

AIR SILENT X

Multi-Color BLADE INSTALL GUIDE (Part #: 2-ARBR-103), SAFETY NOTES AND TIPS

SAFETY: Wind turbine blades spin at a potentially dangerous speed. This must be respected. **Danger** - Never approach a turbine in motion. Utilize the stop-switch to shut down turbine and **exercise caution** as blade edges are sharp and pose a safety hazard.

Affixing Blades:

1.) When attaching the blades, one should be aware of the torque applied to the screws. **Blade edges are sharp – exercise caution.** When tightening the screws, it is important not to over-torque as the blades may crack along the screw hole due to the rigid material of the blades. Cracking can allow water to penetrate into the blade over time and remain in the blade cavity causing a weight difference. A difference in blade weights will result in one blade falling consistently to the bottom of the turbine and vibration, uneven operation may occur or potential **danger** of blade failure. You can easily check this by putting the blades under water for a few hours and then check the weight again. If the weight increases, this indicates cracking has occurred and the blade is damaged. The AIR user manual gives detailed instructions on installing the blades: ***Once the mast is mounted you can start the relatively simple installation of the Silent Blades. First connect the 3 blades to the assembly hub (see below images) with the enclosed screws and washers.***

Helpful Links for Blade, Nose Cone and Hub install:

www.primuswindpower.com

Under: Support tab – Service and Repair

(Affixing Blades—continued):

The recommended torque on the screws is 7-8 Nm (62-71 in-lbs.). This is equivalent to a weight of 7-8 kg (15.432-17.637 lbs.) on a 10 cm (3.94 in) long lever arm, applied perpendicular to the lever arm. If the fastening torque is too high, this will destroy or damage the blades.

Warning - If the fastening torque is not high enough, the blades can become loose. **If you do not have access to a torque wrench it is best to tighten until there is no side to side movement of the blade a sort of “feel” that the assembly is secure.** Incorrect fastening and torque is a considerable **safety risk** for **danger** of blade failure.

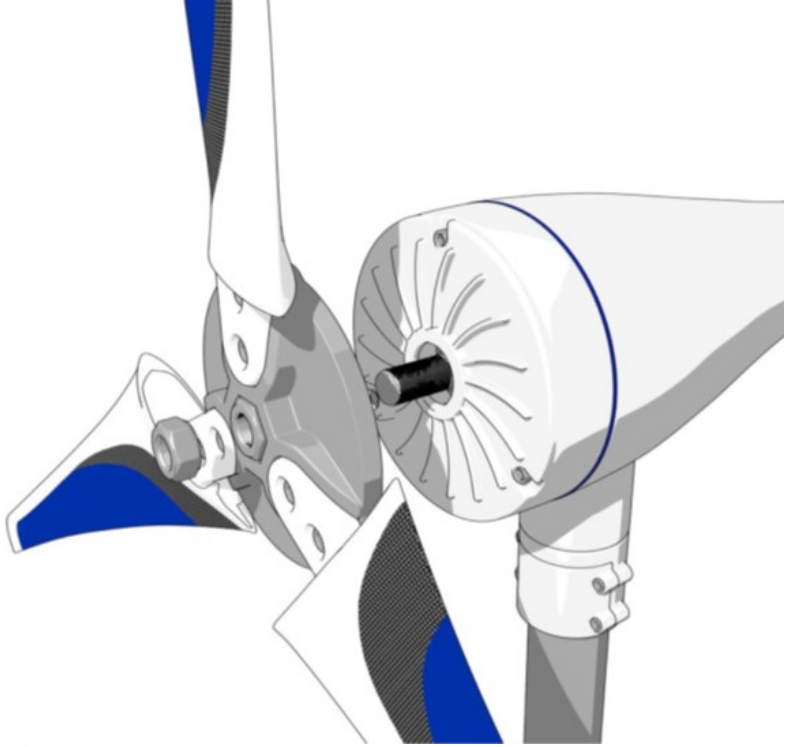
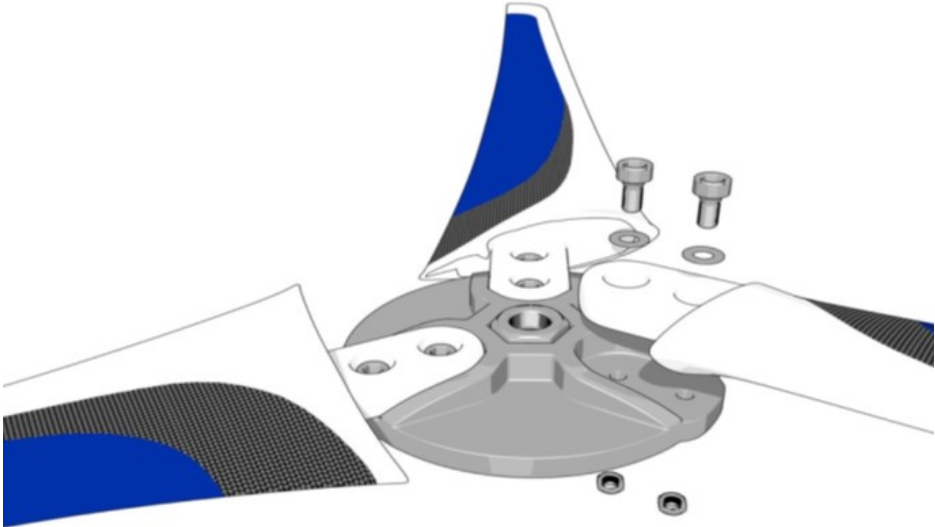
Blade Weight range:

