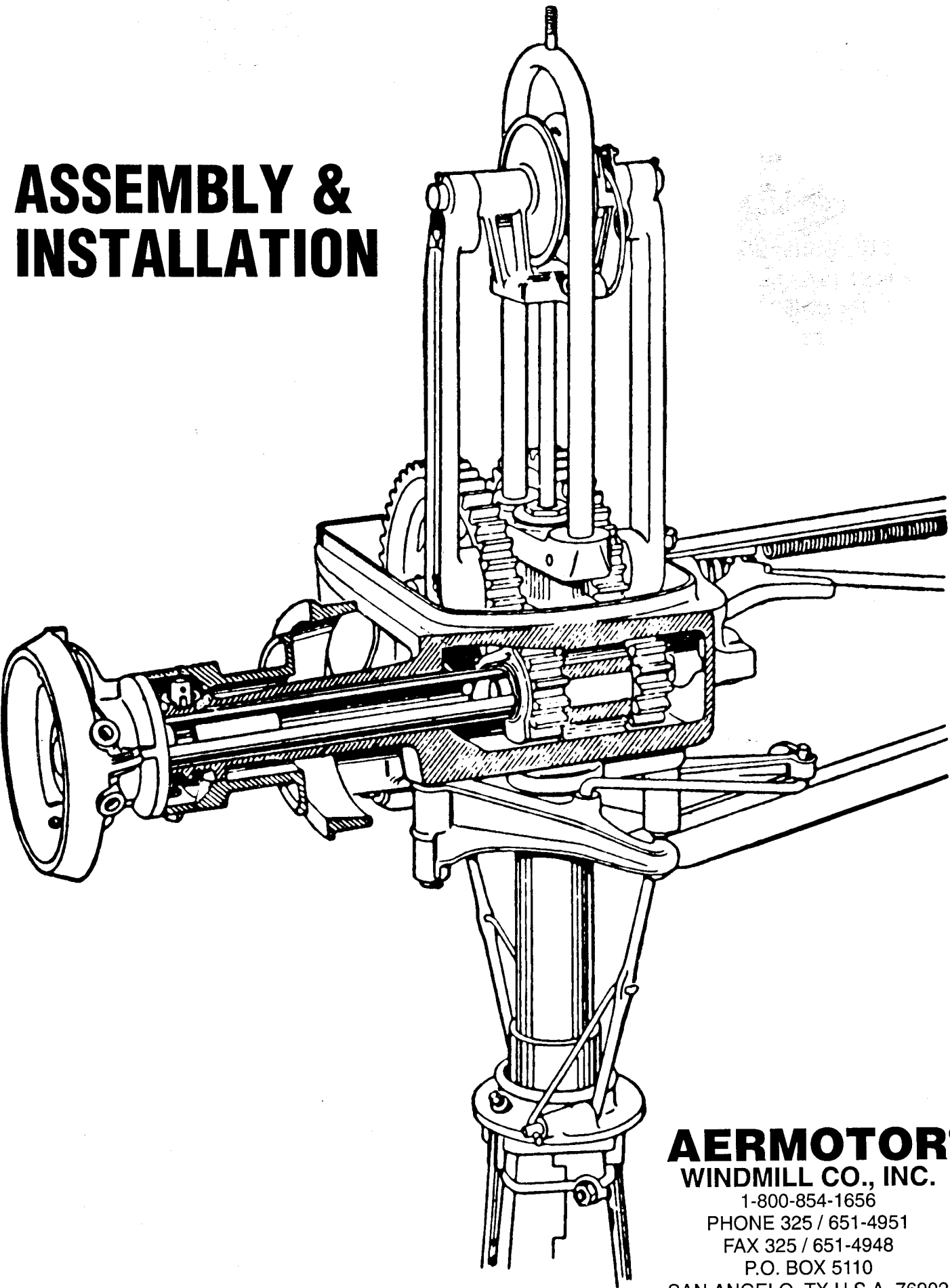


ASSEMBLY & INSTALLATION



AERMOTOR®

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PRE-ASSEMBLY

Before Starting . . .

