



## **ZipTENSIONER STUD TENSIONER**

### **Tensioning Bolts on Wind Turbine Towers**



## **Operation and Maintenance Manual**

### **Keep for your records**

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## **INTRODUCTION**

**You have acquired the finest hydraulic stud tensioner on the market.**

**ZipTENSIONER are dependable and durable. When operated properly, these tensioners deliver accurate preload within their specified range.**

**Please be sure to read this manual very carefully. Save it in a secure place and refer to it when needed.**

**For additional information call FASTORQ at 281.449.6466,  
Toll Free at 1.800.231.1075 or by e-mail at  
[sales@fastorq.com](mailto:sales@fastorq.com).**

**The ZipTENSIONER is designed to tension 36MM Williams foundation bolts #11 on wind turbine towers. The tensioner fits over the foundation bolts, the puller bar is screwed all the way down secured against the piston. Then unscrew the puller bar  $\frac{1}{4}$  turn. When the tensioner piston is extended, the puller bar engages the foundation bolt and pulls it into tension.**

**The piston area of the tensioner is 14.018 square inches. This area provides a maximum tension of 134,573 pounds at 9,600 PSI hydraulic pressure. The tensioner has a .5 inch stroke, therefore, full elongation of the foundation bolts is accomplished with two pulls.**

**When the bolt is pulled into tension, the nut rotator is turned with a tommy bar to turn the service nut down and lock the bolt in tension.**

**The tensioner is double-acting, so the piston is returned hydraulically. The F36MM-10K134 requires the foundation bolt to extend 9" above the foundation.**

## **POWER REQUIREMENTS**

**ZipTENSIONER stud tensioners are hydraulically driven. They require a hydraulic pump unit that delivers up to 10,000 psi of hydraulic pressure.**

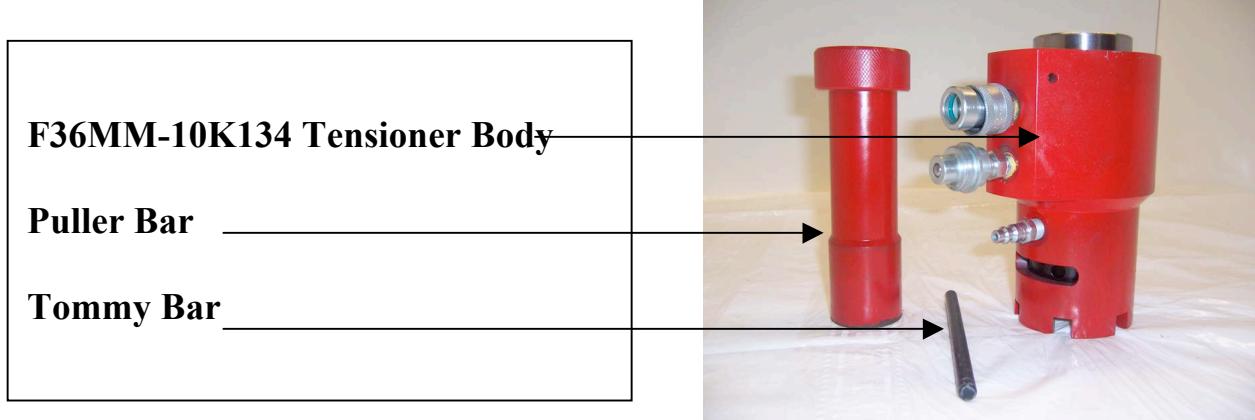
**The hydraulic pump can be driven by an air motor, an electric motor, or a diesel engine.**

**FASTORQ carries a wide range of power units that can be used with ZipTENSIONER tools.**

**For complete information on these units, contact your sales representative.**

## UNPACKING

**The ZipTENSIONER Hydraulic stud tensioner is fully tested before it is shipped. Upon receiving your tensioner, verify that you have received the following items:**



## SAFETY PRECAUTIONS

### IMPORTANT

**Please read and follow all instructions to avoid the risk of personal injury and / or property damage.**

### CAUTION

**Always wear safety goggles or safety glasses, and protective gloves when operating stud tensioners.**

## **SAFETY PRECAUTIONS**

### **WARNING**

**Do not allow the hydraulic hoses to kink, twist, curl or bend so tightly that the oil flow within the hose is blocked or reduced.**

**Never attempt to grasp a leaking hose under pressure with your hands.**

**Never exceed the rated pressure of the tensioner or the maximum allowable stroke.**

**Use the bolt load values specified by the manufacture.**

## **PRE-TENSIONING INSTRUCTIONS**

**Insure that the threads are clean and in excellent condition. This is verified when the nuts are being assembled onto the studs. The nuts should screw on the studs freely by hand.**

