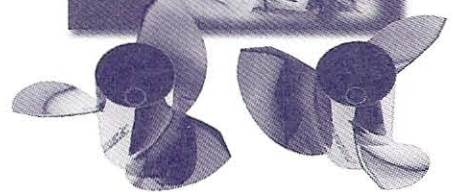
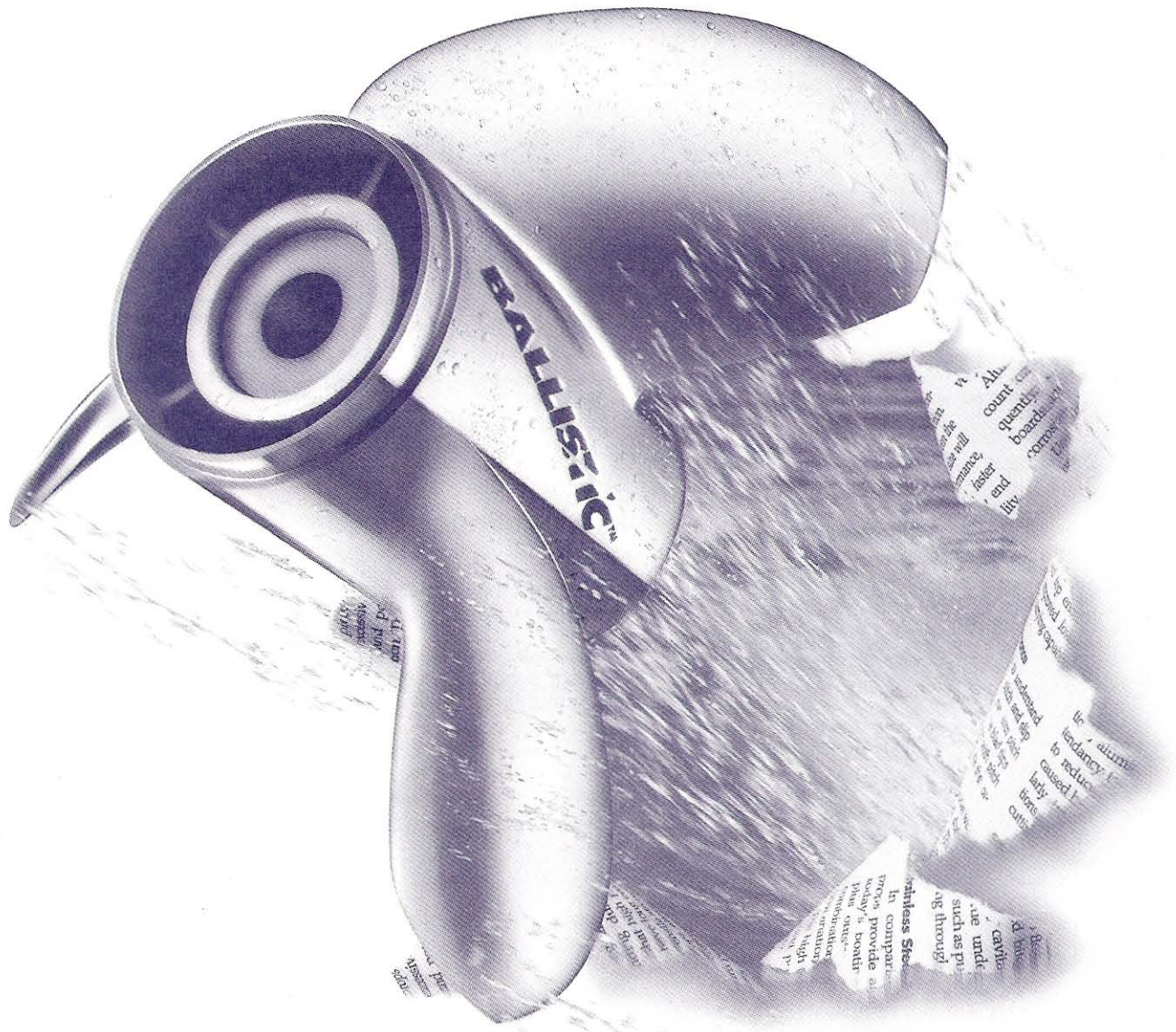


# **BALLISTIC™**

Michigan Wheel Corporation



# BALLISTIC™ PERFORMANCE AVAILABLE FOR EVERY BOAT!

Now more boaters than ever can enjoy — and afford — the performance benefits of Ballistic propellers. Ballistic props offer “mainstream” boaters the kind of stainless durability and performance that used to be available only with exotic racing props.

We have the leading-edge 3- and 4-blade props for midrange and high performance hulls that have been making waves in the prop industry.

The 3 & 4 blade Ballistic-XL Propellers are designed to give high-horsepower lighter boats the “extra lift” to achieve the performance levels beyond the competition.

## Performance Features In Every Ballistic Prop

Ballistic props offer innovative, performance-enhancing features:

### Highly Cambered Blade Sections

Blade design provides better bow lift, higher speeds and smoother turns.

### Tapered Leading Edge

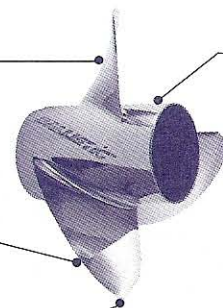
Minimizes drag for racing style prop performance.

### Unique Power Tip

Ballistic's radical blade tip and cupping combine to give you better “hole shot” and virtually eliminate ventilation during tight turns. Each blade actually has more surface area than a conventional prop.

### Long-Lasting Mirror Finish

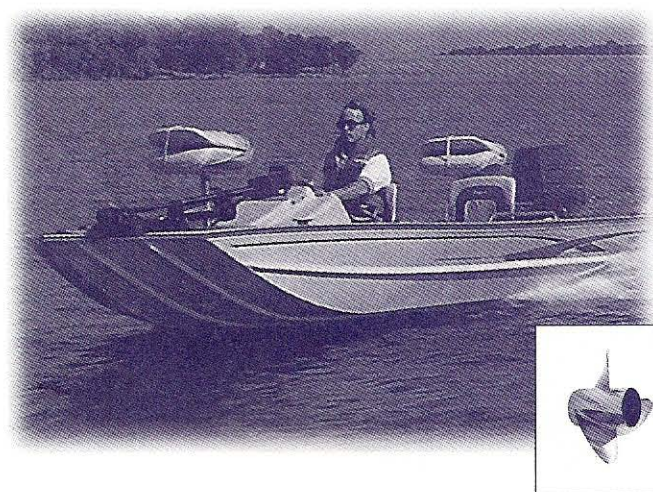
Propellers are made from one-piece investment-cast construction using 15-5ph stainless steel.



## Stainless Props for Smaller Boats

The Ballistic small-diameter props bring the value of Ballistic's great performance benefits to fishing boats, inflatables and other small boats running a 20-60 HP engine.

Because they're made from strong and durable stainless steel, Ballistic props withstand nicking and bending better than aluminum props, allowing them to keep their edge and shape. Their unique “Power Tip” blade design delivers improved performance to small engine applications, including improved bite and reduced power loss. Plus, all Ballistic props feature a durable, high-luster mirror finish—not a painted surface, which can chip and wear.



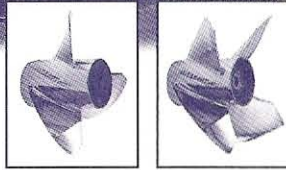
## All Round Performance for Runabouts

Michigan Wheel has a broad selection of Ballistic props for recreational and family boats. These advanced-design stainless steel propellers are more efficient than aluminum props. In some cases, this drops RPM so the engine works more efficiently to deliver better performance.

For 3-, 4-, and 6-cylinder outboards and I/O engines, Ballistic 3-blade propellers are a great choice for recreational boaters. They provide excellent “hole shot” acceleration to pull skiers out of the water. They also deliver the optimum balance of top speed, smooth handling, and durability. The unique “Power Tip” blade prevents blow outs.



## BALLISTIC™ XL



### Power and Control for High Performance Boats

All Ballistic-XL props feature a unique design to deliver "extra lift".

3-blade Ballistic-XL props provide peak top end speed for bass boats and high performance hulls. Advanced rake provides bow lift for reduced hull drag. Enhanced cup design reduces cavitation when the engine is trimmed high for extra bow lift. This combination of rake and cup yields incredible efficiency and speed.

4-blade Ballistic-XL props have the same combination of advanced rake and enhanced cup for less drag and higher efficiency. In addition, the 4-blade XL props deliver better "hole shot" for faster planing. They also produce less steering torque and vibration at higher speeds.



### Another New Ballistic-XL Propeller For '99!

The new 22" pitch "XL" for V-6 applications accompanies the current 24" & 26" "XL" to provide maximum performance for all bass boat and high performance hull applications.

The current 22"- and 24"XL-pitch props for 4-cylinder, 80 to 150 HP outboards are sized for maximum performance and efficiency on small- to medium-size bass boats.

We also have XL propellers exclusively matched for Mercury V-6 EFI outboards 150hp and up. They're tuned for high-volume EFI exhaust release, which optimizes "hole shot" and top end speed.

### Left-Hand Props for Dual Engines

Take all the Ballistic benefits offshore! Ballistic left-hand props are made to match their right-hand twins on offshore or high performance boats with dual engines. Models are available for outboard or I/O applications.

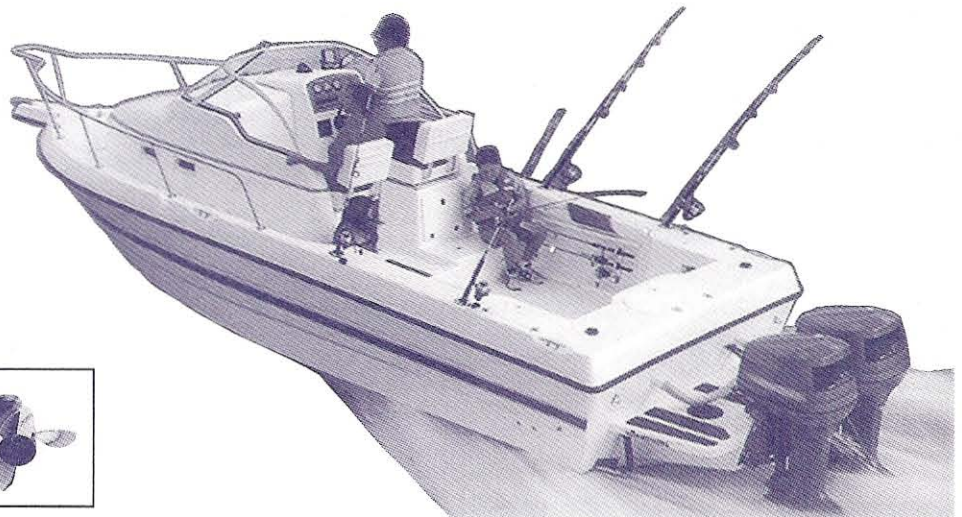
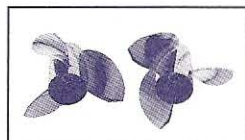
Left-hand Ballistic props fit engines with left-hand rotation. They offer the same great performance advantages as right-hand Ballistic props!

In combination, Ballistic left- and right-hand props reduce steering torque with better balance and straight-line tracking.

You'll get explosive "hole shot" starts and better bow lift; great mid-range cruising speed and fuel efficiency for sportfishing boats and cruisers; and fast top-end speed for high performance boats.



The new 23" pitch left hand propeller partners with the existing 23" pitch right hand for the higher horsepower dual engine offshore and high performance applications.



# HOW TO USE THIS CATALOG/TABLE OF CONTENTS

## Application Chart

Outboard		Sterndrive	
Motor	Page	Motor	Page
Evinrude	12,13	OMC Cobra	23,24,25
Force	14	OMC Sea Drive	25
Honda	15	MerCruiser	26,27,28
Johnson	12,13	Volvo-Penta SX	23
Mariner	16,17	Yamaha	29
Mercury	16,17		
Nissan	22		
Suzuki	18,19		
Tohatsu	22		
Yamaha	20,21		

This catalog helps you select the best Ballistic™ propeller for your performance needs.

First, determine the reasons for changing your propeller. These reasons indicate which section or charts you should use —

- To Replace an Existing Propeller:**  
Use "Cross Reference Charts"
- To Modify Performance:**  
Use "Propeller Characteristics"
- To Specify By Engine, RPM and Boat Type:**  
Use "Application Charts"

## Table of Contents

### CROSS REFERENCE CHARTS ..... Page 5

This section helps you replace another manufacturer's propeller with a Ballistic prop.

Reasons for replacement:

- Damage To Existing Prop—  
Even if a propeller is only slightly damaged, it can cause engine lugging or over-revving, poor fuel economy, and safety hazards.
- Switch From Aluminum To Stainless Steel—  
Stainless steel construction provides superior bite, durability and will not deform under load.

#### Suzuki to Ballistic Cross-Reference

3 Blade Propellers		
RH	58100-96490-019	10 1/4" x 13"
RH	—	—
RH	—	—
RH	58100-95363-019●	11 1/2" x 15"
RH	—	—
RH	—	—
RH	58100-95382-019●	11 1/2" x 17"
RH	58100-95511-019●	13 1/4" x 17"
RH	58100-95521-019●	13" x 19"
RH	58100-95530-019●	13" x 21"
RH	58100-94500-019	13 1/2" x 15"
RH	58100-94512-019	13 1/4" x 17"
RH	58100-94522-019	13" x 19"

### PROPELLER CHARACTERISTICS ..... Page 9

This section explains:

- Choosing between 3-blade and 4-blade applications and left-hand propellers for twin engine applications
- Explanation of propeller diameter, pitch, slip and cupping
- How to select a propeller for proper engine RPM and performance

### APPLICATION CHARTS ..... Page 11

This section explains:

- How to specify a Ballistic propeller to match your engine, RPM's and boat type

#### Mercury/Mariner Outboards

Mercury Engine	
18 HP	1980-85
20 HP	1986 Thru Present
25 HP	1980 Thru Present
Includes Bigfoot, SeaPro, & 4 Stroke thru hub exhaust	
Application	
Boat Description	Approx. Gross Wt.
14 - 17' General Usage	900-1800
13 - 15' General Usage	700-1500

# PRODUCT NUMBER CROSS REFERENCE

If you simply want to make a direct switch from your existing prop (OMC, Mercury, Force, Suzuki, Yamaha, Honda or Nissan/Tohatsu) to a new Ballistic prop, save time by referring directly to the Product Number Cross Reference charts below.