2.) Blades are matched in sets by the factory based on each blade’s weight resulting in a set of blades with a maximum weight difference of 0.5 g (.0176 oz.) between each blade. Should multiple sets be at a location and mistakenly mixed, there is a possibility of a weight difference resulting in unbalanced sets (it is important to keep spare blades in the originally supplied packaging and recording the S/N of blades sold).

New Advanced HUB

3.) A new advanced hub design allows for the blades to be slipped into the hub with very little movement. This new hub eliminates the need to any tip to tip measurements of the blade. Included with each blade set is a washer for behind hub and rotor shaft. **This washer is an optional install** and only should be used if there is rubbing from hub to AIR turbine Face that impedes free movement of rotor hub. **Most AIR installs will not require this washer.**

SILENT BLADE ASSEMBLY



SILENT X BLADE KIT COMPONENTS

ROTOR BLADES

Check if the blades show damages (e.g. broken edges, damaged surface or cracks). If you notice any damage, the generator must not be used any longer. Check the blade bolt tightness one day after mounting and after that every 3-6 months. Eventually then you can go to a longer interval.

NOTE: The Silent X Blade Kit (Upgrade Kit) can be retrofitted to all Primus Wind Power wind turbine models. For further information contact Primus Wind Power directly.



Fig. 1 Blade Set (set of 3))

Fig. 2 Hub and Hardware

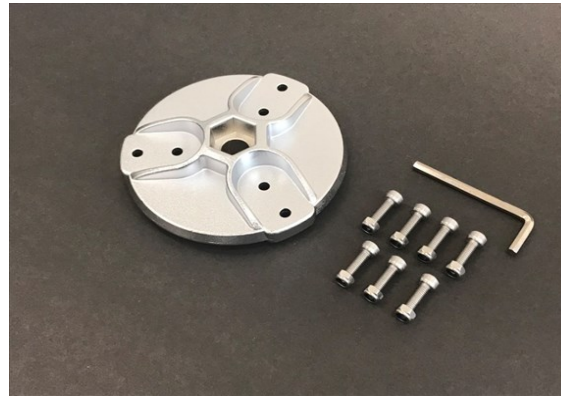


Fig. 3 Nose Cone (white)



ADVANCED HUB DESIGN AND HARDWARE / NOSE CONE

A new advanced hub design allows for the blades to be slipped into the hub with very little movement. This new hub eliminates the need to any tip to tip measurements of the blade. Included with each blade set is a washer for behind hub and rotor shaft. **This washer is an optional install** and only should be used if there is rubbing from hub to AIR turbine Face that impedes free movement of rotor hub. **Most AIR installs will not require this washer.**