1. It is important the tower is tall enough to place the wheel of the windmill at least 15-feet above all obstructions, such as trees, buildings, hills, etc., within a radius of 400-feet. This will provide a good wind exposure from every direction, allowing the windmill to pump more often and efficiently. The windmill and tower will also be less susceptible to strong or severe storm damage.
2. Be sure that all parts of the water system are properly sized; windmill, tower cylinder drop pipe, pump rod, ect., to assure many years of satisfactory performance.
3. As in any installation of this type, the proper practice of safety precautions is important.
 - A. At least two people should work on the installation. This is a good safety practice and the assembly will be easier.
 - B. **Be sure that the area is clear of overhead electrical lines. This should apply to the finished windmill and tower as well as the equipment used in the installation.**
 - C. Dress Properly:
 - a. No loose fitting or torn clothing that can snag on the tower or windmill.
 - b. Wear safety shoes with steel toes and rubber or cork soles and heels.
 - c. Wear construction type hard hat.
 - d. Use a reliable safety belt when working on tower.
 - D. Keep the working area around the installation clear of tools, shovels, steel pieces, etc., that are not being used.
 - E. Tighten all nuts and bolts at each level of the tower before climbing or standing on that section.
 - F. Keep the assembly area clear of bystanders and others not involved in the installation.

NOW - Before starting the assembly, open all crates, spread the parts of the windmill in a cleaned area and check against the packing list provided.

THEN - Read the entire instruction manual before starting. This will make assembly easier and the Aermotor Windmill will go together and operate as it should.

ASSEMBLY

Step 1

ASSEMBLE THE MASTPIPE WITH BASE (PART 661^{1/2}) INTO TOP OF TOWER OR STUB TOWER. Refer to figure 1.

1. Remove the LOCKNUT (PART 578) the LOCKWASHER (PART 579) from the top of the mastpipe. Remove the SHIM WASHERS (THREE) (PART 576) from the turntable base.

Remove the UPPER FURL RING ASSEMBLY (PART 613^{1/2}).

2. Place the MASTPIPE (PART 661^{1/2}) in the top of the tower or sub tower. See figure 1.

3. Using the two long bolts, attach the supporting angles of the lower furl ring assembly. See figure 1.

4. Apply a coating of grease to the turntable base, the friction washers and the mastpipe above the turntable base.

Replace the three turntable SHIM WASHERS (PART 576) on the turntable base.

5. Place the UPPER FURL RING ASSEMBLY (PART 613^{1/2}) over the mastpipe and on the lower furl ring assembly. Position the upper furl ring with the flat side down. See figure 1.

6. Remove 1/8 NPT plug from (613^{1/2}) UPPER FURL RING ASSEMBLY and insert suitable greasing nipple and apply liberal amount of grease to the furl ring.

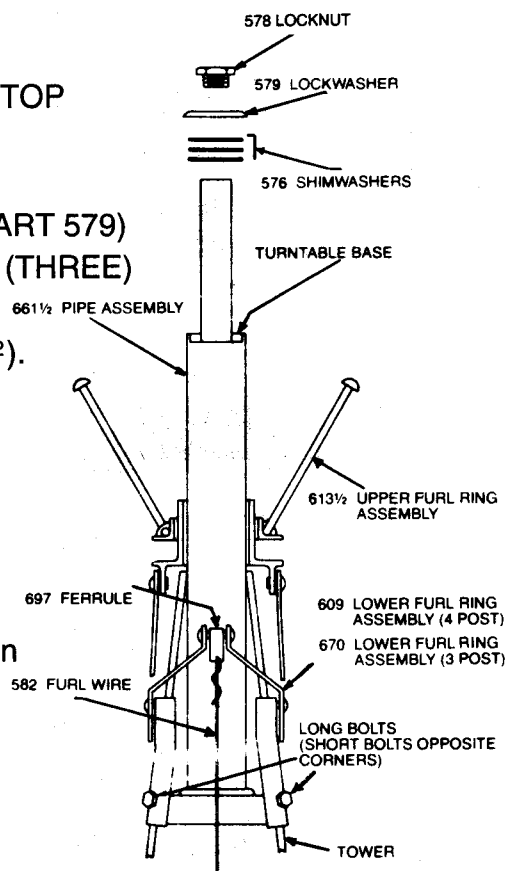


FIGURE 1

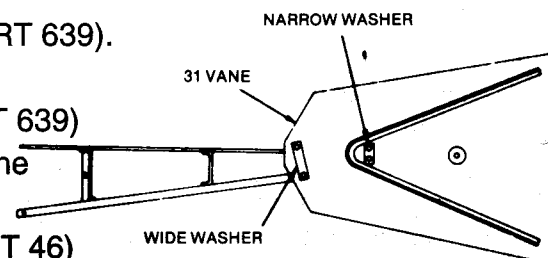
Step 2

ASSEMBLE THE VANE (PART 31) TO THE TAILBONE (PART 639).

