

HYTORC

The World's Most Trusted Industrial Bolting Systems

Whether you are tensioning flanges in a plant or installing blades on a wind turbine, HYTORC has the right tools for the job. Our line of Topside Spring Return tensioners can be designed to meet any application that our customers need. Contact us to see what our tensioners can do for you.

TSR+ AUTO RETURN TENSIONERS

Technical Information and Specification Guide



ABOUT TSR+ AUTO RETURN TENSIONERS

The HYTORC TSR+ Auto Return Tensioner range has been designed to ensure fast, simple, safe and reliable operation. With a focus on productivity and a reduction in downtime we have implemented state of the art materials and technology resulting in significant time saving during operation.

DESIGNED FOR LONG LIFE

Our spring return tensioners are made to withstand the toughest of operating environments. With hardened steel bodies and industry-leading metal treatments, these tools are made to last.

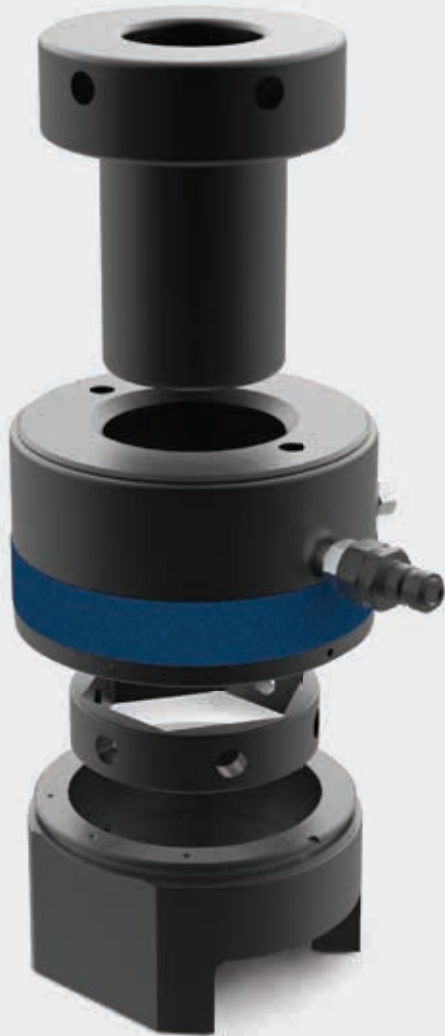
TIME AND ENERGY SAVINGS

Our spring return feature provides automatic piston retraction when pressure is released. This saves the time and effort required to reseat the piston after every stroke, giving you more energy to finish the job.

CUSTOMIZABLE TO ANY SPECIFICATION

HYTORC Tensioner Specialists can work with you to customize our spring return tensioners to fit your needs.

OPTIMIZED FOR SPEED, VERSATILITY, AND ACCURACY



INTERCHANGEABILITY

TSR+ load cells have exactly the same overall dimensions and hydraulic specification as the existing TSR load cells. This ensures interchangeability and ease of customer upgrades to the new range.

DURABILITY

Operational performance does not degrade during the life of the tool. Extensive in-house tests at full stroke and full pressure have shown that it far out performs current TSR load cells.

INCREASED SAFETY

TSR+ Load cells have a relief valve to prevent accidental overstroke of the tool. This safety mechanism prevents seal blow outs and the users exposure to ejected oil.

PREMIUM SURFACE TREATMENT

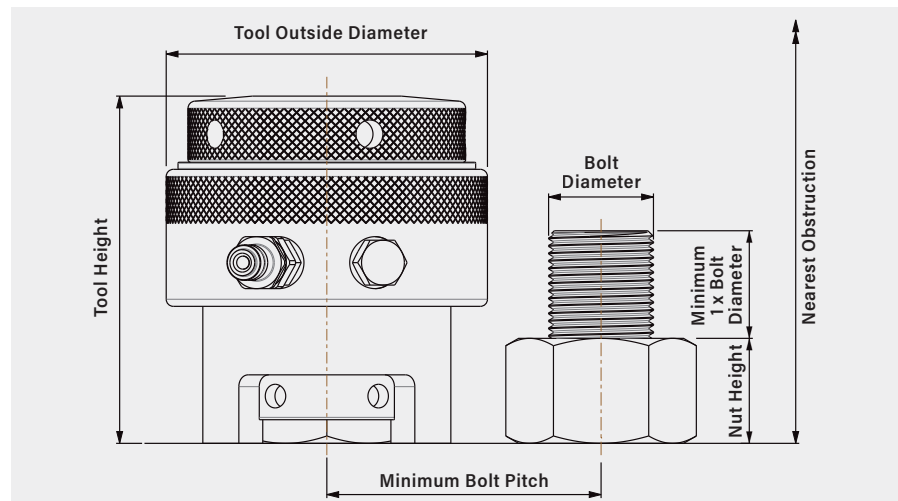
All load cells have a unique surface finish which provides a long lasting finish against harsh environments.

