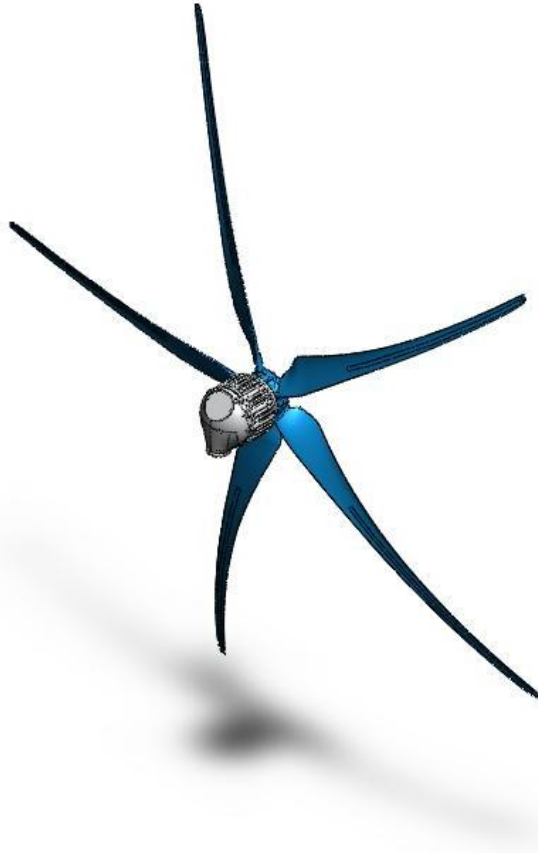


# **Raum Energy Inc.**

## **3.5 kW Turbine Installation Guide**



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## **WARNING!**

The turbine installation guidelines contained herein is a result of careful design and consideration. Raum Energy Inc. will not warrant any turbine installed by the customer in contradiction of these guidelines. In addition, Raum Energy is not liable for any damage to the Raum Energy wind turbine system or any collateral damage or injury as a result of a faulty or defective turbine installation.

## **IMPORTANT!**

Read this manual entirely before you start. Failure to accurately follow these steps may result in damage to the tower, turbine or foundation.

The Raum3500w wind turbine is capable of delivering thrust loads of over 1850 N (420 lbf) in extreme winds. The Raum 15m Monopole and Raum 70ft Guy towers were designed specifically for the loading of the Raum3500w wind turbine. Raum Energy is not liable for failures resulting from improper installation or installations which use a different tower or different configuration.

### **Before you start:**

Installation of this turbine will likely take two people approximately one hour of time. Some lifting can be physically strenuous and should only be completed by performed by people in good health and in good weather conditions. Lifting the tower should never be performed in high wind conditions or when a chance of rain or electrical storms exists.

### **Items required:**

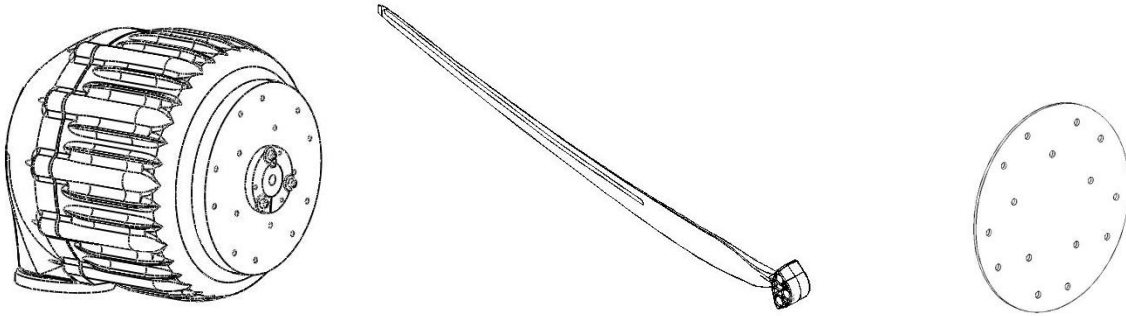
- Vehicle capable of pulling 9000 N (2,000 lbs) or greater of force
- Foundation constructed as per Raum Energy 15m Monopole Foundation or Guy Tower Foundation Construction Guide
- Cable, and hardware included with Raum3500w turbine installation kit
- Parts included with the Raum3500w turbine package
- Torque Wrench capable of producing 12 and 75 ft-lbs
- Sockets, 7/16" and 1/2" and 3/4"
- Lock Tight Threadlocker (242 recommended)

