FASTORQ®

The Speed of Innovation.

ZipTENSIONER STUD TENSIONER

Tensioning Bolts on Wind Turbine Towers

Operation and Maintenance Manual

Keep for your records

18914 East Industrial Parkway | New Caney, TX 77357 | www.fastorq.com | Main: 281.449.6466 | 1.800.231.1075

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INTRODUCTION

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

ZipTENSIONER Stud Tensioners 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 (Global), Toll Free at 1.800.231.1075 (US and Canada) or by e-mail at sales@fastorq.com.

The Model DZF34MM-10K 2 Stud Tensioner is designed to tension 34MM Williams foundation bolts #10 on wind turbine towers. The Double ZipNut mechanism allows the tensioner to slide down over the foundation bolts without rotating a retaining nut. When the tensioner piston is extended, the Double ZipNut mechanism automatically engages the foundation bolt and pulls it into tension.

The piston area of the tensioner is 8.68 square inches. This area provides a maximum tension of 86,800 pounds at 10,000 PSI hydraulic pressure. The tensioner has a half-inch stroke, therefore, full elongation of the foundation bolts is accomplished with one pull.

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 Double ZipNut mechanism is automatically released when the piston is returned. The DZF34MM-10K 2 requires the foundation bolt to extend 10-½" above the foundation.

POWER REQUIREMENTS

ZipTENSIONER Stud Tensioner Hydraulic 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 Stud Tensioner tools.

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

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UNPACKING

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

Double Auto Zip

Load Cell

Tommy Bar

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 10 ½”

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 thread segments are clean. Use a mild cleaner to clean the segments if dirty and blow with clean dry air.

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NOTE: DO NOT DISASSEMBLE THE ZipNut ASSEMBLY PORTION OF THE TENSIONER, RETURN TO FASTORQ FOR REPAIRS.

NOTE: Insure that the ZipNut Assembly (see page 10 part # 15) is screwed all the way down the piston part # 10.

OPERATION INSTRUCTIONS

TIGHTENING

1. **Set the pump to PSI / load. (see chart on page 9)**
2. **Install the stud tensioners on the first bolt as explained in the previous section, "Pre-Tensioning Instructions." Slide the tensioner down over the foundation bolt.**
3. **CAUTION: Ensure Zip Nut Segments are engaged properly.**
4. **Apply pressure to the stud tensioner.**
5. **When the tensioner piston is extended, the Double ZipNut mechanism automatically engages the foundation bolt and pulls it into tension. The tensioner has a one-inch stroke, therefore, full elongation of the foundation bolts is accomplished with one pull.**
6. **Tightening the nuts 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.**

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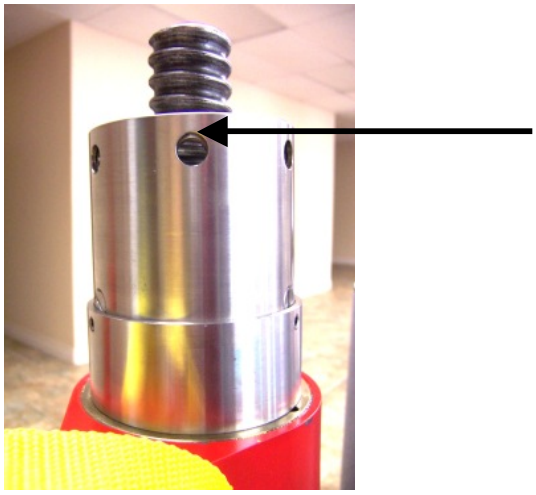
CAUTION:

While applying pressure slowly to the tensioner, be sure that the inner and outer sleeve has no offset as noted in the photo below.

