

PROPELLERS

Everything you need to know and more



www.mercurymarine.com.au

Only the right propeller will do

When it comes to propeller performance and selection, no one comes close to Mercury Propellers. That's because for over 60 years, we've been conceiving, designing and creating technology solely for the water. It's how we've developed more industry-leading innovations and why we offer the widest selection of High-quality aluminium and stainless steel propellers than any other manufacturer. In fact, our dedication and commitment to be the best is unparalleled in the industry and that is why our propellers not only fit Mercury engines they can **fit most other manufacture engines** as well. So no matter what power you run, there is a Mercury propeller that will help you make the most of your time on the water.

In determining boat performance, propellers are second in importance only to the power available from the engine itself. **Without the propeller's thrust, nothing happens.** Your boat's propeller affects every phase of performance handling, riding, comfort, speed, acceleration, engine life, fuel economy and safety.

Like tyres on a car, the propeller conducts the power from the engine to the "road." Your propeller is the primary connection between your engine and the water. Selecting which propeller or propellers to make that connection is critical to achieving optimum boat performance.



Mercury Advantages

1. Flo-Torq II hub system

Makes Mercury propellers compatible with almost all marine engines.

- Reduces slippage.
- More flexible during engine shifting – minimizes stress on the engine, engine drive and propeller when the engine is shifted into gear.
- Cushions and protects the drivetrain from most impacts through reduced slippage and flex during engine shifting.
- The Delrin sleeve of the Flo-Torq II system is designed to break away following impact – ensuring that damage to the engine, engine drive and propeller is kept to a minimum.
- Highly corrosion-resistant through use of an advanced, non-corrosive plastic at the heart of the system.
- Makes propeller replacement easy.

Suits most brands of engines –

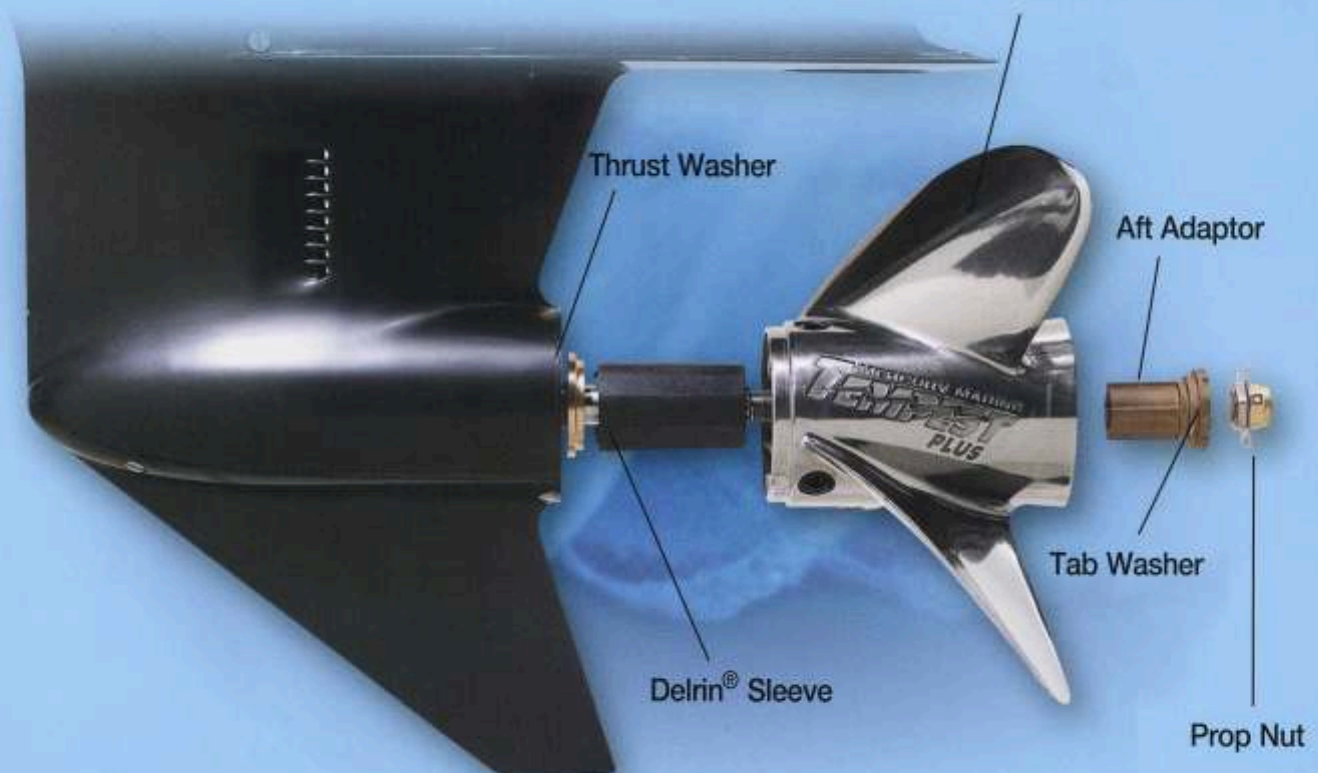
Mercury, Mariner, MerCruiser, Yamaha, Suzuki, Honda, Tohatsu, Evinrude/Johnson, Volvo Sterndrives, OMC Sterndrives.