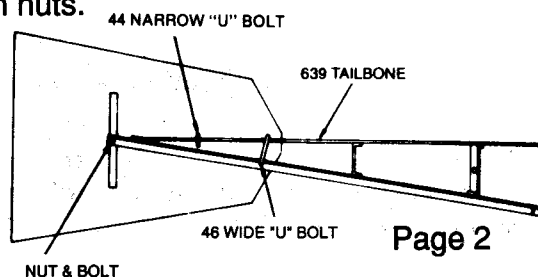
Refer to figure 2.

1. Place the VANE (PART 31) against the TAILBONE (PART 639) with the clear side of the vane flat against the flat face of the tailbone angle. See figure 2.

2. Secure the vane to the tailbone with WIDE U BOLT (PART 46) the NARROW U BOLT (PART 44) and the bolt with nut. Enter WASHERS on the outside of the vane, install and tighten nuts.



NOTE: The tail assembly can be attached to the MOTOR (PART 802) at ground level or after the motor has been placed on the mastpipe. If it is preferred to attach the tail assembly at ground level and hoist the complete assembly, refer to STEP 4 and then refer to STEP 3.

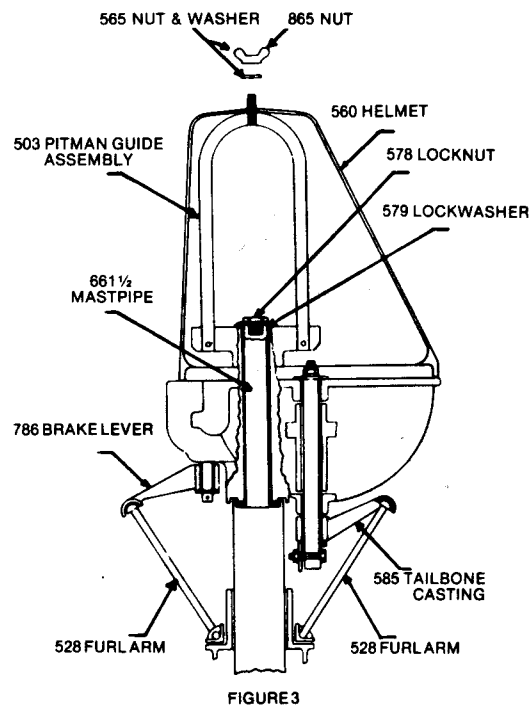


ASSEMBLY

Step 3

ASSEMBLE THE WINDMILL MOTOR (PART 802) TO THE MASTPIPE (PART 661^{1/2}). Refer to figure 3.

1. Remove the HELMET (PART 560) from the motor by removing the WASHER AND HELMET NUT (PART 565). Using a suitable hoist attached to the PITMAN GUIDE ASSEMBLY (PART 503) raise the motor and install on the mastpipe. See figure 3.
2. Replace the LOCKWASHER (PART 579) and the LOCKNUT (PART 578) in the top of the mastpipe and tighten.
3. Install the ball ends of the FURL ARMS (PART 528) in the sockets of the TAILBONE CASTING (PART 585) and the BRAKE LEVER (PART 786). See figure 3. Removing the furl arms from the upper furl ring and replacing them after locating the ball ends in the sockets, will make this assembly step easier.



