	42	1.7	102	4.0	112	4.4	269	10.6
WSL2/WSL2-138	129	5.1	211	8.3	110	4.3	42	1.7	102	4.0	112	4.4	280	11.0

Ordering Information

Load Cell Order No.	Adaptor Kit** Order No.	Bar Size	Stroke		Max Load		Hyd Area		Wt	
			mm	In	kN	Lbf	sq.mm	sq.in	kg	Lb
FOR GRADE 75 ksi ALL THREAD FOUNDATION BOLTS										
WSS1	WSS1-10	#10	10	0.4	470	105,600	3481	5.4	5.74	12.7
	WSS1-11	#11							5.85	12.9
WSL1	WSL1-10	#10	25	1.0	470	105,600	3481	5.4	9.00	19.8
	WSL1-11	#11							9.20	20.3
FOR GRADE 150 ksi ALL THREAD FOUNDATION BOLTS										
WSS2	WSS2-125	1-1/4"	10	0.4	760	170,800	5630	8.7	8.20	18.1
	WSS2-138	1-3/8"							8.30	18.3
WSL2	WSL2-125	1-1/4"	25	1.0	760	170,800	5630	8.7	12.30	27.1
	WSL2-138	1-3/8"							12.40	27.3

**For manual nut rotation Adaptor Kit add "M" after part number, for gearbox style nut rotation add "GB".

Note: For a complete tensioner, order load cell and adaptor kit.