WFD300W-B

Owner's Manual

Congratulations!

You have just purchased a advanced battery charging wind turbine. We believe you will find it easy to install your WFD300W-B; however, it is important that you read this entire manual thoroughly prior to installation to assure proper performance and safety.

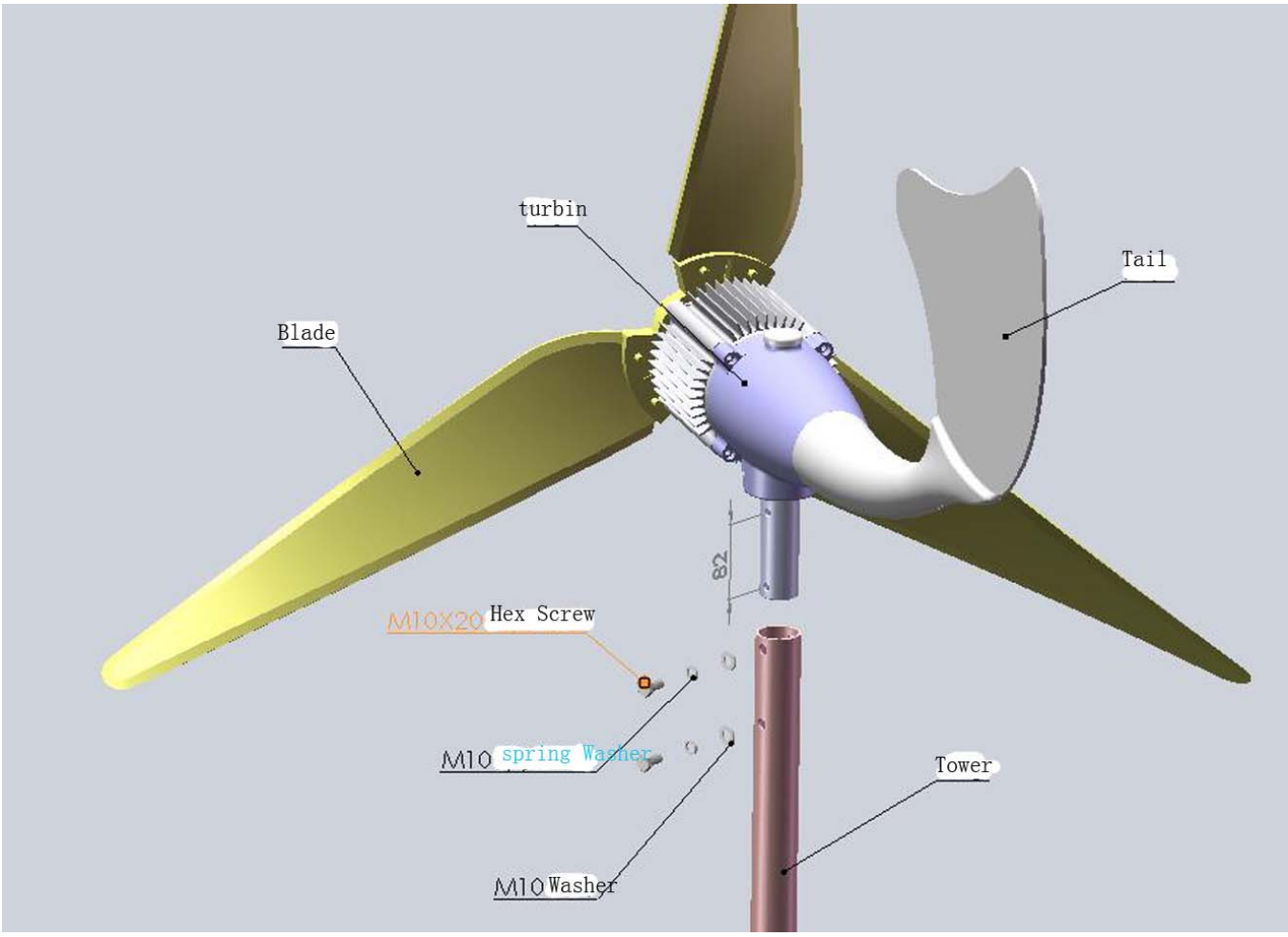
The WFD300W-B consists of a 9 kilogram weight wind turbine rated at 300 watts and a built-in regulators, self-governing mechanisms.

