PYI INC.

QUALITY MARINE EQUIPMENT
SINCE 1981

MAX PROP

AUTOMATIC FEATHERING PROPELLERS

Cover photo courtesy of Fırat Göker
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MAX PROP

AUTOMATIC FEATHERING PROPELLERS

THE STORY

Max- Prop was designed and built in the early 1970's by Maximillian Bianchi in Milan, Italy. Max, a young Italian engineer invented a new type of propeller at the request of a sailboat racing friend in the golden days of the IOR racing rules. Little did he know at the time, this simple product would become his lifelong passion and livelihood. To this day, Max still oversees any new development of the product and follows it all the way through the manufacturing process. It is hard to believe, but Max quality checks each and every propeller that comes out of his factory. Nowadays, his son and daughter work with him so the legacy will continue long after Max retires (if he ever does).

THE FOUNDRY

In order to keep the metal quality to a constant high standard, Max bought a foundry in the mid 70's. To this day, the majority of Max-Prop cast parts are made in that foundry close to Lake Cuomo, a two hour drive from Milan.

The ownership of this foundry not only resulted in high quality cast parts, but also insured that any defect in the material or the part would not be passed on to the next stage of machining. This vertical integration is one of the main reasons for the success and durability of Max-Prop.

THE MACHINE SHOP

The actual machining of the propellers has always been under the full supervision of Max, from the days of manual lathes and mills to the ultra-modern CNC machines of today. Through the years, the machine shop has had multiple locations and currently is in Milan, in the same building as the sales offices, management and where the final assembly of the Max-Prop occurs. Once again, Max himself oversees each and every process.

SALES OFFICE

PYI is the only sales office for Max-Prop in North/South America and Asia. PYI was established in 1981 and on that date Max-Prop was already the main product distributed. Since then, PYI has added products which are well known in the sailing community, some as a manufacturer and some as a distributor. Through the years, Max-Prop has been the driving force for PYI, allowing us to facilitate the manufacturing of other quality products.

As a company, PYI has single a minded mission statement:

"To provide quality, innovative marine equipment with an unsurpassed level of customer service and satisfaction"

Our track record speaks for itself. If you have not experienced it yourself, ask a fellow boater!

MAX-PROP THROUGH THE YEARS

An evolution towards perfection!

1972
Original

1978
2 Blade Classic

1982
3 Blade Classic

1989
3 Blade V.P.

2002
4 Blade Fast

2008
3 Blade Gen II

2013
4 Blade Easy

2013
3 Blade Easy

2015
5 Blade Whisper

2017
2 Blade Easy

2018
5 Blade Boomerang

Maximilian Bianchi
Circa 1972

Maximilian Bianchi
Circa 2018

WHY CHOOSE A MAX-PROP?

Whether purchasing, refitting, or re-powering, a boat owner is faced with a somewhat confusing choice of propellers: fixed bladed, folding, feathering, brands, material, number of blades. It becomes daunting. So why choose a Max-Prop?

RELIABILITY IN OPERATION

Max-Props are "feathering propellers", so unlike folding propellers, Max-Props do not rely on centrifugal force to open. Instead, the Max-Prop relies on the torque from the shaft rotation acting on the "differential" type gear design in the body of the propeller. This in turns ensures an immediate opening in forward and more importantly in reverse, unlike folding propellers which have a lag time in reverse.

RELIABILITY OVER TIME

Through the years, Max-Prop propellers have acquired a flawless reputation for reliability and longevity. It is not uncommon to see a boat built in the 70's or 80's still using its orginally installed Max-Prop. A simple check on the internet would allow you to see the renowned reputation of Max-Prop. While we all wish that we could sail all the time, a propeller is a very important part of any sailboat. Sailboats end up powering a substantial amount of time and sometimes, in an emergency, we have to use our engine. In times like this it is critical to know that your propeller will open and will function as designed. Max-Prop has proven that time and again for decades.

EFFICIENT IN FORWARD

While not always exactly as efficient as a perfectly sized fixed propeller, a good choice of Max-Prop diameter, pitch and number of blades will usually achieve 96% or better efficiency compared to a fixed blade propeller. This maximum of 4% drop in efficiency is only seen at maximum throttle, which is seldom, if ever, used. The fact that with a Max-Prop, a boat owner or a designer can choose not only the diameter and number of blades of the propeller but can also adjust the pitch easily after sea trials makes the Max-Prop an ideal tool to fine tune a boat's performance under power.

