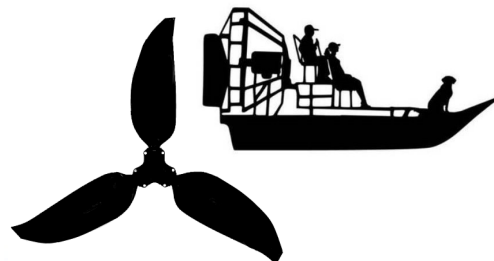


Props & Hulls

First Quarter 2020 Newsletter
WhirlWind Propeller Company
1800 Joe Crosson Dr, El Cajon, CA 92020
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Razor X

Newly delivered Panther 18x8 Lightning Airboat powered by a GM 550HP LSA engine & 2.68 gear-to-gear. Counter-rotating 80" diameter Razor X propeller. This new 2016 boat and propeller is going into service for **Spirit of the Swamp Airboat Rides** in Kissimmee, Florida. "Great propeller, quality and performance. Fast delivery and outstanding customer service!"

Panther Airboats

Propeller: WhirlWind **Razor X** 80" Counter-Rotator

Engine: GM 500 HP LSA

Reduction: 2.68 Panther Gear-to-Gear



*We'd love to hear about
how WhirlWind propellers give you
a better airboating experience !*

*Drop us a note and send some photos...
you might be on this page next!*



Testimonials

Whisper Tip

"Hi, just wanted to let you know my prop came in and I absolutely love it! It was so easy to install and about 10 times easier to set the pitch than my Water Walkers.

I have it set on A-15 to turn 5200 on the trailer – and man it does great on the ground. Thank you!"

Bronson C.

Breaux Bridge, LA

Engine: 400 SB, 350hp

Reduction: 2:1 Century Belt

Propeller: 2-blade **Whisper Tip** 2.0

(78" diameter, 12" wide)

Pitch: A-15

Full Power RPM: 5200



Excalibur

New Trend – 5-blade 72" **Excalibur** on 6-Cylinder Aircraft style Engines

Lower Cruise RPM, Better Fuel Economy, and Runs the Hill better than your buddies... No Compromise.

-J. Nash (Cocoa, FL)

Pictured: Special Red Armor Coat on WhirlWind 6-blade 72" Excalibur



I said...



Tech Tips

Jim Rust



I want MORE POWER!

A customer asked me about what the best propeller set-up would be for “more push”. He said he had a 376 horsepower engine. I asked him what RPM the engine had to turn, to make that much horsepower, and he started telling me that the “torque peak” was at 3900.

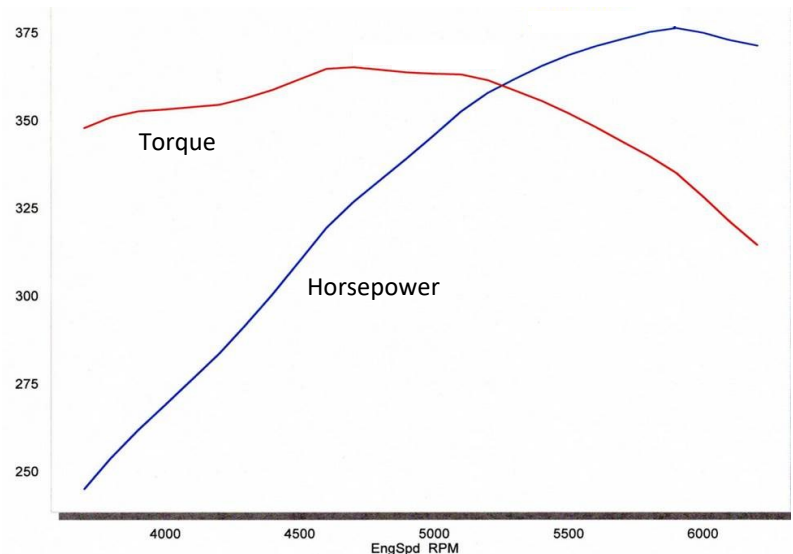
But that has *nothing* to do with maximum horsepower. We need to understand that what we call “push” on an airboat comes from **thrust**. Thrust is a combination of *everything*: the prop, the RPM, the torque, and the horsepower.

