# WindCharge Plus

WCP-1

## Operating Instructions

WindCharge Plus is a mini wind turbine designed for charging rechargeable batteries with the power from the wind. The charged batteries may then be used to charge electronic devices, such as mobile phones. You may connect a rechargeable battery pack to the RED (+VE) and BLACK (GND) terminals on the DC electrical output connector of the WindCharge Plus for charging when you expose it to the wind.

The Blades for WindCharge Plus are molded with Poly-Propylene plastic material with a aerodynamic profile so that it can harvest more power from the wind while the Blades for WindCharge are cut from Poly-Propylene plastic sheet. The vane will automatically align the turbine to the direction of the wind to harvest the maximum wind power.

Our optional analog LED Voltmeter (VM-1) is great to monitor the output of the WindCharge Plus with more fun. It helps you to check the output voltage at that particular wind speed environment. The higher output voltage, the more power you harvest from the wind.

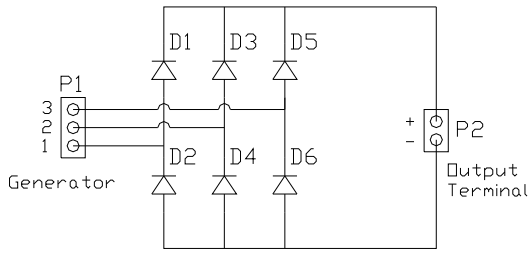
**Specification**:

Length of all wind turbines :- 200 mm
Height (Centre of rotor to Base) of WindCharge Plus, :- 280 mm
Blade Type :- BP-38
Blade sweep radius :- 180 mm

**Reference Data of different Turbines:**

| Turbine | Blade Type | No. of Blade | Wind Speed (mph) | Load (Ohm) | Output Voltage (V) | Output Current (mA) | Output Power (W) | Rotor Speed (RPM) |
|---|---|---|---|---|---|---|---|---|
| WindCharge Plus | BP-38 | 3 | 12 | 75 | 8.0 | 100 | 0.8 | 1440 |
| WindCharge | BS-11 | 3 | 12 | 75 | 4.0 | 50 | 0.2 | 720 |

## Schematic Diagram – WindCharge Plus




**Warnings**:

- Keep your hands and your body, especially your head, away from the blades when it is rotating to avoid injury.
- This product contains small parts. It is not suitable for children under 12 years old.
- The high output voltage from the turbine can damage the electronics connected to it. The voltage you read from a DC voltmeter is an average voltage while the peak voltage can be much higher.

## Tips for transportation

If you need to take the WindCharge Plus to country side, you may pull out the Blade Assembly Unit from the Main Body Assembly. Detach the Support Base by pulling out the Post Secure Pin. The whole unit is then easy for transportation.

# Assembly Instructions

Refer to the attached assembly drawings and the Part List reference numbers for assembly. Please note the length of the screws (14) for Rotor, it is 18mm for sheet blade and 20mm for the Profiled Blade.

I. Main Body Assembly

Plug the connector of the generator (10) to the socket on the Printed Circuit Board Assembly (11).

Install the Generator (10), Printed Circuit Board Assembly (11) and the Vane (9) in the Main Body Housing (1 & 2).

Secure the assembly with screws (13) and nuts (16) as shown in the diagram. You may press the 3 nuts (16) to the Left Housing (1) first with the help of the long screw (14).

II. Blade Unit Assembly

Press 3 nuts (16) to the nut holders alternately on the back side of the Blade Base. Install the Blades (8) alternately on the Blade Base (4) and put on the Blade Head (3). Install the 3 screws (14) through the holes on the Blade Head to the nuts (16) on the back side of the Blade Base. Make sure that the screws are aligned with the nuts when you secure the screws.

III. Blade Unit Installation

Plug the Blade Unit to the shaft on the Main Body Assembly. Make sure you press the Blade Unit all the way to the shaft. Check that the Blade Unit is securely clipped to the shaft of the turbine.

(You may also install the Blade Unit after you assemble the Post and Support Base Assembly.)

IV. Post and Support Base Assembly

Install the Aluminium Post on the Support Base Assembly (5) with the Post Secure Pin (6). Install the Body Assembly on the top of the Aluminium Post.

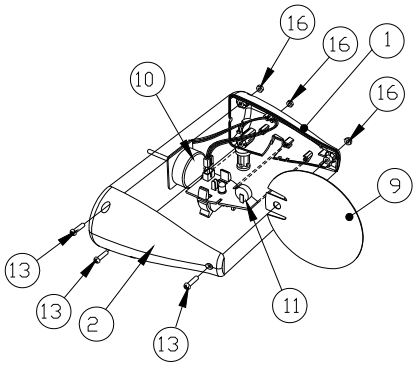
**Enable Yawing**: secure the screw (15) from the back side of the Body Assembly through the hole in the Aluminium Post into the groove of the plastic stud of the Body Assembly.
**Disable Yawing**: secure the screw (15) from the front side of the Body Assembly through the hole in the Aluminium Post into the solid plastic stud of the Body Assembly.