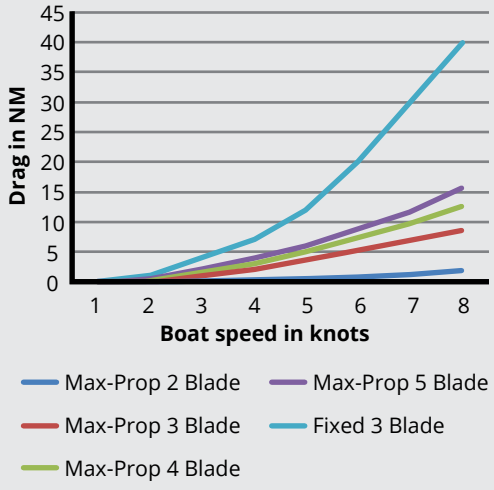
EFFICIENT IN REVERSE

The simple fact that the Max-Prop blades use the same leading edge and pitch in reverse as in forward results in an identical power in both directions. A fixed blade propeller looses almost 50% of its power in reverse. Worse yet - a folding propeller which, depending on the brand, can loose up to 80% of its power in reverse. The Max-Prop blades switch from forward to reverse instantaneously. It takes only ¾ of the shaft rotation for the blade switch to occur.

VERY LOW DRAG UNDER SAIL

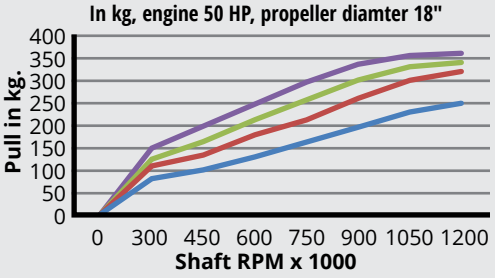
Under sail a Max-Prop will increase sailing speed between 10% to 15% compared to a fixed blade propeller, the largest difference being noticed when sailing in light air. The drag under sail varies widely between propellers, number of blades, angle of the shaft as well as location of the propeller on the boat. It is fair to say that a 2 blade Max-Prop propeller located on a horizontal shaft (sail-drive) will have the least drag while a 5 blade Max-Prop on a high angle shaft will have the most drag. However, even a 5 blade Max-Prop on a high angle shaft will have substantially less drag and provide more power when motoring than a fixed 2 blade propeller.

PROPELLER DRAG



BOLLARD PULL

In kg, engine 50 HP, propeller diamter 18"



MAX-PROP MODELS

The Max-Prop is available in four different models, each unique for certain applications, but feature the legendary Max-Prop low drag and smooth running.

EASY

- 2, 3 and 4 blade designs
- Ships fully assembled for easy installation in or out of the water
- Simple pitch adjustment, no disassembly needed
- 2 Blade models offer the least drag so are ideal for racers or smaller cruising boats
- 3 and 4 Blade models offers more power and eliminate vibrations
- 3 or 4 Blade models are ideal for a local and long range cruiser
- Available from 12" to 26" diameter and for ¾" to 1¾" shaft

WHISPER

- 5 blade design offers ultra-quiet powering and extra power
- Ideal for heavy displacement cruisers or large cruising yachts
- Simple externally adjustable pitch (no need for a haul out)
- Ships fully assembled for easy installation in or out of the water
- Available up to 44" diameter and 3½" shafts

BOOMERANG

- 5 blade design offers ultra-quiet powering and extra power
- Spring assisted instantaneous feathering
- Immediate feathering with electronic shift mechanisms
- Ships fully assembled for easy installation in or out of the water
- For high speed vessels or vessels with electronic shift transmission
- Available from 18" to 44" diameter up to 3" shafts

EASY ANTISHOCK for SAILDRIVE

- Antishock dampening devise
- 2, 3 and 4 blade designs
- Designed to fit SailDrives from, Volvo, Yanmar, TwinDisc, ZF, Sillette or Bukh
- Ships fully assembled for easy installation in or out of the water
- Simple pitch adjustment, no disassembly needed
- 2 Blade models offer the least drag so are ideal for racers or smaller cruising boats
- 3 and 4 Blade models offer more power and eliminate vibrations
- Available from 14" to 20" diameter

EASY 2, 3 & 4 BLADE

Available from 12" to 26" diameters, and for ¾" to 1¾" shaft diameters. Also available for SailDrive.