**Insure that the studs has a minimum length of 9" above the foundation**

**Insure that the nut rotator is turning smoothly. Using the air-port to blow any debris that might be in between the nut rotator and the tensioner body.**

**Insure that the puller bar threads are clean. Use a mild cleaner to clean the threads if dirty and blow with clean dry air.**

## **OPERATION INSTRUCTIONS**

### **TIGHTENING**

- 1. Install the stud tensioner on the first bolt as explained in the previous section, "Pre-Tensioning Instructions." Slide the tensioner down over the foundation bolt and screw the Puller Bar all the way down against the piston and back-off  $\frac{1}{4}$  turn on the Puller Bar**
- 2. NOTE: Insure that the Puller Bar is screwed all the way down the piston and back-off  $\frac{1}{4}$  turn on the puller bar.**
- 3. Set the pump to PSI / load. ( see chart on page 8 )**
- 4. Apply pressure to the stud tensioner.**
- 5. When the tensioner piston is extended, the Puller Bar engages the foundation bolt and pulls it into tension. The tensioner has a .5 inch stroke, therefore, full elongation of the foundation bolts is accomplished with two pulls.**
- 6. Tightening the nut using a Tommy Bar through the slot in the bridge.**
- 7. Release the hydraulic pressure.**
- 8. Repeat steps 1 – 6 as needed to complete job.**

# **PSI / LOAD CHART**

## **Piston Area – 14.018 sq. in.**

<b>Pump Pressure - PSI</b>	<b>Tensioner Load - Pounds</b>
1,000	14,018
2,000	28,036
3,000	42,054
4,000	56,072
5,000	70,090
6,000	84,108
7,000	98,126
8,000	112,144
9,000	126,162
9,600	134,573

## **LOOSENING**

- 1. Install the stud tensioners on the first bolt as explained in the, "Pre-Tensioning Instructions." Slide the tensioner down over the foundation bolt and screw the Puller Bar all the way down against the piston and back-off  $\frac{1}{4}$  turn on the Puller Bar**
- 2. Set the pump to pressure / load. ( see chart above )**
- 3. Apply pressure to the stud tensioner.**
- 4. When the tensioner piston is extended, the Puller Bar engages the foundation bolt and pulls it into tension. The tensioner has a .5 inch stroke, therefore, full elongation of the foundation bolts is accomplished with two pulls.**
- 5. Loosen the nuts using a Tommy Bar through the slot in the bridge.**
- 6. Release the hydraulic pressure.**
- 7. Repeat steps 1 – 6 as needed to complete job.**