## Parts List

Raum3500w Turbine

Raum3500w Turbine blades, Qty 5

Raum3500w Blade retaining ring



Raum3500w Blade mount bushing, Qty = 30

5/16" x 4" UNC Gr 8 bolts , QTY = 15

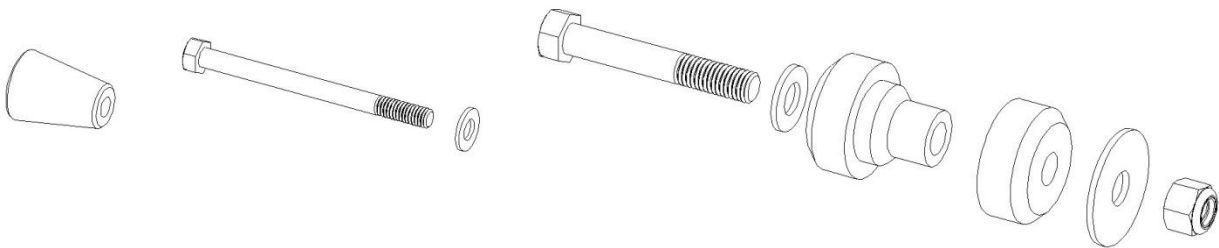
1/2" x 3.25" Gr 5 bolts, QTY = 6

Rubber dampers, QTY = 6 sets

1/2" Nylock nuts

1/2" Washers , QTY = 6

1/2" Fender washers, QTY = 6

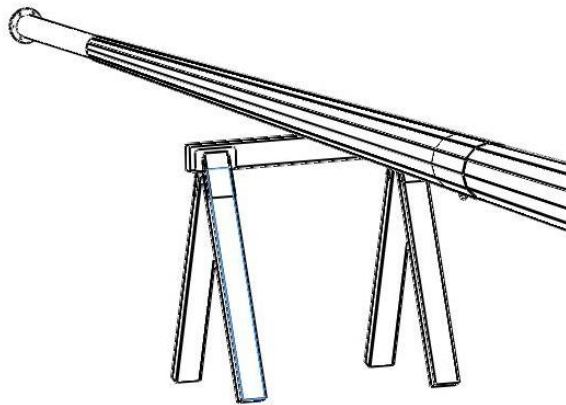


## Introduction:

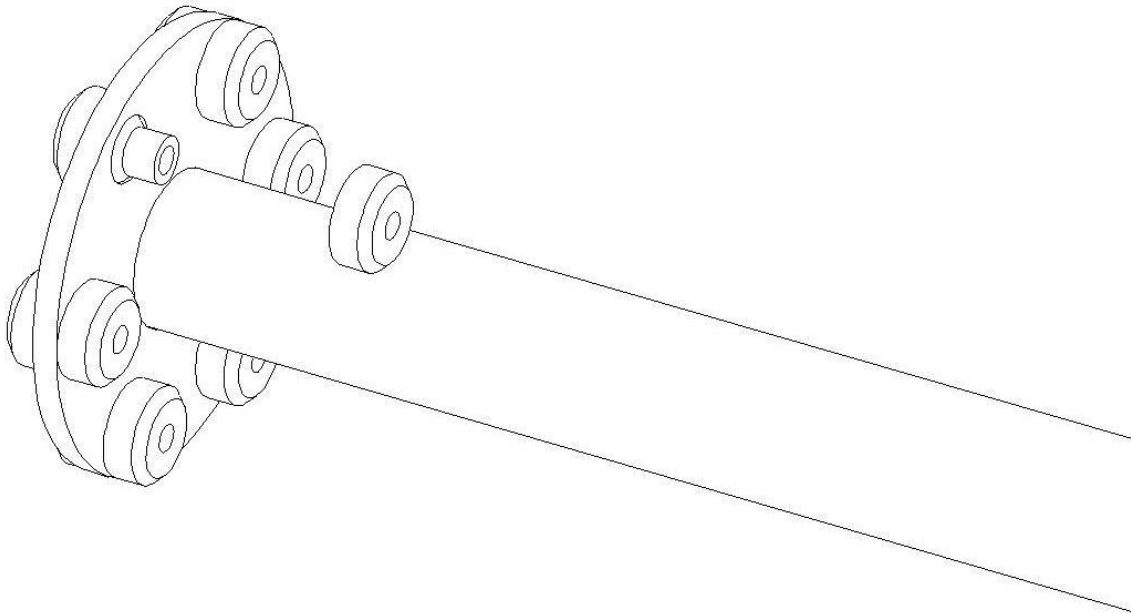
This guide covers attachment of the Raum3500w wind turbine to the tower and final assembly of the Raum3500w turbine. Before starting, ensure that the break switch is turned ON.