Features:

Marine quality powder coated aluminum body, all stainless steel hardware, water tight housing

sophisticated internal charge controller slows the blades to a silent spin when the batteries are charged

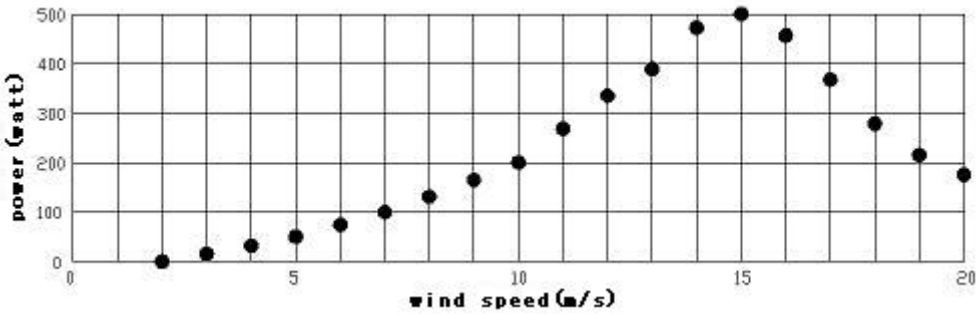
If you have any questions after thoroughly reading the manual, please contact your authorized distributor/dealer.



Specifications

Model : WFD300W-B
Rated Power : 300W
Maximum Power : 500W
Rotor Diameter : 1.5m
Rotor speed : 550 rpm
Start-up Wind Speed : 2.5m/s
Rated Wind Speed : 12m/s
Max Wind Speed : 4 0 m/s
Cut-Out Wind Speed : 13 m/s
Blade material : ABS Engineer Plastic
Generator : 3 phase permanent magnet alternator
Rated Voltage : 12V/24V/36V/48V
Net Weight : 12.5kg
It can supply about 50kwh per month under the condition: average wind speed is 12m/s per day, valid wind hours is 210h per month

Power Curve



1.Safety Precautions

When installing the WFD300W-B, exercise due care at all times. The turbine weighs 12 kilograms and is awkward in shape. It is best to plan the installation carefully in advance and enlist some help when erecting the machine in order to avoid accidents.

Complete as much of the installation procedure as possible at ground level.

Choose a calm, dry day for your installation if possible.

WFD300W-B blades are quite sharp, particularly on their trailing edges. Handle with care.

WFD300W-B is robustly engineered, but contains high-energy permanent magnets that can be damaged if the machine is dropped or handled heavily.

When running, particularly if disconnected from the batteries, WFD300W-B is capable of

producing high voltages. Caution must be exercised at all times to avoid electric shocks.

Always observe correct polarity when connecting WFD300W-B to an electrical circuit. Reverse polarity connection will result in damage to the wind generator.

The WFD300W-B must be appropriately fused at all times.

