Tunnel Boat Performance News - #176 - June 15, 2016

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Miss GEICO Wins in Sarasota

In the third time in as many offshore races, the Miss GEICO team prevailed over the Alex And Ani team today at the 32nd annual Sarasota Powerboat Grand Prix on the west coast of Florida. Miss GEICO throttleman Scott Begovich and driver Marc Granet led wire-to-wire in the team's 44-foot Victory catamaran during the 20-lap, 80-mile contest that Begovich described as "really bumpy" at the historic racing venue.

"In 15 years of coming here, yesterday's practice session was the roughest I've seen it," said Begovich. "Today, there was a big hole by the start-finish line. The fastest we saw was 140 mph. I think Alex And Ani saw 150 mph at one point when they were trying to catch up with us. They got caught up in the start, but on one lap they were actually gaining on us. I think they broke on lap 14 or 15.

"I still have Cazzani's belt and I'm not giving it back to him until he beats us," said Begovich. "When I beat him in Point Pleasant (N.J.), he gave me his checkered-flag belt. But it's more like a headband for me."

The withdrawal of the Sailor Jerry/Autonation team from the Super Cat class left Cleveland Construction, a 38-foot Skater, and Warpaint, a 42-foot MTI—each with twin 750-hp engines—to fight it out for top honors this afternoon in Sarasota. Driver/owner Ed Smith and throttleman Keith Holmes prevailed in Cleveland Construction—the team's first win of the season after taking second place in Superboat Boat International season-opener in Cocoa Beach, Fla., but blowing an engine after three laps at last weekend's SBI contest in Marathon, Fla., and finishing last.

Facing competition for the first time this season, the AMH Construction/Instigator duo of owner/throttleman Peter Meyer and driver Johnny Stanch squared off against throttleman Billy Glueck and driver Brett Furshman in Legacy Builders/Twisted Metal. Glueck and Furshman prevailed in the battle of the Fountain V-bottoms. It was a particularly good day for Glueck, who earlier in the day claimed another victory with Gary Jones the Black Pearl Fountain.

The father-and-son duo of Steve and Stephen Kildahl in boatfloater.com claimed first place in Super Vee Lite, followed by Albrittonfruit.com. Backing up his first-place Stock-class performance in the SBI Marathon race, Gary Ballough in his 32-foot Doug Wright cat Gettle/FJ Propeller beat out Ryan Beckley in his 30-foot Skater flying the Professional Plumbing sponsor banner for the Sarasota event, as well as Lee Austin's LA Marine cat, in the Cat Lite class.

In Class 5, the finishing order was Pump It, Two Cruel and Goodnewspest.com. In Class 4, Simmons Marine took first followed by Perdition and Getrubbermulch.com.

Read more at speedonthewater.com
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Yamaha's New F350 Outboard has 5yr Warranty

Honed to perfection over the years, Yamaha's new 5.3-litre F350C now has five full years of Limited Warranty coverage, wrapped in a refined outboard package with a list of benefits and features that are still unique in the marketplace.

Yamaha's F350 redefined offshore power when it debuted in 2007 – and still has little competition in its class. The first F350 offered an outboard capable of the raw thrust necessary for pushing larger and heavier offshore boats. Thousands of F350s later, there is still nothing like it. The durability and unique performance of the V8 Yamaha F350 has proven particularly instrumental for commercial operators whose livelihood depends on the reliability of their engines.

While other manufacturers offer 350-horsepower outboards, none can match the big bore, normally aspirated flat torque curve of the 5.3-litre Yamaha F350C. There is simply no replacement for displacement. Nothing makes power as smoothly and consistently, and this type of reliable performance is what separates the Yamaha 350C from its competitor's 2.6-litre, inline six-cylinder supercharged outboard. The torque curve of Yamaha's naturally aspirated V8 delivers more power, more smoothly, compared to a supercharged six-cylinder outboard.

Like the original, the F350C also offers:
•Specific marine design – The 60-degree V8 has four valves per cylinder and double overhead cams;
•Unbelievable acceleration – Variable Camshaft Timing (VCT™) optimizes the engine's torque at low and mid-range rpm for unequalled performance;
•Sequential multi-point fuel injection – Eight long-intake tracks in the induction system optimize power;
•Less internal stress and friction, and lower internal engine pressures and heat build-up;
•And it runs on 89 octane fuel, while some supercharged engines need 91 octane for maximum performance.

New 4.2L V6 Offshore "Mechanical" Outboards - Boaters who need mechanical control can now enjoy all of the benefits of Yamaha's F250 and F225, as the company introduces new versions of these two legendary 4.2-litre V6 offshore outboards. "These outboards are a great repower option for boats that can take advantage of the light weight and high efficiency of Yamaha's 4.2-litre offshore platform, but don't require digital electronic control," said Jean-Francois Rioux, National Manager for Marine at Yamaha Motor Canada.