IMPROVED SEAL TECHNOLOGY

Latest design eases seal changeouts and enhances general performance throughout high cycle usage.

OPTIONS

- Twin port hydraulic connections
- Oversized threads
- Gear drive nut rotation
- Swivel connectors
- Special designs



TECHNICAL INFORMATION AND DIMENSIONAL SPECIFICATIONS

TECHNICAL INFORMATION

Tensioner Design	Single acting cylinder, auto return
Maximum Operating Pressure	1500bar (21750 psi)
Stroke	10mm (0.375") except TSR+ 0 – 8mm (0.315")
Hydraulic Oil Type	ISO 32 or equivalent

DIMENSIONAL SPECIFICATIONS

TOOL NUMBER	BOLT DIAMETER		HYDRAULIC AREA mm ²	MAXIMUM LOAD		TOOL OUTSIDE DIAMETER		TOOL HEIGHT		DISTANCE TO NEAREST OBSTRUCTION		TOTAL TOOL WEIGHT		LOAD CELL WEIGHT	
	mm	in.		kN	Lbf	mm	in.	mm	in.	mm	in.	kg	lbs.	kg	lbs.
TSR+ 0*	M20	3/4	1,070	160	35,970	66	2.60	93	3.66	142	5.59	1.4	3.1	1	2.2
	M22	7/8						93	3.66	144	5.67				
TSR+ 1	M24	1	1,870	280	62,950	87	3.43	117	4.61	175	6.89	4.0	8.8	2.4	5.3
	M27	1 1/8						117	4.61	178	7.01				
TSR+ 2	—	—	3,000	450	101,160	103	4.06	120	4.72	178	7.01	5.8	12.8	3.3	7.3
	M24	1						117	4.61	175	6.89				
	M27	1 1/8						117	4.61	178	7.01				
	M30	1 1/4						120	4.72	184	7.24				
	M33	1 3/8						123	4.84	190	7.48				
M36	—	126	4.96	196	7.72										
TSR+ 3	M33	1 1/4	4,400	660	148,370	118	4.65	123	4.84	192	7.56	7.7	17	4.2	9.3
	M36	1 3/8						126	4.96	198	7.80				
	M39	1 1/2						130	5.12	204	8.03				
	M42	1 5/8						133	5.24	211	8.31				
TSR+ 4	M39	1 1/2	6,670	1,000	224,810	141	5.55	132	5.20	212	8.35	12.0	26.5	6.1	13.4
	M42	1 5/8						135	5.31	218	8.58				
	M45	1 3/4						139	5.47	225	8.86				
	M48	1 7/8						142	5.59	231	9.09				
	—	2						145	5.71	231	9.09				
TSR+ 5	M52	2	10,000	1,500	337,210	176	6.93	148	5.83	248	9.76	19.4	42.8	9.5	21.0
	M56	2 1/4						154	6.06	258	10.16				
	M60	2 1/2						161	6.34	262	10.31				
	M64	2 3/4						161	6.34	273	10.75				
	M68	—						167	6.57	283	11.14				
TSR+ 6	M72	2 3/4	16,670	2,500	562,020	219	8.62	167	6.57	297	11.69	34.5	76.0	14.7	32.4
	M76	3						171	6.73	308	12.13				
	M80	3 1/4						180	7.09	312	12.28				
	M85	3 1/2						180	7.09	323	12.72				
	M90	—						186	7.32	334	13.15				
TSR+ 7	M90	3 1/2	21,340	3,200	719,390	252	9.92	186	7.32	341	13.43	47.0	103.6	19.4	42.8
	M95	3 3/4						186	7.32	346	13.62				
	M100	4						192	7.56	356	14.02				
	—	—						199	7.83	356	14.02				

* TSR+ 0 is not an auto return tensioner.

TSR+ AUTO RETURN TENSIONERS COMPARISON AND SUMMARY

COMPARING THE CURRENT TSR+ WITH THE PREVIOUS TSR

FOUR TSR+ TOOLS WERE USED TO DEMONSTRATE A TYPICAL APPLICATION. USING A STANDARD AIR-DRIVEN PUMP, THE TOOLS WERE ACTIVATED TO FULL STROKE, THEN DEPRESSURISED AND ALLOWED TO RETURN.

TSR+
COMPLETION TIME

00:33.000

TSR
COMPLETION TIME

02:13.000 (+01:40.000)



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HYTORC

Headquarters:
333 Route 17 N., Mahwah, NJ 07430
+1-201-512-9500

Email:
info@hytorc.com

Phone:
1-800-FOR-HYTORC

Online:
hytorc.com