2. X7 Alloy

- 30% stronger than conventional stainless steel.
- Four times more durable than conventional stainless steel.
- Allows prop designs that are impossible with conventional stainless steel.



10 different Mercury propeller styles are available with Flo-Torq II



3. PVS – Performance Vent System

The Performance Vent System (PVS) is an EXCLUSIVE Mercury innovation that allows you to "custom tune" the venting of your propeller blades- giving you the power to optimize the acceleration and cruising performance of any engine. For example, when you accelerate, exhaust is drawn out of the vent holes. When the next prop blade strikes this aerated water, it pushes through much easier than it would in solid water- causing engine RPM to increase more rapidly.

Once you're on the plan, the water flowing over the vent holes seals the exhaust, allowing the propeller to again run in solid non-aerated water. Just by varying the size of the exhaust hole and controlling your engine's rpm, you can eliminate sluggish performance or compensate for changes in load and altitude.



LARGE

Problem: Boat is sluggish getting on plane.

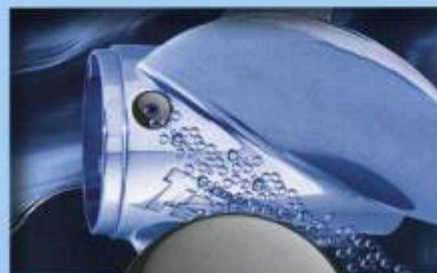
Solution: By using a large vent and allowing more air through, your engine's rpm get up to speed faster, and your boat levels off quicker.



MEDIUM

Problem: Change in altitude or pulling heavy loads.

Solution: By Experimenting, you can find the right amount of ventilation that produces maximum prop performance – no matter the altitude, load or temperature.






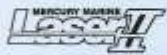













SOLID

Problem: Too much ventilation is slowing you down.

Solution: By sealing off the vent hole completely, your prop can now get the solid water it needs to propel through the water, thus optimizing performance and fuel efficiency.



| PROPELLER COMPARISON  | OUTBOARDS | | | | | | | | | STERNDRIVES | | | | | | | | |
|---|------------|-----------|----------|-----------------|---------------|-------------------|-----------------|------|---------|-------------|-------------------|-----------------|----------------|-----------|------|---------|-----------|----------|
| | INFLATABLE | ALUMINIUM | SKI BOAT | OFFSHORE SINGLE | OFFSHORE DUAL | SPORT BOAT SINGLE | SPORT BOAT DUAL | DECK | PONTOON | SKI BOAT | SPORT BOAT SINGLE | SPORT BOAT DUAL | FAMILY CRUISER | RUNABOUTS | DECK | PONTOON | HOUSEBOAT | WORKBOAT |
|  | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | | | | ✓ |
|  | | | | | | ✓ | ✓ | | | | ✓ | ✓ | | | | | | |
|  | ✓ | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
|  | ✓ | ✓ | ✓ | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
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|  | | ✓ | | | | | | | | | | | | | | | | |
|  | ✓ | ✓ | | | | | | | | | | | | | | | | |
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|  | | | | | | | | | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |

To aid in your search for the ideal propeller for the type of boating you enjoy, we have provided several icons to describe activities suited to each propeller as well as important features. Use these icons in the prop features area to make quick-reference to help narrow your search.