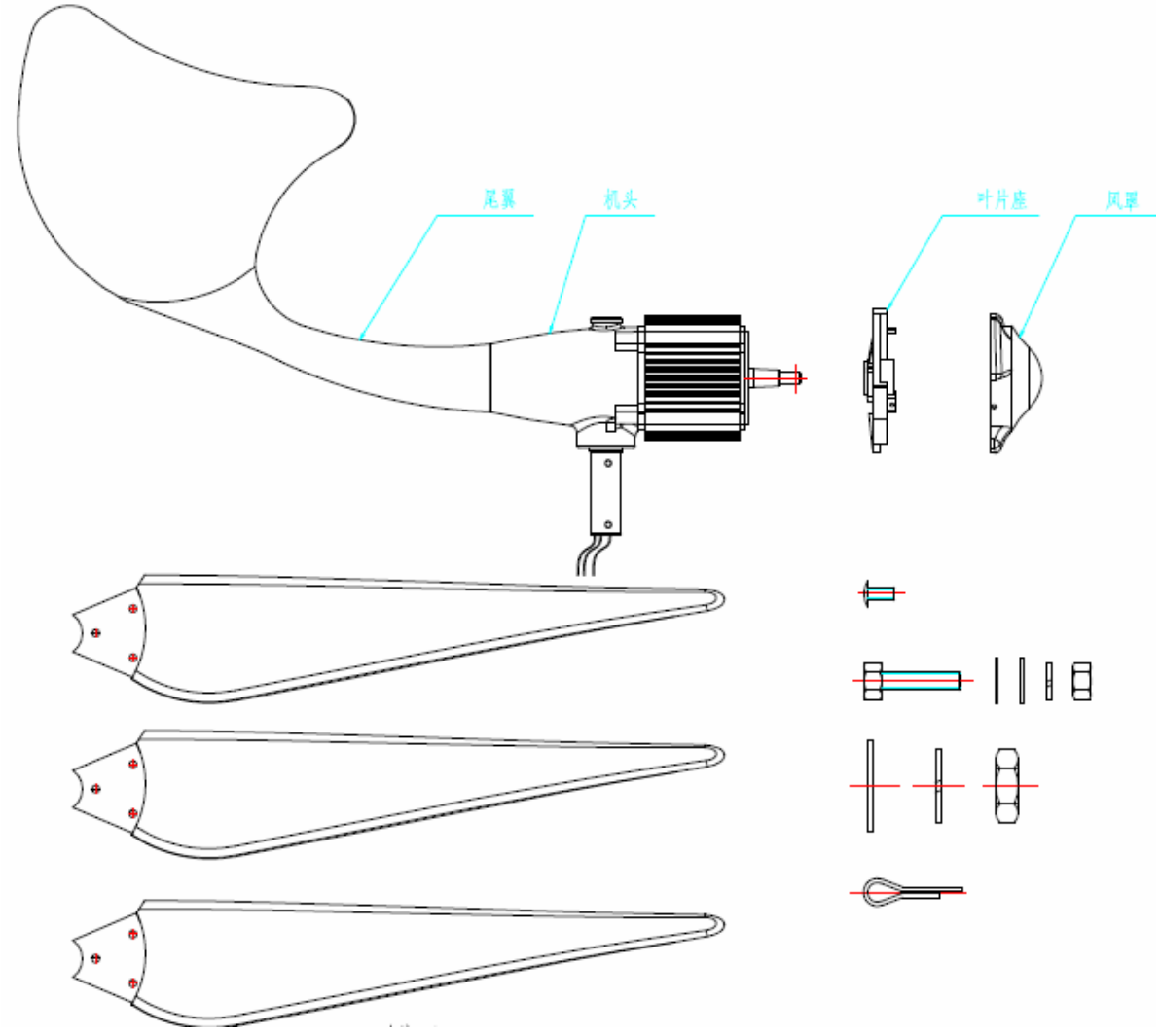
Never approach the path of the blades when the machine is operating as severe personal injury could result.

