

Hydraulikk as



Torque and tension specialist

**ENERPAC** 

# PGT, FTR, FTE-SERIES POWER GENERATION BOLT TENSIONERS

FOR CRITICAL FASTENING APPLICATIONS IN WIND, GAS AND STEAM TURBINES



**ENERPAC**   
TOOLS. SERVICES. SOLUTIONS.

▼ PGT-Series Single Stage and Double Deck Tensioners



## High Precision, Low Maintenance



### Tensioning Pumps

Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



### Hoses and Fittings

High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

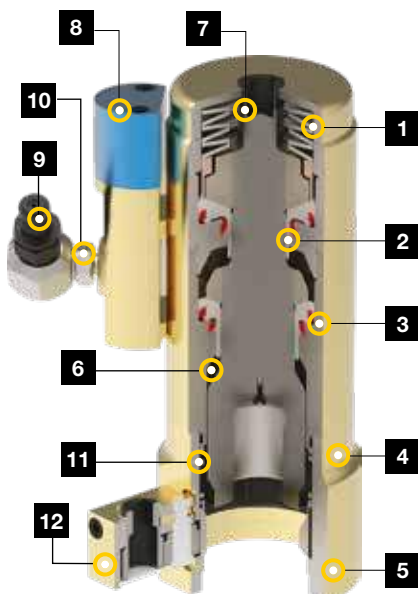
- PGT-Series Bolt Tensioners are designed for critical fastening applications in wind, steam and gas turbines
- A broad range of single stage and double deck tensioners provide high performance in tight spaces associated with Power Generation applications
- PGT-Series Bolt Tensioners are loaded with performance enhancing features such as Auto-Retract Pistons, Cycle Counters and a premium coating to offer the ultimate in efficiency, durability and ease of use.

Description	PGTS Single Stage	PGTD Double Deck
Auto-Retract Piston	✓	✓
Zinc Coating	✓	✓
Geared Nut-Rundown	✓	✓
Over-stroke Indicator	✓	✓
Over-stroke Preventer	✓	✓
Single Male Fitting	✓	✓
Swivel Manifold	+	+
Cycle Counter	-	+

✓ = Standard on tensioner

⊕ = Possible option

- = Option not available



1. **Auto-retract piston:** Simplifies use and improves speed of operation.
2. **Long-life puller:** For maximum durability.
3. **Long-life seals:** For maximum durability and extended service life intervals.
4. **Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
5. **Interchangeable bridge:** For optimal application fit.
6. **Over-stroke preventer:** Mechanically prevents over-stroke, extending cylinder life.
7. **Over-stroke indicator:** Extends cylinder life by helping to prevent over-stroking of cylinder.
8. **Optional counter:** Helps indicate when maintenance is due to maximize uptime.
9. **Quick-disconnect coupler:** For safe, simple hydraulic connection.
10. **Optional 360° swivel:** available for additional hose positioning flexibility.
11. **Spring-loaded nut engagement:** Keeps socket positioned on nut for faster and easier seating process.
12. **Auto-engage nut rundown:** For rapid and accurate seating of nuts.

▲ The model above illustrates a typical tool configuration.  
Actual model configurations vary.

# Power Generation Bolt Tensioners



## Options

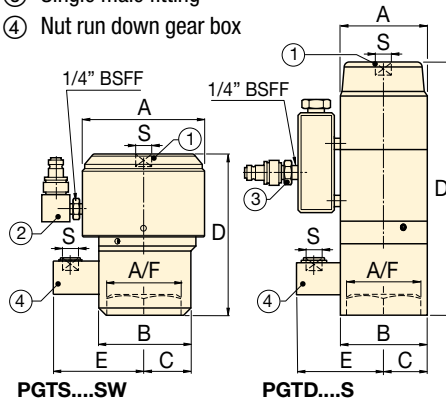
### Fitting Type

**SW** = Swivel manifold with single male fitting  
Example: **PGTS2436SW**

### Cycle-Counter

**C** = Cycle Counter (not available on PGTS-models)  
Example: **PGTD3655SWC**

- ① Puller bar square drive
- ② Swivel manifold with single male fitting
- ③ Single male fitting
- ④ Nut run down gear box



## PGT Series



Bolt Range:

**M20 - M72**

Maximum Load Capacity:

**203,7 - 2969,6 kN**

Maximum Operating Pressure <sup>1)</sup>:

**1350 - 1500 bar**

<sup>1)</sup> Max. pressure varies, see specifications table for details.