The Max-Prop Easy is a step forward in Max-Prop design. This propeller replaces the well-known Max-Prop Classic, facilitating simplicity for the customer without sacrificing performance. The Easy model's main attributes over the Classic are: 1) ease of installation (simple bolt on to the shaft); and 2) flexibility of pitch adjustment without the need of a haul out.

All the Easy models share the following features:

- Easy bolt on installation
- Externally adjustable pitch
- Outstanding reverse
- Low drag under sail

Two Blade Easy features:

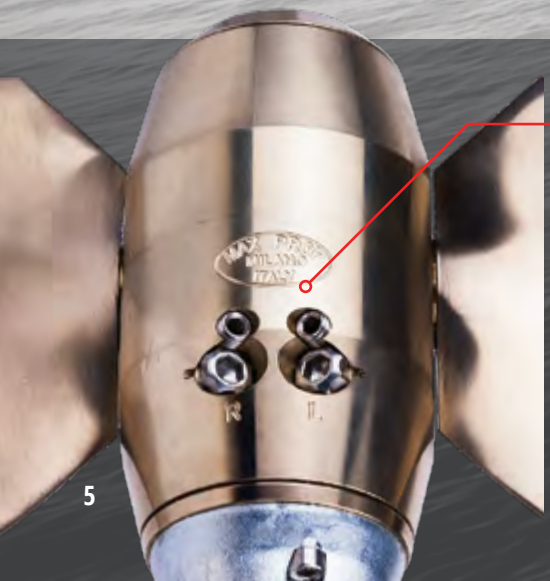
- Efficient forward power
- Very low drag under sail
- Available from 11" to 18" diameter
- For shafts ¾" to 1⅛"
- Best suited for all racing boats or smaller cruisers

Three Blade Easy features:

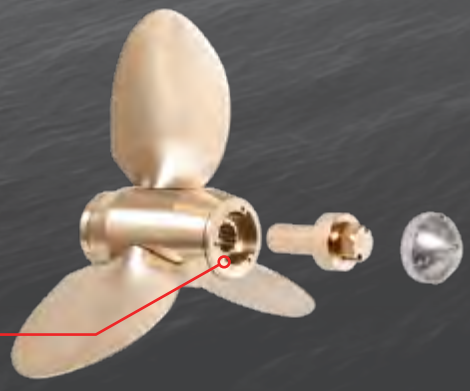
- Added forward power
- Runs much smoother than a two blade
- Low drag under sail (slightly more than a 2 blade)
- Available from 12" to 26"
- For shafts ¾" to 1¾"
- Best suited for 24' to 55' cruiser (medium displacement)

Four Blade Easy features:

- Outstanding forward power
- Very smooth running (no vibrations)
- Low drag under sail
- Available from 14" to 26"
- For shafts ¾" to 1¾"
- Best suited for 40' to 70' cruiser (medium to heavy displacement)



Adjustable Pitch
If your engine achieves either too much or too little RPM at max throttle, adjust the pitch to a higher or lower setting to attain the correct RPM. Pitch adjustment can easily be done in or out of the water. To change the pitch you just need to remove the pitch bolt and replace it with one of a different length.



Easy To Install
Arrives pre-assembled. Unique design allows for simple bolt onto the shaft installation.

EASY ANTISHOCK for SAILDRIVE

2, 3 & 4 BLADE

A large majority of modern production sailboats are equipped with a "SailDrive" leg instead of a propeller shaft. These "SailDrives" require a different type of propeller for two reasons:

- The attachment of the propeller needs a spline instead of a taper.
- The gears in the leg cannot take the shock loads of low drag propellers opening (true for both folding or feathering propellers). Therefore all propellers including fixed propellers must have a dampening device built in the hub which lessens the shock loads initiated by the propeller opening or closing.

The Max-Prop "Easy Antishock" for SailDrive is designed to fit on any drive leg on the market today including Volvo, Yanmar, Bukh, and Twin Disc. This propeller system greatly reduces the shock load upon engaging the transmission which remains much lower than all SailDrive manufacturers maximum load requirements.

The installation of a Max-Prop "Easy Antishock" is identical to a fixed blade propeller.

