

Primus AIR Wind Generators - Case Study

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Preventable Water Damage = Costly Repair

AIR wind generators manufactured by Primus Wind Power (formerly Southwest Wind Power of AZ) in Denver, CO have been a main staple in the marine industry for decades. Over 170,000 of these units have been produced.

e Marine Systems is an authorized warranty repair center for these Primus products (Air X, Silent Air X, Air Breeze, Air 30, Air 40) and we see many repairs that come through that have similar problems with water penetrating the nacelle (wind generator body (21)). This ultimately leads to their failure. We wanted to share with you our experience to hopefully provide some guidance to keep your wind turbine running and minimize repair cost.

Here is an example of one wind turbine that had an unnecessary failure that could have been easily avoided. Refer to Figure 1 below, behind the front of the wind generator nosecone is the hub (4) that attaches to the drive stem/stator (16) of the wind generator and connects the blades (5). Many users will remove this hub-blade assembly when the boat is on "the hard", or, when it is being left for a duration of time, but never cover the front of the wind generator leaving it exposed to weather probably thinking it will be fine. This is not the case.

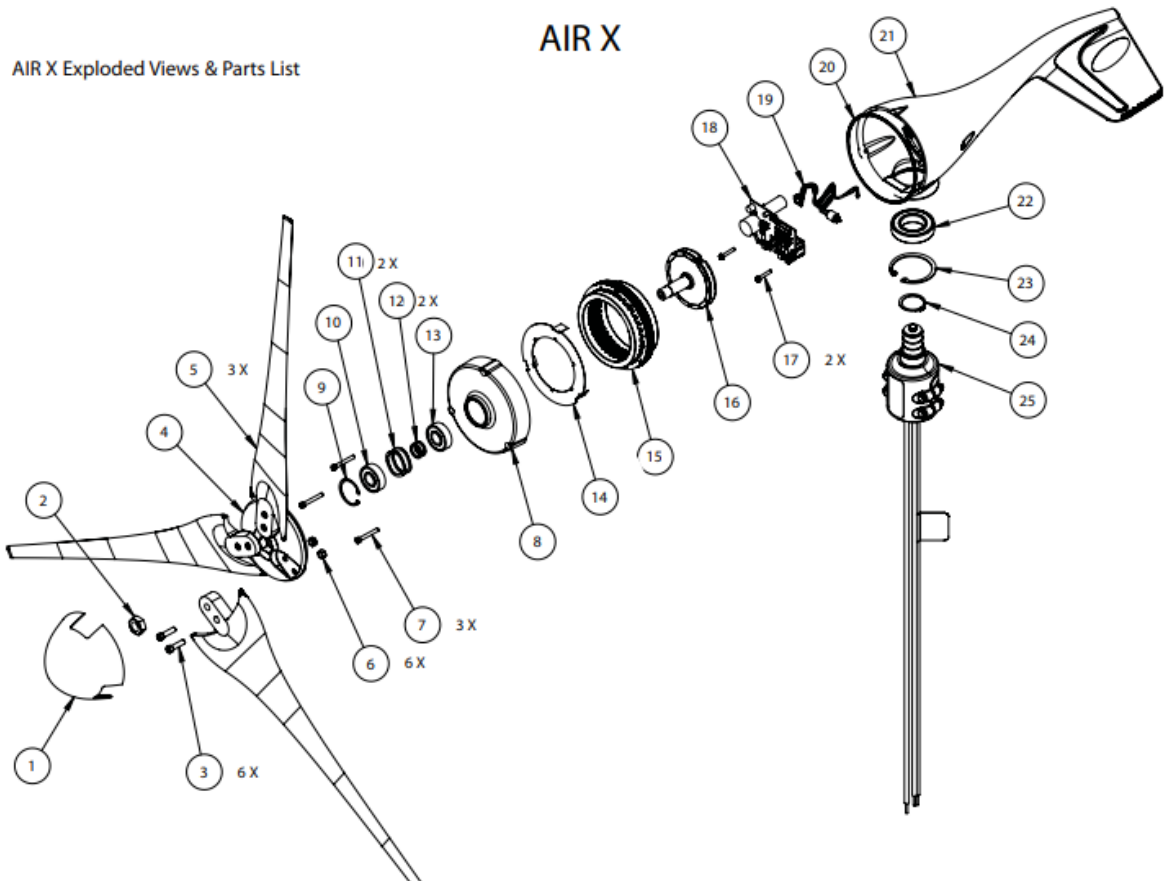


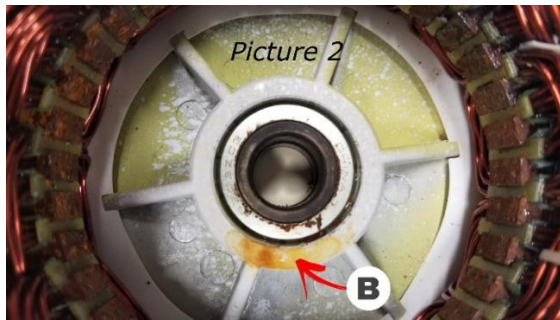
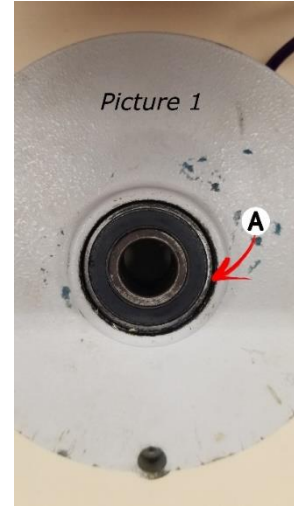
Figure 1 – AIR X Exploded View

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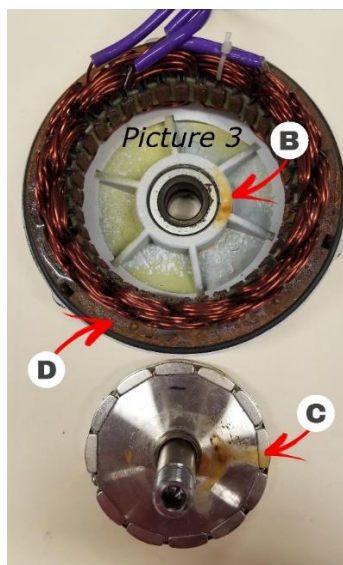
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What happens is the driving rain and related weather will get water build up against the sealed face bearing (10), {which is weather protected}, but water seepage makes its way around the outside of the bearing entering into the nacelle (21).