These charts help you quickly specify a new Ballistic prop without calculating factors for a performance modification.

You need to identify which prop(s) you currently have — locate the number stamped into the existing prop, refer to the boat or engine owner's manual, or ask your dealer.

## Evinrude/Johnson to Ballistic Cross-Reference

3-Blade Propellers									
Rotation	Aluminum*		SST		Raker		Viper		BALLISTIC™
RH	175191	10" x 13"	396729	10" x 13"	—	—	—	—	305029 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	390380	10" x 15"	390730	10" x 15"	—	—	—	—	305030 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	176421	12 <sup>1</sup> / <sub>4</sub> " x 15"	390850	12 <sup>1</sup> / <sub>4</sub> " x 15"	—	—	—	—	325030 12 <sup>3</sup> / <sub>8</sub> " x 15"
RH	176422	11 <sup>3</sup> / <sub>4</sub> " x 17"	390851	11 <sup>3</sup> / <sub>4</sub> " x 17"	—	—	—	—	325031 12" x 17"
RH	391198	13 <sup>3</sup> / <sub>4</sub> " x 15"	389949	13 <sup>3</sup> / <sub>4</sub> " x 15"	—	—	—	—	335030 13 <sup>5</sup> / <sub>8</sub> " x 15"
RH	176214	14" x 17"	176572	13 <sup>7</sup> / <sub>8</sub> " x 17"	—	—	176623	13 <sup>1</sup> / <sub>8</sub> " x 17"	335031 13 <sup>1</sup> / <sub>2</sub> " x 17"
RH	176215	14" x 19"	176573	13 <sup>7</sup> / <sub>8</sub> " x 19"	394758	13 <sup>1</sup> / <sub>2</sub> " x 18"	176624	13 <sup>1</sup> / <sub>8</sub> " x 19"	335032 13 <sup>3</sup> / <sub>8</sub> " x 19"
RH	176216	14" x 21"	176574	13 <sup>7</sup> / <sub>8</sub> " x 21"	394759	13 <sup>1</sup> / <sub>2</sub> " x 20"	176625	13 <sup>1</sup> / <sub>8</sub> " x 21"	335033 13 <sup>1</sup> / <sub>2</sub> " x 21"
RH	391535	15 <sup>1</sup> / <sub>2</sub> " x 15"	174926	15" x 15"	—	—	—	—	345031 14 <sup>7</sup> / <sub>8</sub> " x 15"
RH	391200	15" x 17"	389925	15" x 16"	—	—	174889	15" x 17"	345032 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	—	—	391290	15" x 17"	—	—	174889	15" x 17"	345032 14 <sup>3</sup> / <sub>4</sub> " x 17"
LH	—	—	431930	15" x 17"	—	—	174890	15" x 17"	345062 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	—	—	176615	15" x 17"	—	—	176626	15" x 17"	345032 14 <sup>3</sup> / <sub>4</sub> " x 17"
LH	—	—	176616	15" x 17"	—	—	176629	15" x 17"	345062 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	391201	14 <sup>1</sup> / <sub>2</sub> " x 19"	389924	14 <sup>1</sup> / <sub>2</sub> " x 19"	394752	14 <sup>1</sup> / <sub>2</sub> " x 18"	174814	14 <sup>1</sup> / <sub>2</sub> " x 19"	345033 14 <sup>1</sup> / <sub>2</sub> " x 19"
LH	—	—	390821	14 <sup>1</sup> / <sub>2</sub> " x 19"	—	—	174811	14 <sup>1</sup> / <sub>2</sub> " x 19"	345063 14 <sup>1</sup> / <sub>2</sub> " x 19"
RH	—	—	176617	14 <sup>1</sup> / <sub>2</sub> " x 19"	—	—	176627	14 <sup>1</sup> / <sub>2</sub> " x 19"	345033 14 <sup>1</sup> / <sub>2</sub> " x 19"
LH	—	—	176618	14 <sup>1</sup> / <sub>2</sub> " x 19"	—	—	176630	14 <sup>1</sup> / <sub>2</sub> " x 19"	345063 14 <sup>1</sup> / <sub>2</sub> " x 19"
RH	391202	14 <sup>1</sup> / <sub>4</sub> " x 21"	389923	14 <sup>1</sup> / <sub>4</sub> " x 21"	394753	14 <sup>1</sup> / <sub>2</sub> " x 20"	174815	14 <sup>1</sup> / <sub>4</sub> " x 21"	345034 14 <sup>3</sup> / <sub>8</sub> " x 21"
LH	—	—	390822	14 <sup>1</sup> / <sub>4</sub> " x 21"	398502	14 <sup>1</sup> / <sub>2</sub> " x 20"	174812	14 <sup>1</sup> / <sub>4</sub> " x 21"	345064 14 <sup>3</sup> / <sub>8</sub> " x 21"
RH	—	—	176619	14 <sup>1</sup> / <sub>4</sub> " x 21"	—	—	176628	14 <sup>1</sup> / <sub>4</sub> " x 21"	345034 14 <sup>3</sup> / <sub>8</sub> " x 21"
LH	—	—	176620	14 <sup>1</sup> / <sub>4</sub> " x 21"	—	—	176902	14 <sup>1</sup> / <sub>4</sub> " x 21"	345064 14 <sup>3</sup> / <sub>8</sub> " x 21"
RH	391203	14 <sup>1</sup> / <sub>4</sub> " x 23"	389019	14 <sup>1</sup> / <sub>4</sub> " x 23"	394754	14 <sup>1</sup> / <sub>2</sub> " x 22"	174816	14 <sup>1</sup> / <sub>4</sub> " x 23"	345035 14 <sup>1</sup> / <sub>4</sub> " x 23"
LH	—	—	390823	14 <sup>1</sup> / <sub>4</sub> " x 23"	398503	14 <sup>1</sup> / <sub>2</sub> " x 22"	174813	14 <sup>1</sup> / <sub>4</sub> " x 23"	345065 Δ 14 <sup>1</sup> / <sub>4</sub> " x 23"
RH	—	—	390725	14" x 25"	394755	14 <sup>1</sup> / <sub>4</sub> " x 24"	—	—	345036 14 <sup>1</sup> / <sub>4</sub> " x 25"

3-Blade XL Propellers									
Rotation					Raker				BALLISTIC™ XL
RH					394760	13 <sup>1</sup> / <sub>2</sub> " x 22"			335034 13 <sup>1</sup> / <sub>2</sub> " x 22"
RH					394761	13 <sup>1</sup> / <sub>2</sub> " x 24"			335035 13 <sup>1</sup> / <sub>2</sub> " x 24"
RH					394754	14 <sup>1</sup> / <sub>2</sub> " x 22"			345041 Δ 14 <sup>1</sup> / <sub>2</sub> " x 22"
RH					394755	14 <sup>1</sup> / <sub>2</sub> " x 24"			345037 14 <sup>1</sup> / <sub>2</sub> " x 24"
RH					394756	14 <sup>1</sup> / <sub>2</sub> " x 26"			345038 14 <sup>1</sup> / <sub>2</sub> " x 26"

4-Blade XL Propellers									
Rotation							Renegade		BALLISTIC™ XL
RH							176058	13 <sup>1</sup> / <sub>2</sub> " x 23"	435035 13 <sup>3</sup> / <sub>4</sub> " x 23"
RH							175738	13 <sup>1</sup> / <sub>2</sub> " x 25"	435036 13 <sup>3</sup> / <sub>4</sub> " x 25"
RH							175739	13 <sup>1</sup> / <sub>2</sub> " x 27"	435037 13 <sup>3</sup> / <sub>4</sub> " x 27"

## OMC® Cobra/Volvo Penta SX Drive™ Cross-Reference (1994-Present)

3-Blade Propellers									
Rotation	Aluminum*		SST		Raker		Viper		BALLISTIC™
RH	3850299	15 <sup>1</sup> / <sub>2</sub> " x 15"	3850305	15" x 15"	—	—	—	—	346031 14 <sup>7</sup> / <sub>8</sub> " x 15"
RH	3850300	15" x 17"	3850306	15" x 16"	—	—	—	—	346032 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	—	—	3850307	15" x 17"	—	—	3850311	15" x 17"	346032 14 <sup>3</sup> / <sub>4</sub> " x 17"
LH	—	—	3850316	15" x 17"	—	—	3850320	15" x 17"	346062 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	3850301	14 <sup>1</sup> / <sub>2</sub> " x 19"	3850308	14 <sup>1</sup> / <sub>2</sub> " x 19"	—	—	3850312	14 <sup>1</sup> / <sub>2</sub> " x 19"	346033 14 <sup>1</sup> / <sub>2</sub> " x 19"
LH	—	—	3850317	14 <sup>1</sup> / <sub>2</sub> " x 19"	—	—	3850321	14 <sup>1</sup> / <sub>2</sub> " x 19"	346063 14 <sup>1</sup> / <sub>2</sub> " x 19"
RH	3850302	14 <sup>1</sup> / <sub>2</sub> " x 21"	3850309	14 <sup>1</sup> / <sub>4</sub> " x 21"	3855142	14 <sup>1</sup> / <sub>2</sub> " x 20"	3850313	14 <sup>1</sup> / <sub>4</sub> " x 21"	346034 14 <sup>3</sup> / <sub>8</sub> " x 21"
LH	—	—	3850318	14 <sup>1</sup> / <sub>4</sub> " x 21"	3855152	14 <sup>1</sup> / <sub>2</sub> " x 20"	3850322	14 <sup>1</sup> / <sub>4</sub> " x 21"	346064 14 <sup>3</sup> / <sub>8</sub> " x 21"
RH	3850303	14 <sup>1</sup> / <sub>4</sub> " x 23"	3850310	14 <sup>1</sup> / <sub>4</sub> " x 23"	3855144	14 <sup>1</sup> / <sub>2</sub> " x 22"	3850314	14 <sup>1</sup> / <sub>4</sub> " x 23"	346035 14 <sup>1</sup> / <sub>4</sub> " x 23"
LH	—	—	3850319	14 <sup>1</sup> / <sub>4</sub> " x 23"	3855154	14 <sup>1</sup> / <sub>2</sub> " x 22"	3850323	14 <sup>1</sup> / <sub>4</sub> " x 23"	346065 Δ 14 <sup>1</sup> / <sub>4</sub> " x 23"
RH	—	—	—	—	3855146	14 <sup>1</sup> / <sub>2</sub> " x 24"	—	—	346036 14 <sup>1</sup> / <sub>4</sub> " x 25"

Δ = New

LH = Left-hand prop. In dual-engine applications, both propellers must be the same size and from the same manufacturer.

\*Aluminum Note: When changing from an aluminum to a stainless steel prop, you may need to change to a lower pitch (1"-2") depending on the actual WOT RPM of your boat/motor (see page 10).

# PRODUCT NUMBER CROSS REFERENCE CHARTS

## Mercury/Mercruiser to Ballistic Cross-Reference

### 3-Blade Propellers

Rotation	Aluminum*	QSS	Laser	Mirage	BALLISTIC™
RH	48-19640* 10 <sup>5</sup> / <sub>8</sub> " x 13"	48-19644* 10 <sup>5</sup> / <sub>8</sub> " x 13"	—	—	305129 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	48-19642* 10 <sup>1</sup> / <sub>4</sub> " x 14 <sup>1</sup> / <sub>2</sub> "	—	—	—	305130 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	48-73136* 10 <sup>1</sup> / <sub>2</sub> " x 13"	48-76228* 10 <sup>5</sup> / <sub>8</sub> " x 13"	—	—	395129 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	48-73140* 10 <sup>1</sup> / <sub>8</sub> " x 15"	48-76232* 10 <sup>1</sup> / <sub>8</sub> " x 15"	—	—	395130 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	48-77342* 13 <sup>3</sup> / <sub>4</sub> " x 15"	—	—	—	335130 13 <sup>5</sup> / <sub>8</sub> " x 15"
RH	48-77344* 13 <sup>1</sup> / <sub>4</sub> " x 17"	—	—	—	335131 13 <sup>1</sup> / <sub>2</sub> " x 17"
RH	48-77346* 13" x 19"	—	48-16990* 13 <sup>1</sup> / <sub>4</sub> " x 20"	—	335132 13 <sup>3</sup> / <sub>8</sub> " x 19"
RH	48-77348* 12 <sup>3</sup> / <sub>4</sub> " x 21"	—	48-16992* 13 <sup>1</sup> / <sub>2</sub> " x 22"	—	335133 13 <sup>1</sup> / <sub>8</sub> " x 21"
RH	48-78116* 15 <sup>1</sup> / <sub>4</sub> " x 15"	48-16312* 14 <sup>1</sup> / <sub>2</sub> " x 15"	—	48-19838* 15 <sup>3</sup> / <sub>4</sub> " x 15"	345131 14 <sup>7</sup> / <sub>8</sub> " x 15"
RH	48-78118* 14 <sup>1</sup> / <sub>2</sub> " x 17"	48-16314* 14 <sup>1</sup> / <sub>2</sub> " x 17"	—	48-18278* 15 <sup>1</sup> / <sub>2</sub> " x 17"	345132 14 <sup>3</sup> / <sub>4</sub> " x 17"
LH	—	48-16315* 14 <sup>1</sup> / <sub>2</sub> " x 17"	—	48-90159* 15 <sup>1</sup> / <sub>2</sub> " x 17"	345162 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	48-832828* 15" x 17"	—	—	—	345132 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	48-78120* 14" x 19"	48-16316* 14" x 19"	48-16544* 14" x 19"	48-13700* 15 <sup>1</sup> / <sub>4</sub> " x 19"	345133 14 <sup>1</sup> / <sub>2</sub> " x 19"
LH	—	48-16317* 14" x 19"	48-16543* 14" x 19"	48-13701* 15 <sup>1</sup> / <sub>4</sub> " x 19"	345163 14 <sup>1</sup> / <sub>2</sub> " x 19"
RH	48-832830* 14 <sup>1</sup> / <sub>2</sub> " x 19"	—	—	—	345133 14 <sup>1</sup> / <sub>2</sub> " x 19"
RH	48-78122* 13 <sup>3</sup> / <sub>4</sub> " x 21"	48-16318* 13 <sup>3</sup> / <sub>4</sub> " x 21"	48-16546* 13 <sup>7</sup> / <sub>8</sub> " x 21"	48-13702* 14 <sup>3</sup> / <sub>4</sub> " x 21"	345134 14 <sup>3</sup> / <sub>8</sub> " x 21"
LH	—	48-16319* 13 <sup>3</sup> / <sub>4</sub> " x 21"	48-16545* 13 <sup>7</sup> / <sub>8</sub> " x 21"	48-13703* 14 <sup>3</sup> / <sub>4</sub> " x 21"	345164 14 <sup>3</sup> / <sub>8</sub> " x 21"
RH	48-832832* 14 <sup>1</sup> / <sub>4</sub> " x 21"	—	—	—	345134 14 <sup>3</sup> / <sub>8</sub> " x 21"
RH	48-78124* 13 <sup>1</sup> / <sub>2</sub> " x 23"	48-16320* 13 <sup>1</sup> / <sub>2</sub> " x 23"	48-16548* 13 <sup>3</sup> / <sub>4</sub> " x 23"	48-13704* 14 <sup>5</sup> / <sub>8</sub> " x 23"	345135 14 <sup>1</sup> / <sub>4</sub> " x 23"
LH	—	48-16321* 13 <sup>1</sup> / <sub>2</sub> " x 23"	48-16547* 13 <sup>3</sup> / <sub>4</sub> " x 23"	48-13705* 14 <sup>5</sup> / <sub>8</sub> " x 23"	345165 Δ 14 <sup>1</sup> / <sub>4</sub> " x 23"
RH	48-832834* 14" x 23"	—	—	—	345135 14 <sup>1</sup> / <sub>4</sub> " x 23"
RH	48-78126* 13 <sup>3</sup> / <sub>8</sub> " x 25"	48-16322* 13 <sup>3</sup> / <sub>8</sub> " x 25"	48-16550* 13 <sup>3</sup> / <sub>4</sub> " x 25"	48-13706* 14 <sup>1</sup> / <sub>2</sub> " x 25"	345136 14 <sup>1</sup> / <sub>4</sub> " x 25"