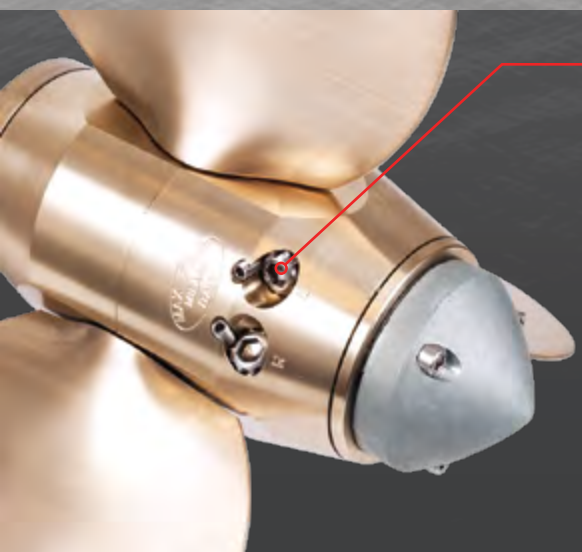
Features:

- Easy bolt on installation
- Externally adjustable pitch
- Outstanding reverse
- Low drag under sail

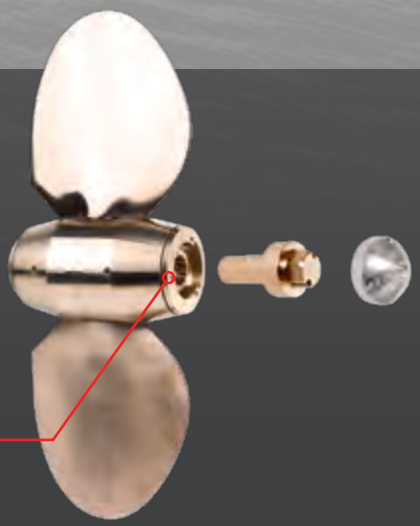
Max-Prop SailDrives Fit These Manufacturers and More!

YANMAR · VOLVO PENTA · TWIN DISC · ZF · BUKH

Dampening Device
A dampening device is installed internally on all Max-Prop "Easy Antishock" propellers. This dampening device is essential for preventing shock loads while engaging the drive in forward or reverse.



Adjustable Pitch
If your engine achieves either too much or too little RPM at max throttle, adjust the pitch to a higher or lower setting to attain the correct RPM. Pitch adjustment can easily be done in or out of the water. To change the pitch you need to remove the pitch bolt and replace it with one of a different length supplied with the propeller.



Easy To Install
Arrives pre-assembled. Unique design allows for simple bolt onto the shaft installation.

WHISPER / 5 BLADE

Available from 18" to 48" diameters, and for 1¼" to 3½" shaft diameters.

The size of sailboats has been increasing steadily over the past few years. With the larger size comes the demand for bigger engines and higher speed under power, while keeping noise and vibration down to a minimum.

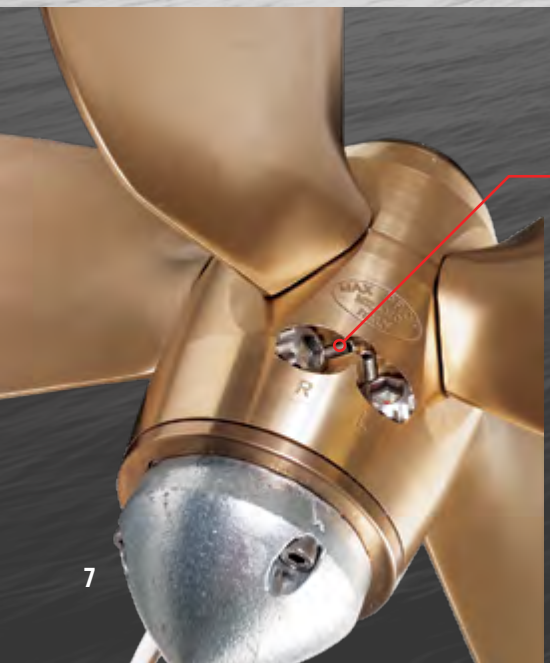
To that affect, Max-Prop has designed a 5 blade propeller, combining all the necessary attributes. To address the horse power gains, Max-Prop has added one more blade. This allows the transfer of power in the water in a more efficient way than the only other alternative-a larger diameter-while keeping noise to a minimum. In addition to the increased power, the extra blade provides a smoother run than a 4 blade propeller.