Water seepage gets in (Picture 1) at the inside of the face case at the front sealed bearing (A) where the rotor and stator reside. The rust stain trail (Picture 2, B) found is the evidence of the water made its way from the bottom side of the bearing mounted on the face case into the nacelle internal body.



The wind generator rotor (Picture 3) (16) also has a stain (C) which indicates that it had not rotated for some time. This was evidence that the hub (blades and nosecone) had been removed from the wind generator and it was idle in the weather as no rotation occurred. Please also note that there is extensive rust now (D) on the Stator (15, coils of wire on laminated steel that is mounted into the faceplate) as a result of the water getting in. The rusted plates have doomed the Stator, so it needs replacement as well.



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In addition, the high amount of water puddling and dampness inside the nacelle (Picture 4) corroded the commutator ring (15, E) and yaw bearing (22, E). It was a costly unnecessary repair.



Special note: Primus Wind Power AIR Products carry a 5-year manufacturer's warranty, which is the best in the industry. Unfortunately, when failures like this are found, the manufacturer does not warranty the product.

How do you prevent this? There are a couple of simple things that you can do. For example, after you remove the hub with the blades, simply remove the blades, reinstall the hub and reattach the nosecone. Alternatively, there is a winter storage kit available, P/N [WGP20368](#) (\$39) which you can order from e Marine which is simply a hub and nosecone which will eliminate need to dismantle your blades making life much more pleasant. In lieu of doing that, you can cover the front of the wind generator with a heavy plastic bag and seal it off with tie wraps or duct tape. Keeping the rain from hitting the front of the wind generator is the goal.

We hope all this information was helpful. If you need additional information or might have questions, feel free to reach out to our support department at: support@emarinesystems.com or call 954-764-9339.