Cruising Propeller



Play/Sport Propeller



Speed Propeller



Fishing Propeller



Custom Venting system



Left-Handed Rotation Available



Right-Handed Rotation Available

Propellers

Enertia

- Good acceleration and top speed.
- Thin blades and higher rake angles for increased efficiency.
- Perfect for high-horsepower outboard powered offshore boats.
- Stays hooked up; fewer blowouts while cornering.
- Built with exclusive X7 alloy for ultimate strength and durability.

MERCURY
ENERTIA

X7
ALLOY



| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 14" to 27" | 3 | RH |
| 15" to 21" | 3 | LH |

Fury

- Good acceleration and top speed.
- Thin blades and higher rake angles for increased efficiency.
- Perfect for 175HP and above, on 18 to 22ft Sports Boats.
- Stays hooked up; fewer blowouts while cornering.
- Built with exclusive X7 alloy for ultimate strength and durability.

FURY

X7
ALLOY



| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 14" to 27" | 3 | RH |
| 15" to 21" | 3 | LH |

Mirage Plus

- Improves acceleration and top speed on larger high-horsepower boats.
- For outboards 150hp and higher, especially for offshore fishing, bay and sport boats.
- For V8 single, centre-console Bravo One single, or dual and TRS sterndrives.

MERCURY MARINE
MIRAGE
plus



| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 13" to 29" | 3 | RH |
| 15" to 29" | 3 | LH |

Revolution 4

- Brings power, top speed and lift with incredible traction and acceleration.
- For V6 outboards and Bravo One and TRS sterndrives, especially sport and offshore boats.

MERCURY MARINE
Revolution
4



| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 15" to 25" | 4 | RH |
| 17" to 25" | 4 | LH |



Vengeance

- Stainless steel performance and value with increased efficiency, strength and durability over aluminium.
- Precision handling and acceleration - better than most three-blade aluminium propellers.
- For outboards 25 - 250 hp and Alpha sterndrives.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 15" to 25" | 3 | RH |
| 17" to 25" | 3 | LH |

MERCURY MARINE
VENGEANCE



Laser II

- High rake design for greater lift on 15 - 18 foot outboard-powered boats and 18 - 22 foot Alpha sterndrive-powered boats.
- Thinner blades reduce drag and increase top speed while improving handling.
- For outboards 75 hp and up and sterndrive sport boats 22 feet and under.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 19" to 26" | 3 | RH |
| 19" to 25" | 3 | LH |

MERCURY MARINE
Laser II



Vensura

- Provides better acceleration, aggressive holding and tremendous bow lift.
- For V6 outboard and 3.0L - 5.7L Alpha sterndrive water ski, wakeboard and tubing boats.
- For single or twin 135 - 175 hp outboard-powered 18 - 24 foot centre-consoles.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 17" to 23" | 4 | RH |
| 17" to 23" | 4 | LH |

VENSURA
MERCURY MARINE



HighFive

- Ultimate in hole shot for effortlessly pulling skiers or hauling to your favourite fishing hole.
- Pulls strong and smooth and offers great bow lift and handling, even in rough water.
- For outboards over 75 hp and Alpha, Bravo One and TRS sterndrives.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 17" to 25" | 5 | RH |

MERCURY MARINE
HIGHFIVE



Propellers

Trophy Sport

- Smaller four-blade stainless steel design.
- All the advantages of the trophy Plus.
- Fast planing, top speeds and improved handling with reduced steering loads.
- Ideal for small flats, walleye or bass boats.
- For 30-60 hp outboards running 30-60 mph.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 12" to 15" | 4 | RH |

MERCURY MARINE
TROPHY
Sport



Tempest Plus

- Higher rake and bigger cup for better handling and lift.
- Large 14-5/8" diameter for high engine height installations.
- For big, V6 outboard-powered bass, walleye, bay and sport boats.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 19" to 29" | 3 | RH |
| 19" to 29" | 3 | LH |

MERCURY MARINE
TEMPEST
PLUS



Trophy Plus

- Unbelievable bow lift and quick planing on outboard-powered bass, flats or sport boats.
- Delivers superior handling and better control in tight turns with reduced torque and steering loads.
- For outboards 75 hp and up.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 17" to 28" | 4 | RH |