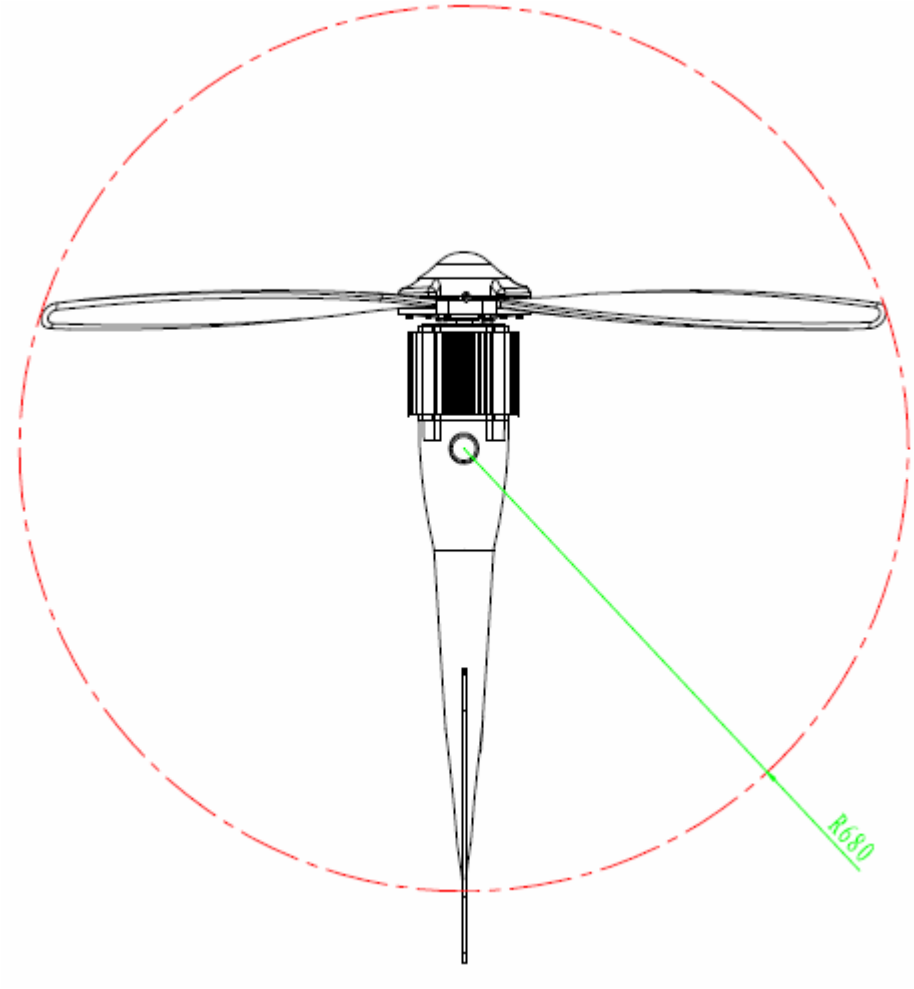
Always stop the machine and secure the blades before attempting maintenance.

Ensure that all batteries are disconnected when undertaking maintenance.

2. Package Contents

Compare the parts shown in Figure 1 to ensure that the contents of the box contain all necessary parts.





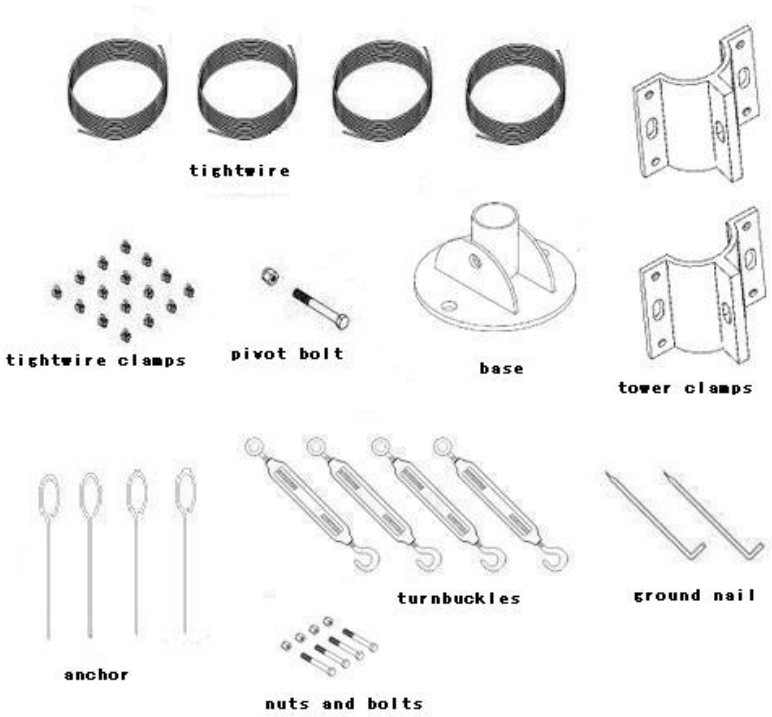
Name and Quantity of Each Components

1 – Generator assembly	1 set
2 – Tail	1 pc
3 – Tail component	2 pc
4 - Blades	3 pc
5 - Flange for blades	1 pc
6 – Bolts, Nuts and Washer	1 set
7 – Nose cone	1 pc

The user can buy as option the tower and tower attachment from us as below:

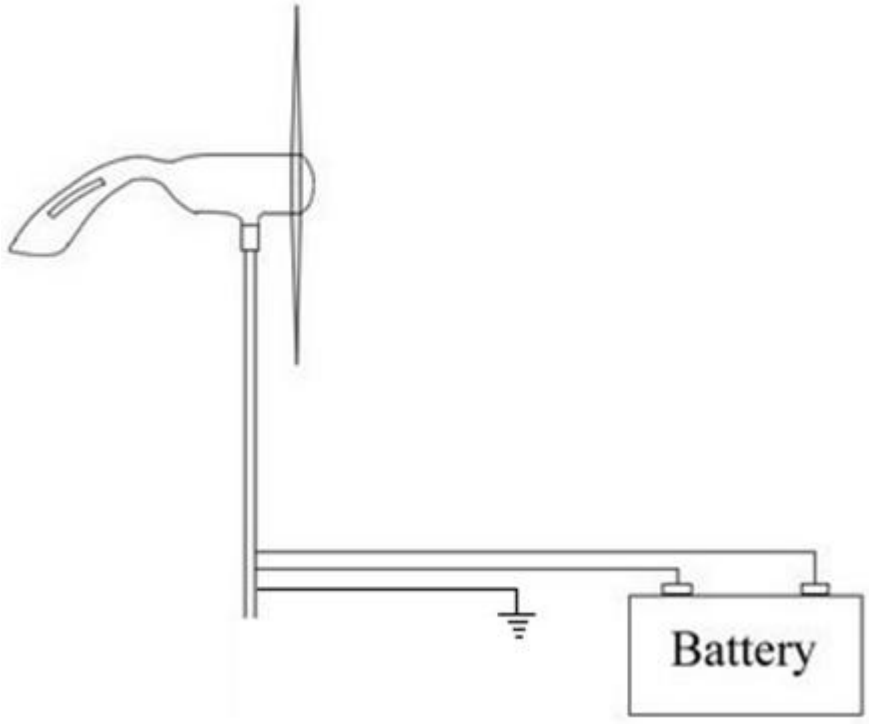
Tower	3 pc x 1.5m length
Tower Base	1 pc
Tightwire	4 pc
Tower Clamp	2 pc
Nuts and Bolts	4 set
Tightwire Clamps	16 pc
Pivot Bolt and Nut	1 set
Turnbuckles	4 set
Anchor	4 pc

Nail 2 pc



3. System Wiring

3.1 El ectrical Connections



We recommend you wire the turbine directly to the battery bank to its own set of battery posts. This internal regulator will independently monitor the battery and charge as necessary.

Note: WFD300W-B 12V version requires one piece of 12V/200Ah battery, and 24V version requires 2 pieces, etc…

3.2 Wire size from wind generator to battery bank

Connecting wire between WFD500W-B and the battery bank should be appropriately sized to minimize transmission losses. For low voltage machines transmission losses are always a consideration, so it is advisable to keep wire runs as short as possible and be prepared to use heavier gauge wire for longer runs.
Typically, you should use copper wire of at least 4.5 square mm conductor across section. For longer runs approaching 20 meters you should consider 6 square mm.

CAUTION: MAKE SURE THE TURBINE IS DISCONNECTED FROM THE BATTERIES DURING INSTALLATION.

CAUTION: CONNECTIONS SHOULD BE INSPECTED PERIODICALLY FOR SIGNS OF CORROSION AND CLEANED WHEN NECESSARY

NOTE: All electrical power cables should be physically protected. Run the wires inside the tower or conduit for maximum protection.

NOTE: The yaw can support a total of 70 kg in wire weight. For higher wire weights, you must install a strain relief to minimize the stress put on the hanging wires.

3.3 **Fusing**

The WFD300W-B is capable of producing high amperages. As with all electrical installations, you must protect each of your turbines with a properly sized fuse or circuit breaker. The WFD300W-B should be wired with an appropriately sized "slow-blow" type fuse between itself and the batteries.

Recommended Size for Circuit Breakers or Slow-Blow Fuse

24-volt model : 50 amps D.C.
36-volt model : 35 amps D.C.
48-volt model : 25 amps D.C.

3.3 Regulation

The charge controller built inside the nacelle serves as the central connection point for the electrical components in the system and it provides 2 valuable control functions. 1) It rectifies the AC output from the turbine into direct current(DC) and charge the battery. 2) The controller continually monitors the battery voltage and compares it to the regulation set point. The regulation set point is factory set to 30.2V(24V Turbine) or 45V(36V Turbine). When the battery voltage rises above the set point, it automatically stops charging the battery. It will wait for the battery voltage to drop. Normal charging will resume when the battery voltage drops

slightly below the fully charge level. For 24 V turbine the controller will resume charging at 25.2V(37.8V for 36V turbine).

