

# W650



**Beawindhog**

10.1.2010

Rev01

**ALASKA'S LOW COST ENERGY SOURCE**

*Wind, Solar, Bio, and Other alternative energy custom manufacturing*

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## **Warranty and Liability:**

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Thank you for purchasing from CSS Solutions (AKA Beawindhog.com)

## Package:

So Your package has arrived you removed this booklet to start getting your wind turbine setup.

Please contact us immediately if any of the following has happened:

1. The package was destroyed or badly damaged before you opened it.
2. The unit appears to be water damaged.
3. The items or item appears to be damaged due to shipping abuse or parts are missing. (refer to parts guide)

Our email is [info@beawindhog.com](mailto:info@beawindhog.com) or

call us at 1-907-232-6705

Parts list for your W650 wind turbine.

- Chassis of the turbine.
- 1 x 14" 5 blade stainless hub (separate package)
- 5 x 35" aluminum blades
- 1 x SlipRing
- 1 x controller
- 20 x 1/4" x 3/4" stainless bolts
- 20 x 1/4" locking stainless nuts

## Assembly:

**NOTE: Check all bolts and nuts be sure shipping didn't loosen them up.**

1. Attach the blades to hub.

Hold the blade flat against the hub aligning the blade bolt holes to the hub so that it is curved away from turbine.

2. Put each bolt in from the back side of the hub near alternator and push through hole in hub and each blade. The threads of the bolt should be exposed pointing away from the turbine. Do this one blade at a time.

3. Thread each locking nut onto each bolt and finger tighten the nuts down.

4. If using a wrench to tighten these we want about 300" lbs or until tight without breaking the bolt. We recommend a small impacting 1/4" driver to speed this up to to hit 300" lbs quickly. Be sure these are tight.

You may use light duty loctite be sure it is still easily serviceable.

5. Attach hub to alternator by placing entire blade set with hub hole over the alternator shaft. Be sure locking washer and spacers are on shaft and the nut is off shaft. Tighten nut in front of hub to ~250' lbs.

6. Now hold the slip ring in your hand and see which 3 wires is the top of the slip ring. To do this twist the wires on each side. You will see the wires easily turn inside the plastic fitting on one side but not the other. The side that turns easily is the top of the slip ring.

7. Trim the insulation back 1/2" on the three wires coming out the top of the slip ring.

8. Trim the insulation on the 3 wires coming out of the alternator back 1/2".
9. Using a soldering iron tin all 6 bare connections with 60/40 tin/lead solder.
10. Thread 3 wires from slip ring top through hole in chassis through 1-15/16 bearing bore.
11. Slide 1/4" or appropriately sized heat shrink over each of the 3 wires coming out of the top of the slip ring.
12. Now solder 1 wire from the alternator to 1 wire of the slip ring at a time. Refer to figure 1-3 It does not matter which wire goes where as long as all 3 wires are soldered well. Then slide the heat shrink tubing up and seal the soldered connection.
13. Now cut off 1/2" of insulation from each wire coming out of the bottom of the slip ring. These need to be soldered and heat shrunk to your 12/3 wire or comparable wire to transfer power down your pole and to your controller.
14. Insert your transfer wire and slip ring into your tower 1.5" schedule 80 pipe and set turbine on. Slide the turbine all the way down to the chassis plate and raise up 1/16" tighten set screws with thread lock to 200" lbs or very tight without breaking them.
15. Inspect turbine to be sure blades spin easily and turbine yaws easily and can turn in a 360 degree rotation unobstructed.
16. double check both 3/8" bolts that hold alternator onto chassis to ensure they are tight. Also be sure to check hub that it is tight and will not slip on the shaft. Check grease insert to be sure it is tight as well.
17. You are now finished installing the turbine. If you wish to touch up paint or repaint the turbine use Hammered black quick drying version available at Home Depot and Lowes. It comes in a spray can that can spray in all directions and usually costs under 10 dollars.
18. Solder your transfer wires to the L1,L2 and L3 ring terminals provided on the controller. Short L1, L2, and L3

wires using jumpers then attach to 1/4" studs provided be sure not to over tighten and use conductivity grease as needed.

19. If you have a grid tie inverter follow diagram 1-2 If you have a battery charge controller follow diagram 1-1.

Please note the voltage on the controller is the voltage your battery bank should be wired for.

20. A dump load is not required but recommended at least 500 watts. Most customers use a 500 watt work/shop light with the cord cut and wired to the positive and negative of the dumpload.

21. All connection made to your control box require a soldered ring terminal to be used and conductivity grease. A good connection is crucial.