Whether you choose digital electronic control or the new mechanical control F250/F225, you get the same features, power and performance inside. Yamaha's 4.2-litre offshore models have big-bore V6 displacement thanks to plasma-fused sleeveless cylinders. This technology increases displacement without enlarging the outer diameter of the cylinder bores, resulting in an outboard with the largest displacement in its class. The technology also contributes to the light weight of these outboards.

V6 Offshore Mechanicals are more than 50 pounds lighter than the venerable Yamaha 3.3-litre V6s. In addition, they offer better low- and mid-range punch, as well as better fuel efficiency.

When repowering with the Yamaha 4.2-litre V6 Mechanicals, there is typically no need to change over to a new control box, thus providing an economical solution for work boats or other craft where digital control is not needed or desired.

The expected availability for the F350C, F225 and F250 is late summer 2016.

See more at: BoatsandPlaces.com.

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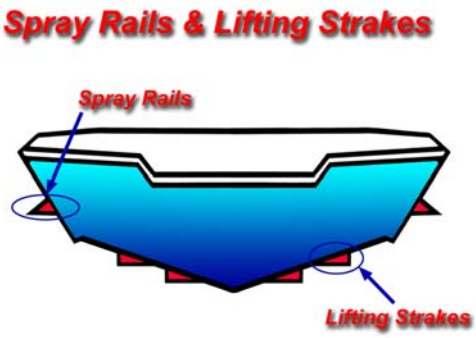
FEATURE: "Spray Rails and Lifting Strakes"



Today's performance hulls make extensive use of bottom design enhancements to improve performance, soften ride, etc. Some of the most frequently employed bottom design features on vee hulls and tunnel hulls are spray rails and lifting strakes.

Spray rails and Lifting strakes are different design features. There sometimes exists a confusion of these two terms and even some misunderstanding of what each element can do for your hull's performance. I will describe the differences of spray rails and lifting strakes and explain how they work.

Spray Rails - Spray Rails are located lengthwise on the hull, positioned symmetrically, usually near the chine of the hull. Spray rails or "spray strips" or "spray deflectors" are flat or triangular in shape and have a singular *purpose of deflecting water and spray away from the hull.*

The "whisker" spray from highly loaded lifting surfaces can wet a significant portion of your hull surface, causing additional drag without the benefit of any lift. Spray rails deflect spray, they don't provide any hydrodynamic lift for the hull. Spray rails can also provide a drier ride, reducing overspray to passenger area, sometimes otherwise uncomfortable for some boats in wavy conditions.....

Lift Strakes - - Lifting Strakes are longitudinal members running fore and aft on the outside bottom of the hull. Usually most effective on vee hulls, lift strakes are triangular in shape, positioned symmetrically (same on each side of the hull centreline), usually located closer to the hull's keel.

Properly designed with their flat contact surface horizontal or parallel to the water, their

purpose is to provide increased lift, making the hull more efficient and potentially faster. There may be several pairs of strakes located on the hull bottom. Strakes may run the entire length of the hull bottom, or may be shorter in length and placed at particular locations on the hull where additional lift is needed.

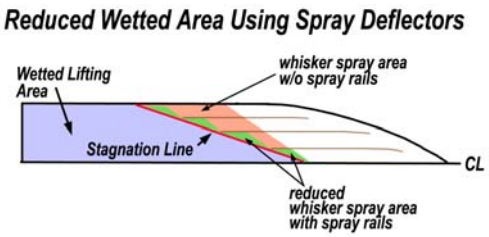
There's a difference - Lifting strakes are different from spray rails in that their design purpose is to provide hydrodynamic lift. Spray rails deflect spray and are not intended provide any lift.

Spray Rail design - The first (and possibly the only) set of spray rails is often fitted to run from the bow to the stern along the chine or close to the chine. Sometimes multiple sets of spray rails are employed when the hull has a particular issue with excessive "wetting".

While vee hulls and tunnel hulls both can be seen with spray rails, higher deadrise hulls usually create more spray and hence the positive effect of spray rails is more enhanced on deeper deadrise hulls.

Some spray rails are located right at the chine, called “chine spray rail”. They are also seen at multiple staggered locations from chine up to the sheer (where the hull meets the deck).

Whisker Spray Drag - The hydrodynamic drag of any design of planing hull includes mostly viscous (friction) drag and pressure drag components of the planing bottom surfaces. These drag components are associated with the primary lifting area of the hull, aft of what’s called the “stagnation line”. There is also another type of drag in the “whisker spray region” which is located forward of the stagnation line. We know that for high-speed planing hulls, whisker spray drag component can be as much as 15% of the total drag. This added drag steals valuable horsepower and reduces the efficiency of the hull.



There are engineering methods that can calculate the contribution of whisker spray drag, but for our purposes today, it’s valuable to know that it’s a function of deadrise angle, trim angle, and speed. It’s also valuable to know that we can reduce its effect by properly designed and located Spray Rails.