4.Mounting To Tower

4.1 Hub and Rotor Assembly

Mounting the Blades. Please see the pictures below.

Tighten all the screw with wrench to 10-12 foot lbs(13.6-16.3 Nm)

4.2 Mounting the Hub and Rotor

Carefully slide the blade assembly onto the alternator shaft. Place the washers and Nut on the shaft. Tighten the nut to 50-65 foot pounds(68-88 Nm). See pictures below.

Note : when assembling the blades to the hub, please take care of the bolt position. 2 bolts shall go down the hub while one bolt comes up. Please see the picture

4.3 Attaching Nose Cone

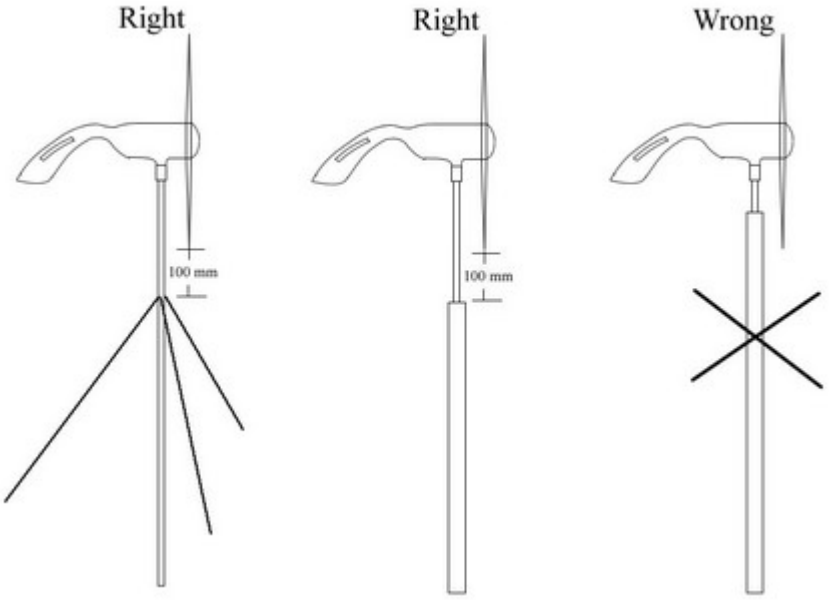
Carefully place the nose cone over the hub and the blades. Snap the nose cone into place. Insert the screw and tighten. See pictures.

5. Attaching to Pole

5.1 Blade-to-Tower Clearance

Make sure that your tower allows for proper clearance of the blades. A minimum 100 mm clearance must be given between the blade tips and any obstruction. Refer to Figure below

The WFD300W-B is designed to be mounted on a steel pipe of outer diameter 48mm(inner dia. 42mm) We offer wire guyed tower as option. Contact your dealer for details.



5.2 Step by Step Instructions

1) Run the wires from the battery(do not connect to the battery), through the pole to the top of

the tower. Be sure not to connect the wires to the battery until everything else has been completed.

2) Strip the insulation back from each set of wires.