Features

- Very efficient power
- Outstanding reverse and stopping power
- Ultra smooth operation
- Very low drag
- Simple "bolt on" installation
- Externally adjustable pitch
- Best suited for heavy displacement cruisers over 50 feet
- Ideal for large Yachts 70 to 150 feet
- Available from 18" to 48" diameter
- For shafts 1¼" to 3½"

Simple Installation
Due to the design of the Max-Prop Whisper, installation can be done in or out of the water with the simple "bolt on" installation.

Low Drag
A 5 blade Max-Prop Whisper on a high angle shaft will have substantially less drag than a fixed 2 blade propeller and provides more power while motoring.



Easy Pitch Adjustability
If your engine achieves either too much or to little RPM at max throttle, adjust the pitch to a higher or lower setting to attain the correct RPM. Pitch adjustment can be done in the water as the propeller does not need to be disassembled to change the pitch.

BOOMERANG 5 BLADE

Available from 18" to 44" diameters, and for 1¼" to 3" shaft diameters.

For decades, feathering propellers have operated as a result of the water flowing over the blades, combined with some friction of the shaft and/or transmission.

In recent years radical changes in sailboat engine transmissions have created new issues for propeller manufacturers. The advent of hydraulic transmissions as well as the electronic gear shifting.

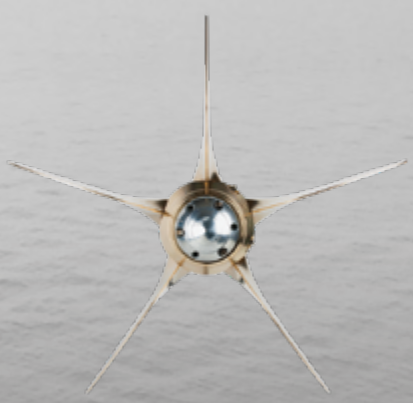
In both cases, the transmission (whether in gear or not) presents almost zero drag on the shaft when the engine is not running. Some shaft drag is always necessary for a propeller to either fold or feather. However, with these new types of transmissions, there is no drag and the helmsman does not have any mechanical way to slow the shaft down from freewheeling when the engine is stopped.

To that effect, the Max-Prop engineers have invented a patented radial spring which is incorporated inside the body of the Boomerang model. This spring solves the feathering issues by forcing the blades back into a feathered position as soon as no torque is applied to the shaft. Once the engine is either in idle or shut down the blades will feather within seconds, regardless of the shaft rotation or the boat speed at the time.

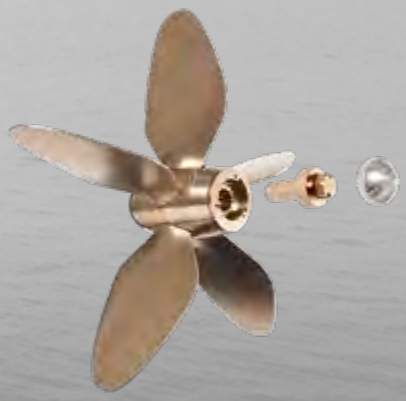
The Boomerang model has been in testing since 2016 and has already been adopted by many European boat builders.

Features

- Assisted feathering
- Very efficient power
- Outstanding reverse and stopping power
- Ultra smooth operation
- Very low drag
- Simple "bolt on" installation
- Externally adjustable pitch
- Available from 18" to 44" diameter
- For shafts 1¼" to 3"
- Maintains feathered position in high speed, turbulent operation



Low Drag
A 5 blade Max-Prop Boomerang on a high angle shaft will have substantially less drag than a fixed 2 blade propeller while providing much more power while motoring.



Simple Installation
Due to the design of the Max-Prop Boomerang, installation is a simple bolt on, can be done in or out of the water.

Assisted Feathering
The Boomerang does not require water flow to feather the propeller. The internal spring brings the propeller to the feathered position. Perfect for use with electronic shift mechanisms and hydraulic transmissions.

CATAMARAN / 2, 3 & 4 BLADE

Catamarans are increasingly popular modes of cruising sailboats. Catamarans in general present issues under power or sail which are different from monohull sailboats. The usual advantages of the Max-Prop are accentuated on a Catamaran. The reduced drag under sail not only improves boat speed but it also reduces turbulence over the rudders providing improved boat handling. This reduction in drag also allows a boat to come through a tack quicker and with more boat speed exiting the maneuver, making it easier to sail in light winds.