How it works - The most beneficial effect of a spray rail is to deflect undesirable water spray away from the hull surface, and thus placement is important. At high speeds, spray rails are more effective, since there is more spray when the hull is going faster. Since the location, direction and force of the spray are functions of the boat speed and loading, the hull designer must determine the most favorable location of the spray rails to best handle the spray pattern high-speed range of operation.

On slower boats, particularly displacement hulls that cannot plane, spray rails have little effect. They may look flashy, but the only function they can provide is to add wetted surface to the boat, which adds drag, thus slowing the boat down.

Lifting Strake design - High-lift strakes are located symmetrically (on both sides of the keel) and parallel to the keel of the hull. They are triangular in shape with their lower surface flat and horizontal (parallel) to the water surface. The corner/edge of the strake should be sharp, not rounded. Multiple pairs of lift strakes can be employed at different positions out from the keel (centreline) and of different lengths and longitudinal locations fore/aft on the hull.

Since strakes increase lift of the hull surface locally, a boat with aft-ward lift strakes can get up on plane faster. Longitudinal strakes can also provide better steering/tracking.

How it works - The lift strake is an additional planing lifting surface that is flat (parallel) to the water surface. This means that the strake generates much more efficient lift than a similar veed surface area. When a strake is located on a deep vee hull, the boat can benefit from the advantages of the vee hull shape while getting a boost of additional lift from the low-deadrise lifting strakes positioned locally on the hull bottom.

Placement of longitudinal strakes has a big effect of the performance and dynamic stability of the hull. Lifting strakes acting in the forward part of the hull surface will increase bow lift, while strakes acting in the aftward section of the hull will increase stern lift. Strakes placed close to the keel (centre-line) of the hull gives increased lift at higher speeds, whereas strakes located further outboard and closer to the chine act more when the bottom is fully wetted during acceleration or when the boat is getting up to plane.

The Bottom Line - Properly placed spray rails can improve the efficiency of any planing hull. With attention to well-designed placement, the reduced wetted surface and associated decrease in hydrodynamic drag can be as significant as 15%. Lifting strakes will help a vee hull plane more quickly and can increase both acceleration and top speed of a performance hull, when they are well sized and located. While there are always design trade-offs' to be considered when selecting size, quantity, lengths and locations, an optimized design can make a big difference to the performance, handling and dynamic stability of the boat at speed.

Read more in this article on "Spray Rails and Lifting Strakes".

See more Performance Articles at: www.aeromarineresearch.com

[Note: Do you have any of your own questions on performance hull design? Send your question or story to mailto:jimboat@aeromarineresearch.com?subject=TBPNews]

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Video - 1974 Bristol Embassy Grand Prix

1974 Bristol Embassy Grand Prix with Cesare Scotti, Cees van der Velden, Jimbo McConnell, Tom Percival. [click for video]

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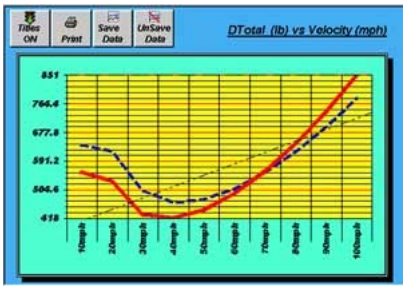
NEW TBDP/VBDP Ver 8.6 software release!

See the newest Version 8.6 "Tunnel Boat Design Program" and "Vee Boat Design Program" software.

"The best TBDP/VBDP release ever!" - Dozens of new features, enhanced results. Performance optimization, speed prediction, stability analysis, porpoising analysis, acceleration, elapsed time, and allot more!

See your hull's performance results throughout the full operating velocity range. Easy Auto



1-2-3 Performance Wizard. Now Vee hull and Tunnel hull design in same software package.

Version 8.6 has NEW screen layouts, NEW input variables, more performance analysis, output data/graphics, more reporting. Also includes the NEW 2016 Motor Wizard update with over 2050 OEM engine choices. NEW input variables and NEW 5-screen input format. Performance results with 500+ performance data points and 50+ trending graphs showing full velocity range. Animated 3D Chart display for Lift/Drag component contributions through Velocity range. And lot's more!!

See some of the new update features here, and all the high performance TBDP/VBDP features here.

See more at AeroMarine Research

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See 13th Edition "Secrets of Tunnel Boat Design" book (ISBN# 1-894933-30-3)
See ALL the TBDP/VBDP features, screen samples, and 'how-it-works'!

Review: TBDP V8 at Scream & Fly magazine. *["Tunnel Boat/Vee Boat Design Software is the very best and most comprehensive performance evaluation tool available. It has been evaluated by Scream And Fly, and has proven to be extremely accurate and easy to use. Version 8.4 is the most robust yet" - Scream and Fly mag, March 2015]*

Get the new TBDP/VBDP software! Buy Now

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See you next time!

/Jimboat