Tensioner Type	Thread Diameter (mm)	Model Number with single male fitting	Nut Size A/F (mm)	Maximum Pressure (bar)	Hydraulic Pressure Area (mm <sup>2</sup> )	Maximum Load Capacity (kN)	Stroke (mm)	Dimensions (mm)						Bolt Potrusion (mm)		
								A	B	C	D	E	S* (inch)			
Single Stage	M20 x 2,5	PGTS2030S	30	1500	1358	203,7	7,0	64	64	32	81	78	3/8	2,0	44	55
	M24 x 3,0	PGTS2436S	36	1500	1947	292,1	7,0	77	77	31	98	81	3/8	2,9	49	62
	M27 x 3,0	PGTS2742S	42	1500	2646	396,9	8,0	92	75	34	129	83	3/8	4,8	60	70
	M30 x 3,5	PGTS3046S	46	1500	3204	480,7	8,0	99	85	38	134	88	3/8	5,8	68	73
	M33 x 3,5	PGTS3350S	50	1500	3960	594,0	8,0	106	90	40	142	90	3/8	6,8	75	100
	M36 x 4,0	PGTS3655S	55	1500	4467	670,1	9,0	111	90	56	128	95	1/2	6,4	71	95
	M39 x 4,0	PGTS3960S	60	1500	5561	834,1	10,0	123,5	104	46	160	96	3/8	9,8	89	115
	M42 x 4,5	PGTS4265S	65	1500	6259	938,8	10,0	134	115	67	177	99	1/2	9,5	79	115
	M45 x 4,5	PGTS4570S	70	1500	7505	1125,8	10,0	143	119	53	168	102	3/8	13,2	98	116
	M48 x 5,0	PGTS4875S	75	1500	8390	1258,4	10,0	152	125	56	158	106	3/8	13,3	103	119
	M52 x 5,0	PGTS5280S	80	1500	10.094	1514,1	10,0	165	134	59	171	108	3/8	17,9	106	118
	M56 x 5,5	PGTS5685S	85	1500	11.663	1749,5	10,0	177	142	62	170	112	3/8	20,4	116	128
	M60 x 5,5	PGTS6090S	90	1500	13.474	2021,2	10,0	190	152	66	186	115	3/8	24,8	123,5	137
	M64 x 6,0	PGTS6495S	95	1500	15.315	2297,3	10,0	200	159	69	207	118	1/2	30,7	137	150
M68 x 6,0	PGTS68100S	100	1500	17.493	2623,9	10,0	213,5	169	73	206	123	1/2	34,3	136	148	
M72 x 6,0	PGTS72105S	105	1500	19.797	2969,6	10,0	225	178	76	223	126	1/2	40,3	151	167	
Double Deck	M24 x 3,0	PGTD2436S	36	1350	2293	309,6	6,0	61,5	77	31	185	81	3/8	4,6	53	59,5
	M27 x 3,0	PGTD2742S	42	1350	2939	396,8	6,0	68	75	34	196	83,4	3/8	5,3	60	68
	M30 x 3,5	PGTD3046S	46	1350	3426	462,6	7,0	73	85	37	195	88	3/8	5,8	60	70
	M33 x 3,5	PGTD3350S	50	1350	4272	576,7	7,0	78	77	38,5	208	90	3/8	6,7	65	77
	M36 x 4,0	PGTD3655S	55	1350	4995	674,3	8,0	84	83	41	218	93	1/2	7,7	70	87
	M39 x 4,0	PGTD3960S	60	1350	6260	845,0	10,0	95	104	48	266	96	3/8	12,5	84	93
	M42 x 4,5	PGTD4265S	65	1350	6865	926,8	10,0	98	104	52	248,4	99	1/2	11,4	82	91
	M45 x 4,5	PGTD4570S	70	1350	8339	1125,8	10,0	108	119	53	294	104	3/8	17,7	97	107
	M48 x 5,0	PGTD4875S	75	1350	9430	1273,1	10,0	115	125	57,5	304	106	3/8	20,1	103	113
	M52 x 5,0	PGTD5280S	80	1350	11.288	1523,8	10,0	124	134	61	328	108	3/8	26,1	110	125,5
	M56 x 5,5	PGTD5685S	85	1350	12.942	1747,1	10,0	132	142	65	346	112	3/8	30,0	117	132,5
	M60 x 5,5	PGTD6090S	90	1350	15.032	2029,3	10,0	141	152	70,5	372	115	3/8	37,2	125	143
	M64 x 6,0	PGTD6495S	95	1350	17.123	2311,6	10,0	151	159	76	386	119	1/2	43,0	133	152,5
	M68 x 6,0	PGTD68100S	100	1350	19.514	2634,4	10,0	160	170	80	398	123	1/2	49,5	138	160
M72 x 6,0	PGTD72105S	105	1350	21.977	2966,9	10,0	171	177	88,5	429	126	1/2	60,1	146	171	