Step 4

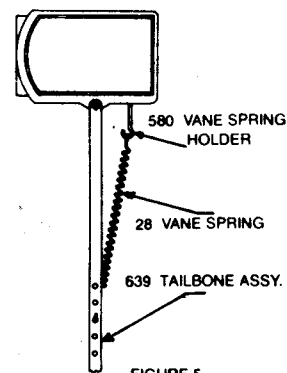
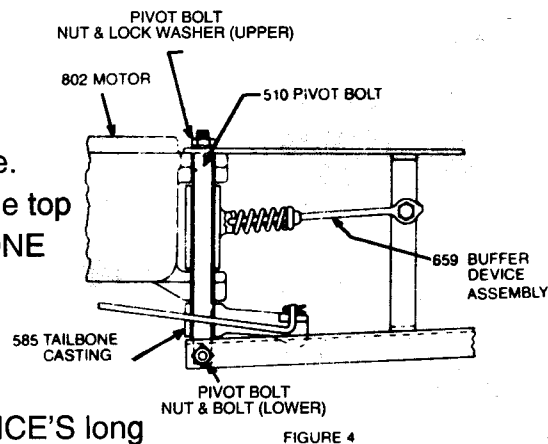
ASSEMBLE THE TAILBONE (PART 510) TO THE MOTOR (PART 802) Refer to figures 4 & 5.

1. Remove the PIVOT BOLT (PART 639) from the tailbone. Place the tailbone and vane assembly top brace over the top lug on the motor and the lower brace under the TAILBONE CASTING (PART 585).

NOTE: The BUFFER DEVICE (PART 659) must be rotated so that its long arm is on the vane side of the tailbone vertical brace. Replace the pivot bolt fasteners. See figure 4.

2. Remove the nut and bolt provided in the BUFFER DEVICE'S long arm and attach the end of it to the vertical brace on the tailbone. See figure 4.
3. Attach the end of the VANE SPRING (PART 28) with the short hook to the VANE SPRING HOLDER (PART 580). Attach the opposite end with the extended hook to the middle hole of the five holes in the underside of the top brace. See figure 5.

NOTE: To obtain maximum wheel speed (the windmill to furl at high wind velocity) place the spring hook in the tailbone hole furthest from the motor. For the windmill to furl at low wind velocity place the spring hook in the tailbone hole closest to the motor.



ASSEMBLY

Step 5

INSTALL THE PUMP ROD (PART 171) TO THE MOTOR (PART 802). Refer to figure 6.

1. Remove one of the cotter pins from the YOKE PIN (PART 610) and slide out the pin from the PUMP ROD YOKE (PART 608). Insert the small end of the PUMP ROD (PART 171) up through the base of the mast pipe and into the hole in the bottom of the yoke. Align the hole in the pump rod with the hole in the yoke, replace the yoke pin and cotter pin.

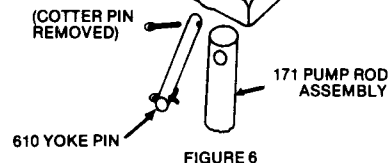


FIGURE 6

Step 6

INSTALL THE FURL WIRE (PART 582). Refer to figure 1.

1. Attach the FURL WIRE (PART 582) to the end of the furl lever. Thread the wire through the holes in the ferrule, loop the wire back and twist the wire around itself several times to secure. See figure 1.
2. Run the wire through the center of the platform and down through the center of the tower to the furl handle located on the opposite corner of the tower. Attach the wire through the LOOP ON THE FURL HANDLE (PART 243 1/2). Loop the wire back and twist the wire around itself to secure.
3. To adjust the brake lever for correct manual furling of the windmill, adjust the furl handle location up or down on the tower leg until the furl levers on the top of the tower are rotated down as far as possible and the BRAKE BAND (PART 690) is tight against the WHEEL HUB (PART 703). The wooden furl handle should be down and back against the tower leg with the windmill furling and locked from rotating.

NOTE: If it is necessary to ascend the tower to perform maintenance on the windmill, the furl handle must be secured to the tower leg in the manually furled position. This will prevent the windmill from accidentally becoming unfurled.

Step 7

ASSEMBLY AND INSTALLATION OF THE WHEEL (PART 799) TO THE WHEEL HUB AND MOTOR. Refer to figures 7,8,9,10 and 11.

Assemble the sails into six sections as follows:

1. Slide the SAIL RIB (PART 101) over the small end of the SAIL ASSEMBLY (PART 100) until the rib fits into the rectangular notches on each side of the sail. Repeat this step for each of the 18 sails. See figure 7.

NOTE: The assembly is easier to achieve if the rib is held at an angle to the sail as it is slid into position.