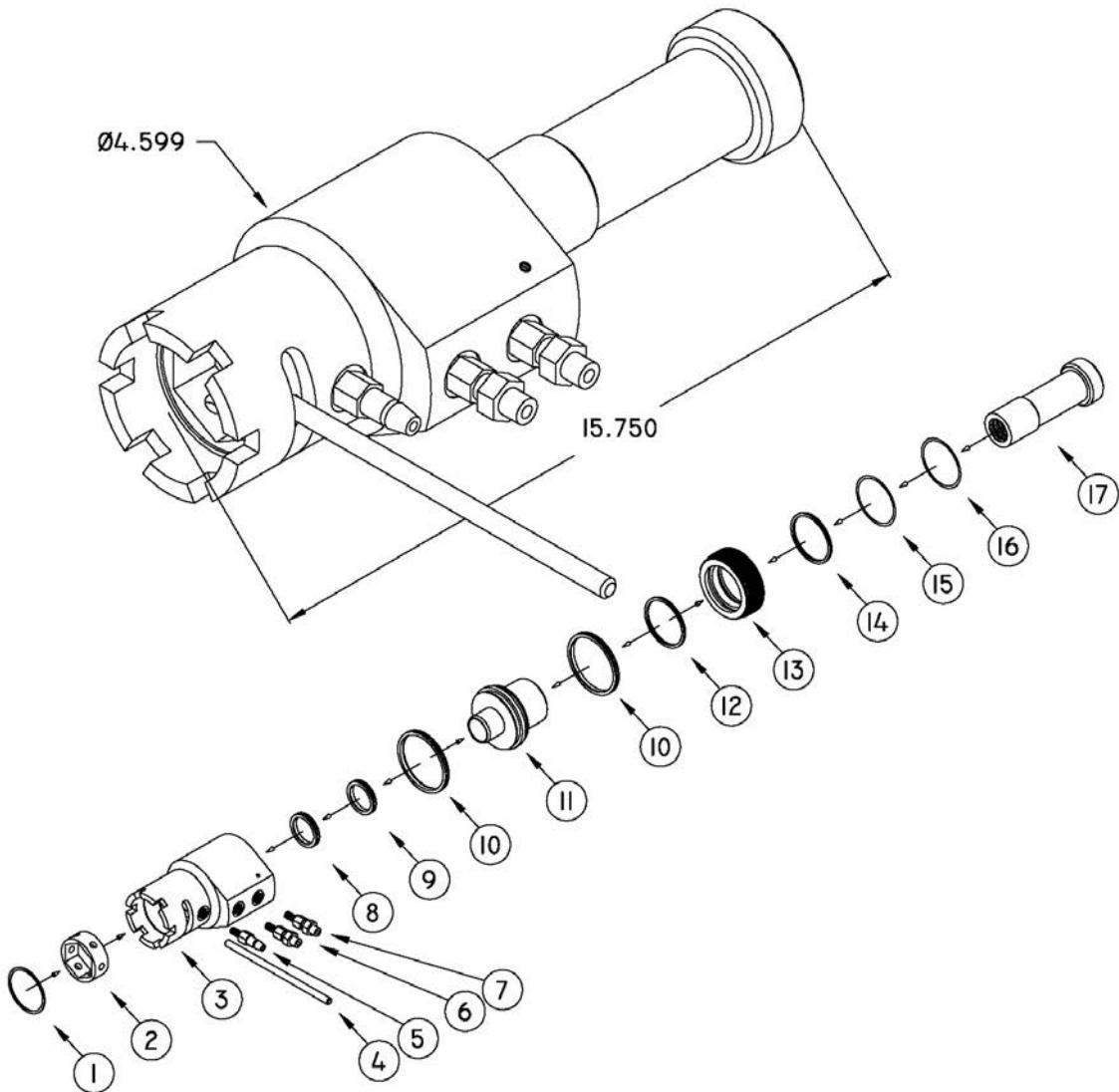
## TROUBLE SHOOTING

SYMPTOMS	CAUSE	SOLUTIONS
<b>Nut not turning under bridge with system under pressure.</b>	Improper hydraulic connection resulting in no real effect on bolt. Damaged threads on nut and / or stud.	Release pressure, and check your connections.  Remove stud tensioner, and repair threads.
<b>Tensioner locks up on bolt or can't be removed, when loosening studs.</b>	Improper practices while assembling stud tensioners for loosening.	Pressurize stud tensioner gradually until the nut rotates. Tighten the nut half a turn. Release the pressure. Double zip should release at this time.
<b>Oil leaking from hydraulic connection.</b>	<b>Connection is loose</b>  <b>Connection is too tight</b>	Tighten connection  Replace Fitting
<b>Piston will not retract / or advance.</b>	Hydraulic connections not connected properly	Reconnect fittings
<b>Hydraulic connection will not lock / or will not release</b>	Hydraulic pressure on the line	Release the pressure in the hose

## STORING TIPS

- **Always have the piston retracted.**
- **Rinse and clean the stud tensioners after every job, and**
- **lubricate with light oil film.**
- **Cover the internal threads of the Puller Bar.**

# EXPLODED VIEW



ITEM	PART #	DESCRIPTION
1	WH334-S02	SNAP RING
2	A2K911	NUT ROTATOR
3	B2K907	BODY
4	A95108	TOMMY BAR
5	**CUSTOMER SUPPLIED**	AIR HOSE QUICK COUPLING
6	PVV-25-F	HYDRAULIC COUPLING FEMALE
7	PVV-25-M / 2083-4-4	HYDRAULIC COUPLING MALE
8	302.46047	BODY WIPER SEAL
9	I02.46045	BODY PISTON SEAL
10	202.46044	PISTON SEAL WITH BACK UP RING
11	B2K908	PISTON
12	I02.46042	GLAND PISTON SEAL
13	A2K909	GLAND
14	302.46039	GLAND WIPER SEAL
15	D-240-N90	GLAND O-RING SEAL
16	PB90-240N90	GLAND O-RING SEAL BACK UP RING
17	A2K923	PULLER BAR

## **LIMITED WARRANTY**

**FASTORQ warrants its products against defects in workmanship and materials for 180 days from date of delivery.**

**Warranty does not cover ordinary wear and tear, abuse, misuse, overloading, or altered products.**

## **REPAIR AND SERVICE**

**FASTORQ shall provide complete and prompt service on all its products. It is recommended to return the unit to the factory in the event of a failure or a general maintenance requirement. Fastorq's trained and experienced technicians can properly inspect and repair the unit.**



## ASSISTANCE

**FASTORQ provides technical support and assistance to all its customers. Help is available 7 days a week, 24 hours a day by calling 281.449.6466 or Toll Free 1.800.231.1075.**

**Please contact us whenever you have a question or need assistance. We may be reached by phone or e-mail.**