### 3-Blade XL Propellers

Rotation	Laser	Tempest	BALLISTIC™ XL
RH	48-16992* 13 <sup>1</sup> / <sub>2</sub> " x 22"	—	335134 13 <sup>1</sup> / <sub>2</sub> " x 22"
RH	48-16994* 13 <sup>1</sup> / <sub>2</sub> " x 24"	—	335135 13 <sup>1</sup> / <sub>2</sub> " x 24"
RH	48-16546* 13 <sup>3</sup> / <sub>4</sub> " x 21"	48-825864* 14 <sup>3</sup> / <sub>4</sub> " x 23"	345141 Δ 14 <sup>1</sup> / <sub>2</sub> " x 22"
RH	48-16548* 13 <sup>3</sup> / <sub>4</sub> " x 23"	48-825864* 14 <sup>3</sup> / <sub>4</sub> " x 23"	345137 14 <sup>1</sup> / <sub>2</sub> " x 24"
RH	48-16548* 13 <sup>3</sup> / <sub>4</sub> " x 23"	48-825864* 14 <sup>3</sup> / <sub>4</sub> " x 23"	345139 ✦ 14" x 24"
RH	48-16550* 13 <sup>3</sup> / <sub>4</sub> " x 25"	48-825866* 14 <sup>3</sup> / <sub>4</sub> " x 25"	345138 14 <sup>1</sup> / <sub>2</sub> " x 26"
RH	48-16550* 13 <sup>3</sup> / <sub>4</sub> " x 25"	48-825866* 14 <sup>3</sup> / <sub>4</sub> " x 25"	345140 ✦ 14" x 26"

### 4-Blade XL Propellers

Rotation	Trophy	BALLISTIC™ XL
RH	48-825938* 13 <sup>3</sup> / <sub>4</sub> " x 23"	435135 13 <sup>3</sup> / <sub>4</sub> " x 23"
RH	48-825942* 13 <sup>3</sup> / <sub>4</sub> " x 25"	435136 13 <sup>3</sup> / <sub>4</sub> " x 25"
RH	48-825944* 13 <sup>3</sup> / <sub>4</sub> " x 26"	435137 13 <sup>3</sup> / <sub>4</sub> " x 27"

Δ New

\* May include one of the following suffixes- A4, A5, A30, A40, A41, A45 (A45 represents Flo-TorqII drop in hub assembly. See below for replacement details)

LH = Left hand propeller. In dual engine applications, both propellers must be the same size and from the same manufacturer.

\* When Changing from an aluminum propeller to a stainless steel propeller, you may need to lower pitch (1"-2") depending on the actual WOT RPM of your application. (See page 10)

✦ EFI Outboards

## Replacing a Flo-TorqII™ Drop In Hub design with Ballistic Propellers

Propellers supplied from Mercury, Mariner and Force since 1996 come with Flo-TorqII drop in hubs equipped with attaching hardware A,B,C,F & G per the following illustrations. When switching to Ballistic propellers, change the attaching hardware set up as follows.

When converting to a Ballistic Propeller on a 4-cylinder gear-case, eliminate B & C and use A, F & G as attaching hardware.

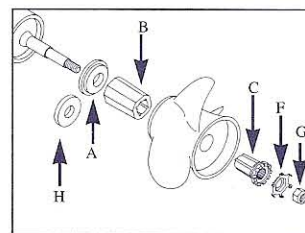
When converting to a Ballistic on a V-6 gear-case, eliminate B & C and use A, D, E, F & G as attaching hardware. (D & E replaces C) Be sure to use high-performance trim tab 822777A1 for Ballistic installations.

Michigan Wheel offers the following attaching hardware kits for these installations:

- 990312 Includes D & E for the V-6 gear-case
- 990332 Includes Forward Thrust Washer H for 4 Cylinder gear-case
- 9661-1 Includes A, D, E, F & G for the V-6 gear-case
- 9660-1 Includes H, F & G for the 4 cylinder gear-case

### 4 Cylinder Gear-Case

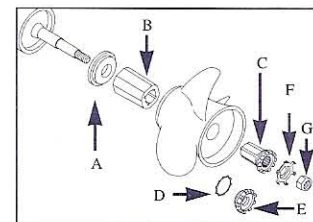
Example part No. 335131



- A) 12-835467 Forward Thrust Washer
- B) 827703 Plastic Drive Sleeve
- C) 826074-1 Metal Sleeve adapter
- D) 13-42351-1 Conductivity (star) washer

### V-6 Gear-case Motor

Example Part No. 345133



- E) 12-31211A2 Aft Castle Thrust Washer
- F) 14-816629 Locking Tab Washer
- G) 11-827614 Shaft Prop Nut
- H) 13191A1 Forward Thrust Washer

## Honda to Ballistic Cross-Reference

### 3-Blade Propellers

Rotation	Aluminum*	Stainless Steel	BALLISTIC™
RH	—	—	305229 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	—	—	305230 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	51830-ZV5-000ZA 11 <sup>1</sup> / <sub>2</sub> " x 13"	—	395929 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	58130-ZV5-870ZA 11 <sup>1</sup> / <sub>2</sub> " x 14 <sup>1</sup> / <sub>4</sub> "	—	395930 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	58130-ZW1-W21ZA 13 <sup>3</sup> / <sub>4</sub> " x 15"	58130-ZW1-W91 13 <sup>1</sup> / <sub>8</sub> " x 16	335130 13 <sup>3</sup> / <sub>8</sub> " x 15"
RH	58130-ZW1-W31ZA 13 <sup>3</sup> / <sub>4</sub> " x 17"	58130-ZW1-V01 13" x 18	335131 13 <sup>1</sup> / <sub>2</sub> " x 17"
RH	58130-ZW1-W61ZA 13" x 19"	58130-ZW1-V11 13 <sup>1</sup> / <sub>4</sub> " x 20	335132 13 <sup>3</sup> / <sub>8</sub> " x 19"
RH	58130-ZW1-W41ZA 12 <sup>3</sup> / <sub>4</sub> " x 21"	58130-ZW1-V31 13 <sup>1</sup> / <sub>2</sub> " x 22	335133 13 <sup>1</sup> / <sub>8</sub> " x 21"

## Nissan/Tohatsu to Ballistic Cross-Reference

### 3-Blade Propellers

Rotation	Aluminum*	BALLISTIC™
RH	348-64102-0	305429 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	348-64103-0	305430 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	353-64105-0	325030 12 <sup>3</sup> / <sub>8</sub> " x 15"
RH	353-64107-0	325031 12" x 17"
RH	387-64532-0	335930 13 <sup>3</sup> / <sub>8</sub> " x 15"
RH	387-64536-0	335931 13 <sup>1</sup> / <sub>2</sub> " x 17"
RH	387-64541-0	335932 13 <sup>3</sup> / <sub>8</sub> " x 19"
RH	387-64545-0	335933 13 <sup>1</sup> / <sub>8</sub> " x 21"

## Suzuki to Ballistic Cross-Reference

### 3-Blade Propellers

Rotation	Aluminum*	Stainless Steel	BALLISTIC™
RH	58100-96490-019 10 <sup>1</sup> / <sub>4</sub> " x 13"	58200-96400 10 <sup>1</sup> / <sub>4</sub> " x 13"	305529 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	—	99105-00600-13P 10 <sup>1</sup> / <sub>4</sub> " x 13"	305529 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	—	99105-00600-15P 10 <sup>1</sup> / <sub>4</sub> " x 15"	305530 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	58100-95363-019● 11 <sup>1</sup> / <sub>2</sub> " x 15"	58100-94401 11 <sup>1</sup> / <sub>2</sub> " x 13"	395929 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	—	99105-00500-13P 11 <sup>3</sup> / <sub>4</sub> " x 13"	395929 10 <sup>1</sup> / <sub>8</sub> " x 13"
RH	—	58100-94411 11 <sup>1</sup> / <sub>2</sub> " x 14"	395930 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	58100-95382-019● 11 <sup>1</sup> / <sub>2</sub> " x 17"	99105-00500-15P 11 <sup>3</sup> / <sub>4</sub> " x 15"	395930 10 <sup>1</sup> / <sub>8</sub> " x 15"
RH	58100-95511-019● 13 <sup>1</sup> / <sub>4</sub> " x 17"	—	335530 13 <sup>3</sup> / <sub>8</sub> " x 15"
RH	58100-95521-019● 13" x 19"	—	335531 13 <sup>1</sup> / <sub>2</sub> " x 17"
RH	58100-95530-019● 13" x 21"	—	335532 13 <sup>3</sup> / <sub>8</sub> " x 19"
RH	58100-94500-019 13 <sup>1</sup> / <sub>2</sub> " x 15"	58100-94554 13 <sup>1</sup> / <sub>2</sub> " x 15"	335530 13 <sup>3</sup> / <sub>8</sub> " x 15"
RH	58100-94512-019 13 <sup>1</sup> / <sub>4</sub> " x 17"	99105-00100-16P 13 <sup>1</sup> / <sub>4</sub> " x 16"	345531 13 <sup>1</sup> / <sub>2</sub> " x 17"
RH	58100-94522-019 13" x 19"	99105-00100-18P 13 <sup>1</sup> / <sub>4</sub> " x 18"	345532 13 <sup>3</sup> / <sub>8</sub> " x 19"
RH	58100-94532-019 13" x 19"	99105-00101-20P 13 <sup>1</sup> / <sub>4</sub> " x 20"	345533 13 <sup>1</sup> / <sub>8</sub> " x 21"
RH	—	—	345531 14 <sup>7</sup> / <sub>8</sub> " x 15"
RH	—	99105-00200-16P 14 <sup>1</sup> / <sub>4</sub> " x 16"	345532 14 <sup>3</sup> / <sub>4</sub> " x 17"
LH	—	99105-0020L-16P 14 <sup>1</sup> / <sub>4</sub> " x 16"	345562 14 <sup>3</sup> / <sub>4</sub> " x 17"
RH	—	99105-00200-18P 14 <sup>1</sup> / <sub>4</sub> " x 18"	345533 14 <sup>1</sup> / <sub>2</sub> " x 19"
LH	—	99105-0020L-18P 14 <sup>1</sup> / <sub>4</sub> " x 18"	345563 14 <sup>1</sup> / <sub>2</sub> " x 19"
RH	—	99105-00200-20P 14 <sup>1</sup> / <sub>4</sub> " x 20"	345534 14 <sup>3</sup> / <sub>8</sub> " x 21"
LH	—	99105-0020L-20P 14 <sup>1</sup> / <sub>4</sub> " x 20"	345564 14 <sup>3</sup> / <sub>8</sub> " x 21"
RH	—	99105-00200-22P 14 <sup>1</sup> / <sub>4</sub> " x 22"	345535 14 <sup>1</sup> / <sub>4</sub> " x 23"
LH	—	99105-0020L-22P 14 <sup>1</sup> / <sub>4</sub> " x 22"	345565 Δ 14 <sup>1</sup> / <sub>4</sub> " x 23"
RH	—	99105-00200-24P 14 <sup>1</sup> / <sub>4</sub> " x 24"	345536 14 <sup>1</sup> / <sub>4</sub> " x 25"

### 3-Blade XL Propellers

Rotation	Aluminum*	Stainless Steel	Thunder	BALLISTIC™ XL
RH	58100-94532-019 13" x 21"	99105-00100-22P 13 <sup>1</sup> / <sub>4</sub> " x 22"	—	335534 13 <sup>1</sup> / <sub>2</sub> " x 22"
RH	—	99105-00101-24P 13 <sup>1</sup> / <sub>4</sub> " x 24"	—	335535 13 <sup>1</sup> / <sub>2</sub> " x 24"
RH	—	99105-00200-22P 14 <sup>1</sup> / <sub>4</sub> " x 22"	—	345541 Δ 14 <sup>1</sup> / <sub>2</sub> " x 22"
RH	—	99105-00200-24P 14 <sup>1</sup> / <sub>4</sub> " x 24"	99105-00203-23P 14 <sup>3</sup> / <sub>4</sub> " x 23"	345537 14 <sup>1</sup> / <sub>2</sub> " x 24"
RH	—	99105-00200-26P 14 <sup>1</sup> / <sub>4</sub> " x 26"	99105-00203-25P 14 <sup>3</sup> / <sub>4</sub> " x 25"	345538 14 <sup>1</sup> / <sub>2</sub> " x 26"

### 4-Blade XL Propellers

Rotation	BALLISTIC™ XL
RH	99105-00400-23P 13 <sup>3</sup> / <sub>4</sub> " x 23" 435535 13 <sup>3</sup> / <sub>4</sub> " x 23"
RH	99105-00400-25P 13 <sup>3</sup> / <sub>4</sub> " x 25" 435536 13 <sup>3</sup> / <sub>4</sub> " x 25"
RH	435537 13 <sup>3</sup> / <sub>4</sub> " x 27"

Δ = New

LH = Left-hand prop. In dual-engine applications, both propellers must be the same size and from the same manufacturer.

