



~~~~~  
**TBPNews #118 – March 22, 2008**  
 ~~~~~

>>>> **Tunnel Boat Performance News** >>>>> (over 5000 members!)
 =====

In this issue:

- 1) [St. Louis Grand Prix Powerboat Races ready for 37th Annual Event](#)
- 2) [FEATURE ARTICLE - "What a Blowout!"](#)
- 3) [OSS Back in Full Force](#)
- 4) [2008 World Class 1 season starts up in Qatar](#)
- 5) [Evinrude Multi-Fuel Engines Available for Consumers](#)
- 6) [NEW Powerboat History & Design Books On-line](#)
- 7) [2007 AeroMarine Research® Software Update](#)
- 8) [Powerboat Racing on TV](#)
- 9) [Jimboat's NEW Feature Articles](#)

***** TBPNews *****

1) St. Louis Grand Prix Powerboat Races ready for 37th Annual Event



The St. Louis Grand Prix Powerboat Races, presented by BUD LIGHT, have finalized the date for 2008. The races will be held on August 2nd and 3rd, 2008, at Creve Coeur Lake.

BUD LIGHT will not only be the title sponsor, they have renewed their sponsorship of Seebold Racing and driver Tim Seebold for the 27th year. Mercury Marine will be supporting the event as well. This will be the 37th year that the Concord Village Lions Club has organized the event. Missouri Sports Hall of Fame and Motorsports Hall of Fame of America member, Bill Seebold is the Chairman of the event.

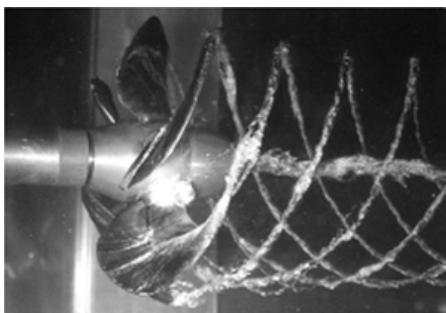
The 37th annual St. Louis Grand Prix Powerboat Races will feature drivers from all over the USA, and internationally. Classes participating will be the CHAMP Boats, also known as F1CHAMP, the CHAMP2 or SST 120's, and the CHAMP3 or SST 45's.

check out more at: www.stlgrandprix.net and www.champboat.com.

***** TBPNews *****

2) FEATURE ARTICLE: "What a Blowout!"

We receive many questions about the cause and effects of "blow-out". Here is an explanation of Blowout and causes...



Blowout occurs when something causes air/water mixture in the region of the propeller to become sufficiently disturbed that the propeller cannot continue working in "clean" water, but is rather, trying to work through a very soft or light mixture (or a relative vacuum). This causes the propeller efficiency to significantly fall off, (seems to lose thrust) and triggers a typically dramatic hull performance behaviour. These behaviors can vary from a feeling of "loose" steering to a nasty turn (typically to the right). The velocity at which "blowout" takes place depends on boat design, hull setup, lower unit design, propeller design, and driving style.

The main contributors to blowout are:

• Motor height:

If the engine is positioned too high, the propeller may not generate sufficient lift for the boat. This usually requires that the driver then apply excessive trim (out). This causes the direction of thrust of the propeller (shaft) to be less than optimum - inclined downward instead of aligned exactly in the direction of motion (parallel to the water surface). This trim angle is thus forcing an inefficient profile to the hydrodynamic flow around the lower unit (more drag) and the propeller (inefficient lift).

Designing the hull and the boat setup with the engine at the optimum height will help overall performance.

Using a jack plate will make these engine adjustments much easier. This is easiest to do with a hydraulic jack plate, but a manual jack plate will provide the same range of adjustment needed. [Remember that as you raise the engine height, a low water pickup may become necessary in order to ensure that the engine gets enough water pressure.] Often, as the engine is raised on the transom, the reduced lower unit drag can allow for a different trim angle to be applied, resulting in an improved effect on the speed of "onset of blowout".

- Gear case condition:

If the gear case has been damaged (tagged any logs or rocks lately?); or has an improperly installed nosecone; or a damaged skeg; the gear case cannot maintain the intended hydrodynamic direction (steering). The impact can be the desire (need) for the gear case to "crab" through the water, creating an area void of pure water, like an air pocket where the propeller is now trying to perform its duty. This is bad news for the propeller - it needs water to work properly. Cleaning up all the scratches, scrapes, nicks and gouges in the gear case so that it is very smooth will improve performance. Don't underestimate the possible significance of this operation – the smallest and seemingly trivial defects in the gear case surfaces can trip the "onset of blowout"!