NO OFFSET = THREADED ZIP SEGMENTS FULLY ENGAGED

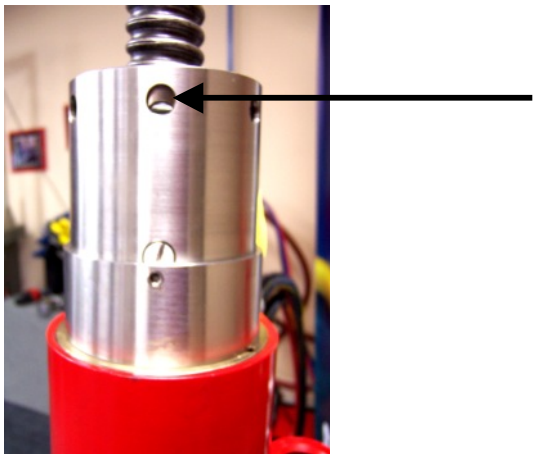


NOTE:
If you see through the window that the inner and outer sleeve match and there is almost no offset from the outer sleeve, the threaded zip segments are fully engaged.

Fully Engaged Segments

If the segments are NOT fully engaged as noted in the photo below see corrective action.

OFFSET = THREADED ZIP SEGMENTS NOT FULLY ENGAGED



NOTE:
If you see through the window that the inner and outer sleeve do not match, where the inner sleeve is offset then the threaded zip segments are NOT fully engaged.

NOT Fully Engaged Segments

CORRECTIVE ACTION:
Turn the whole tensioner slowly 1/4 - 3/8 turn clockwise, and slowly apply pressure to the tensioner and observe through the window that the inner and outer sleeve has No offset, as in the first picture above.

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PSI / LOAD CHART
Piston Area - 8.68 sq. in.

Pump Pressure - PSI	Tensioner Load - Pounds
1,000	8,680
2,000	17,360
3,000	26,040
4,000	34,720
5,000	43,400
6,000	52,080
7,000	60,760
8,000	69,440
9,000	78,120
10,000	86,800

LOOSENING

1. Set the pump to pressure / load. (see chart above)
2. Install the stud tensioners on the first bolt as explained in the, "Pre-Tensioning Instructions." Slide the tensioner down over the foundation bolt.
3. **CAUTION:** Ensure Zip Nut Segments are engaged properly.
4. Apply pressure to the stud tensioner.
5. When the tensioner piston is extended, the Double ZipNut mechanism automatically engages the foundation bolt and pulls it into tension. The tensioner has a one-inch stroke, therefore, full elongation of the foundation bolts is accomplished with one pull.
6. Loosen the nuts 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.

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TROUBLE SHOOTING

SYMPTOMS	CAUSE	SOLUTIONS
Nut not turning under bridge with system under pressure.	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.
Tensioner locks up on bolt or can't be removed, when loosening studs.	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.
Oil leaking from hydraulic connection.	Connection is loose Connection is too tight	Tighten connection Replace Fitting
Piston will not retract / or advance.	Hydraulic connections not connected properly	Reconnect fittings
Hydraulic connection will not lock / or will not release	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.