To get the most thrust from any given propeller/engine combination, the engine must develop *the most horsepower possible*. The prop just converts this HP into thrust. The formula is $HP = (\text{Torque} \times \text{RPM}) / 5252$. The “M” stands for Minute, because horsepower is the amount of work done in a given time. Since the engine’s torque doesn’t change as much as the RPM changes, higher RPM means there’s more work being done every minute. Higher RPM results in more horsepower than any other factor. So if you want more thrust, you need more horsepower, and HP is a direct function of RPM. But **too high** of an RPM could damage your engine, and NEVER TURN THE PROPELLER FASTER THAN THE MFG. RECOMMENDATIONS

Most airboats using car engines (with prop reduction) turn the engine 5000-5400 RPM. At 5000 rpm that “376HP engine” is only making about 330HP. For propeller selection we have to use what the HP is at these RPM’s, reduction ratio, and any diameter limits the boat has... to find *the correct size prop*.

With size selected, now we **still** need to set it up correctly. Pitch should be adjusted while the boat is static (or on the trailer), so full throttle rpm should be 5000-5400 rpm. This ensures the engine’s full rated horsepower is going to the propeller.

As an example, for 5400 RPM with a 2.3 reduction, the propeller would be a three blade 79” dia. CarbonMax, pitched at 14 degrees. Typically, you’ll develop 3 to 4 **pounds** of thrust per horsepower. ‘Till next time... Happy Airboating !





This month, we put the spotlight on the new **CarbonMax™** series. CarbonMax™ *looks* aerospace because *it is aerospace*. It's made using real aircraft grade woven carbon fiber in the outer surface layer. The gorgeous carbon weave pattern may be black, but it'll make other airboat owners **green** with envy!

But form follows function at WhirlWind, and our beauty isn't just skin deep. The tight carbon fiber weave results in an **ultra-dense** outer layer that's even more durable than our original legendary blade surface finish. And it's even more fade and UV resistant too.

CarbonMax™ blades feature a **nickel leading edge** so you get a far more damage-resistant prop and a longer service life. Only WhirlWind uses this *super-tough* metal on the leading edge.

But we didn't just improve the blades. For the new CarbonMax™ series, we also added a *really cool* feature to the **hub**.



Our **QuickChange™** Hub set the industry standard over 20 years ago, with great features like an *integral blade pitch guide* molded right in, and through-bolt design to give you the highest level of safety and strength. Our newest QuickChange™ Hub raises the standard again, with a bright color pitch guide molded into the face of the hub and blade. It's the easiest and most accurate pitch indicator yet.

Stunning looks. Tougher metal leading edge. Better fade and UV resistance. The strongest hub. The BEST pitch adjustment system.... WhirlWind's new CarbonMax™ series propeller is for airboat enthusiasts who want it all.



