



# THE BOTTOM



## YOUR PROPELLERS

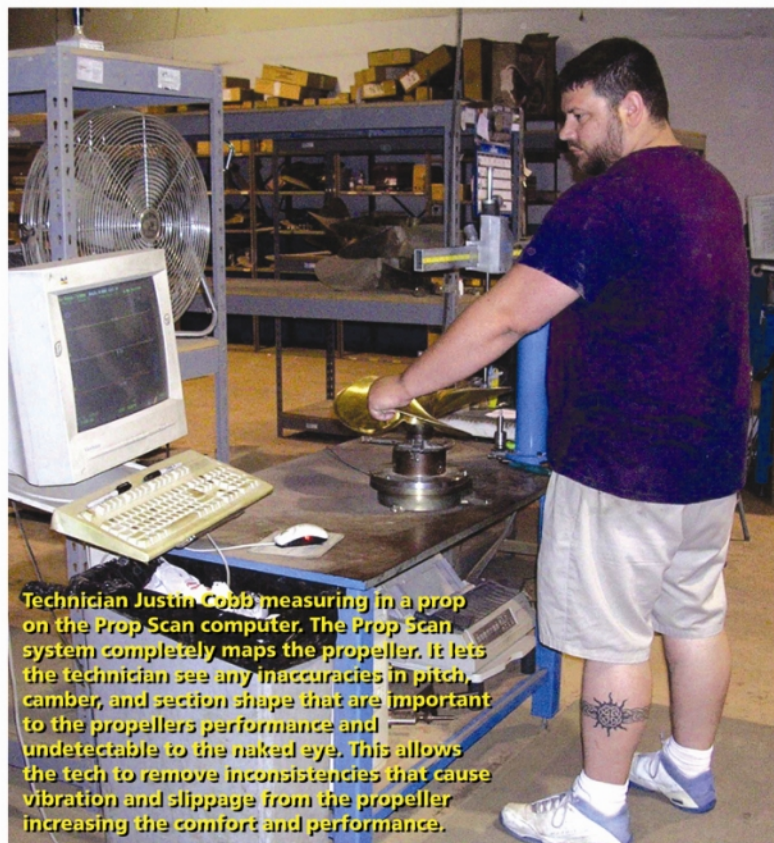
BY CAPTAIN RAY TEEL



# LINE TO FUEL SAVINGS:







**Technician Justin Cobb measuring in a prop on the Prop Scan computer. The Prop Scan system completely maps the propeller. It lets the technician see any inaccuracies in pitch, camber, and section shape that are important to the propellers performance and undetectable to the naked eye. This allows the tech to remove inconsistencies that cause vibration and slippage from the propeller increasing the comfort and performance.**

O.K., your boat's bottom is perfect and coated with the latest in ablative paint technology. Your engine is tuned with all its filters and fluids changed and cleaned. Your hoses, belts, alignment, etc., have all been checked and adjusted. Everything is dialed in to

maximize fuel efficiency. But what about your props?

Most anglers and boaters keep their engines and onboard systems in good working order, but many are guilty of taking their props for granted. They allow the marina to send them out year after year with-

out ever talking to the prop shop or requesting documentation of the propellers condition before and after the repair. They figure "it ran ok last year, so why not just leave it the same." This might be alright if you use your boat as a "floating condo," but if you run your boat 50 or more hours a year chances are you could be doing much better with regards to performance and fuel efficiency.

Looks can be deceiving when it comes to propellers. A new or reconditioned prop may look beautiful to the naked eye, but is it as good as it looks? In short, the answer is "no." Propellers that are reconditioned by conventional means are far from perfect. In fact, even new propellers right out of the box lack the fine-tuned accuracy that ultimately leads to peak performance.

If even new propellers right from the box can cause vibration and rob a boat of top fuel efficiency, then what can be done? Enter Prop Scan—the revolutionary electronic propeller inspection system. Developed in Australia in 1980, the Prop Scan system was introduced to the United States in 1995. It is a technology that has caused quite a stir in the propeller industry.

What sets the Prop Scan system method of propeller repair apart is the fact that it is exact, setting the progression of the pitch and camber from root to tip, and from leading edge to trailing edge at ISO 484-2 Standards (see Fig.1) that are within one-thousandth of an inch. Unlike the "old school" method, blade pitch is not measured from two points on a single radius or with a pitch block. Prop Scan measures up to 10 radii and 16 local areas along each blade using a sensor probe and computer. Each blade on a propeller can be measured in approximately 600 points. Measurements are taken progressively along radii, starting from the hub to the blade tip. It also ensures uniform section shape.