22. When the controller dump loads (unless you have a grid tie package) it will light up the light bulb.

Figure 1-1

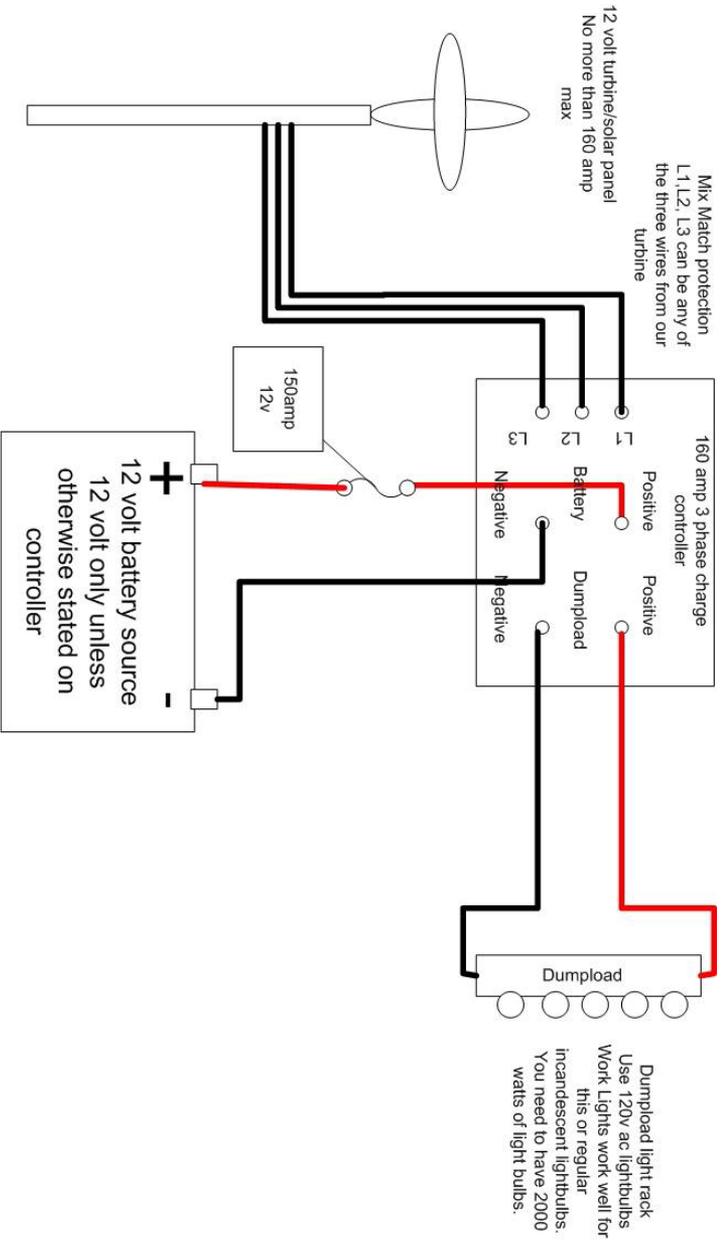
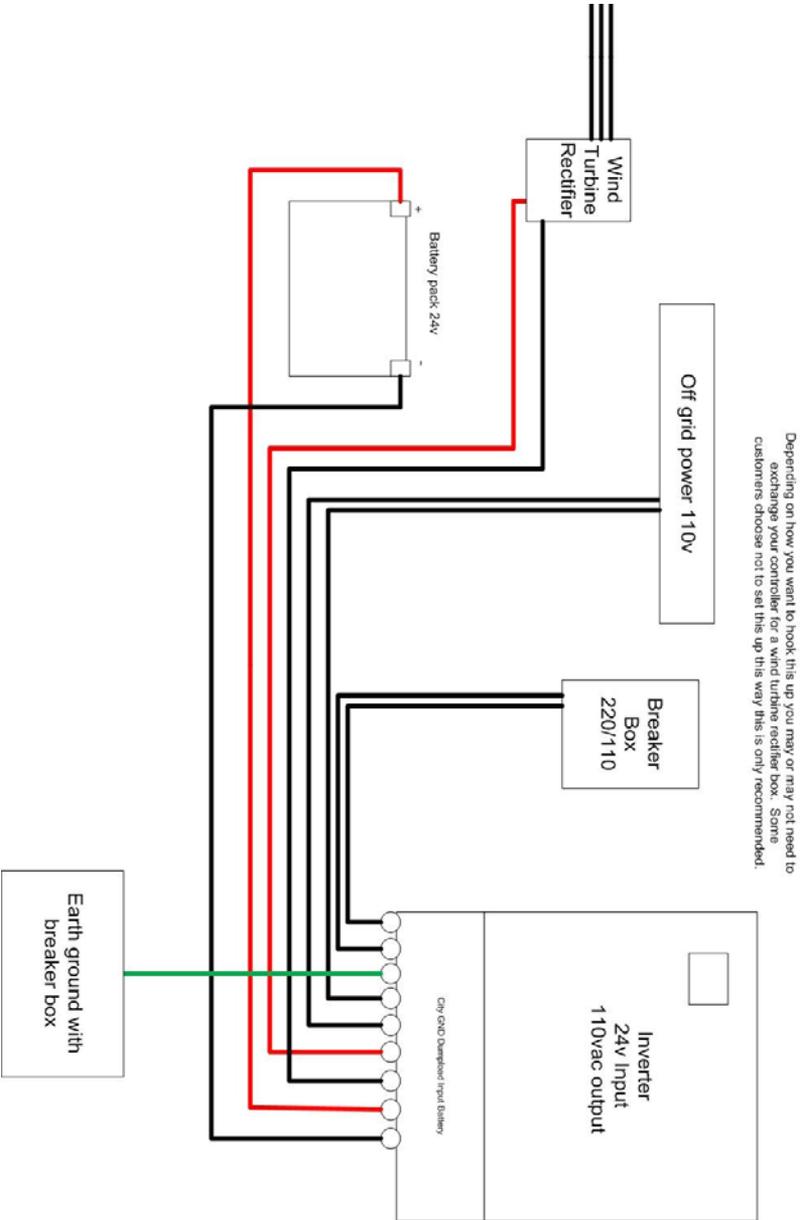
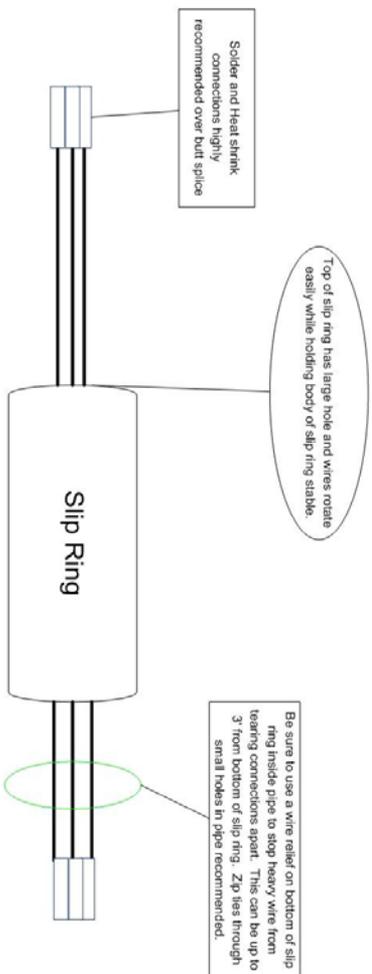