### Raum3500w Turbine Installation

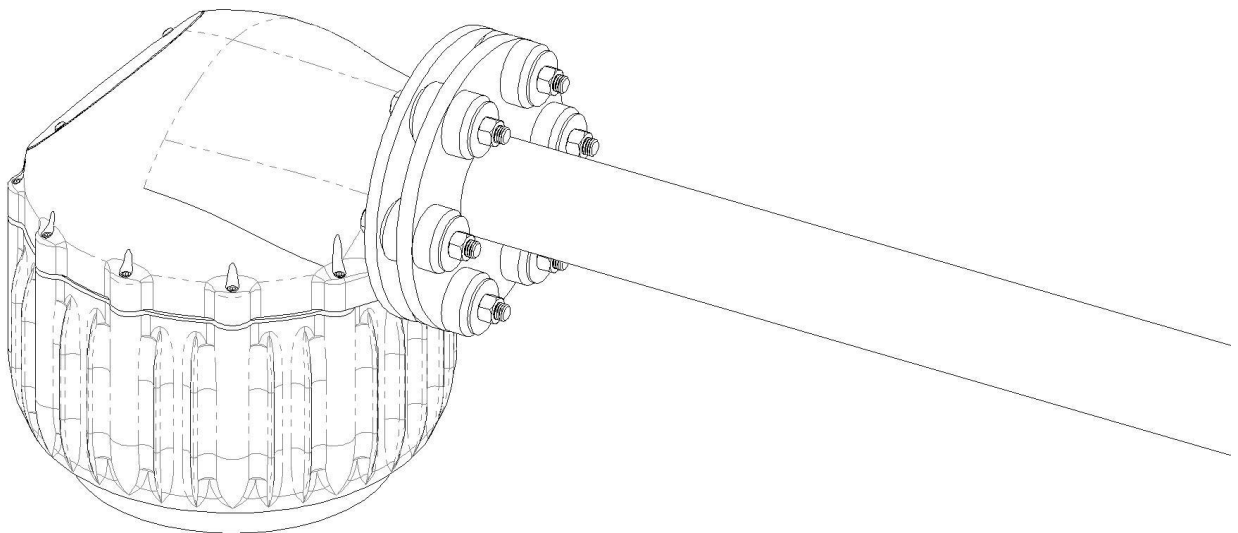
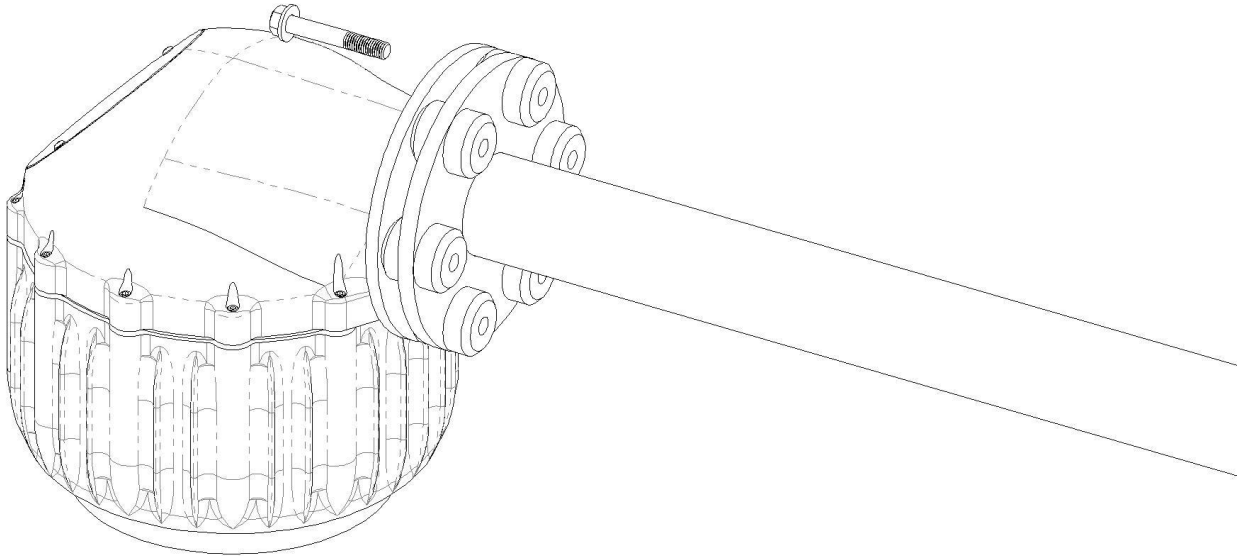
**Step 1:** The turbine will need to be installed as the tower is leaned over. Thus if the tower is already standing, the tower will first need to be lowered and propped up about 4 to 5 ft as shown.