MERCURY MARINE
TROPHY
PLUS



Bravo 1

- Delivers increased speed, better acceleration and unparalleled top-end performance.
- Excellent speed and handling, especially for stepped and cat hulls.
- For high-horsepower, high-drive-height outboards and Bravo One stern drives.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 22" to 36" | 4 | RH |
| 22" to 36" | 4 | LH |

MERCURY MARINE
BRAVO I



Black Max

- Performs well on outboards, Alpha sterndrives, inflatables and pontoons.
- High quality die-cast aluminium.
- For all outboards and Alpha and Bravo One sterndrives with up to 250 hp and top speed of less than 50 mph.

| X Pitch | Number of Blades | Rotation |
|-------------|------------------|----------|
| 5.5" to 25" | 3 | RH |
| 11" | 3 | LH |
| 10" to 14" | 4 | RH |

MERCURY MARINE
BLACK MAX



Alpha 4

- Delivers high quality performance and acceleration in an affordable price range.
- Perfect for runabouts, ski boats and day cruisers.
- Delivers improved handling and better holding than a three-blade design.
- For V6 outboards and Alpha sterndrives up to 250 hp.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 16" to 20" | 4 | RH |
| 16" to 20" | 4 | LH |

ALPHA 4
MERCURY MARINE



Bravo Two

- Delivers enhanced mid- to top-range performance.
- Large blade area for maximum thrust - designed for better manoeuvrability and holding in turns.
- Perfect complement for Bravo Two sterndrive.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 11" to 25" | 3 | RH |
| 18" to 32" | 4 | LH |

Bravo Two
MERCURY MARINE



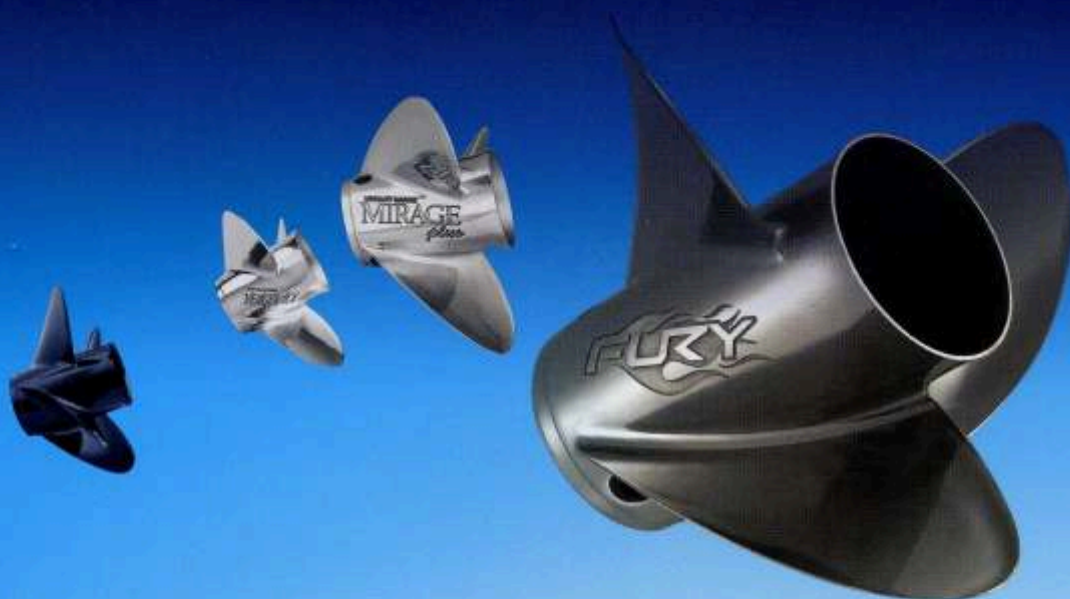
Bravo Three

- Twin counter-rotating stainless steel design - large-diameter forward and small-diameter aft propeller.
- Delivers unbelievable control and handling.
- Generates high-thrust production and improved operating efficiency while running smooth at high-and low-end speeds.
- Perfect complement for Bravo Three system.

| X Pitch | Number of Blades | Rotation |
|------------|------------------|----------|
| 19" to 28" | 4 Blade Front | RH |
| 19" to 28" | 3 Blade Rear | LH |