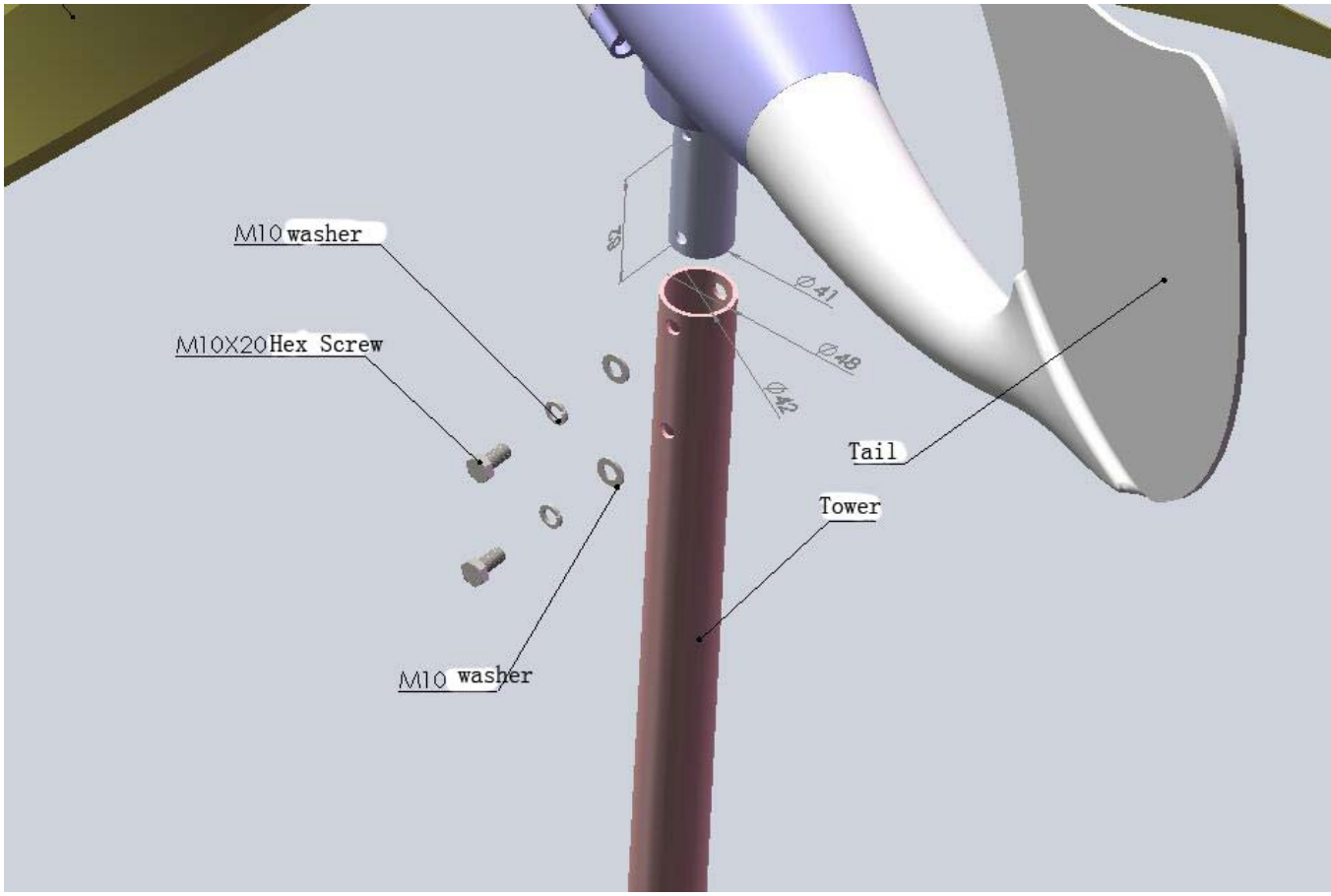
3) Mark both ends of all the wires with tape to identify which is positive, negative and earth ground.

4) Insulate the connections using either heat shrink tubing or a quality electrical tape.

5) Connect the wires from the WFD300W-B to the wires running to the battery.

6) Once the wires are attached to the FD2.5-300, gently pull the wires down through the tower sliding the yaw shaft inside the 48mm O.D./42mm I.D. steel pipe.

7) Slide the yew shaft all the way down over the end of pole being careful not to pinch the yaw wires. Be sure to leave enough slack in the wires so that if necessary, the turbine can be removed.



8) Once the yaw shaft is on the tower, use the M10 hex bolts to firmly tighten the yaw to the tower as shown above.

9) Check your WFD300W-B to be sure that it is securely attached to the mounts. Remember that this attachment will have to hold in high winds.

10) Run all wires from the turbine to the battery.

11) Before attaching the wiring to the battery, make sure that all circuit breakers are in the off position.

12) Attach wires to the battery. Positive wire to positive, negative to negative.

13) Turn on the circuit breakers

14) You have now completed the installation process.

6. Testing

6.1 Alternator

The WFD300W-B uses a three-phase brushless permanent magnet alternator internally rectifies the power to D.C. The rotor is comprised of Neodymium Iron Boron arched magnets, the most powerful magnet material available. The stator is hand wound for maximum output.