**Step 2:** Mount the rubber dampers to the tower by pushing them through the tower holes. installing the 6 – 1/4" X 7/8" long bolts thru the mast and into the yaw of the turbine. Apply a drop of lock tight to the threads on the bolt before engaged. Torque each bolt to 12 ft-lbs.

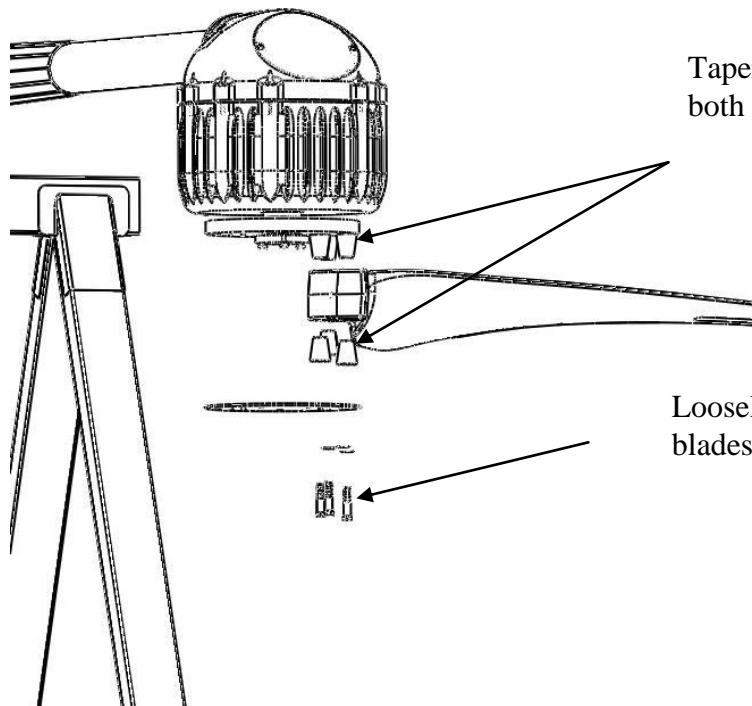
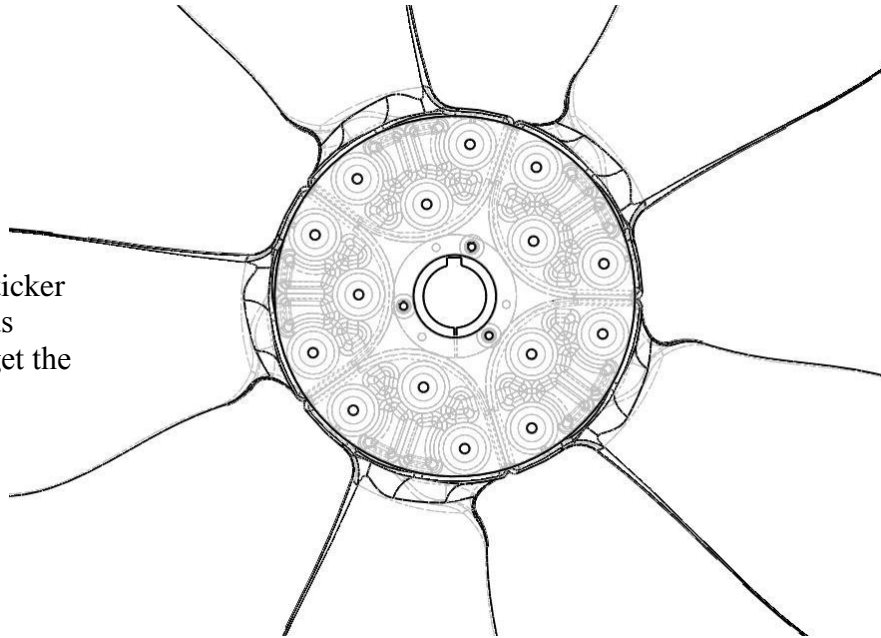


**Step 3:** Mount the turbine to the tower by installing the 6 - 1/2" x 3.25" long bolts thru the mast and into the yaw of the turbine. Apply a drop of lock tight to the threads on the bolt before engaging. Use the 1/2" Nylock nuts and torque each bolt to 75 ft-lbs.



