

### Installation of Fold Over Kit's Screw Actuator System

The Acme Screw System consists of the following **sequence of parts**, as installed with the handle or gearmotor below the Folding Plates:

- a. THREADED ACME SCREW ROD, 6 ft. long, either 1" or 1 1/4" dia. depending on the size system purchased.
- b. THREADED TRAVELLER NUT, with 3/4" pivot bolt – holes to bolt into the top Folding Plate.
- c. TOP RETAINING NUT, with set screws
- d. Washer, 1" or 1 1/4", dia.
- e. UNTHREADED YOKE NUT, with 3/4" pivot bolts to bolt within Fold Over Kit side-plates.
- f. THRUST BEARING, ring shaped
- g. Flat Washer, 1" or 1 1/4" dia., depending on system size
- h. BOTTOM RETAINING NUT, with set-screws
- i. DRIVE SOCKET for manually operated winch or GEARMOTOR COUPLER for motorized system. Either one will be bolted on end.

**To INSTALL** the Acme Screw System in the set of Folding Plates:

- 1) Bolt the top aluminum Nut block into the top Folding Plate by threading one 3/4" pivot bolt (supplied with your Screw Actuator) through one of the 1" (3/4" in old steel versions) holes on the side of the Fold Over Kit plates into one of the two 3/4" pivot holes in the Yoke or Traveller Nuts. You will have to hold the Screw System vertical and in place or have another person hold it while you are threading the pivot bolt into a aluminum Nut blocks' side holes.
- 2) Keep a hold on the Screw System and thread a pivot bolt through the other side of the top Traveller Nut. Continue to hold the Screw System and proceed to the next step.
- 3) Position the bottom Yoke Nut to thread the pivot bolts. If the bottom aluminum Yoke Nut is too high to permit threading, twist the Acme Screw in the proper direction to align the aluminum Yoke Nut bolt-holes with the 1" side holes in the bottom Folding Plate. Thread the 3/4" holes as done for the above aluminum Nut.
- 4) Make sure the top and bottom Retaining Nuts snugly sandwich the top and bottom of the Unthreaded Yoke Nut with the washers and bearings sandwiched in between, however they should not be pressing the Bearing so tight that you are unable to rotate them by hand before pressure is applied to the Screw System. **Make sure the set-screws in the top and bottom Retaining Nuts are now tightened down so that they will hold the Retaining Nuts in place when the Screw-system is operation (check every time to be safe).** The bottom edge of the main acme lead screw should be about 6-7/16" below the bottom edge of the large aluminum Yoke Nut.
- 5) If the handle of the Screw-system is about 6-7/16" below the Yoke Nut (see assembled Gearmotor diagram), the bottom 3/8" hole in the lead screw should align with the 3/8" cross hole on the gearmotor coupler. (If you are not using the

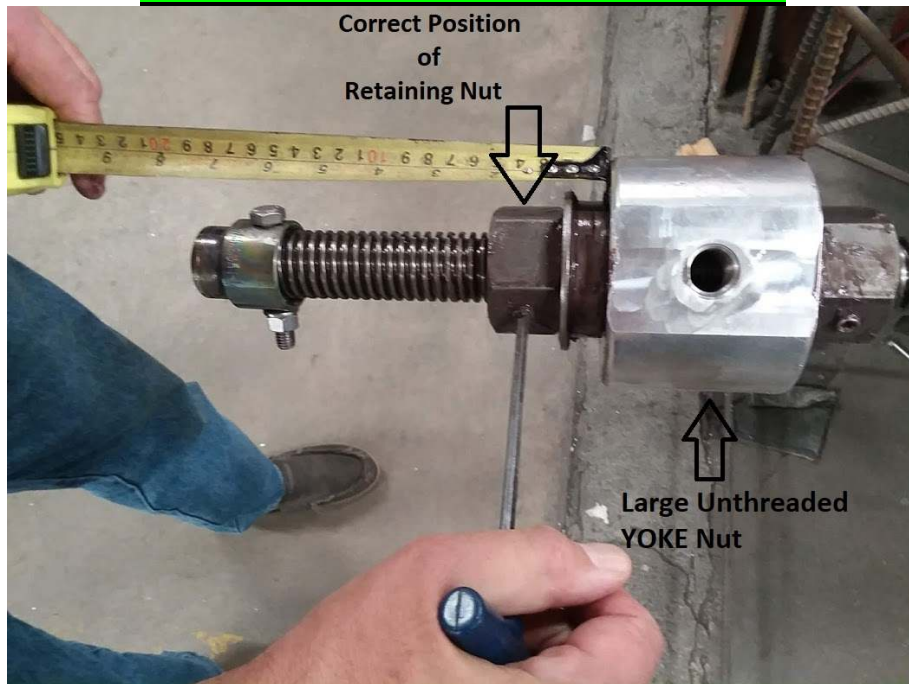
Gearmotor Kit, you can skip this step, as the exact length is not important.) The coupler should also fully engage the  $\frac{3}{4}$ " dia. shaft of the gearmotor, with  $\frac{7}{8}$ " to  $1\frac{1}{8}$ " of it being engaged.