\*Aluminum Note: When changing from an aluminum to a stainless steel prop, you may need to change to a lower pitch (1"-2") depending on the actual WOT RPM of your boat/motor (see page 10).

● Uncupped propeller: Equivalent to Ballistic with 2" less pitch.

# PRODUCT NUMBER CROSS REFERENCE CHARTS

## Yamaha to Ballistic Cross-Reference

### 3-Blade Propellers

Rotation	Aluminum*		Stainless Steel		VMAX 3		Performance Series		BALLISTIC <sup>®</sup> FL
RH	664-45949-02-EL	9 $\frac{7}{8}$ " x 13"	664-45970-00-98	9 $\frac{7}{8}$ " x 13"	—	—	—	—	305929 10 $\frac{1}{8}$ " x 13"
RH	664-45952-00-EL	9 $\frac{7}{8}$ " x 14"	—	—	—	—	—	—	305930 10 $\frac{1}{8}$ " x 15"
RH	6H5-45945-00-EL	10 $\frac{3}{8}$ " x 13"	663-45974-60-98	11 $\frac{1}{2}$ " x 13"	—	—	—	—	395929 10 $\frac{1}{8}$ " x 13"
RH	6H5-45943-00-EL	10" x 15"	663-45976-00-98	10 $\frac{1}{4}$ " x 15"	—	—	—	—	395930 10 $\frac{1}{8}$ " x 15"
RH	6E5-45947-00-EL	13 $\frac{1}{2}$ " x 15"	688-45932-60-98	13 $\frac{1}{2}$ " x 14"	—	—	—	—	335930 13 $\frac{3}{8}$ " x 15"
RH	—	—	688-45978-60-99	13 $\frac{1}{2}$ " x 16"	—	—	—	—	335931 13 $\frac{1}{2}$ " x 17"
RH	6E5-45947-00-EL	13 $\frac{3}{4}$ " x 17"	688-45930-01-98	13" x 17"	—	—	—	—	335931 13 $\frac{1}{2}$ " x 17"
RH	6E5-45947-00-EL	13" x 19"	688-45970-03-98	13" x 19"	MAR-VMAX3-04-18	13 $\frac{1}{4}$ " x 18"	MAR-GYT3B-V4-18	13 $\frac{1}{4}$ " x 18"	335932 13 $\frac{3}{8}$ " x 19"
RH	6E5-45947-00-EL	12 $\frac{5}{8}$ " x 21"	688-45972-02-98	13" x 21"	MAR-VMAX3-04-20	13 $\frac{1}{4}$ " x 20"	MAR-GYT3B-V4-20	13 $\frac{1}{4}$ " x 20"	335933 13 $\frac{1}{8}$ " x 21"
RH	6G5-45941-00-98	15 $\frac{1}{4}$ " x 15"	6G5-45970-02-98	15 $\frac{1}{4}$ " x 15"	—	—	—	—	345931 14 $\frac{7}{8}$ " x 15"
RH	6G5-45947-01-98	14 $\frac{1}{2}$ " x 17"	6G5-45978-03-98	13 $\frac{3}{4}$ " x 17"	MAR-VMAX3-06-16	14 $\frac{1}{4}$ " x 16"	MAR-GYT3B-V6-16	14 $\frac{1}{4}$ " x 16"	345932 14 $\frac{3}{4}$ " x 17"
LH	—	—	6K1-45978-02-98	13 $\frac{3}{4}$ " x 17"	—	—	—	—	345962 14 $\frac{3}{4}$ " x 17"
RH	6G5-45945-01-98	14" x 19"	6G5-45974-03-98	13 $\frac{3}{4}$ " x 19"	MAR-VMAX3-06-18	14 $\frac{1}{4}$ " x 18"	MAR-GYT3B-V6-18	14 $\frac{1}{4}$ " x 18"	345933 14 $\frac{1}{2}$ " x 19"
LH	—	—	6K1-45974-02-98	13 $\frac{3}{4}$ " x 19"	MAR-VMAX3-C6-18	14 $\frac{1}{4}$ " x 18"	MAR-GYT3B-V6-18	14 $\frac{1}{4}$ " x 18"	345963 14 $\frac{1}{2}$ " x 19"
RH	6G5-45943-01-98	13 $\frac{3}{4}$ " x 21"	6G5-45972-02-98	13 $\frac{3}{4}$ " x 21"	MAR-VMAX3-06-20	14 $\frac{1}{4}$ " x 20"	MAR-GYT3B-V6-20	14 $\frac{1}{4}$ " x 20"	345934 14 $\frac{3}{8}$ " x 21"
LH	—	—	6K1-45972-01-98	13 $\frac{3}{4}$ " x 21"	MAR-VMAX3-C6-20	14 $\frac{1}{4}$ " x 20"	MAR-GYT3B-V6-20	14 $\frac{1}{4}$ " x 20"	345064 14 $\frac{3}{8}$ " x 21"
RH	6G5-45949-00-98	13 $\frac{1}{2}$ " x 23"	6G5-45976-01-98	13 $\frac{3}{8}$ " x 23"	MAR-VMAX3-06-22	14 $\frac{1}{4}$ " x 22"	MAR-GYT3B-V6-22	14 $\frac{1}{4}$ " x 22"	345935 14 $\frac{1}{4}$ " x 23"
LH	—	—	6K1-45976-00-98	13 $\frac{3}{8}$ " x 23"	MAR-VMAX3-C6-22	14 $\frac{1}{4}$ " x 22"	MAR-GYT3B-V6-22	14 $\frac{1}{4}$ " x 22"	345965 $\Delta$ 14 $\frac{1}{4}$ " x 23"
RH	—	—	6G5-45930-00-98	13 $\frac{3}{8}$ " x 25"	MAR-VMAX3-06-24	14 $\frac{1}{4}$ " x 24"	MAR-GYT3B-V6-24	14 $\frac{1}{4}$ " x 24"	345936 14 $\frac{1}{4}$ " x 25"

### 3-Blade XL Propellers

Rotation	Pro Series		BALLISTIC <sup>®</sup> FL
RH	62A-45970-10-00	13 $\frac{1}{2}$ " x 21"	335934 13 $\frac{1}{2}$ " x 22"
RH	62A-45972-10-00	13 $\frac{1}{2}$ " x 23"	335935 13 $\frac{1}{2}$ " x 24"
RH	6J9-45976-10-00	14 $\frac{1}{2}$ " x 21"	345941 $\Delta$ 14 $\frac{1}{2}$ " x 22"
RH	6J9-45972-B0-00	14 $\frac{1}{2}$ " x 23"	345937 14 $\frac{1}{2}$ " x 24"
RH	66K-45972-B0-00	14 $\frac{1}{2}$ " x 25"	345938 14 $\frac{1}{2}$ " x 26"

### 4-Blade XL Propellers

Rotation	VMAX 3		Performance Series		BALLISTIC <sup>®</sup> FL
RH	MAR-VMAX4-06-22	13 $\frac{3}{4}$ " x 22"	MAR-GYT4B-V6-22	13 $\frac{3}{4}$ " x 22"	435935 13 $\frac{3}{4}$ " x 23"
RH	MAR-VMAX4-06-24	13 $\frac{3}{4}$ " x 24"	MAR-GYT4B-V6-24	13 $\frac{3}{4}$ " x 24"	435936 13 $\frac{3}{4}$ " x 25"
RH	MAR-VMAX4-06-26	13 $\frac{3}{4}$ " x 26"	MAR-GYT4B-V6-26	13 $\frac{3}{4}$ " x 26"	435937 13 $\frac{3}{4}$ " x 27"

$\Delta$  = New

LH = Left-hand prop. In dual-engine applications, both propellers must be the same size and from the same manufacturer.

\*Aluminum Note: When changing from an aluminum to a stainless steel prop, you may need to change to a lower pitch (1"-2") depending on the actual WOT RPM of your boat/motor (see page 10).



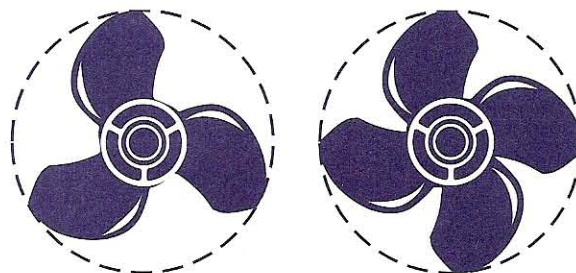
Finding the right match between the propeller, engine type and boat size will optimize the following performance factors — increased top end, faster planing speed, improved low end punch and load carrying capability.

If you want to modify your boat's performance with a new Ballistic™ propeller, consider the following before making your selection.

### 3 blades ... or 4?

We recommend 3-blade propellers for recreational boats with 3, 4, and 6 cylinder outboards and I/O engines. These propellers provide good "hole shot" and top-speed performance.

We recommend 4-blade propellers for bass boats and boats with high performance hulls running high horsepower outboard engines. Compared to 3 blades, they provide better "hole shot" performance with less steering torque and less vibration at high speeds.

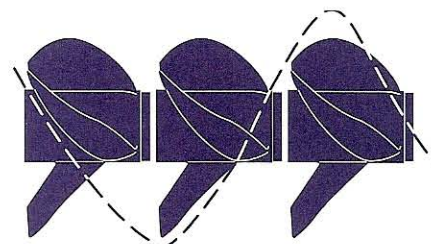


Wheel Diameter

### What's the advantage of a left-hand prop?

Two propellers spinning the same direction on twin-engine boats will create steering torque. In other words, two right-hand propellers pull the stern hard to the right and the bow to the left.

Two opposite-direction propellers on twin engines eliminate this steering torque because the left-hand propeller balances out the right-hand propeller. This results in better straight-line tracking and helm control at high speed.



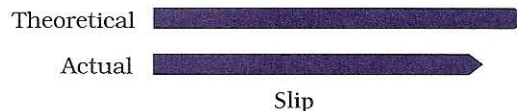
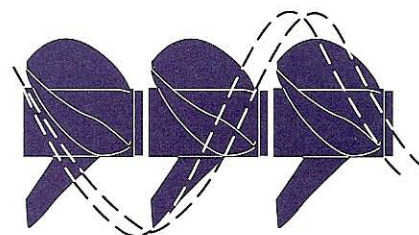
Pitch

### How does wheel diameter, pitch, and slip affect performance ... and how is it measured?

Wheel diameter is the circle formed by the blade tips. Diameter, along with pitch, determines the correct propeller for the application.

Pitch is the distance the boat will theoretically travel forward during one full propeller revolution. This is the action of a spiral ramp or screw.

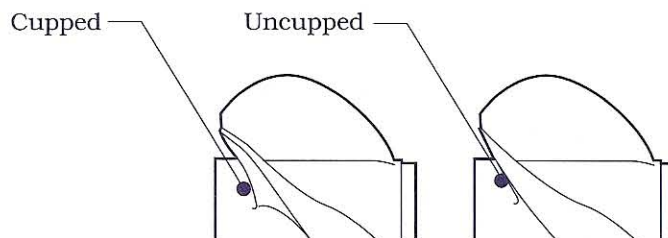
Slip is the difference between actual and theoretical travel of the propeller blades through water. A properly matched propeller will actually move forward about 80 to 90 percent of the theoretical pitch.



### What is cupping?

Cupping is the small curved lip on the blade tip and trailing edge of the propeller. Ballistic 3-blade propellers feature a moderate cup along the pitch line.

Ballistic-XL propellers have enhanced cup design that yields improved efficiency in surfacing or near-surfacing applications. Cupping provides a better "bite" on the water. It also reduces "ventilation" which is the thrust-loss that occurs when the propeller pulls in air or exhaust gas. Because ventilation is reduced, it allows the engine to be trimmed or mounted higher, for less drag.

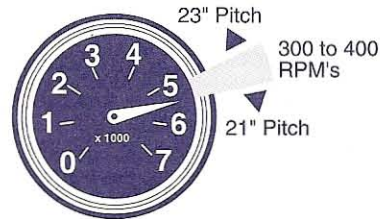


## Now, determine your wide open throttle (WOT) RPM

For safety and efficient performance, it is critical that your engine operates within the RPM range recommended by the manufacturer. Matching the right prop for the load is the most significant factor of RPM adjustment.

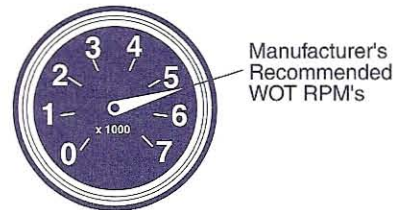
### Effect of Prop Pitch on RPM

A pitch change can increase or decrease the RPM's and bring RPM's into the recommended range. A 2" **increase** in pitch (for example, from 21" to 23") typically results in a **decrease** of approximately 300-400 RPM.



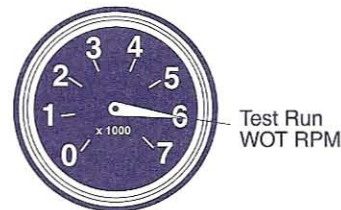
### First, Determine Manufacturer's Recommended RPM

Find the manufacturer's recommended RPM range in the owner's manual or ask your dealer.



### Test for Maximum RPM

Using the existing propeller or a new propeller, make test runs to determine the maximum RPM and boat speed. Vary the trim angle for optimum performance.



### RPM's Higher Than Recommended

If the actual WOT RPM's are **above** the recommended RPM range, install the next larger pitch propeller to **decrease** your WOT RPM's. Re-test the WOT RPM.



### RPM's Lower Than Recommended

If the actual WOT RPM range is **below** the recommended range, install the next smaller pitch propeller to **increase** your WOT RPM's. Re-test the WOT RPM.



When you combine all these factors, you have the information you need to select the correct propeller for maximum performance, safety, and fuel efficiency.

# APPLICATION CHARTS

## Use the Application Charts to Make Your Propeller Selection

1. Determine your engine's make and type (horsepower or displacement) and find it under the "Engine Category" heading.
2. Determine the rotation of the engine's propeller. In Application Charts, these "Rotation" directions are under the Ballistic Product Number labeled RH (right-hand) and LH (left-hand).