- Hull Design:

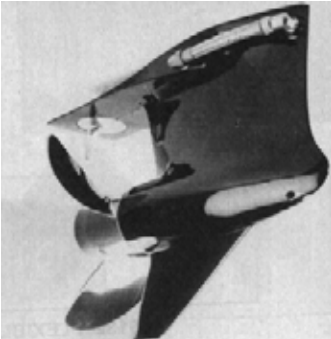
Some hull designs are more susceptible to "blowout" than others. There are no "rules" for how to design for "no blowout", since there are so many operating and performance issues that the designer must consider. It's difficult to merely "look" at your boat to determine whether it might be susceptible to "premature onset of blowout" or not. The well-designed hull will have a dynamically balanced performance through all operating speeds. The inherently unstable hull will need more effort with "on the water" set-up. Weight distribution, engine positioning, bottom cleanliness are some features that can be altered, if need be, after the boat is diagnosed with problems. The hull that is dynamically stable throughout its uppermost velocity range can reduce the tendency for blowout and lessen the otherwise dramatic effects of blowout.

- Velocity:

Once a stock gear case is asked to go faster than it's original design speed, water separates from the leading edge of the bullet and upsets the flow around the propeller. In engineering terms, this is a disturbed flow, and when this occurs near the propeller, it really impacts the propeller's performance and efficiency. Smaller gear cases with smaller, aerodynamic bullets will always improve this situation, delaying "blowout" tendencies to a higher velocity. Adding a nosecone can also increase the velocity (delay the onset of blowout) that a standard gear case can operate effectively (more on nosecones later).

The cause of blowout is generally a combination of all of these sources. Gear case modifications and propeller changes can reduce your chance of blowout or reduce the tendencies for blowout, or delay the onset of blowout (velocity). A properly designed and dynamically balanced hull also helps the blowout situation. The reality of high performance powerboating is, however, that as you strive for the maximum performance of your setup, blowout is often just piece of the business, so you will experience it eventually.

- Nose-cone technology - As water flows by the lower unit and begins to separate from the unit at higher speeds, a turbulent flow condition or "vortex" causes a lower pressure behind the gear case. This lower pressure increases the drag of the lower unit. A by-product of the air/water mixture and the water separation from the gearcase surfaces is propeller burning. This phenomenon leads to blow-out, and can also reduce top speed before blow-out is obtained. By increasing the length of the "bullet" on the lower unit, the hydrodynamic aspect ratio (length to diameter ratio) of the bullet is increased (improved), providing superior water flow characteristics and delaying the onset of propeller burn and blowout. A well-designed nose cone can delay the speed at which blow-out occurs and improve propeller efficiency.



Cavitation is not Blowout....but we always get it! Cavitation is "the sudden formation and collapse of low-pressure bubbles in liquids in regions of very low pressure or regions that are subjected to rapid or intense pressure changes".

The design of a gearcase is a compromise hydrodynamically. Irregularities on the outside surfaces of the gearcase such as fill holes, drain holes, water vents, etc. create a disturbance of the flow and can cause cavitation as the speed of the boat increases.

You might not even have "Blowout" - Very few boats run into a "total" blow-out situation...more often the setups encounter "propeller burn" - a phenomenon that occurs prior to blow-out. Many high performance boaters may be experience propeller burn and not even be aware of it. You may have noticed pitting on your propeller blades caused by this propeller burn. The addition of a nose cone can reduce or even eliminate propeller burn, blow-out, and allow you to improve your speed if the horsepower is available.

When blowout does occur, the propeller breaks loose completely and cannot recover until the boat is slowed down enough to allow water to re-enter the propeller void created by the ventilation occurrence.

Blowout can sneak up on you! - Classically, just prior to encountering a blowout you will experience a "loose" steering feeling, an RPM increase without any speed increase, a loss of lift, and a resulting drop of the bow of the boat. When all of these happen quickly, it can be a hair-raising incident! With experience, you can learn to sense when you are approaching the onset of "blowout"...so pay close attention, take appropriate actions, always wear your PFD...and hold on!

See more Performance Articles at: aeromarineresearch.com/articles.html

Read more about Tunnel Boat design and setup in the world acclaimed "[Secrets of Tunnel Boat Design](#)" book

***** TBPNews *****

3) OSS Back in Full Force



The Offshore Super Series kicks off its 2008 racing season with the "Smokin' the Sound" race in Biloxi, Miss., April 4-6.

The race, taking place along the Mississippi Gulf Coast, can be viewed by spectators along the coast or from Casino Row, giving them an up-close view of the action.

The organization has also added a second race in Florida this year. The offshore race will take place at Sunny Isles Beach, June 19-22. The series national championships will be held in November in Destin, Fla.

check out more at: www.offshoresuperseries.com

***** TBPNews *****

4) 2008 World Class 1 season starts up in Qatar



The Arab duo of Arif Saif Zfeen and Nadir Bin Hendi enjoyed a dream start to the 2008 World Class 1 season when they drove Victory 1 to a convincing win in the opening round of the series in Qatar. Remarkably, Qatar's Sheikh Hassan and Steve Curtis filled 2nd place in the team's spare boat after their own rig was badly damaged during Friday's qualification session. The spare boat was powered by Mercury V8's as opposed to Skema V12's but thanks to mechanical problems aboard Qatar 95 which had been holding 2nd place., the Qatari Sheikh secured 15 points. The 3rd podium place went to Victory 7 ahead of the unlucky Qatar 95. The original Qatar 96 was wrecked in a spectacular crash during qualifying, where Hassan and Curtis were pushing too hard

trying to catch pole setters Arif Saif Zafeen in Victory 1 when the bow of the former Spirit of Norway lifted and the 5 ton rig flipped over backwards.