\* Dimension S = Square Drive of Puller Bar and Gear Box.

▼ FTR-Series, Foundation Bolt Tensioners Round



- FTR-Series Foundation Bolt Tensioners provide fast, accurate and easy tightening of external or internal-ring wind tower foundations
- Standard models are available for 75, 150 ksi and metric style Williams, Dyson and Macalloy® bar types
- Long-stroke options accelerate process with single-pull tensioning.

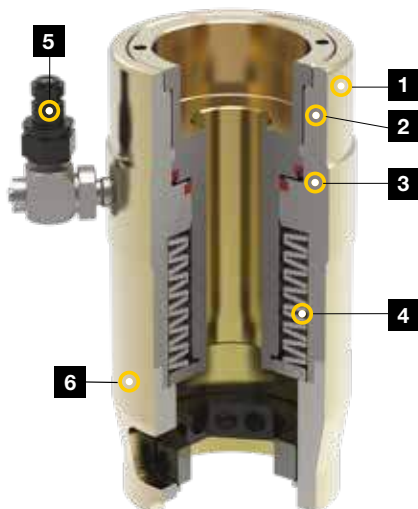
## High Precision, Low Maintenance



### FTR-Series Foundation Bolt Tensioners

FTR-Series Foundation Bolt Tensioners are designed specifically for tensioning wind tower foundation bolts. These tensioners provide the speed and precision required by this critical application. Potential thread fit problems are eliminated through the use of existing rebar hex nuts as a reaction point.

The FTR-Series includes long-stroke models, which provide greater speed and ease of use by enabling applications to be completed in a single pull.



1. **Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
2. **Over-stroke indicator:** Extends life by helping to prevent over-stroking of cylinder.
3. **Long-life seals:** For maximum durability and extended service life intervals.
4. **Auto-retract piston:** Simplifies use and improves speed of operation.
5. **Quick-disconnect coupler:** For safe, simple hydraulic connection. Optional 360° swivel available for additional hose positioning flexibility.
6. **Interchangeable bridge:** For optimal application fit.

▼ FTR-Series Foundation Bolt Tensioner. Manual wrench (not included) required to apply up to 30 Nm of torque during installation of models that feature run down gears.



# FTR-Series, Foundation Bolt Tensioners

▼ This is how a FTR-Series Foundation Bolt Tensioner model number is built up:



### 1 Product Type

**FTR** = Foundation Tensioner, Round

### 2 Bar Grade

**75** = 75 ksi  
**150** = 150 ksi  
 (or metric designation)

### 3 Bar Size Designation

Example  
**14** = No. 14 bar size

### 4 Maximum Stroke

Example:  
**20** = 20 mm max. stroke

### 5 Fitting Type

**SW** = Includes swivel manifold with single male fitting  
 single male fitting

### 6 Run Down Gear

**G** = Includes Nut Run Down Gear  
 \* available in select models

## FTR Series



Maximum Load Capacity:

**2736 kN**

Maximum Operating Pressure <sup>1)</sup>:

**1500 bar**

<sup>1)</sup> Max. pressure varies, see specifications table for details.