(Step 7 cont'd next page)

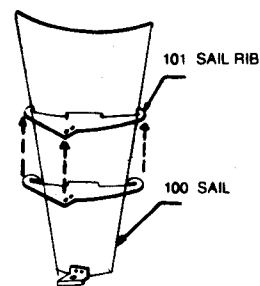


FIGURE 7

ASSEMBLY

Step 7 Continued

- Slide three sails on the OUTER WHEEL BAND (PART 34) through the slots in the sail and on the outside of the sail rib. Make sure that the hole locations in the outer wheel band are located as shown in figure 8. Install two bolts and locknuts at each rib location.
- Locate the INNER WHEEL BAND (PART 35) to the sail on the inside of the tabs. Make sure the hole locations in the inner band are located to the sail as shown in figure 8. Attach with one bolt and locknut.
- After all hardware is loosely assembled, check to make sure all parts are correctly positioned and tightened.
- Repeat this procedure for the remaining five wheel sections.
- Install the twelve WHEEL ARMS (PART 736) into the hub of the motor. The end of the wheel arm with the hex head nut attaches to the hub. Use care when installing to avoid scratching the galvanized finish. Screw the threads all the way in but do not tighten. With all the wheel arms installed rotate them clockwise until the tabs which attach to the inner wheel band are in line with each other. If alignment cannot be achieved by rotating clockwise, back off counter clockwise until alignment is achieved. With all wheel arms correctly located on the tabs on the arms extending from the holes in the back of the hub should be on top of the tabs on the forward wheel arms.

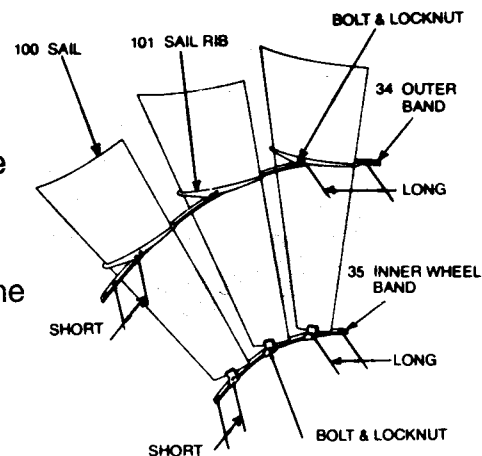


FIGURE 8

NOTE: (a) Do not tighten the nuts and bolts on the wheel assembly until the entire assembly is complete. (b) A suitable drift pin for pulling the wheel band holes into line as the assembly proceeds is recommended. A pair of vice grips for clamping the parts together before removing the drift pin and installing the bolt is also recommended.

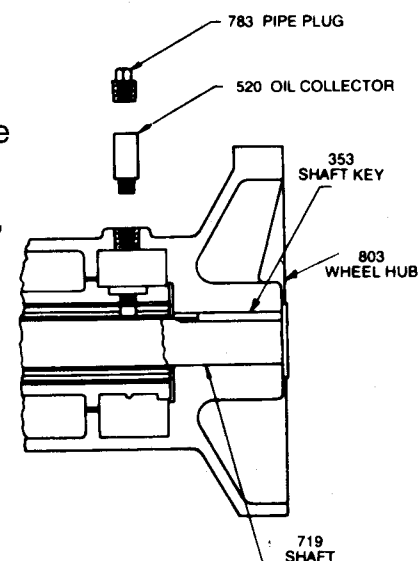


FIGURE 9

- Take one of the six wheel sections and with the concave side of the sail facing away from the front of the wheel hub, place the wheel arms through the holes in the outer wheel band. Take the second wheel section and place it over the top of the first section and loosely install the lockwashers and nuts. See figure 10. At the inner wheel band the first section should be against the wheel arm tabs and the second section on top. Loosely install a nut and bolt. See figure 11.