Check out more at: www.class-1.com

***** TBPNews *****

5) Evinrude Multi-Fuel Engines Available for Consumers



Previously sold only to the defense industry, dealers now offer MFE engines to consumers.

High tech Evinrude multi-fuel engines (MFE) that have powered U.S. military branches like the Marines and Navy SEALs, and the international defense industry, are now offered to the general public by BRP/Evinrude dealerships worldwide.

The Evinrude MFE was on display at the Miami International Boat Show (February). Designed for flexible use of multiple fuels in harsh demanding mission applications, Evinrude MFE outboards are capable of running on kerosene, aviation fuels (JP-4, JP-5, JP-8, Jet-A and Jet-B), and standard gasoline. The engine's fuel selection can be changed with the simple flip of a switch, without compromising performance. The Evinrude MFE meets the Common Fuels Initiative, a U.S. Department of Defense mandate that will require all U.S. military forces to use a series of common fuels to power their equipment for simpler logistics and increased safety by the year 2010.

The two-cylinder 55-hp engine is rope started with a break-down tiller steering arm and is available in two models: a propeller model (E55MRL) and a jet propulsion model (E55MJRL). The custom military design, created for stealth operation, includes minimal engine noise, low emissions, a wrap-around assist handle and tilt-assist strap for easy lifting and a matte tactical black paint color.

Check out more at: www.brp.com

***** TBPNews *****

6) NEW Powerboat History & Design Books On-line

Most complete supply of over 50 specialized performance powerboat history, design and racing books...

check out the new book additions: [Powerboat Design & History books](#)

***** TBPNews *****

7) 2007 AeroMarine Research® Software Update includes New Yamaha 350hp V8 & Mercury 350hp Verados for TBDP© and PropWorks2©



New 2008 Motor Wizard update (AeroMarine Research®) for TBDP© and PropWorks2©
Now over 575 engine choices in Motor Wizard database! [Included with "Tunnel Boat Design©" software & PropWorks2© software].

The 2008 motor database update now has over 575 engine specs, including new jet-drive outboards, new Yamaha 350hp V8 outboard, Evinrude E-Tec specs, new Mercury 300hp & 350hp Verados. Use the New Motor Design Wizard to easily input the dimensional information for your setup. Just select your OEM engine manufacturer and highlight your model from the over 575 listed. The published manufacturers specifications are all there - Mercury Marine, Merc Hi-Performance, Bombardier Evinrude/Johnson, Yamaha, Suzuki, Nissan, Honda, Tohatsu, Mariner, Volvo, MerCruiser, Steyr, OMC, Volvo Penta. The OEM

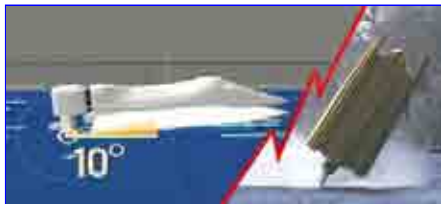
factory correct MaxHP, Height, Weight, RPM and gear ratio will be automatically input to TBDP V7.9 and PropWorks software V2.9.

Contact [AeroMarine Research®](#) for more information or your [Update!](#)

***** TBPNews *****

8) Powerboat Racing on TV

*** **"Thrill Zone: Extreme Powerboats"** - National Geographic powerboat show.



Author Jim Russell (Jimboat) is powerboat design technical consultant on a new National Geographic special for "Thrill Zone" series...

Details at: (channel.nationalgeographic.com)

check out next show date at: [Thursday, March 28, 2008 at 05A](#)

Watch for other show dates on AR's website! aeromarineresearch.com/NatGeo_thrill-zone.html

*** **"Streaming Motorsports"** on Speedbox.tv - Parker ENZED Jetsprinting Championship - - Check at: speedbox.tv

*** **"Champ Boat Grand Prix Series"** - on SPEED Channel - Check next show at: www.champboat.com or at: www.speedtv.com

*** **"F1 World Championship TV Show"** on The Water Channel - Check it out at: www.waterchannel.com; [see web site for other show times]

*** **NEW "War On Water" TV Show** on The Water Channel - Check it out at: www.waterchannel.com; [see web site for other show times]

*** **"Class 1 – World Championship – 2006"** on The Water Channel - Check it out at: www.waterchannel.com; [see web site for other show times]