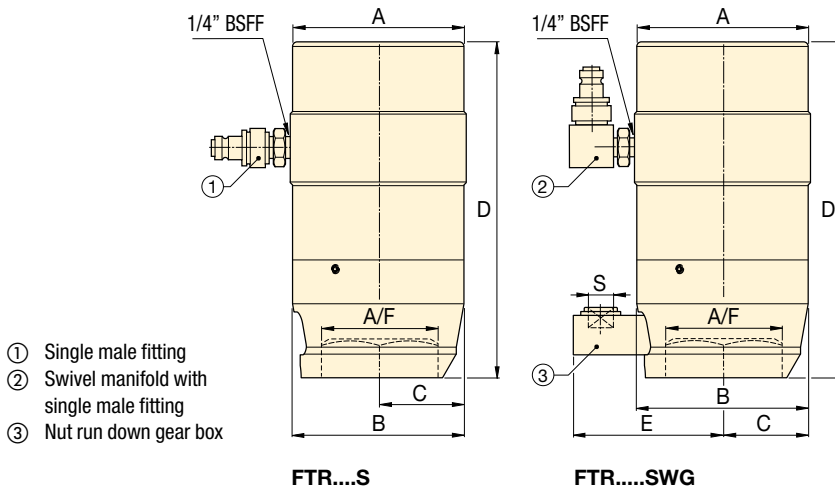
### Tensioning Pumps

Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



### Hoses and Fittings

High-pressure hoses and fittings for use with Enerpac tensioning systems are available.



- ① Single male fitting
- ② Swivel manifold with single male fitting
- ③ Nut run down gear box

## ▼ SPECIFICATION TABLE

Bar Grade	Bolt Diameter		Bar Size Designation	Model Number with single male fitting	Nut Size A/F	Max. Pressure	Hydraulic Pressure Area	Max. Load Capacity	Stroke	Dimensions (mm)					Minimum Bolt Potrusion	
	(mm)	(inch)								A	B	C	D	E		(kg)
75 ksi	35	1.38	#10	<b>FTR751010S</b>	51	1200	3134	376,1	10,0	99	88,5	44,3	163	–	5,8	200
	35	1.38	#10	<b>FTR751025S</b>	51	1200	3123	374,8	25,0	115	102	42	220	–	10,9	250
	38	1.50	#11	<b>FTR751110S</b>	57	1500	3134	470,1	10,0	99	98	38	178	–	5,5	220
	38	1.50	#11	<b>FTR751125SG</b>	57	1500	3123	468,5	25,0	115	102	51	226	96	11,5	260
	48	1.88	#14	<b>FTR751420S</b>	70	1170	6093	712,9	20,0	132	132	66	268	–	18,2	315
150 ksi	37	1.44	1.25	<b>FTR15012510S</b>	57	1170	5383	629,8	10,0	111	110	40	178	–	8,2	220
	40	1.56	1.37	<b>FTR15013810S</b>	64	1500	5383	807,5	10,0	111	110	38	178	–	8,1	225
	70	2.75	2.50	<b>FTR15025025S</b>	108	1500	18.238	2736,0	25,4	215	212	86	348	–	58,0	450
10.9	36	1.42	36	<b>FTR1093610SG</b>	60	1500	3820	573,0	10,0	102	99	40	176	95	8,6	195

Gear box square drive dimension S = 1/2 inch.

▼ FTE-Series, Foundation Bolt Tensioner Elliptical



- FTE-Series Foundation Bolt Tensioners provide fast and accurate performance in difficult, narrow access foundation tensioning applications
- Standard models are available for 75, 150 ksi and metric style Williams, Dyson and Macalloy® bar types
- Ideal universal solution that fits both standard and narrow access applications.

## High Precision, Low Maintenance



### FTE-Series, Foundation Bolt Tensioners

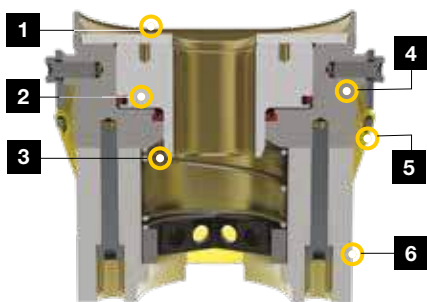
Similar to Standard Foundation Tensioners, Elliptical tensioners were designed specifically for foundation fastening applications on wind towers, and utilize the existing hex nut as a reaction point in order to eliminate thread fit misalignment.

Unlike standard FTR-Series Tensioners, the FTE-Series Tensioners feature an elliptical geometry, which enables fit in narrow access foundation applications, without reducing load capabilities.

Operators may access the nut with a Tommy bar rather than employing the use of an offset rundown gear.

Elliptical tensioners are ideal for close clearance applications, or as a universal tool that will work in nearly any foundation application, whether standard or narrow access.