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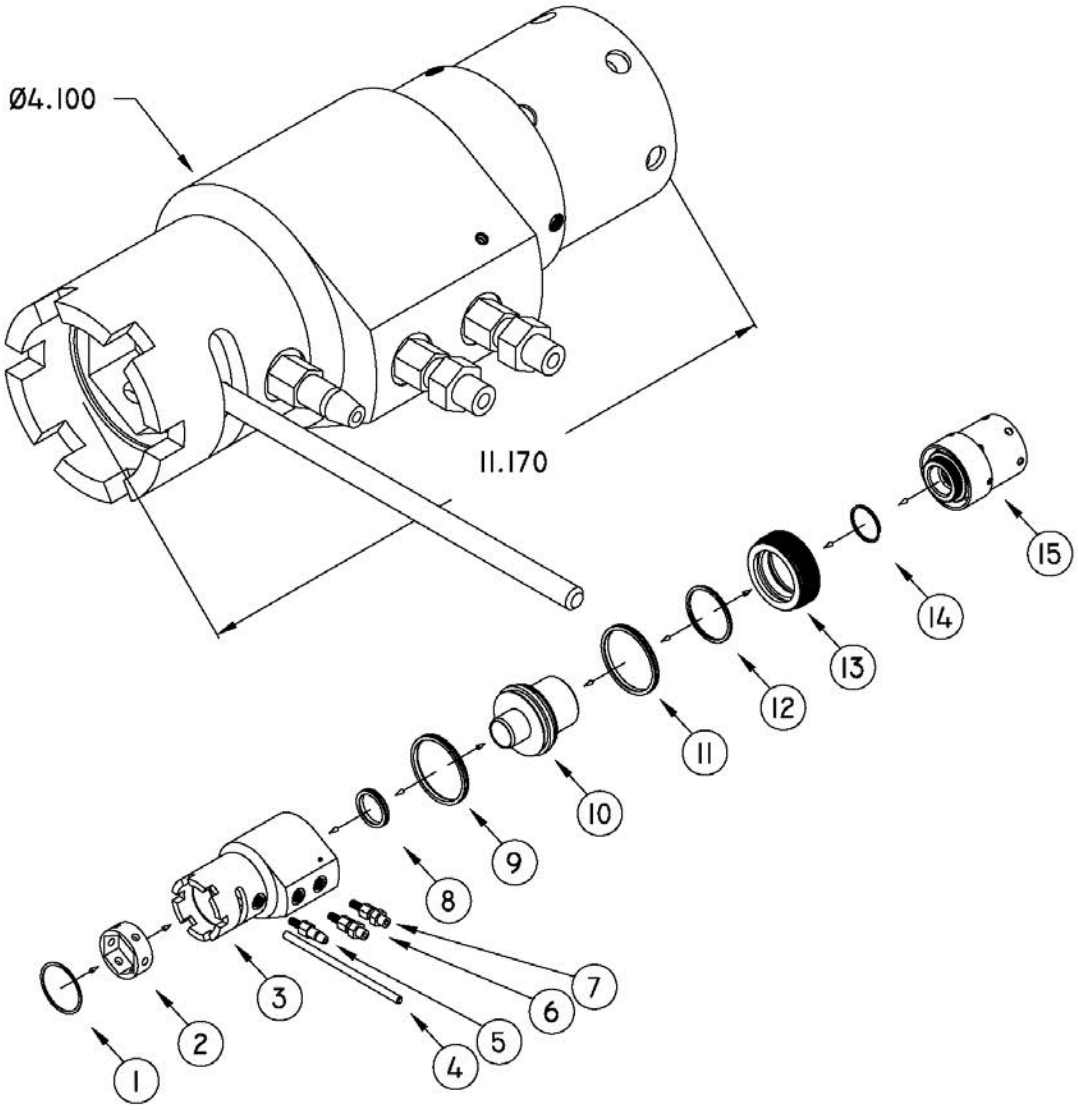
EXPLODED VIEW



ITEM	PART #	DESCRIPTION
1	WH268-S04	SNAP RING
2	A2K407	NUT ROTATOR
3	A2K889	BODY
4	A95108	TOMMY BAR
5	**CUSTOMER SUPPLIED**	AIR HOSE QUICK COUPLING
6	PVV-25-M / 2083-4-4	HYDRAULIC COUPLING MALE
7	PVV-25-F	HYDRAULIC COUPLING FEMALE
8	102.45348	ROD SEAL WITH BACK UP RING
9	202.45347	PISTON SEAL WITH BACK UP RING
10	A2K891	PISTON
11	202.45347	PISTON SEAL WITH BACK UP RING
12	102.45349	ROD SEAL WITH BACK UP RING
13	A2K406	GLAND
14	302.45350	WIPER SEAL
15	WILLIAMS 34MM STUD	FASTORQ PROPRIETARY ZIP NUT ASSEMBLY

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.

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.

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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.