Figure 1-2



A Slip Ring is an optional component  
You can always use 8 gauge wire and clamp the 8 gauge wire to the chassis of the turbine



**NOTE:**  
Slip Ring Can be sanded down to fit various 1.5" pipe ID's

The slip ring is designed to be soldered to the alternator leads and be placed up to 12" down inside of pipe from turbine. It allows turbine to turn without twisting up it's wires be sure not to kink wires we want the wires to move unrestricted to the slip ring so the slip ring can do it's job.

Figure 1-3

## Using your Wind Turbine:

Your windhog 650 is built to charge batteries or grid tie and to provide up to 3000 watts of power in very high winds. (note 3000 watts can only be achieved with a grid tie inverter or mppt controller)

Your windhog 650 provides 200 kwh in a 10mph average and 240kwh in a 12mph average wind speed. Power increases exponentially hitting 2000 watts in 45 mph winds. This is achieved with high voltage and low current with a mppt controller.

You can see if your wind turbine is producing power by using a AC clamp meter and snapping it over each L1, L2, and L3 wires coming from the turbine in a good wind 9mph and above you should see current on the amp meter. You cannot measure dc power with a clamp meter.

Watch your wind turbine and ensure it is working well. Be sure the tower it is placed on does not sway more than 6 inches in any direction any more may result in premature damage to the turbine.

The turbine should last 15 years without any serious maintenance needing to be done. However we recommend annual inspections to ensure all bolts and nuts are tight. Just a visual inspection will work. In 15 years we expect the rear and front bearings to be replaced which can be done at any Napa machine shop for less than 50 dollars. The front bearing is a 6203 the rear is a Delco 10/12si needle bearing. These can also be replaced in the field if needed. During visual inspections be sure to look at electrical connections on controllers and battery's if corrosion is found be sure to clean connections. If you remove the battery connections be sure to short L1,L2, and L3 to stop the charge controller from chattering.

## Maintenance:

- once a year visually inspect turbine for loose Alternator Mounting bolts. Ensure all bolts are tight by a good visual inspection at a minimum. Check to make sure set screws are still tight on bottom bearing to your pipe.
- once every 2 years ensure bolts are tight by checking with a wrench. Be sure hub nut, bearing bolts, blade bolts, and alternator mounting bolts are tight.
- once every 3 years grease pivot bearing.
- Once every 15 years Inspect and replace if necessary front and rear 6203 and needle Delco sealed ball bearings and needle bearings in alternator. Inspect blades for fatigue, inspect pivot bearing for fatigue, inspect alternator rotor and shaft for fatigue and corrosion damage.