- 6) You should grease the lead Screw by now. You are almost ready to fold the system over. If you need to readjust the level of the handle or Gearmotor Coupler, then loosen the set-screws on the Retaining Nuts and twist the Acme Screw up or down to the desired level. Once you position the lead acme screw and the system is aligned, go back to Step 4 to reset the screws. Also, please read the Instruction sheet accompanying this, "Gearmotor Mounting Instructions".
- 7) Again, completely grease the length of the exposed Acme Screw rod with a molybdenum fortified, lithium-based grease. The lithium-based, #2 grade, molybdenum fortified grease is preferred. 14 oz. cartridges of this type of grease are available for purchase from Heights Tower Systems. This grease has a shelf life of approximate 3 years, so we would recommend replacing your back-up grease supply/stock every 3 years.
- 8) If you have a Gearmotor & Mount kit to attach, see separate installation instructions for the Motor & Mount. Otherwise, attach the breaker bar handle for manual operation. You are now ready to crank the screw on your Screw Actuator System and fold over or fold up the tower.

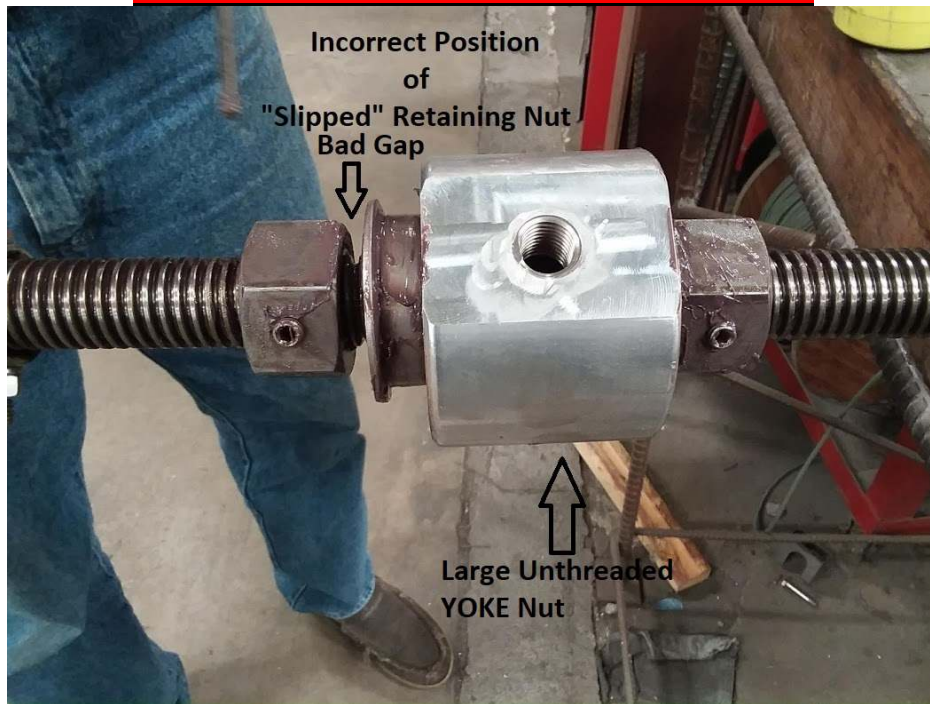
For weather protection of the Screw System, many customers have cut off a piece of PVC tube, approx. 5 ft. long, taped over its end with duct taped and sheathed the extended end of the Screw System.