**This Veem propeller is being tuned to Class S for the new 58ft custom sportfisher "Intensity" with 1650hp C32 Cats and projected top speeds in the high 40kt range. Proper propeller selection and accuracy is critical. Prop Scan assures perfection**

ISO 484 Accuracy Classes	
Class	Description
S	Very High Accuracy
I	High Accuracy
II	Medium Accuracy
III	Wide Tolerances



### ISO Tolerances on Pitch

Class			S	I	II	III
a)	Local Pitch	Pitch of one portion of one blade	± 1.5%	± 2%	± 3%	-
b)	Section Pitch	Mean pitch of one radii of one blade	± 1%	± 1.5%	± 2%	± 5%
c)	Blade Pitch	Mean pitch of one blade	± 0.75%	± 1%	± 1.5%	± 4%
d)	Propeller Pitch	Mean pitch of all blades	± 0.5%	± 0.75%	± 1%	± 3%

**Graph showing the International Standards Organization's accuracy classes and tolerances on pitch. Before Prop Scan there were no standards in place and a propeller was done when the shop said it was without any means of verification.**

This accuracy is repeated from one blade to the next. The result is a propeller that has perfect pitch, camber and shape on all of its blades. A propeller that has every part of the blade working for you, with the least amount of slippage possible! In addition, if propellers are damaged after Prop Scan modifications have been made, they can be reconditioned again and brought back to the same perfectly tuned condition. The Prop Scan computer keeps a data base of all customers' propeller designs.

Why then is a perfectly tuned propeller so important? With every part of the propeller working for you in unison and with the least amount of slippage possible, most customers notice a decrease in fuel consumption from 1 to 6 gallons per hour at cruise!

This high-tech method of tuning props has also solved multiple engine synchronization and load

problems (both of which can waste fuel) for many boaters. With the advent of electronically controlled engines, load and GPH gauges quickly point out an in-efficient wheel. Prop Scan tunes and perfectly matches sets of propellers, which provides equal loading of engines for maximum performance. Prop Scan works with all types of propellers. The computer software is loaded with every prop design imaginable. Compared to the old pitch-block method of fixing props,

the cost is very competitive and the results are far better.

So what does all this mean in layman's terms? If your props are being reconditioned each year at a traditional pitch-block shop, you are not getting optimum fuel efficiency-period.

A traditional repair consists of placing the propeller blade over a die (pitch block) and smashing the propeller down to conform. This lines up the leading and trailing edges (so it shouldn't vibrate) but, unfortunately,

Class		Average Fuel Savings			
Prop Scan EPS Class	O				
ISO 484 Class	S				
ISO 484 Class	I				
ISO 484 Class	II	1-5%	5-10%	10-15%	15-20%
ISO 484 Class	III				

**Most of today's recreational propellers are Class II or Class III so trying to bring it to a Class I or Class S will yield you a savings of anywhere between 5 and 15 percent.**






This line graph is an actual screenshot of the Prop Scan system that the technicians use to repair your prop. The top line represents a properly repaired/tuned prop. The others are typical of traditionally repaired props. Notice the belly and collapsed middle which causes slippage. The bottom 3 props are wasting fuel.

causes the middle of the blade to either "belly" or "collapse" (see fig. 2). The original manufacturer's design has been compromised. This results in slippage, causing the prop to waste fuel with each revolution! The best analogy would be if someone went out to your car and took 4 pounds of air out of each tire. It would still feel smooth and most owners wouldn't even notice, but you would be wasting fuel with every turn of the tire. Prop Scan Technology allows propellers to be repaired or modified keeping the original design intact. This ensures the least amount of slippage possible, while you get a propeller that gives maximum design pitch with each rotation. Therefore, you'll efficiently utilize every drop of fuel being burned!!

Why then are "traditional" shops still around? Simple—their method is a quick and easy way to "fix" a propeller. Even so, many "old school" shops have realized

their pitch-blocked props cannot match the performance of a Prop Scan tuned wheel and are slowly buying their own computerized measuring equipment. Whether or not they are actually using it to repair the prop is another story.

In this day and age of outrageous fuel prices, every drop matters. Computers have revolutionized almost every industry including marine and Prop Scan technology has lead the way. It has turned propeller repair into an exact science. The United States Navy, the U.S. Coast Guard, boat manufacturers, and all major propeller manufacturers are using this technology—shouldn't you?!

If you would like more information on how much fuel Prop Scan could save you, please visit [www.atlantispropeller.com](http://www.atlantispropeller.com) and click on "fuel savings." Check out our testimonials or give Ray a call at (856) 231-0106. He loves to talk props! 

## ABOUT THE AUTHOR



### CAPTAIN RAY TEEL

has loved fishing and boating for as long as he can remember. Looking to spend more time on the water, he acquired his OUPV license in 1995 and began chartering his family boat: the Char-Sea.

It was during this time that he first heard of the new Prop Scan technology and its fuel-saving benefits. He learned that a Prop Scan shop had recently opened in Mt. Laurel, N.J., so he brought his props in for a "tune up." The results were impressive. He gained a knot at cruise and dropped from 22 gallons per hour to 20.

A few years later he decided he wanted to make the marine industry his full-time career and enrolled in Penco Techs Marine Engine program. Near the end of his studies an opportunity presented itself to join the team at Atlantis Propeller. Ray jumped at the chance. After six months of intensive training in Propeller Theory and operation of the Prop Scan Measuring Equipment, he was ready for his first set of wheels.

Thousands of propellers and satisfied customers later, another opportunity presented itself when the shops long-time owner decided to pursue other interests and offered Captain Ray the business. Again, he jumped at the chance.

He is the new owner of Atlantis Propeller and his No. 1 goal is to make your boat perform better! Ray can be reached at (856) 231-0106 or [ray@atlantispropeller.com](mailto:ray@atlantispropeller.com).

Ray lives in Philadelphia with his wife Marly and their four children Ray Jr., Alex, Elizabeth and Caroline.