Usually a single-engine application is right-hand rotation. In most dual-engine applications one engine is right-hand rotation, the other is left-hand rotation.

3. Under the corresponding "Application" heading find the range of your boat's length, weight, and current speed (in MPH).
4. Read across the chart to the right, where it will tell you the diameter and pitch of the recommended propeller (Ballistic or Ballistic-XL) and the part number to order.
5. Once you know the recommended pitch, confirm it against the WOT range you've established for your boat.

For example: Your boat has a V-6 4.3 Liter Inboard/Outboard and is 20' long, weighing 2400 lbs. First, find the Inboard/Outboard section of the Application Listing; next, locate the 4.3 Liter model; then find your boat's range of length and weight (17'-21', 2300-2900 lbs.). Read across to find the Ballistic number to order your new propeller.

### Special Note for Dual-Engine Propeller Selections

The propeller pitches in these charts have been calculated for single-engine applications. For dual-engine applications, select a prop with a pitch 4" higher than the propeller listed.

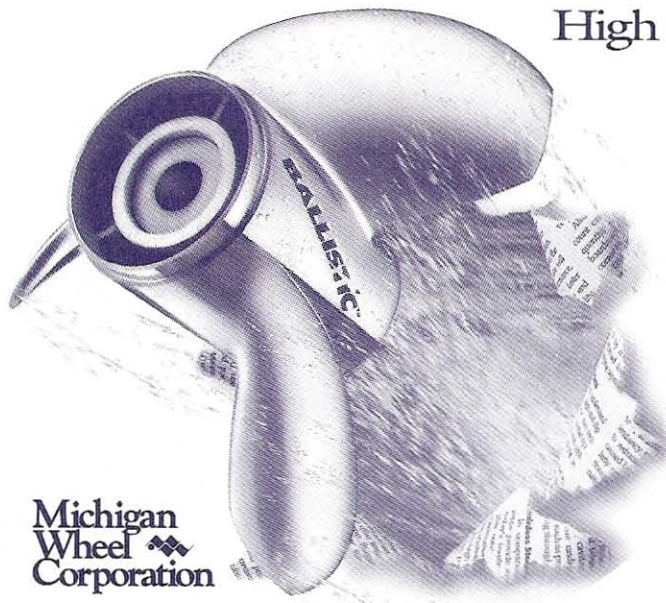
For example: If your boat would use a 15" pitch prop with a single engine, it requires 19" props when fitted with dual engines. This is due to the increase in horsepower and weight that a second engine applies.

Single-Engine Pitch	Dual-Engine Pitch
13"	17"
15"	19"
17"	21"

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# EVINRUDE/JOHNSON OUTBOARDS

Evinrude/Johnson Outboards					
Engine	Year				
20 HP 2 Cyl.	1984-97				
25 HP 2 & 3 Cyl.	1984 Thru Present				
25 HP Commercial	1993 Thru Present				
30 HP 2 Cyl.	1984 Thru Present				
35 HP 2 & 3 Cyl.	1976 Thru Present				
Application	Ballistic				
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
13-17' General Usage	900-1800	18-27	305029	10 $\frac{1}{8}$ " x 13"	3
13-17' General Usage	700-1500	26-36	305030	10 $\frac{1}{8}$ " x 15"	3

Evinrude/Johnson Outboards (Small Gearcase)					
Engine	Year		Engine	Year	
40 HP 2 Cyl.	1984 Thru Present		60 HP 2 Cyl.	1980-85	
48 HP	1987-96		75 HP 3 Cyl.	1975-85	
50 HP 2 Cyl.	1975 Thru Present		Sprint	1986-92	
55 HP 2 Cyl.	1976-79		Formula E	1986-92	
Application	Ballistic				
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
14-16' General Usage	900-1600	26-32	325030	12 $\frac{3}{8}$ " x 15"	3
13-15' General Usage	700-1500	30-36	325031	12" x 17"	3

Evinrude/Johnson Outboards 2-Cylinder (Large Gearcase)					
Engine	Year		Engine	Year	
45 HP 2 Cyl. Commercial	1986 Thru Present		50 HP 2 Cyl.	1971-74	
50 HP 2 Cyl. Commercial	1977-79		55 HP 2 Cyl. Commercial	1980 Thru Present	
Application	Ballistic				
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
15-17' Boats	1000-1600	27-34	335030	13 $\frac{5}{8}$ " x 15"	3
14-16' Boats	900-1500	27-34	335031	13 $\frac{1}{2}$ " x 17"	3
13-15' Boats	800-1100	32-38	335032	13 $\frac{3}{8}$ " x 19"	3
12-14' High Speed Boats	Up To 800	36-42	335033	13 $\frac{1}{8}$ " x 21"	3

Evinrude/Johnson 3-Cylinder					
Engine	Year		Engine	Year	
50 HP 3 Cyl.	1994 thru Present		65 HP 3 Cyl.	1972-73	
55 HP 3 Cyl.	1968-69		70 HP 3 Cyl.	1974 Thru Present	
60 HP 3 Cyl.	1970-71, 1986 Thru Present		75 HP 3 Cyl.	1975-84	
65 HP 3 Cyl. Commercial	1984 Thru Present				
Application	Ballistic				
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
16-18' Runabouts, Ski Boats	1600-2300	25-35	335030	13 $\frac{5}{8}$ " x 15"	3
15-17' Runabouts, Ski Boats	1400-2100	30-48	335031	13 $\frac{1}{2}$ " x 17"	3
14-16' Runabouts, Ski Boats	900-1500	36-46	335032	13 $\frac{3}{8}$ " x 19"	3
13-15' Runabouts, Ski Boats	800-1200	40-50	335033	13 $\frac{1}{8}$ " x 21"	3
High Performance	1000-1800	34-40	335031	13 $\frac{1}{2}$ " x 17"	3
High Performance	800-1300	37-45	335032	13 $\frac{3}{8}$ " x 19"	3
High Performance	700-1100	42-49	335033	13 $\frac{1}{8}$ " x 21"	3

# EVINRUDE/JOHNSON OUTBOARDS (Continued)

## Evinrude/Johnson Outboards V-4

Engine	Year	Engine	Year
85 HP	1969-80, 1991-95	115 HP	1973 Thru Present
88 HP	1981-96	120 HP	1986-94
90 HP	1981 Thru Present	125 HP	1971-72
100 HP	1979-80, 1988-93	135 HP	1973-76
110 HP	1986-89	140 HP	1977-94
112 HP	1994-96		

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades
19-22' Runabouts, Ski Boats	2300-4000	24-36	335030	—	13 $\frac{1}{8}$ " x 15"	3
18-21' Runabouts, Ski Boats	2100-3600	30-42	335031	—	13 $\frac{1}{2}$ " x 17"	3
17-20' Runabouts, Ski Boats	1900-3100	38-50	335032	—	13 $\frac{3}{8}$ " x 19"	3
15-18' High Performance	1300-2300	44-56	335033	—	13 $\frac{1}{8}$ " x 21"	3
High Performance	1900-3200	36-46	335031	—	13 $\frac{1}{2}$ " x 17"	3
High Performance	1700-2900	42-52	335032	—	13 $\frac{3}{8}$ " x 19"	3
High Performance	1100-2100	48-58	335033	—	13 $\frac{1}{8}$ " x 21"	3
High Performance			—	335034	13 $\frac{1}{2}$ " x 22"	3 XL
High Performance			—	335035	13 $\frac{1}{2}$ " x 24"	3 XL

## Evinrude/Johnson Outboards V-4( with V-6 Gearcase), V-6 and V-8

Engine	Year	Engine	Year
<b>V-4 Engines</b>		<b>V-6 Engines (continued)</b>	
90 HP	1995 Thru Present	185 HP	1984-85
100 HP Commercial	1984 Thru Present	200 HP	1976 Thru Present
115 HP	1995 Thru Present	225 HP	1986 Thru Present
130 HP	1995 Thru Present	235 HP	1978-85
120-140 HP	1985	2.6 Liter	1984-85
140 HP (25")	1989-94	<b>V-8 Engines</b>	
<b>V-6 Engines</b>		250 HP	1991 Thru Present
150 HP Commercial	1993 Thru Present	275 HP	1986-88
150 HP	1978 Thru Present	300 HP	1986-95
155 HP Commercial	1978 Thru Present	3.6 Litre	1986-87
175 HP	1977 Thru Present		

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades	
24-28' Cruisers	3000-5000	24-26	345031	—	14 $\frac{7}{8}$ " x 15"	3	
22-26' Cruisers	2800-4700	30-42	345032	—	14 $\frac{3}{4}$ " x 17"	3	
19-22' Runabouts	2200-4000	36-49	345033	—	14 $\frac{1}{2}$ " x 19"	3	
17-20' Runabouts	1700-3300	42-56	345034	—	14 $\frac{9}{8}$ " x 21"	3	
15-19' High Performance	1400-2600	50-64	345035	—	14 $\frac{1}{4}$ " x 23"	3	
15-18' High Performance	1300-2400	56-70	345036	—	14 $\frac{1}{4}$ " X 25"	3	
High Performance	2500-4300	40-52	345033	—	14 $\frac{1}{2}$ " x 19"	3	
High Performance	1900-3700	45-57	345034	—	14 $\frac{3}{8}$ " x 21"	3	
High Performance	1800-3300	50-60	345035	—	14 $\frac{1}{4}$ " x 23"	3	
High Performance	1800-3300	48-58	—	345041 $\Delta$	14 $\frac{1}{2}$ " x 22"	3 XL	
High Performance	1500-3000	50-62	—	345037	14 $\frac{1}{2}$ " x 24"	3 XL	
High Performance	1100-2200	55-67	—	345038	14 $\frac{1}{2}$ " x 26"	3 XL	
			RH Rotation	LH Rotation			
Dual Engines			345032	345062	—	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345033	345063	—	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345034	345064	—	14 $\frac{9}{8}$ " x 21"	3
Dual Engines			345035	345065 $\Delta$	—		
High Performance	1500-2800	50-62	—	—	435035	13 $\frac{3}{4}$ " x 23"	4 XL
High Performance	1100-2200	55-67	—	—	435036	13 $\frac{3}{4}$ " x 25"	4 XL
High Performance	1000-2000	60-72	—	—	435037	13 $\frac{3}{4}$ " x 27"	4 XL

$\Delta$  New

# FORCE OUTBOARDS

Force Outboards					
Engine	Year				
25 HP (3-Cylinder)	1995 Thru Present				
Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
14-17' General Usage	900-1800	18-27	305129	10 $\frac{1}{8}$ " x 13"	3
13-15' General Usage	700-1500	26-36	305130	10 $\frac{1}{8}$ " x 15"	3

Force Outboards					
Engine	Year				
40 HP	1995 Thru Present				
50 HP	1995 Thru Present				
70 HP	1991-95				
75 HP	1996 Thru Present				
Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
15-18' General Usage	1100-1800	20-28	395129	10 $\frac{1}{8}$ " x 13"	3
14-16' General Usage	900-1600	26-32	395130	10 $\frac{1}{8}$ " x 15"	3

Force Outboards						
Engine	Year	Engine	Year			
90 HP ▼	1995 to Current	150 HP ◆	1989-94			
120 HP ▼	1995 to Current	90 HP L-Drive ◆	1990-91			
90 HP ◆	1993 & 1994*	120 HP L-Drive ◆	1990-91			
120 HP ◆	1993 & 1994*	150 HP L-Drive ◆	1991			
Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades
19-22' Runabouts, Ski Boats	2200-3800	24-36	335130	—	13 $\frac{3}{8}$ " x 15"	3
18-21' Runabouts, Ski Boats	2000-3500	30-42	335131	—	13 $\frac{1}{2}$ " x 17"	3
17-20' Runabouts, Ski Boats	1800-3000	38-50	335132	—	13 $\frac{3}{8}$ " x 19"	3
15-18' High Performance	1200-2200	44-56	335133	—	13 $\frac{1}{8}$ " x 21"	3
High Performance	1800-3100	36-46	335131	—	13 $\frac{1}{2}$ " x 17"	3
High Performance	1600-2800	42-52	335132	—	13 $\frac{3}{8}$ " x 19"	3
High Performance	1000-2000	48-58	335133	—	13 $\frac{1}{8}$ " x 21"	3
High Performance			—	335134 ○	13 $\frac{1}{2}$ " x 22"	3 XL
High Performance			—	335135 ○	13 $\frac{1}{2}$ " x 24"	3 XL

△ New

▼ Units 95 thru current require thrust washer 13191A1

◆ For dual exhaust units only & requires thrust washer 23-819057

○ Requires special exhaust snout part number F744116 for proper fit.