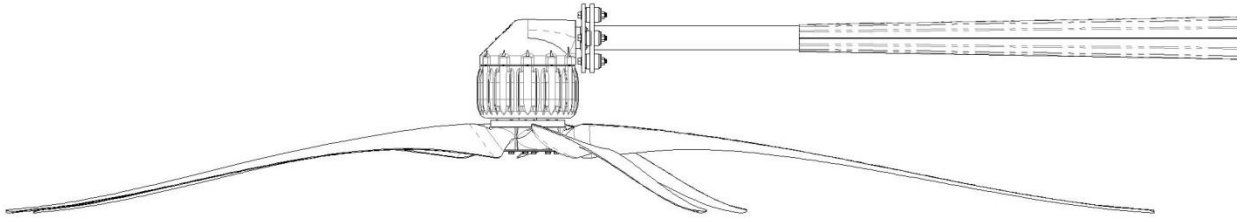
**Step 4:** The blades will be placed on the mount plate as shown in the figure. To do this, attach the place the bushings in the blades and bolt fasten with the 5/16" X 4" bolts. Note that a drop of lock tight should be applied to each bolt. All bolts should be loosely tight, then once all blades attached tightened to 24 ft-lbs.

Each blade has a sticker  
"This Side Towards  
Turbine". Do not get the  
blades backward!

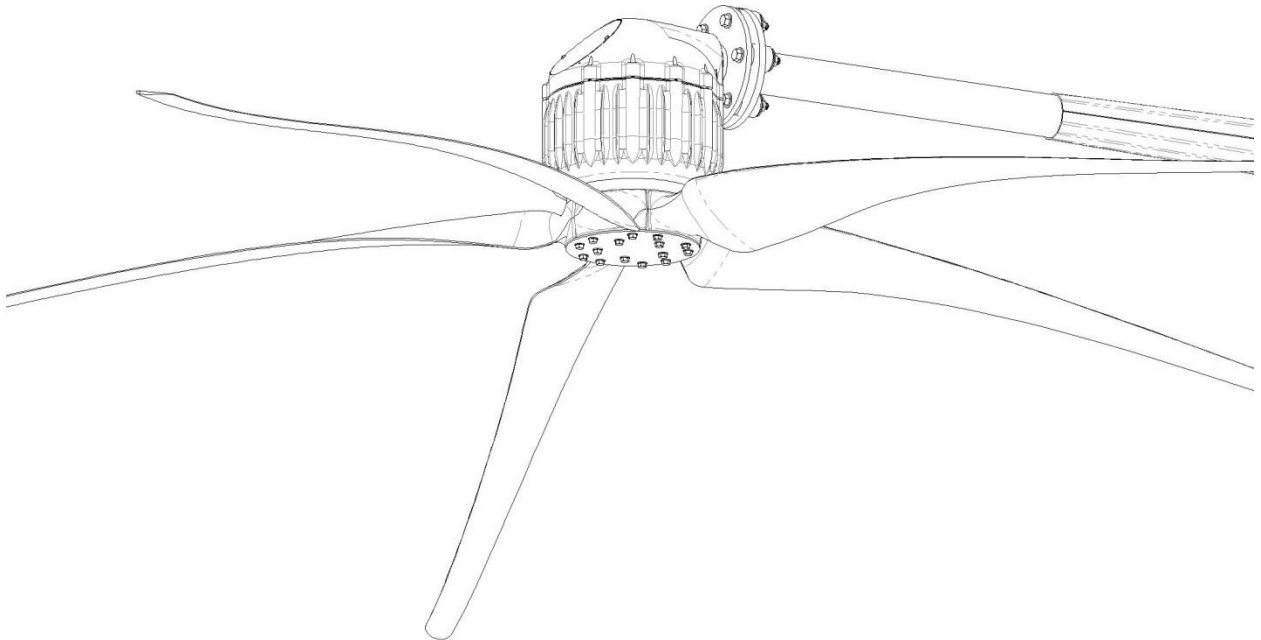


Tapered Bushings inserted in  
both sides of blade

Loosely tighten bolts until all  
blades are positioned



**Step 4:** Tighten each blade so that all blades are balanced. The bolts need to be torque to 24 ft-lbs each.



The Raum Energy 3.5 KW turbine is now installed to the tower and can be raised. Please read over the tower manual carefully before attempting to lift the tower.