## Safety

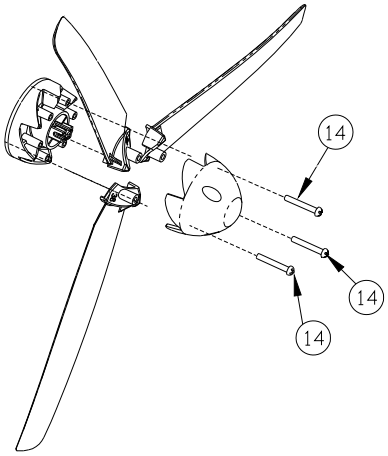
Before you proceed to operate the turbine, please note that the rotor can rotate at a few thousand RPM (Rotations per Minute). Bodily injury may result if struck by rotating blades. You should install the turbine properly so that it will not “walk” or topple over. Placing a rubber mat, polyfoam, or a thin book under the base helps stabilize the turbine if the surface of the table is hard. You may place adhesive tape on the Base Extender to help secure the turbine to a secure surface. In case the turbine topples at high rotational speed, to avoid being hurt, do not try to catch it. Extending the “Base Extender” increases the diameter of the base and reduces the chance of toppling over. Please note that one of the Base Extenders has to be aligned in the direction of vane to prevent it from toppling over. Arranging the wires from the turbine to run inside the aluminium post through the opening on the post and base to external devices prevents the wires from tangling by the rotating blades. All of the above measures help to reduce accidents during operation of the turbine. However, you have to make sure that the environment is safe for doing experiments. Adult supervision is required. This wind turbine is not suitable for children under 12 years old.

## Assembly Drawings

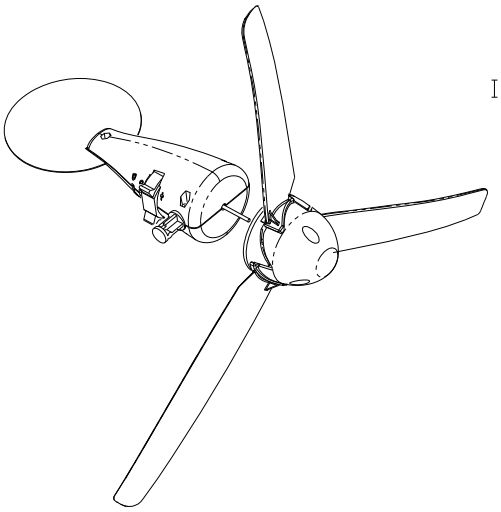
I. Main Body Assembly



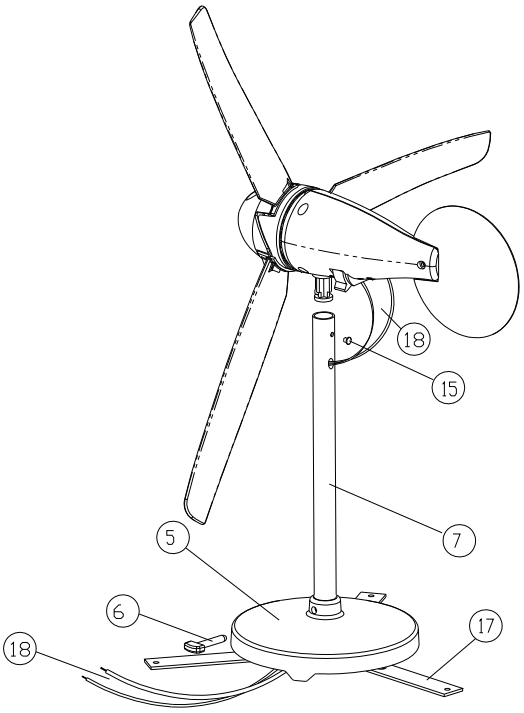

II. Blade Assembly




III. Rotor Assembly



IV. Post and Support Base Assembly




Part List

1. Left Housing
2. Right Housing
3. Blade Head
4. Blade Base
5. Support Base Assembly
6. Post Secure Pin
7. Aluminium Post
8. Molded Profile Blade
9. Polypropylene Vane
10. Generator
11. Printed Circuit Board Assembly
12. Spring Plate
13. Screw, M2.6 x 10 mm
14. Screw, M2.6 x 20 mm
15. Screw, M3 x 2 mm
16. Hex Nut, M2.6
17. Base Extender
18. Output Wire