Yamaha's
Prop Shop
"Propeller news that you can use"
VOL. 5 | EDITION 1 | FEBRUARY 2015

EPS Certificates


1 of 1

Congratulations!

You have won one **Yamaha** or **Turbo®** propeller of your choice, compliments of **YAMAHA**

Please complete the Yamaha Propeller Recommendation Form on the reverse and take it to your choice of a Yamaha Marine or Turbo Propeller dealer for redemption.

The below information must be completely filled in by an authorized Yamaha/Turbo representative, including a "ship to" address.

Winner's Name: _____ **Signature:** _____ **Phone #:** _____

Ship to Address: _____ **City/ST/Zip:** _____

Dealer Name: _____ **City/ST/Zip:** _____ **Dealer #:** _____

Propeller Name: _____ **Part #:** _____

Presenter Signature/Name | Dealer Signature/Name | Yamaha Motor Corporation, USA

Yamaha and / or Turbo Propeller Dealer to redeem certificate,
please fax completed form to: (770) 420-8180 or email to Propeller_Certificates@Yamaha-Motor.com
Only one certificate per winner, and one winner per certificate. Max retail value: $799 MSRP.
Do not photocopy. If multiple copies are received, only the first certificate received will be honored. SDS hardware and Turbo hubs not included.
Certificate is not assignable, transferable, or redeemable for cash. Certificate will not be replaced if lost or stolen.
Certificate expires December 15, 2014

Throughout the year Yamaha supports a wide array of fishing tournaments, boat shows, and boat club events. During these events there are often chances to win various prizes. One such prize could be a Yamaha or Turbo® propeller of the winner's choice. We donate these propeller certificates to many of the events that we sponsor, and should you find yourself the lucky recipient, just take the certificate in to your local Yamaha Marine Dealer or Turbo Propeller dealer. They will help you select and order the right propeller for your boat. Hey, sometimes the best things in life are free!

Cupping explained

There are many parts of a propeller that affect the way it performs, but one that is commonly misunderstood is the cup. Most often cup is confused for the dished out portion of the blade's face, or pressure side. In fact, the cup is found along the trailing edge of the blade and the blade tip. Cup is commonly modified by propeller repair shops, but how do these changes affect the propeller's performance?

To start, let's identify the areas where cupping can be found. In the first image you can see the cupping along the trailing edge of the propeller blade. The rapid rise in material at this point essentially adds pitch to the propeller because of its position on the blade. Since adding cup here effectively adds pitch to the propeller, it will also lower your maximum engine RPM. As a general rule of thumb every 0.10"

(continued on next page)

What's news?

YAMAHA

Cupping explained | continued

of cup will equal approximately 1" of pitch or 150 RPM ± 50. Because of this effect, cup can be added or taken away to raise or lower the operating RPM of the engine.

The other location where cup can be placed is at the blade tip, as shown in the adjacent image. Cupping in this area essentially adds rake to the propeller. Cupping at the blade tip will have a large effect on how the propeller grips the water and provides lift for maximum hull efficiency. On the other extreme too much cup at the tip can cause excessive steering torque. There is a fine balance of cupping needed in the blade tip for maximum performance, making this area extremely crucial to overall propeller performance.

Many performance issues associated with propellers can be related back to the cupping of the blades. The blade tip area of the propeller can often get dinged or damaged, which flattens out the cupping or causes excess slip due to sharper edges, which can also cause cavitation. Another performance factor can result from shallow water use. If the propeller is run through sandy or silty conditions on a regular basis, the resulting abrasion will wear the cupping out over time, causing a gain in engine RPM and a loss of lift. Top speed will also suffer.

A good propeller repair shop can typically address cup issues and help restore some of the performance that may have been lost over time. If the propeller is worn excessively, it may be a good idea to replace it with a new one and have the old one reconditioned to keep as a spare.

Now you know: Propellers are designed to create performance, and cup is a major factor in how they achieve it.

Hub types

Propeller hub technology has been the focus for many new propellers. With four-stroke engines becoming prevalent, shift noise and in-gear rattle at idle or with very light load have become unsatisfactory for most consumers. The propeller hub has become the mechanism for softening the sounds associated with shifting and light load operation.

Yamaha utilizes several different hub types: standard pressed-in rubber, SDS, and universal hubs. These hub types range in fitment from our smallest portable outboards to our largest 5.3L V8 F350. The propeller hub serves several functions, but in its most basic application it is the link between your engine and the propeller. Without this all-important link, you have no means of transferring horsepower into forward propulsion.

(continued on next page)

Yamaha's Prop Shop

Hub types | continued

Standard pressed-in rubber hubs are essentially the original hub system, but these hubs start out much larger than the cavity they are pressed into. The resulting compressed fit allows the hub to hold the propeller simply by a high amount of friction. If a submerged object comes in contact with a propeller using a pressed-in rubber hub, the hub would spin if there were enough force, and it would break the friction fit of the hub. The premise is that the propeller and hub take the bulk of the trauma in order to save the gearcase from potentially catastrophic damage. Special tools like a hub insertion funnel and a hydraulic press are required to install this hub type, which is why it is best to see a reputable propeller shop for repairs.

Universal propeller hubs are likely the next most common hub type that you may encounter. These hubs are typically made of nylon fibers or Delrin® with brass splines. Universal hubs are still designed to sacrifice the hub if an impact occurs but as an added benefit this hub system requires no special tools to install or replace; in fact, many boaters will carry a spare universal hub kit in the boat in case of emergencies. The vast majority of Yamaha's Turbo® propellers use the Guardian SQ-Lok™ universal hub system.