6.2 Charge Controller

The charge controller serves as the central connection point for the electrical components in the system and it provides 2 valuable control functions. It rectifies the AC output from the turbine into direct current(DC) and charge the battery.

The controller continually monitors the battery voltage and compares it to the regulation set point. The regulation set point is factory set to 15.1V(12V Turbine) or 30.2V(24V Turbine), or 45V(36V Turbine), or 60V(48V version). When the battery voltage rises above the set point, it automatically stops charging the battery. It will wait for the battery voltage to drop. Normal charging will resume when the battery voltage drops slightly below the fully charge level. For 12 V turbine the controller will resume charging at 12.6V(25.2V for 24V turbines, 37.8V for 36V turbine and 50.4V for 48V turbine)

Note: Bad connections, undersized wires, and inline diodes will cause the internal regulator to not work properly.

6.3 Bench Testing

Two quick bench tests can verify if your WFD300W-B is providing output.
Test 1

1. Remove blade assembly from turbine and place in a safe location.
2. Spin rotor shaft with your fingers while at the same time connecting and disconnecting the positive and negative yaw wires.
3. With the yaw wires connected, the rotor shaft should become more difficult to rotate and feel "lumpy". With the yaw wires disconnected it should spin freely. If these conditions do not exist, you should contact your turbine dealer.

6.4 Performance Test

Electrical System. Your battery bank should be a minimum 400 amp hours for 12 V systems, and 200 amp hours for 24V system and 36V system. If your battery bank is smaller than the recommended size, battery voltage could quickly rise while the turbine is charging and cause the internal regulator to prematurely stop charging.

Measure the voltage at the battery terminals to which the WFD300W-B is connected. For the factory regulation set point, if the voltage for a 12V system reads 14.1V or higher(24V 28.2;

36V 42.3; 48V 56.4), then the turbine will sense the battery is charged and stop producing power.

NOTE: THE WFD300W-B ELECTRONICS INCLUDING INTERNAL DIODES. DO NOT PUT ADDITIONAL BLOCKING DIODES BWTWEEN THE WFD300W-B AND THE BATTERIES. ANY DIODES BETWEEN THE FD2.5-300 AND THE BATTERIES WILL PREVENT THE TURBINE FROM PROPERLY "SENSING" THE BATTERIES.

7. Maintenance Monthly

7.1 Check Mechanical Condition

Watch and listen from the tower base. Use binoculars. There should be no mechanical noise, rattle or vibration. The blades must not wobble. Lower or climb the tower for inspection, if indicated. There should be no buzzing either heard or felt with your hand on the tower mast. Go to Electrical Problems, if indicated.

7.2 Inspect the Tower

Follow all inspection and maintenance requirements of the tower manufacturer. Tighten all nuts and bolts, especially wire clips. Check for cracks and bent or broken parts at the anchors and base structure. Check for broken strands and tighten guys

7.3 Check the Battery

Add only distilled water if needed.(Consult your battery manufacturer guide.)
Tighten battery connections
Remove corrosion and protect terminals
Wipe tops with baking soda solution.

8. Maintenance Annual

Lower tower and give wind generator a complete mechanical check.

Fix or replace any worn or loose parts.

8.1 Check tightness of all tower mounting nuts and bolts and blades mounting bolts.

8.2 Check all bearings. Just perceptible play is acceptable.

8.3 Clean the blades with mild detergent to remove all dirt and debris. Avoid scratching the surface. Replace blades if they are cracked or damaged.

Specification

Model	WFD300W-B
RATED POWER	300W
MAX POWER	500W
OUTPUT DC VOLTAGE	12V，24V, 36V or 48V
START WIND SPEED	3 m/s
RATED WIND SPEED	10 m/s
SURVIVAL WIND SPEED	40 m/s
Cut-Out Wind Speed	14 m /s
Temperature Range	-40 to +60 Deg. C
ROTOR Diameter	1.50 m
Rotor speed	550rpm
Blade material	ABS engineer plastic
Height of tower recommended	6 m
Generator	3 phase iron Boron Neodymium magnet alternator.
Turbine Weight(kg)	11
Packing	One carton, size: 90 x 40 x 21, weight 18 kg