With the increased beam and freeboard of a catamaran comes the downside of high windage. The impressive reverse power of the Max-Prop adds to the control and safety of the vessel when maneuvering. Max-Prop offers the options of purchasing the propeller in 2, 3, 4 or 5 blade versions. This allows the boat owner to pick the amount of power desired with a given engine, with very little trade off.

Features specific to Max-Prop on Catamarans

- Improves control and safety of the vessel
- Very low drag under sail
- Reduced turbulence over rudders under sail
- Improved tacking speed with reduced drag
- Overcome windage inherent to Catamarans
- 80% more power in reverse compared to a fixed propeller
- Models designed specifically for SailDrive
- Adjustable pitch to optimize powering performance
- Versatility of blade number

MAX-PROP ACCESSORIES AND SERVICES

For more info or to purchase please visit www.pyiinc.com

ACCESSORIES AND SPARES

ANODES

Keeping a quality sacrificial anode on a Max-Prop is critical to ensure a long life. Galvanic corrosion occurs in marinas; it is simply a fact of life. Imperatively, protection is a necessity. PYI keeps anodes in stock at all times for our current propeller lines as well as for our older propellers. Our anodes are cast with a strong metal ring which helps dispersing the current loads, thus providing better propeller protection. As some EPA rules are changing and in some States zinc is prohibited, PYI also manufactures Aluminum anodes which are available upon request.

GREASE AND GREASE KITS

A Max-Prop should be greased yearly at a minimum. The propeller has a pair of grease ports on the hub, the grease then gets pushed into the prop at these 2 locations with the use of zerc fittings and a grease gun. This operation can be done out of the water during scheduled haul out or in the water by a diver. PYI sells the grease independently or as a set in a "greasing kit" which contains: grease, a grease gun, and a few spare screws and zerc fittings.

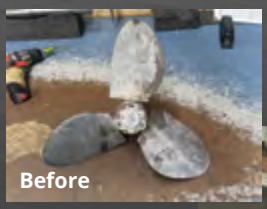
CRUISING KITS

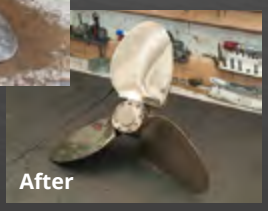
For the long distance cruiser who needs a complete set of spares, PYI sells a "Combo kit" which contains a year or more supply of parts (grease, zincs anodes, screws).

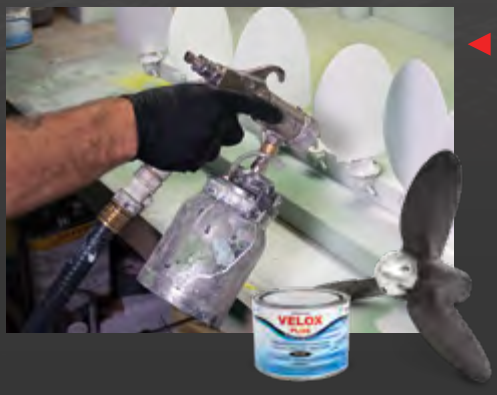
SERVICES

MAX-PROP RECONDITIONING

PYI has an in-house full machine shop with multiple CNC machines as well as a smaller shop with dedicated Max-Prop machinist. Just like any other mechanical device, a Max-Prop eventually needs some "TLC". When we receive a propeller, we assess the cost involved in reconditioning it to factory standards. Then we provide the customer with a firm quote. The process of reconditioning depends on various factors including: the condition of the prop, and parts needed for the work to be done. The usual turnaround time is two weeks.







MAX-PROP ANTIFOULING PAINTING

One of the services offered by PYI is painting the propellers with Velox Plus antifoulant. Marine growth on any propeller dramatically affects the props performance. One solution is to paint the propeller with antifouling. However, normal antifouling paints either do not adhere to metal or even worse, induce metal corrosion. PYI offers a unique product called Velox Plus. It is a base primer coated with a hard antifouling paint specifically formulated for underwater metal. The propeller is sand blasted, heated to the correct temperature, sprayed with primer and then painted with Velox Plus, all in a controlled environment.

01-11818

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