Engineering Corner



RPM and Propeller Stress

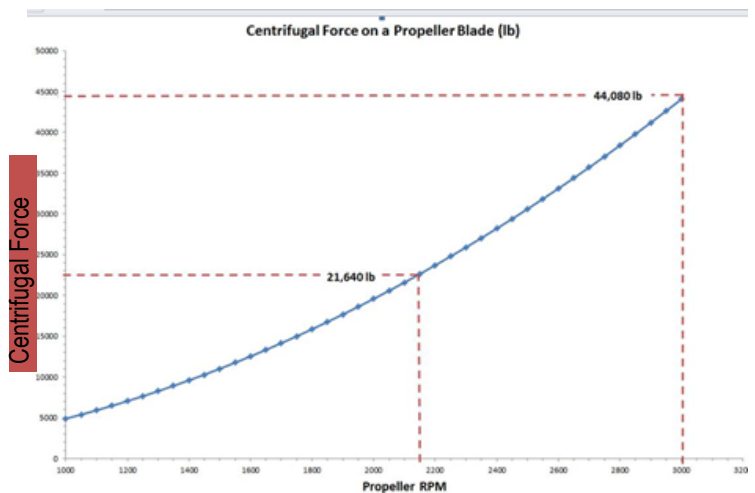
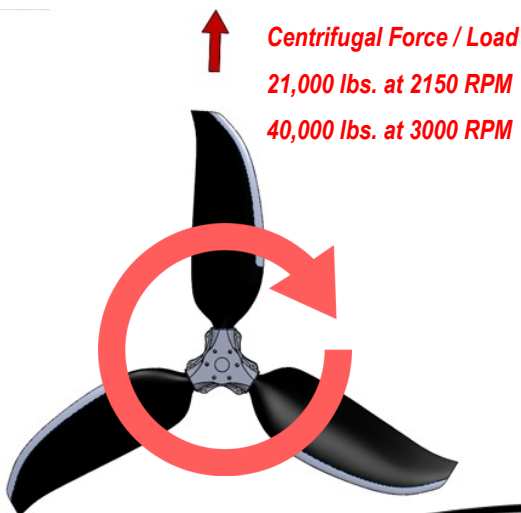
We always want more power. And as mentioned, turning the prop at higher RPM will usually create more power. But there's a **lot more** to it than that. If you ever go past the manufacturer's warnings and operating limits, *you're in for trouble*. Don't do it with our props or anyone else's.

Here's why:

Even at **low** RPM's, there is a very large amount of load from "Centrifugal Force" that is put on the propeller components... thousands of pounds of force! But those forces get downright scary at the higher RPM's where people often run their airboats. Just how much force? A typical airboat propeller turning *only* 2150 RPM will create over 20,000 lbs. (twenty thousand pounds) of Centrifugal Force, trying to tear the blades out of the hub. That's the same amount of force as hanging four pickup trucks on each propeller blade!

But if you increase the prop RPM from 2150 up to 3000, it doubles the load to 40,000 pounds. That's **eight** pickup trucks on each blade. A propeller really has to be engineered to withstand that kind of force safely. Of course there's a safety factor built into any good quality propeller, but going above the recommended RPM significantly reduces this safety factor. It will *always* lower the "useful life" of the propeller, and *increases* the chance of a failure. You don't want to be there when that happens!

But higher RPM doesn't always result in higher performance... it can even decrease performance. There's a bunch of different things that affect *overall performance* besides just RPM – prop diameter, blade style, the number of blades, horsepower and torque. There are other really important things, like noise level and vibration. So please follow the manufacturer's recommendations for correct power, RPM, set up, safety inspection and maintenance.





Air Boater Spotlight



We're proud to have a big family of customers from all across America, running all different types of airboats. In each issue of Props & Hulls we'd like to introduce you to someone who shares our love of airboats. This month, meet **Estéfano Núñez**, the Vice President of Stinger Drives!

Tell us about you... who you are, where you're from.

I grew up in two different family dynamics. My dad's Peruvian side of the family, and my mom's Country side of the family. I have always gravitated to my Southern heritage. I was obsessed with trucks and tractors from a young age, taking apart my toys and putting them back together as a kid. I grew up like any other boy from Florida. Covered in mud, sand, and salt.

Tell us about your first airboat ride! How did you get involved in this great sport?

I don't remember much from my first airboat ride, other than it was my grandpa **Bruce Kay** who took me out first. I grew up on the coast, so most of my early boating experience was on center consoles and skiffs. It wasn't until after school that I really got hands on with airboats.

What do you do with you airboat the most? Hunt, Fish, Get Muddy, Go Camping?

I mostly use the boat for recreation and customer outreach, but it also hunts and fishes. I haul the boat all over Florida, I get to ride the best of what Florida has to offer.

What's your most memorable adventure with an airboat?

Every adventure is memorable, whether it's because of the people riding with me, the other airboats, or the environment around us. Each airboating trip leaves me wanting more.



Is this your first airboat or the tenth?

This is my first airboat, but I'm already thinking about the next.

Tell us about your boat! What makes it special?

This boat was built by 3 different manufacturers in Florida, and then myself tying the loose ends up. It's unique in many ways.