SDS™ or Shift Dampener System hubs, which are exclusive to Yamaha propellers, are "quietly" taking over the Yamaha propeller line. These hubs now range in fitment from our T50, T60 and F70 all the way up to our 5.3L V8 F350. SDS hubs are all designed to help lessen the clunk associated with shifting in and out of gear as well as absorb any in-gear vibration at low speed, i.e. "prop rattle." There are three distinct sizes of SDS hubs: V8, V6, and mid-range. The V8 size fits all Yamaha Saltwater Series XL®, XL4™, and XL4-HP props. The V6 size is used for engines from 150hp to 300hp and fits the Saltwater Series II®, HS4™, and Reliance® Series propellers. Last is the mid-range size, which fits F70 – F115 as well as the T50 and T60 mid-range outboards. For mid-range engines, SDS hubs are available in the Talon aluminum and the stainless Talon™ SS propellers.

When it comes time to select a propeller we have created charts that identify not only the propeller type and material, but also the size, pitch, and hub type. Propellers using the Guardian SQ-Lok hub system will be identified with "See Hub Chart" since these propellers can be fit to any brand of outboard by simply changing the hub. These charts should help simplify your selection and let you know what to expect when you get that new propeller.

Yamaha Propellers

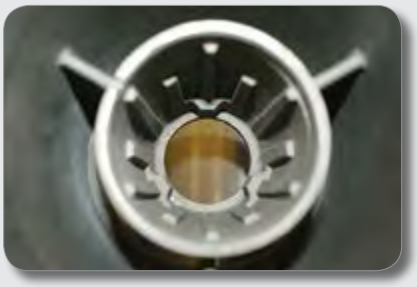
M or T Series Propellers for 4.75" Gearcases
Yamaha Models 150 - 300, F150 - F300 (V6)

Diameter	Pitch	Blades	Rotation	Material	HUB	Part No.
SALTWATER SERIES II SDS*						
15 3/4	13	3	RH	SS	SDS*	6CE-45930-00-00
V MAX SHO®						
15 1/8	22	3	RH	SS	pressed in	6CB-45932-10-00
TURBO 1						
13 1/4	13	3	RH	SS	See Hub Chart	MAR-13213-TR-D0

Yamaha's Prop Shop

Evolution of SDS

Since the SDS system was introduced in 2009, it has evolved into a broader range of propeller fitment and updated designs. As of fall 2014, the SDS system is now included with eight different propeller models in the Yamaha line-up ranging from the T50/T60 to the F350. The most recent update to SDS design has taken hold in our Saltwater Series XL propellers for the 5.3L V8 F350. This newest design does not require the use of the traditional cammed aft spacer used in previous versions of SDS. With this updated design, an SDS propeller now can be more easily retrofitted to any F350 by simply using the traditional round aft spacer.



The Application Chart: Talon SS

Yamaha's newest addition to the Endless Propeller Solutions line up, the Talon SS, brings the evolution of Shift Dampener System (SDS™) technology to large mid-range outboards. The Talon SS is very well suited for small lightweight Bass and Flats applications using Yamaha's F70 – F115, T50 and T60 mid-range outboards. The Talon SS will also perform very well in many small to medium Center Console, Bay, Aluminum and Deep-V applications. The three-blade stainless steel design is more durable than aluminum propellers and provides excellent all around performance with a great balance of holeshot and top speed. The Talon SS also features Yamaha's patented Shift Dampener System (SDS) and requires no special hardware for installation. The Talon SS is available at over 2,000 Yamaha Marine dealers nationwide.

Diameter	Pitch	Blades	Rotation	Material	Hub Type	Part Number	Availability
Talon SS Propeller Models | *Gear Case Size: 4.25" (Yamaha "K")*							
13 1/8	14	3	RH	SS	SDS	6N7-45970-00-00	Now
13 1/8	16	3	RH	SS	SDS	6N7-45972-00-00	Now
13 1/8	18	3	RH	SS	SDS	6N7-45974-00-00	Now
13 1/8	19	3	RH	SS	SDS	6N7-45976-00-00	Spring 2015
13 1/8	20	3	RH	SS	SDS	6N7-45978-00-00	Now
13 1/8	22	3	RH	SS	SDS	6N7-45930-00-00	Spring 2015**
13 1/8	24	3	RH	SS	SDS	6N7-45932-00-00	Spring 2015**
13 1/8	14	3	LH	SS	SDS	6N4-45970-00-00	Summer 2015**
13 1/8	16	3	LH	SS	SDS	6N4-45972-00-00	Summer 2015**
13 1/8	18	3	LH	SS	SDS	6N4-45974-00-00	Summer 2015**
13 1/8	20	3	LH	SS	SDS	6N4-45978-00-00	Summer 2015**

*Always follow Yamaha installation instructions.
**Anticipated availability date. Subject to change without notice.

If you'd like more information about which Yamaha propeller is right for your needs, contact your local authorized Yamaha Marine Dealer at **yamaha-motor.com/outboard/dealers/dealerhome/home.aspx.**

For short videos on Yamaha propellers, including proper installation, maintenance, and more, scan this symbol using your smart phone or tablet.

Message and data rates may apply.
May not be available on all devices.

Also, please join us on Facebook at **facebook.com/yamahaoutboards.** We'll be happy to help you get pointed in the right direction.

Turbo® propellers are manufactured by Precision Propeller Industries, Inc. a wholly owned subsidiary of Yamaha Motor Corporation, U.S.A.

YAMAHA