Bravo Three
MERCURY MARINE

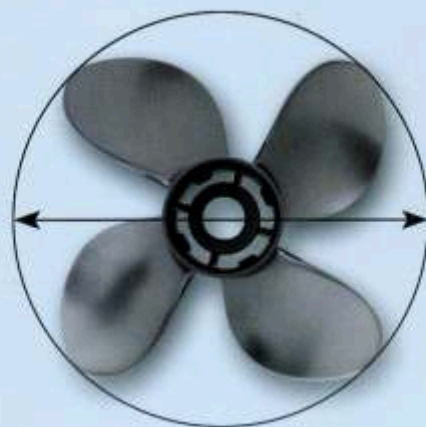




Propeller Basics: There are a variety of terms used to describe propeller characteristics as well as performance attributes. It is important that you have a good understanding of them, the most relevant of which are listed below...

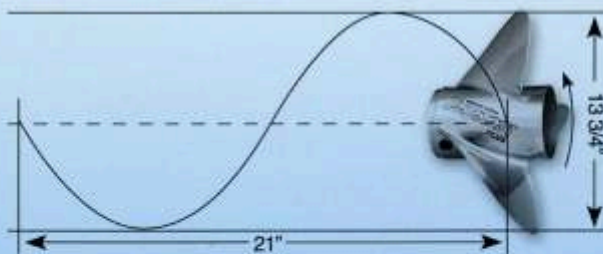
Diameter

Diameter is the distance across the circle made by the blade tips as the propeller rotates. Within a given propeller line, the diameter usually increases for propellers used on slower boats and decreases for faster boats. If all other variables remain constant, diameter will increase as power increases; diameter will increase as propeller RPM decreases (slower powerhead or engine speed and/or more gear reduction); and diameter should increase as propeller surfacing increases.



Pitch

Pitch is the distance that a propeller would move in one revolution if it were moving through a soft solid, like a screw in wood. When a propeller is identified as 13 3/4 x 21, it has a 13 3/4" (35 cm) diameter with 21" (53 cm) of pitch. Theoretically, this propeller would move forward 21" in one revolution. Pitch is rather like another set of gears. For a given engine that wants to run at a given RPM, the faster the boat can go, the higher the pitch you need.





Rake

Rake is the degree to which the propeller blade is orientated in relation to the prop hub. Basic propellers for outboard engines and stern drives commonly have around 15° of rake. Higher-raked (high-performance) propellers often have progressive rake which may go as high as 300 at the blade tip.

A higher rake angle generally improves the ability of the propeller to operate in a cavitating or ventilating situation, such as when the blades break the water's surface. On lighter, faster boats, with a higher engine or drive transom height, higher rake often will increase performance by holding the bow of the boat higher, resulting in higher boat speed due to less hull drag. However, with some very light, fast boats, higher rake can cause too much bow lift, making these boats more flighty or less stable, in which case a more moderately raked propeller would be a better choice.



Number of blades

Trying to decide on a 3-Blade, 4-Blade or 5-Blade

Three-Blade Propellers

- Most widely used propeller
- Holds power well in smooth conditions
- Highest top end speed
- Good all round performance

Five-Blade Propellers

- Best holeshot acceleration
- Ultra-smooth operation
- Our Fastest-Planing Prop

Four-Blade Propellers

- Faster Planing
- Keeps your boat in place at lower speed
- Improved mid-range speed at same rpm as three-blade
- Better low-speed handling
- Runs smoother than three-blades

Excessive Vibration

Very Slight Vibration



1-Blade Propeller

2-Blade Propeller

3-Blade Propeller

Aluminium or Steel

Each has its own set of advantages. So the question really is, How do you plan to use your Propeller?

By far, the most popular material used for boat propellers today is aluminium. It's strong, easily repaired and is very resistant to corrosion. But stainless steel is nearly five times stronger than standard aluminium. In fact, it's the strongest and most durable of all materials used for propellers. That means it's more resistant to the types of nicks and dings that normally plague aluminium propellers. It also means that stainless steel blades can be made thinner, for greater efficiency. Not surprisingly, stainless steel is far more resistant to corrosion than aluminium – Although it can cause corrosion to nearby aluminium surfaces in saltwater if good anodic protection is not used. Also, stainless steel propellers are designed for specific boat types, - Allowing you to choose exactly the performance you desire. So if you're looking for quicker acceleration, superior top speed or greater overall efficiency, you should consider a stainless steel propeller.