# HONDA OUTBOARDS

## Honda Outboards

Engine	Year
25 HP	All
30 HP	All

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
14-17' General Usage	900-1800	18-27	305229	10 $\frac{1}{8}$ " x 13"	3
13-15' General Usage	700-1500	26-36	305230	10 $\frac{1}{8}$ " x 15"	3

## Honda Outboards

Engine	Year
35 HP	1991-94
40 HP	1995 Thru Present
45 HP	1991-94
50 HP	1995 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
15-18' General Usage	1100-1800	20-28	395929	10 $\frac{1}{8}$ " x 13"	3
14-16' General Usage	900-1600	26-32	395930	10 $\frac{1}{8}$ " x 15"	3

## Honda Outboards

Engine	Year
75 HP	1995 Thru Present
90 HP	1995 Thru Present
115 HP	1998 Thru Present
130 HP	1998 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic XL Product Number RH Rotation	Dia. x Pitch	Blades
19-22' Runabouts, Ski Boats	2200-3800	24-36	335130		13 $\frac{5}{8}$ " x 15"	3
18-21' Runabouts, Ski Boats	2000-3500	30-42	335131		13 $\frac{1}{2}$ " x 17"	3
17-20' Runabouts, Ski Boats	1800-3000	38-50	335132		13 $\frac{3}{8}$ " x 19"	3
15-18' Runabouts, Ski Boats	1200-2200	44-56	335133		13 $\frac{1}{8}$ " x 21"	3
High Performance	1800-3100	36-46	335131		13 $\frac{1}{2}$ " x 17"	3
High Performance	1600-2800	42-52	335132		13 $\frac{3}{8}$ " x 19"	3
High Performance	1000-2000	48-58	335133		13 $\frac{1}{8}$ " x 21"	3
High Performance				335134	13 $\frac{1}{2}$ " x 22"	3 XL
High Performance				335135	13 $\frac{1}{2}$ " x 24"	3 XL

# MERCURY/MARINER OUTBOARDS

Mercury/Mariner Outboards					
Mercury Engine	Year	Mariner Engine		Year	
18 HP	1980-85	20-25 HP		1985 Thru Present	
20 HP	1986 Thru Present				
25 HP	1980 Thru Present				
* Includes Bigfoot, Sea Pro, & 4 Stroke Thru Hub Exhaust		Includes Bigfoot, Marathon & 4 stroke Thru Hub Exhaust			
Application			Ballistic		
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
14-17' General Usage	900-1800	18-27	305129	10 $\frac{1}{8}$ " x 13"	3
13-15' General Usage	700-1500	26-36	305130	10 $\frac{1}{8}$ " x 15"	3

Mercury/Mariner Outboards					
Mercury Engine	Year	Mariner Engine		Year	
Model 402-500-700	1977-84	30 HP		1994 Thru Present	
30 HP	1994 Thru Present	40 HP		1978 Thru Present	
35 HP	1984-89	45 HP		1986-89	
40 HP	1977 Thru Present	48 HP		All Years	
45 HP	1986-89	50 HP		1980 Thru Present	
50 HP	1977 Thru Present	55 HP		1995 Thru Present	
55 HP	1995 Thru Present	60 HP (Not Bigfoot or Marathon)		1978 Thru Present	
60 HP (Not Bigfoot or Sea Pro)	1984 Thru Present	70 HP		Thru 1983	
70 HP	Thru 1983				
Includes Bigfoot, Sea Pro, & 4-Stroke unless otherwise noted		Includes Bigfoot, Sea Pro, & 4-Stroke unless otherwise noted			
Application			Ballistic		
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
15-18' General Usage	1100-1800	20-28	395129	10 $\frac{1}{8}$ " x 13"	3
14-16' General Usage	900-1600	26-32	395130	10 $\frac{1}{8}$ " x 15"	3

Mercury/Mariner Outboards 3 Cylinder					
Mercury Engine	Year	Mariner Engine		Year	
60 HP (Bigfoot & Sea Pro Only)	1995 Thru Present	60 HP (Bigfoot & Marathon Only)		1995 Thru Present	
70 HP	1987-89	75 HP		1984 Thru Present	
75 HP	1984 Thru Present	80 HP		1978-83	
80 HP	1978-89	90 HP		1978 Thru Present	
90 HP	1978 Thru Present				
Application			Ballistic		
Boat Description	Approx. Gross Wt.	Current MPH	Product Number RH Rotation	Dia. x Pitch	Blades
16-18' Runabouts, Ski Boats	1600-2300	25-35	335130	13 $\frac{5}{8}$ " x 15"	3
15-17' Runabouts, Ski Boats	1400-2100	30-40	335131	13 $\frac{1}{2}$ " x 17"	3
14-16' Runabouts, Ski Boats	900-1500	36-46	335132	13 $\frac{3}{8}$ " x 19"	3
13-15' Runabouts, Ski Boats	800-1200	40-50	335133	13 $\frac{1}{8}$ " x 21"	3
High Performance	1000-1800	34-40	335131	13 $\frac{1}{2}$ " x 17"	3
High Performance	800-1300	37-45	335132	13 $\frac{3}{8}$ " x 19"	3
High Performance	700-1100	42-49	335133	13 $\frac{1}{8}$ " x 21"	3



# MERCURY/MARINER OUTBOARDS (Continued)

## Mercury/Mariner Outboards 4 Cylinder & V-6 Small Gearcase

Mercury Engine	Year	Mariner Engine	Year
100 HP	1988 Thru Present	100 HP	1988 Thru Present
115 HP	1978 Thru Present	115 HP	1978 Thru Present
125 HP	1994 Thru Present	125 HP	1994 Thru Present
140 HP	1978-81	150 Magnum II (Small Gearcase)	Thru 1991
150 HP XR4 (Small Gearcase)	Thru 1991	150 Magnum III (Small Gearcase)	1992-94
151 HP XR6 (Small Gearcase)	1992-94		

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades
19-22' Runabouts, Ski Boats	2200-3800	24-36	335130	—	13 <sup>5</sup> / <sub>8</sub> " x 15"	3
18-21' Runabouts, Ski Boats	2000-3500	30-42	335131	—	13 <sup>1</sup> / <sub>2</sub> " x 17"	3
17-20' Runabouts, Ski Boats	1800-3000	38-50	335132	—	13 <sup>3</sup> / <sub>8</sub> " x 19"	3
15-18' High Performance	1200-2200	44-56	335133	—	13 <sup>1</sup> / <sub>8</sub> " x 21"	3
High Performance	1800-3100	36-46	335131	—	13 <sup>1</sup> / <sub>2</sub> " x 17"	3
High Performance	1600-2800	42-52	335132	—	13 <sup>3</sup> / <sub>8</sub> " x 19"	3
High Performance	1000-2000	48-58	335133	—	13 <sup>1</sup> / <sub>8</sub> " x 21"	3
High Performance			—	335134	13 <sup>1</sup> / <sub>2</sub> " x 22"	3 XL
High Performance			—	335135	13 <sup>1</sup> / <sub>2</sub> " x 24"	3 XL

## Mercury/Mariner Outboards V-6

Mercury Engine	Year	Mariner Engine	Year
135 HP	1987 Thru Present	135 HP	1986 Thru Present
150 HP	1978 Thru Present	150 HP	1979 Thru Present
175 HP	1978 Thru Present	175 HP	1978 Thru Present
200 HP	1978 Thru Present	200 HP	1979 Thru Present
220 HP	1987-88	220 HP	1987-88
225 HP	1980 Thru Present	225 HP	1994 Thru Present
250 HP	1994 Thru Present	250 HP	1990 Thru Present
275 HP	1990-94	275 HP	1990-94
300HP	1983		
3.4 Litre	1984-86		

Includes DFI, EFI, Magnum, Offshore, OPTIMAX, Sea Pro & Xri

Includes DFI, EFI, Magnum, Offshore, OPTIMAX, Marathon & Xri

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades	
24-28' Cruisers	3000-5000	24-36	345131	—	14 <sup>7</sup> / <sub>8</sub> " x 15"	3	
22-26' Cruisers	2800-4700	30-42	345132	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3	
19-22' Runabouts	2200-4000	36-49	345133	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3	
17-20' Runabouts	1700-3300	42-56	345134	—	14 <sup>9</sup> / <sub>8</sub> " x 21"	3	
15-19' High Performance	1400-2600	50-64	345135	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3	
15-18' High Performance	1300-2400	56-70	345136	—	14 <sup>1</sup> / <sub>4</sub> " x 25"	3	
High Performance	2500-4300	40-52	345133	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3	
High Performance	1900-3700	45-57	345134	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3	
High Performance	1800-3300	50-60	345135	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3	
High Performance	1800-3300	48-58	—	345141 Δ	14 <sup>1</sup> / <sub>2</sub> " x 22"	3 XL	
High Performance	1600-3000	50-62	—	345137	14 <sup>1</sup> / <sub>2</sub> " x 24"	3 XL	
High Performance (EFI Engine)			—	345139	14" x 24"	3 XL	
High Performance	1100-2200	55-67	—	345138	14 <sup>1</sup> / <sub>2</sub> " x 26"	3 XL	
High Performance (EFI Engine)			—	345140	14" x 26"	3 XL	
			RH Rotation	LH Rotation			
Dual Engines			345132	345162	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			345133	345163	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			345134	345164	—	14 <sup>9</sup> / <sub>8</sub> " x 21"	3
Dual Engines			345135	345165 Δ	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3
High Performance	1500-2800	50-62	—	—	435135	13 <sup>3</sup> / <sub>4</sub> " x 23"	4 XL
High Performance	1100-2200	55-67	—	—	435136	13 <sup>3</sup> / <sub>4</sub> " x 25"	4 XL
High Performance	1000-2000	60-72	—	—	435137	13 <sup>3</sup> / <sub>4</sub> " x 27"	4 XL

Δ New

# SUZUKI OUTBOARDS

## Suzuki Outboards

Engine	Year					
DT 25C	1989 Thru Present					
DT 20, 25	1987-88					
DT 20, 25 ❖	1983-86					
DT 30, 30C	1987-97					
DT 30 ❖	1983-86					
Application		Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
Boat Description						
14-17' General Usage		900-1800	18-27	305529	10 $\frac{1}{8}$ " x 13"	3
13-15' General Usage		700-1500	26-36	305530	10 $\frac{1}{8}$ " x 15"	3

## Suzuki Outboards

Engine	Year					
DT 35C	1987-90					
DT 40	1983 Thru Present					
DT 50 & 50 M	1983-84					
DT 55	1985-87					
DT 60	1983-84					
DT 65	1985-97					
Application		Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
Boat Description						
15-18' General Usage		1100-1800	20-28	395929	10 $\frac{1}{8}$ " x 13"	3
14-16' General Usage		900-1600	26-32	395930	10 $\frac{1}{8}$ " x 15"	3

## Suzuki Outboards 3 & 4 Cylinder

Engine	Year					
DF 60, 70 ▼	1998 Thru Present					
DT 75 ◆	1992-97					
DT 75 ★	1983-91					
DT 85 ◆	1992 Thru Present					
DT 85 ★	1979-91					
Application		Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
Boat Description						
16-18' Runabouts, Ski Boats		1600-2300	25-35	335530	13 $\frac{3}{8}$ " x 15"	3
15-17' Runabouts, Ski Boats		1400-2100	30-48	335531	13 $\frac{1}{2}$ " x 17"	3
14-16' Runabouts, Ski Boats		900-1500	36-46	335532	13 $\frac{3}{8}$ " x 19"	3
13-15' Runabouts, Ski Boats		800-1200	40-50	335533	13 $\frac{1}{8}$ " x 21"	3
High Performance		1000-1800	34-40	335531	13 $\frac{1}{2}$ " x 17"	3
High Performance		800-1300	37-45	335532	13 $\frac{3}{8}$ " x 19"	3
High Performance		700-1100	42-49	335533	13 $\frac{1}{8}$ " x 21"	3

▼ Use Stopper 57632-87E10 - Spacer 57633-95501 - Washer 09160-18028

◆ Use Stopper 57635-95510 - Spacer 57633-95501 - Washer 09160-1802

★ Requires: 57633-95501 - Spacer 57635-95503 Stopper 09160-18028 Lock Washer supplied with Engine

❖ Requires: Use Stopper 57632-96400

# SUZUKI OUTBOARD (Continued)

Suzuki Outboards V-4						
Engine	Year					
DT 90 ▼	1989-97					
DT 100 ▼	1989 Thru Present					
DT 115, 140 ◆	1992 Thru Present					
DT 115, 140 ❖	1981-91					

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades
19-22' Runabouts, Ski Boats	2200-3800	24-36	335530	—	13 <sup>5</sup> / <sub>8</sub> " x 15"	3
18-21' Runabouts, Ski Boats	2000-3500	30-42	335531	—	13 <sup>1</sup> / <sub>2</sub> " x 17"	3
17-20' Runabouts, Ski Boats	1800-3000	38-50	335532	—	13 <sup>3</sup> / <sub>8</sub> " x 19"	3
15-18' High Performance	1200-2200	44-56	335533	—	13 <sup>1</sup> / <sub>8</sub> " x 21"	3
High Performance	1800-3100	36-46	335531	—	13 <sup>1</sup> / <sub>2</sub> " x 17"	3
High Performance	1600-2800	42-52	335532	—	13 <sup>3</sup> / <sub>8</sub> " x 19"	3
High Performance	1000-2000	48-58	335533	—	13 <sup>1</sup> / <sub>8</sub> " x 21"	3
High Performance			—	335534	13 <sup>1</sup> / <sub>2</sub> " x 22"	3 XL
High Performance			—	335535	13 <sup>1</sup> / <sub>2</sub> " x 24"	3 XL

Suzuki Outboards V-6						
Engine	Year					
DT 150	1986 Thru Present					
DT 175	1986-92					
DT 200	1986 Thru Present					
DT 225	1990 Thru Present					

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades	
24-28' Cruisers	3000-5000	24-36	345531	—	14 <sup>7</sup> / <sub>8</sub> " x 15"	3	
22-26' Cruisers	2800-4700	30-42	345532	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3	
19-22' Runabouts	2200-4000	36-49	345533	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3	
17-20' Runabouts	1700-3300	42-56	345534	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3	
15-19' High Performance	1400-2600	50-64	345535	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3	
15-18' High Performance	1300-2400	56-70	345536	—	14 <sup>1</sup> / <sub>4</sub> " x 25"	3	
High Performance	2500-4300	40-52	345533	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3	
High Performance	1900-3700	45-57	345534	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3	
High Performance	1700-2800	48-60	—	345541△	14 <sup>1</sup> / <sub>2</sub> " x 22"	3 XL	
High Performance	1500-3000	50-62	—	345537	14 <sup>1</sup> / <sub>2</sub> " x 24"	3 XL	
High Performance	1100-2200	55-67	—	345538	14 <sup>1</sup> / <sub>2</sub> " x 26"	3 XL	
			RH Rotation	LH Rotation			
Dual Engines			345532	345562	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			345533	345563	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			345534	345564	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
Dual Engines			345535	345565△	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3
High Performance	1500-2800	50-62	—	435535	13 <sup>3</sup> / <sub>4</sub> " x 23"	4 XL	
High Performance	1100-2200	55-67	—	435536	13 <sup>3</sup> / <sub>4</sub> " x 25"	4 XL	
High Performance	1000-2000	60-72	—	435537	13 <sup>3</sup> / <sub>4</sub> " x 27"	4 XL	

- ▼ Use Stopper 57632-87E10 - Spacer 57633-95501 - Washer 09160-18028
- ◆ Use Stopper 57635-95510 - Spacer 57633-95501 - Washer 09160-1802
- ★ Requires: 57633-95501 - Spacer 57635-95503 Stopper 09160-18028 Lock Washer supplied with Engine
- ❖ Requires: Use Stopper 57632-96400
- △ New

# YAMAHA OUTBOARDS

Yamaha Outboards					
Engine	Year				
20 HP	1976-78, 1996-97				
25 HP	1980 Thru Present				
C 25 HP	1980 Thru Present				
30 HP	1979 Thru Present				
C 30 HP	1979 Thru Present				

Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
Boat Description					
14-17' General Usage	900-1800	18-27	305929	10½" x 13"	3
13-15' General Usage	700-1500	26-36	305930	10½" x 15"	3

Yamaha Outboards					
Engine	Year				
40 HP	1984 Thru Present				
C 40 HP	1984 Thru Present				
E 48 HP	1995 Thru Present				
50 HP (not T50)	1984 Thru Present				
P50 HP	1984 Thru Present				
55 HP	1976-95				
60 HP	1976-91				

Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
Boat Description					
15-18' General Usage	1100-1800	20-28	395929	10½" x 13"	3
14-16' General Usage	900-1600	26-32	395930	10½" x 15"	3

Yamaha Outboards					
Engine	Year				
T 50 HP	1996 Thru Present				
60 HP	1992 Thru Present				
70 HP	1984 Thru Present				
75 HP	1994 Thru Present				
80 HP	1997				
85 HP	1991-97				
90 HP	1984 Thru Present				

Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
Boat Description					
16-18' Runabouts, Ski Boats	1600-2300	25-35	335930	13⅝" x 15"	3
15-17' Runabouts, Ski Boats	1400-2100	30-48	335931	13½" x 17"	3
14-16' Runabouts, Ski Boats	900-1500	36-46	335932	13⅝" x 19"	3
13-15' Runabouts, Ski Boats	800-1200	40-50	335933	13½" x 21"	3
High Performance	1000-1800	34-40	335931	13½" x 17"	3
High Performance	800-1300	37-45	335932	13⅝" x 19"	3
High Performance	700-1100	42-49	335933	13⅝" x 21"	3

# YAMAHA OUTBOARDS (Continued)

Yamaha Outboards						
Engine	Year					
115 HP	1984 Thru Present					
130 HP	1984 Thru Present					
Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number	Ballistic-XL Product Number	Dia. x Pitch	Blades
Boat Description			RH Rotation	RH Rotation		
19-22' Runabouts, Ski Boats	2200-3800	24-36	335930	—	13 $\frac{5}{8}$ " x 15"	3
18-21' Runabouts, Ski Boats	2000-3500	30-42	335931	—	13 $\frac{1}{2}$ " x 17"	3
17-20' Runabouts, Ski Boats	1800-3000	38-50	335932	—	13 $\frac{5}{8}$ " x 19"	3
15-18' High Performance	1200-2200	44-56	335933	—	13 $\frac{1}{8}$ " x 21"	3
High Performance	1800-3100	36-46	335931	—	13 $\frac{1}{2}$ " x 17"	3
High Performance	1600-2800	42-52	335932	—	13 $\frac{5}{8}$ " x 19"	3
High Performance	1000-2000	48-58	335933	—	13 $\frac{1}{8}$ " x 21"	3
High Performance			—	335934	13 $\frac{1}{2}$ " x 22"	3 XL
High Performance			—	335935	13 $\frac{1}{2}$ " x 24"	3 XL

Yamaha Outboards							
Engine	Year						
150 HP	1986 Thru Present						
175, 200 HP	1984 Thru Present						
220 HP (Special)	1984-85						
225 HP (Excel)	1987-88						
225 HP	1986 Thru Present						
250 HP	1990 Thru Present						
Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number	Ballistic-XL Product Number	Dia. x Pitch	Blades	
Boat Description			RH Rotation	RH Rotation			
24-28' Cruisers	3000-5000	24-36	345931	—	14 $\frac{7}{8}$ " x 15"	3	
22-26' Cruisers	2800-4700	30-42	345932	—	14 $\frac{9}{8}$ " x 17"	3	
19-22' Runabouts	2200-4000	36-49	345933	—	14 $\frac{1}{2}$ " x 19"	3	
17-20' Runabouts	1700-3300	42-56	345934	—	14 $\frac{3}{8}$ " x 21"	3	
15-19' High Performance	1400-2600	50-64	345935	—	14 $\frac{1}{4}$ " x 23"	3	
15-18' High Performance	1300-2400	56-70	345936	—	14 $\frac{1}{4}$ " x 25"	3	
High Performance	2500-4300	40-52	345933	—	14 $\frac{1}{2}$ " x 19"	3	
High Performance	1900-3700	45-57	345934	—	14 $\frac{3}{8}$ " x 21"	3	
High Performance	1800-3300	48-58	—	345941 $\Delta$	14 $\frac{1}{2}$ " x 22"	3 XL	
High Performance	1500-3000	50-62	—	345937	14 $\frac{1}{2}$ " x 24"	3 XL	
High Performance	1100-2200	55-67	—	345938	14 $\frac{1}{2}$ " x 26"	3 XL	
			RH Rotation	LH Rotation			
Dual Engines			345932	345962	—	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345933	345963	—	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345934	345964	—	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345935	345965 $\Delta$	—	14 $\frac{1}{4}$ " x 23"	3
High Performance	1500-2800	50-62	—	—	435935	13 $\frac{3}{4}$ " x 23"	4 XL
High Performance	1100-2200	55-67	—	—	435936	13 $\frac{3}{4}$ " x 25"	4 XL
High Performance	1000-2000	60-72	—	—	435937	13 $\frac{3}{4}$ " x 27"	4 XL

$\Delta$  = New

# NISSAN/TOHATSU OUTBOARDS

## Nissan/Tohatsu Outboards

Engine	Year				
25 HP	1986 Thru Present				
30 HP	1985 Thru Present				

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
13-17' General Usage	900-1800	18-27	305429	10 $\frac{1}{8}$ " x 13"	3
13-17' General Usage	700-1500	26-36	305430	10 $\frac{1}{8}$ " x 15"	3

## Nissan/Tohatsu Outboards

Engine	Year				
40 HP	1984 Thru Present				
50 HP	1992 Thru Present				

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
14-16' General Usage	900-1600	26-32	325030	12 $\frac{3}{8}$ " x 15"	3
13-15' General Usage	700-1500	30-36	325031	12" x 17"	3

## Nissan/Tohatsu Outboards

Engine	Year				
90 HP	1987 Thru Present				
115 HP	1992 Thru Present				
120 HP	1988 Thru Present				
140 HP	1988 Thru Present				

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
16-18' Runabouts, Ski Boats	1600-2300	25-35	335930	13 $\frac{5}{8}$ " x 15"	3
15-17' Runabouts, Ski Boats	1400-2100	30-48	335931	13 $\frac{1}{2}$ " x 17"	3
14-16' Runabouts, Ski Boats	900-1500	36-46	335932	13 $\frac{3}{8}$ " x 19"	3
13-15' Runabouts, Ski Boats	800-1200	40-50	335933	13 $\frac{1}{8}$ " x 21"	3
High Performance	1000-1800	34-40	335931	13 $\frac{1}{2}$ " x 17"	3
High Performance	800-1300	37-45	335932	13 $\frac{3}{8}$ " x 19"	3
High Performance	700-1100	42-49	335933	13 $\frac{1}{8}$ " x 21"	3

# OMC STERNDRIVES SX COBRA, VOLVO PENTA SX

## SX Cobra, Volvo Penta SX, OMC Cobra (94 thru) - Through 4.3 Litre

Engine	Year
3.0 Liter	1994 Thru Present
4.3 Liter	1994 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Dia. x Pitch	Blades
			RH Rotation	LH Rotation		
21-26' Cruisers	2600-3400	24-34	346031		14 <sup>7</sup> / <sub>8</sub> " x 15"	3
19-24' Cruisers	2400-3200	28-37	346032		14 <sup>3</sup> / <sub>4</sub> " x 17"	3
17-21' Runabouts	2300-2800	35-42	346033		14 <sup>1</sup> / <sub>2</sub> " x 19"	3
16-19' Runabouts	2100-2600	39-46	346034		14 <sup>3</sup> / <sub>8</sub> " x 21"	3
15-18' High Performance	1800-2500	42-50	346035		14 <sup>1</sup> / <sub>4</sub> " x 23"	3
Up to 17' High Performance	1700-2200	44-53	346036		14 <sup>1</sup> / <sub>4</sub> " x 25"	3
			RH Rotation	LH Rotation		
Dual Engines			346032	346062	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			346033	346063	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			346034	346064	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
Dual Engines			346035	345065 Δ	14 <sup>1</sup> / <sub>4</sub> " x 23"	3

## SX Cobra, Volvo Penta SX, OMC Cobra (94 thru) - Through 5.8 Litre

Engine	Year
5.0 Liter	1994 Thru Present
5.0 Liter EFI	1994 Thru Present
5.8 Liter and 5.8 Liter EFI	1994 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Dia. x Pitch	Blades
			RH Rotation	LH Rotation		
22-30' Cruiser	3200-5800	28-38	346031		14 <sup>7</sup> / <sub>8</sub> " x 15"	3
20-27' Cruisers and Runabouts	3000-5400	34-44	346032		14 <sup>3</sup> / <sub>4</sub> " x 17"	3
17-22' Runabouts	2300-3400	39-50	346033		14 <sup>1</sup> / <sub>2</sub> " x 19"	3
16-20' Runabouts	2100-2800	44-57	346034		14 <sup>3</sup> / <sub>8</sub> " x 21"	3
High Performance	2000-2600	48-62	346035		14 <sup>1</sup> / <sub>4</sub> " x 23"	3
			RH Rotation	LH Rotation		
Dual Engines			346032	346062	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			346033	346063	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			346034	346064	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
Dual Engines			346035	345065 Δ	14 <sup>1</sup> / <sub>4</sub> " x 23"	3

## SX Cobra, Volvo Penta SX, OMC Cobra (94 thru) - Through 8.2 Litre

Engine	Year
5.8 Litre King EFI	1994 Thru Present
7.4 Litre	1994 Thru Present
8.2 Litre	1994 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Dia. x Pitch	Blades
			RH Rotation	LH Rotation		
22-24' Cruisers	5800-7800	28-38	346031		14 <sup>7</sup> / <sub>8</sub> " x 15"	3
20-30' Cruisers, and Runabouts	5100-7500	35-46	346032		14 <sup>3</sup> / <sub>4</sub> " x 17"	3
18-26' Runabouts	4500-6600	40-52	346033		14 <sup>1</sup> / <sub>2</sub> " x 19"	3
17-22' Runabouts	3900-5700	46-60	346034		14 <sup>3</sup> / <sub>8</sub> " x 21"	3
High Performance	3300-4800	51-66	346035		14 <sup>1</sup> / <sub>4</sub> " x 23"	3
High Performance	2800-4000	57-76	346036		14 <sup>1</sup> / <sub>4</sub> " x 25"	3
			RH Rotation	LH Rotation		
Dual Engines			346032	346062	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			346033	346063	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			346034	346064	14 <sup>3</sup> / <sub>8</sub> " x 21"	3

# OMC STERNDRIVES

## OMC Sterndrive (Inboard/Outboard) - Cobra & Model 400

Engine	Year	Engine	Year
<b>Cobra</b>		<b>Model 400</b>	
2.3 Litre (128 HP)	1988-91	2.3 Litre (120 HP)	Thru 1991
2.5 Litre (120 HP)	1985-87	2.5 Litre (120 HP)	1978-84
3.0 Litre (140 HP)	1985-87	3.0 Litre (140 HP)	Thru 1989
3.0 Litre (130 HP)	Thru 1989		

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Dia. x Pitch	Blades
17-20' Runabouts	2300-3200	30-40	<b>335031</b>	13½" x 17"	3
16-19' Runabouts	2100-2800	34-42	<b>335032</b>	13¾" x 19"	3
15-18' Runabouts	1900-2500	38-46	<b>335033</b>	13½" x 21"	3

## OMC Sterndrive (Inboard/Outboard) - Through 4.3 Liter-King Cobra, Cobra or Model 800 (15 spline)

Engine	Year
3.0 Liter	1990-93
3.8 Liter	1978-85
4.3 Liter	1985-93

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades	
21-26' Cruisers	2600-3400	24-34	<b>345031</b>	—	14⅞" x 15"	3	
19-24' Cruisers	2400-3200	28-37	<b>345032</b>	—	14¾" x 17"	3	
17-21' Runabouts	2300-2800	35-42	<b>345033</b>	—	14½" x 19"	3	
16-19' Runabouts	2100-2600	39-46	<b>345034</b>	—	14⅜" x 21"	3	
15-18' High Performance	1800-2500	42-50	<b>345035</b>	—	14¼" x 23"	3	
Up to 17' High Performance	1700-2200	44-53	<b>345036</b>	—	14¼" x 25"	3	
16 to 19' High Perf. Lifting Hulls	1600-1900	40-48	—	<b>345041</b> Δ	14½" x 22"	3 XL	
15 to 18' High Perf. Lifting Hulls	1900-2400	42-50	—	<b>345037</b>	14½" x 24"	3 XL	
Up to 17' High Perf. Lifting Hulls	1700-2200	44-53	—	<b>345038</b>	14½" x 26"	3 XL	
			<b>RH Rotation</b>	<b>LH Rotation</b>			
Dual Engines			<b>345032</b>	<b>345062</b>	—	14¾" x 17"	3
Dual Engines			<b>345033</b>	<b>345063</b>	—	14½" x 19"	3
Dual Engines			<b>345034</b>	<b>345064</b>	—	14⅜" x 21"	3
Dual Engines			<b>345035</b>	<b>345065</b> Δ	—	14¼" x 23"	3

## OMC Sterndrive (Inboard/Outboard) Thru 5.8 Liter - King Cobra, Cobra or Model 800 (15 Spline)

Engine	Year
3.2 Liter Diesel	1992-93
5.0 Liter	1978-93
5.8 Liter Cobra	1989-93

Includes H.O. & EFI Models

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number RH Rotation	Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades	
22-30' Cruiser	3200-5800	28-38	<b>345031</b>	—	14⅞" x 15"	3	
20-27' Cruisers and Runabouts	3000-5400	34-44	<b>345032</b>	—	14¾" x 17"	3	
17-22' Runabouts	2300-3400	39-50	<b>345033</b>	—	14½" x 19"	3	
16-20' Runabouts	2100-2800	44-57	<b>345034</b>	—	14⅜" x 21"	3	
High Performance	2000-2600	48-62	<b>345035</b>	—	14¼" x 23"	3	
High Performance	1800-2500	50-60	<b>345036</b>	—	14¼" x 25"	3	
High Performance Lifting Hull	1800-2200	55-70	—	<b>345041</b> Δ	14½" x 22"	3 XL	
High Performance Lifting Hull	1800-2200	55-70	—	<b>345037</b>	14½" x 24"	3 XL	
				<b>345038</b>	14½" x 26"	3 XL	
			<b>RH Rotation</b>	<b>LH Rotation</b>			
Dual Engines			<b>345032</b>	<b>345062</b>	—	14¾" x 17"	3
Dual Engines			<b>345033</b>	<b>345063</b>	—	14½" x 19"	3
Dual Engines			<b>345034</b>	<b>345064</b>	—	14⅜" x 21"	3
Dual Engines			<b>345035</b>	<b>345065</b> Δ	—	14¼" x 23"	3