**TROUBLESHOOTING GUIDE**  
**Positioning of Screw Actuator System**

**CORRECT POSITION OF RETAINING NUT**



**INCORRECT POSITION OF RETAINING NUT**



**PLEASE NOTE:** The above pictures are of the uninstalled Screw Assembly in our shop. This assembly would look different if installed in actual Fold Over Kit structure.

Problems	Look for Signs	Corrective Action
<p>Fold Over Kit not operating/tilting. Making audible sounds of stress. Retaining Nuts are clearly out of Position—or slipped. Make cause gearmotor to strain also. Misalignment of Screw Assembly; not straight with angle of gearmotor axle.</p>	<p>Customers may forget to tighten the small (3/8”) hex socket set-screws as directed with original installation, or the load of folding the tower over may push down the lower Retaining Nut a few rotations over time and with operation. This can result in additional loading/stress on the gear motor coupler position and gearmotor axle and observable mis-alignment.</p>	<p>See photos on previous pages illustrating the correct placement/position of retaining nuts. Make sure you are able to tighten both set-screws on each Retaining Nut (see diagram). Retaining Nuts must be put back into place. If the entire lead-screw has ‘slipped’ upward away from the coupler on the axle shaft of gearmotor, then the lead screw shaft should be rotated back downward for a few turns or however many required to bring back to original position. Lead Screw end hole (3/8”) should align and intercept with 3/8” bolt-hole in coupler, while is still on 7/8” to 1” length of the 3/4” motor shaft. Only do this if your tower is in stable vertical position with front 1” dia. T-handle pin in safely locked position, or if load is off tower and it is fully resting horizontally on the ground. Gearmotor should appear visually aligned with lead screw shaft when installed properly. If angle is not aligned even, then the Screw system can not be in the correct assembly position. If other problems, call for assistance.</p>
<p>Groaning Noise Coming from Screw System</p>	<p>Screw Actuator and components not properly lubricated. Grease at bearing points.</p>	<p>Make sure you properly lubricate the Screw Actuator and components before operation. Regularly inspect system for grease and keep it lubricated.</p>
<p>Loud, high-pitched Noise Coming from Gearmotor</p>	<p>Gearmotor fan cover tabs may be bent inward, allowing fan to scrape fan cover (makes screeching sound).</p>	<p>Make sure the Gearmotor fan cover tabs are not bent and pressing on the fan blade. If they are, unscrew 4 sheet-metal screws and pull tabs away from body (only slight movement of less than 3/16” needed).</p>
<p>Gearmotor Not Turning or Not Turning with Enough Power</p>	<p>Gearmotor NOT raising tower or turning Screw Rod, tripping breaker or quickly turning in reverse direction after initial start-up. Test for Voltage Drop @parallel to motor plug. Reading &lt; 110volts indicates deficiency.</p>	<p><b>Electrical:</b> make sure that the power cable you are using is the correct gauge for the distance from your power source to the gearmotor. See table ‘A’ on Page 5 of your gearmotor manual (1/2 HP), titled “Dayton Single-phase and Three-Phase Fractional Gearmotors”. Example: 16 meter conduit extension requires 8 AWG conductor for 115 Volt AC.</p>
<p>Gearmotor on and rotates, but Screw System does not.</p>	<p>Screw system lead screw is not rotating and moving.</p>	<p>Check that the 3/16” key (or it’s set-screw) on the gearmotor’s coupler has not slipped or escaped. Re-insert if needed.</p>