1. **Maximum stroke Indicator:** Extends life by helping to prevent over-stroking of cylinder.
2. **Long-life seals:** For maximum durability and extended service life intervals.
3. **Auto-retract piston:** Simplifies use and improves speed of operation.
4. **Elliptical form:** Provides access to close clearance applications.
5. **Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
6. **Quick-disconnect coupler:** (not shown) For safe, simple hydraulic connection. Optional 360° swivel available for additional hose positioning flexibility.



▼ FTE-Series, Foundation Bolt Tensioner, designed to fit both standard and narrow access foundation applications.



# FTE-Series, Foundation Bolt Tensioners, Elliptical

▼ This is how a FTE-Series Foundation Bolt Tensioner model number is built up:



## 1 Product Type

**FTE** = Foundation Tensioner, Elliptical

## 2 Bar Grade

**75** = 75 ksi  
**150** = 150 ksi  
 (or metric designation)

## 3 Bar Size Designation

Example  
**10** = No. 10 bar size

## 4 Fitting Type

**SW** = Includes swivel manifold with single male fitting

## FTE Series



Maximum Load Capacity:

**761,1 kN**

Maximum Operating Pressure <sup>1)</sup>:

**1500 bar**

<sup>1)</sup> Max. pressure varies, see specifications table for details.



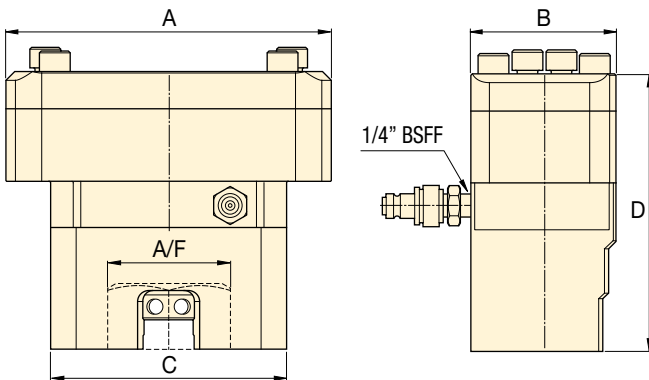
## Tensioning Pumps

Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



## Hoses and Fittings

High-pressure hoses and fittings for use with Enerpac tensioning systems are available.



## ▼ SPECIFICATION TABLE

Bar Grade	Bolt Diameter		Bar Size Designation	Model Number with single male fitting	Nut Size A/F	Max. Pressure	Hydraulic Pressure Area	Max. Load Capacity	Stroke	Dimensions (mm)				Minimum Bolt Potrusion	
	(mm)	(inch)								A	B	C	D		(kg)
75 ksi	35	1.38	#10	<b>FTE7510S</b>	51	1200	3108	373,0	10,0	170	82	142	147,5	8,3	200
	38	1.50	#11	<b>FTE7511S</b>	57	1500	3108	466,2	10,0	170	82	142	147,5	8,3	200
150 ksi	40	1.56	1.375	<b>FTE150138S</b>	64	1500	5074	761,1	10,0	222	99	161	203,4	18,5	230
	37	1.44	1.250	<b>FTE150125S</b>	57	1200	5074	608,9	10,0	222	99	161	203,4	18,9	240
8.8	36	1.42	36	<b>FTE8836S</b>	60	1500	3108	466,2	10,0	142	82	142	147,5	9,7	180



# BOLTING SOLUTIONS

Enerpac's comprehensive range of bolting equipment provides precise and effective force to make your work more productive, safer, and easier to perform. The best solutions for controlled tightening, joint integrity and more, available from one source.

## Controlled Tightening and Loosening



Pneumatic and Electric Torque Wrenches



Hydraulic Torque Wrenches



Electric Torque Wrench Pumps



Pneumatic Torque Wrench Pumps



Manual Torque Multipliers

## Tensioning Tools



Power Generation Bolt Tensioners



Topside Bolt Tensioners



Electric Tensioning Pumps



Pneumatic Tensioning Pumps



High-Pressure Hand Pumps

## Joint Assembly & Joint Separation



Hydraulic Nut Cutters and Nut Splitters



Step-Type Flange Spreaders



Flange Alignment Tools



Pin-Type Flange Spreaders



Mechanical Flange Face Tool



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