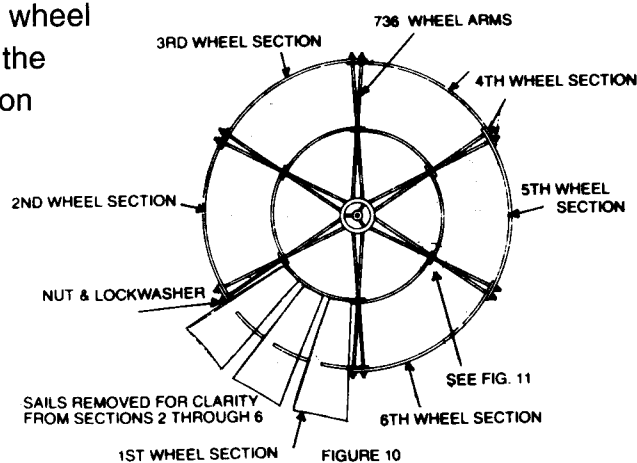


FIGURE 10

ASSEMBLY

Step 7 Continued

- Continue installing each of the four remaining prefabricated wheel sections with the inner and outer wheel bands lapping under and over as shown in figure 10. If the holes at any of the section joints do not align exactly, use a drift pin to pull the holes in line and then clamp parts together with vice grips. Remove the drift pin and install the nut and bolt. Remove the vice grips and move on to the next section.

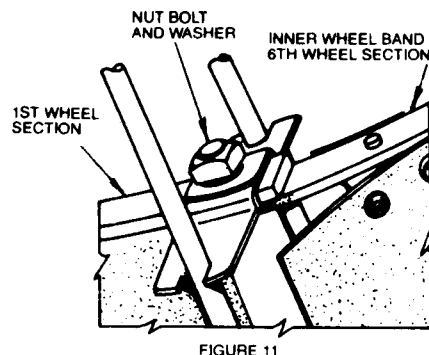


FIGURE 11

NOTE: Do not correct alignment problems by drilling new holes or elongating existing holes, this will cause the finished wheel assembly to be out of balance.

- Tighten the nuts on the outer bands, one or two turns at a time moving around the wheel repeating the procedure for each outer band. Continue until all nuts are tight.
- Tighten the nuts and bolts on the inner band.
The Aermotor wheel is a "tension type" wheel and of high strength when assembled correctly.

Step 8

FILL THE MOTOR WITH AERMOTOR WINDMILL OIL. (*Do not overfill the gear case.*)

- NOTE:** *In order to assure the proper lubrication of your Aermotor Windmill at the start, the required amount of AERMOTOR WINDMILL OIL is provided at no extra cost. Under normal operating conditions, this will be adequate for the first year of operation. You may purchase your annual requirements of Aermotor Windmill Oil from your authorized Aermotor Dealer. AERMOTOR WINDMILL OIL is especially formulated to flow freely through all oil passages, even in cold weather. If, for some reason, you are unable to locate or purchase Aermotor Windmill Oil when you need it, be sure the oil you use is NON-DETERGENT and lighter than #10 Weight.*
- Fill the Aermotor Windmill with the amount of oil as follows:

(X) 6'	1 Quart	(D) 12'	4 Quarts
(A) 8'	2 Quarts	(E) 14'	8 Quarts
(B) 10'	2 Quarts	(F) 16'	8 Quarts
- Replace the HELMET (PART 560) on the MOTOR MAINFRAME.
 - Lower the helmet gently to assure that the motor mainframe is inside the rim of the helmet. This provides a seal against weather and oil loss.
 - Replace the WING NUT and WASHER (PART 565). Tighten the wing nut finger tight to seal the top of the helmet against weather and hold the helmet securely in place.

ASSEMBLY

Step 9

INSTALL THE PUMP POLE

NOTE: Use of a pump pole made of materials other than wood could result in possible damage to the working parts of the windmill.

1. Connect the PUMP POLE to the lower end of the PUMP ROD (PART 171). The pump pole is made of wood and should the units in the well lock up, the pole will break preventing damage to the windmill parts.
2. Turn the windmill wheel until the pump pole is at its lowest point. Attach the pump pole to the well ROD CONNECTION (PART 62). Be sure the plunger in the well cylinder cannot strike the lower check valve of the cylinder, or the top of the cylinder.
3. Slowly turn the windmill wheel by hand a few times to assure that the cylinder or pump will give a clear stroke as long as the stroke of the windmill.

NOTE: If the cylinder or pump is not suitable for use, the cylinder or pump should be replaced.

The Aermotor table of pumping capacities list the correct size of cylinder to use with each size of Aermotor Windmill at each elevation. The plunger in the cylinder must not contact either the top or bottom of the cylinder.

The cylinder must not be larger, nor the pipe size smaller than recommended in our capacities table. Incorrect sizing will reduce the performance of your Aermotor Windmill.

FOR ADDITIONAL WINDMILL
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