Δ = New



# OMC STERNDRIVES (Continued)

## OMC Sterndrive (Inboard/Outboard) - Through 8.2 Liter-King Cobra, Cobra or Model 800 (15 spline)

Engine	Year	
5.7 Litre	1978-93	
5.8 Litre King Cobra	1992-94	
7.4 Litre	1990-93	
7.5 Litre	1987-90	
8.2 Litre	1992-93	
Includes H.O. & EFI Models		

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Ballistic-XL Product Number RH Rotation	Dia. x Pitch	Blades
			RH Rotation	LH Rotation			
22-24' Cruisers	5800-7800	28-38	345031		—	14 $\frac{7}{8}$ " x 15"	3
20-30' Cruisers, Runabouts	5100-7500	35-46	345032		—	14 $\frac{3}{4}$ " x 17"	3
18-26' Runabouts	4500-6600	40-52	345033		—	14 $\frac{1}{2}$ " x 19"	3
17-22' Runabouts	3900-5700	46-60	345034		—	14 $\frac{3}{8}$ " x 21"	3
High Performance	3300-4800	51-66	345035		—	14 $\frac{1}{4}$ " x 23"	3
High Performance	2800-4000	57-76	345036		—	14 $\frac{1}{4}$ " x 25"	3
High Performance Lifting Hull	2500-4000	55-65	—		345041 $\Delta$	14 $\frac{1}{2}$ " x 22"	3 XL
High Performance Lifting Hull	2200-3800	60-75	—		345037	14 $\frac{1}{2}$ " x 24"	3 XL
					345038	14 $\frac{1}{2}$ " x 26"	3 XL
			RH Rotation	LH Rotation			
Dual Engines			345032	345062	—	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345033	345063	—	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345034	345064	—	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345035	345065 $\Delta$	—	14 $\frac{1}{4}$ " x 23"	3

## OMC Sea Drive® V-4

Engine	Year	
1.6 Litre V-4	1982 Thru Present	
1.8 Litre V-4	1987 Thru Present	

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Dia. x Pitch	Blades
			RH Rotation	LH Rotation		
19-22' Runabouts	2200-3800	30-42	335031		13 $\frac{1}{2}$ " x 17"	3
17-20' Runabouts	1700-2600	38-50	335032		13 $\frac{3}{8}$ " x 19"	3
15-18' High Performance	1400-2400	44-56	335033		13 $\frac{1}{8}$ " x 21"	3

## OMC Sea Drive® V-4, V-6 and V-8

Engine	Year	Engine	Year
2.0 Litre V-4	1989 Thru Present	3.0 Litre V-6	1989 Thru Present
2.5 Litre V-6	1982-87	3.6 Litre V-8	1987 Thru Present
2.6 Litre V-6	1982 Thru Present	4.0 Litre V-8	1989 Thru Present
2.7 Litre V-6	1987 Thru Present		

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Dia. x Pitch	Blades
			RH Rotation	LH Rotation		
24-28' Single Engine Cruisers	3000-5000	24-36	345031		14 $\frac{7}{8}$ " x 15"	3
24-27' Single Engine Cruisers	2800-4700	30-40	345032		14 $\frac{3}{4}$ " x 17"	3
21-24' Runabouts	2500-4500	36-47	345033		14 $\frac{3}{4}$ " x 19"	3
18-22' Runabouts	2200-4100	42-54	345034		14 $\frac{1}{2}$ " x 21"	3
23-25' Twin Engine Cruisers & Runabouts	2800-4400	50-62	345035		14 $\frac{3}{8}$ " x 23"	3
			RH Rotation	LH Rotation		
Dual Engines			345032	345062	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345033	345063	14 $\frac{3}{4}$ " x 19"	3
Dual Engines			345034	345064	14 $\frac{1}{2}$ " x 21"	3
Dual Engines			345035	345065 $\Delta$	14 $\frac{3}{8}$ " x 23"	3

$\Delta$  = New

# MERCUISER STERNDRIVES

## MerCruiser - Through 4.3 Litre (MerCruiser & Alpha One Drives)

Engine	Year
120 - 190 HP (Includes 470, 488, 898)	1983-85
2.5 Litre (120 HP)	1986-89
3.0 Litre (125-140 HP)	1986 Thru Present
3.7 Litre (165-190 HP)	1986-89
4.3 Litre (155-180 HP)	1986 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Ballistic-XL Product Number	Dia. x Pitch	Blades
			RH Rotation	LH Rotation			
21-26' Cruisers	2600-3400	24-34	345131	—	—	14 $\frac{7}{8}$ " x 15"	3
19-24' Cruisers	2500-3200	28-37	345132	—	—	14 $\frac{3}{4}$ " x 17"	3
17-21' Runabouts	2300-2900	35-42	345133	—	—	14 $\frac{1}{2}$ " x 19"	3
16' to 19' Runabouts	2100-2600	39-46	345134	—	—	14 $\frac{3}{8}$ " x 21"	3
15' to 18' High Performance	1900-2400	42-50	345135	—	—	14 $\frac{1}{4}$ " x 23"	3
Up to 17' High Performance	1700-2200	44-53	345136	—	—	14 $\frac{1}{4}$ " x 25"	3
16' to 19' High Perf. Lifting Hulls	2100-2600	40-48	—	—	345141 $\Delta$	14 $\frac{1}{2}$ " x 22"	3 XL
15' to 18' High Perf. Lifting Hulls	1900-2400	42-50	—	—	345137	14 $\frac{1}{2}$ " x 24"	3 XL
Up to 17' High Perf. Lifting Hulls	1700-2200	44-53	—	—	345138	14 $\frac{1}{2}$ " x 26"	3 XL
			RH Rotation	LH Rotation			
Dual Engines			345132	345162	—	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345133	345163	—	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345134	345164	—	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345135	345165 $\Delta$	—	14 $\frac{1}{4}$ " x 23"	3

## MerCruiser - Through 5.7 Litre (MerCruiser, Alpha One & Bravo Drives)

Engine	Year
200 - 260 HP (Includes 228, 898)	1983-85
262 Magnum (205 HP)	1997 Thru Present
350 Magnum (240-300 HP)	1987 Thru Present
5.0 Litre (180-240 HP)	1986 Thru Present
5.7 Litre (210-280 HP)	1986 Thru Present

Application Boat Description	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Ballistic-XL Product Number	Dia. x Pitch	Blades
			RH Rotation	LH Rotation			
22-30' Cruisers	3200-5800	28-38	345131	—	—	14 $\frac{7}{8}$ " x 15"	3
20-27' Cruisers and Runabouts	3000-5400	34-44	345132	—	—	14 $\frac{3}{4}$ " x 17"	3
17-22' Runabouts	2300-3400	39-50	345133	—	—	14 $\frac{1}{2}$ " x 19"	3
16-20' Runabouts	2100-2800	44-57	345134	—	—	14 $\frac{3}{8}$ " x 21"	3
High Performance	1800-2500	48-62	345135	—	—	14 $\frac{1}{4}$ " x 23"	3
High Performance Lifting Hull	1900-2600	47-62	—	—	345141 $\Delta$	14 $\frac{1}{2}$ " x 22"	3 XL
High Performance Lifting Hull	1800-2500	50-65	—	—	345137	14 $\frac{1}{2}$ " x 24"	3 XL
High Performance Lifting Hull	1800-2200	55-70	—	—	345138	14 $\frac{1}{2}$ " x 26"	3 XL
			RH Rotation	LH Rotation			
Dual Engines			345132	345162	—	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345133	345163	—	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345134	345164	—	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345135	345165 $\Delta$	—	14 $\frac{1}{4}$ " x 23"	3

$\Delta$  = New

# MERCUISER STERNDRIVES (Continued)

## MerCruisers - Thru 7.4 Litre (Alpha One and Bravo Drives)

Engine	Year		Ballistic		Ballistic-XL		
7.4 Litre (300-330 HP)	1988 Thru Present		Product Number		Product Number		
454 Magnum (350-365 HP)	1987 Thru Present		RH Rotation	LH Rotation	RH Rotation	Dia. x Pitch	Blades
<b>Application</b>	<b>Approx. Gross Wt.</b>	<b>Current MPH</b>	<b>Product Number</b>		<b>Product Number</b>	<b>Dia. x Pitch</b>	<b>Blades</b>
<b>Boat Description</b>			<b>RH Rotation</b>	<b>LH Rotation</b>			
28-36' Cruisers	5300-7800	33-43	345131	—	—	14 <sup>7</sup> / <sub>8</sub> " x 15"	3
27-34' Cruisers	5100-7500	35-46	345132	—	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
25-30' Cruisers and Runabouts	4500-6600	42-52	345133	—	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
23-27' Cruisers and Runabouts	3900-5700	46-60	345134	—	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
22-25'	3300-4800	51-66	345135	—	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3
21-24'	2800-4000	57-76	345136	—	—	14 <sup>1</sup> / <sub>4</sub> " x 25"	3
High Performance Lifting Hull	2700-4200	50-58	—	—	345141 Δ	14 <sup>1</sup> / <sub>2</sub> " x 22"	3 XL
High Performance Lifting Hull	2500-4000	55-65	—	—	345137	14 <sup>1</sup> / <sub>2</sub> " x 24"	3 XL
High Performance Lifting Hull	2200-3800	60-75	—	—	345138	14 <sup>1</sup> / <sub>2</sub> " x 26"	3 XL
			<b>RH Rotation</b>	<b>LH Rotation</b>			
Dual Engines			345132	345162	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			345133	345163	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			345134	345164	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
Dual Engines			345135	345165 Δ	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3

## Mercruiser Diesel

Engine	Year		Ballistic				
D2.8 Litre	1997 Thru Present		Product Number				
			RH Rotation	LH Rotation		Dia. x Pitch	Blades
<b>Application</b>	<b>Approx. Gross Wt.</b>	<b>Current MPH</b>	<b>Product Number</b>			<b>Dia. x Pitch</b>	<b>Blades</b>
<b>Boat Description</b>			<b>RH Rotation</b>	<b>LH Rotation</b>			
23-27' Cruisers	3600-6500	25-32	345131	—	—	14 <sup>7</sup> / <sub>8</sub> " x 15"	3
22-26' Cruisers	3400-6200	28-35	345132	—	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
21-25' Cruisers	3200-5900	31-39	345133	—	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
20-23' Cruisers	3000-4700	33-43	345134	—	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
19-22' Cruisers and Runabouts	2500-3600	35-45	345135	—	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3
			<b>RH Rotation</b>	<b>LH Rotation</b>			
Dual Engines			345132	345162	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			345133	345163	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			345134	345164	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
Dual Engines			345135	345165 Δ	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3

## Mercruiser Diesel

Engine	Year		Application		Ballistic		
D3.0 Litre (D183) Bravo One	1990-96		Product Number				
			RH Rotation	LH Rotation		Dia. x Pitch	Blades
<b>Boat Description</b>	<b>Approx. Gross Wt.</b>	<b>Current MPH</b>	<b>Product Number</b>			<b>Dia. x Pitch</b>	<b>Blades</b>
			<b>RH Rotation</b>	<b>LH Rotation</b>			
23-27' Cruisers	3400-6200	28-37	345131	—	—	14 <sup>7</sup> / <sub>8</sub> " x 15"	3
21-25' Cruisers	3200-5900	33-41	345132	—	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
20-23' Cruisers	3000-4700	37-46	345133	—	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
19-22' Cruisers and Runabouts	2500-3600	42-50	345134	—	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
18-21' Runabouts	2100-2900	47-56	345135	—	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3
			<b>RH Rotation</b>	<b>LH Rotation</b>			
Dual Engines			345132	345162	—	14 <sup>3</sup> / <sub>4</sub> " x 17"	3
Dual Engines			345133	345163	—	14 <sup>1</sup> / <sub>2</sub> " x 19"	3
Dual Engines			345134	345164	—	14 <sup>3</sup> / <sub>8</sub> " x 21"	3
Dual Engines			345135	345165 Δ	—	14 <sup>1</sup> / <sub>4</sub> " x 23"	3

Δ = New

# MERCUISER STERNDRIVES (Continued)

Mercruiser Diesel						
Engine	Year					
D3.6 Litre (D219) Bravo One	1990 Thru Present					
Application				Ballistic		
Boat Description	Approx. Gross Wt.	Current MPH	Product Number		Dia. x Pitch	Blades
			RH Rotation			
25-29' Cruisers	4800-7500	27-35	345131		14 $\frac{7}{8}$ " x 15"	3
23-27' Cruisers	4600-7200	30-39	345132		14 $\frac{3}{4}$ " x 17"	3
21-25' Cruisers	4400-6900	33-41	345133		14 $\frac{1}{2}$ " x 19"	3
20-23' Cruisers and Runabouts	3500-5500	37-46	345134		14 $\frac{3}{8}$ " x 21"	3
19-22' Cruisers and Runabouts	3000-4300	42-50	345135		14 $\frac{1}{4}$ " x 23"	3
18-21' Runabouts	2400-3400	47-55	345136		14 $\frac{1}{4}$ " x 25"	3
			RH Rotation	LH Rotation		
Dual Engines			345132	345162	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345133	345163	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345134	345164	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345135	345165 $\Delta$	14 $\frac{1}{4}$ " x 23"	3

Mercruiser Diesel						
Engine	Year					
D4.2 Litre (D254) Bravo One	1990 Thru Present					
Application				Ballistic		
Boat Description	Approx. Gross Wt.	Current MPH	Product Number		Dia. x Pitch	Blades
			RH Rotation			
25-29' Cruisers	4800-6200	26-35	345131		14 $\frac{7}{8}$ " x 15"	3
23-28' Cruisers	4600-6000	29-38	345132		14 $\frac{3}{4}$ " x 17"	3
21-25' Cruisers	4400-5800	33-40	345133		14 $\frac{1}{2}$ " x 19"	3
20-23' Cruisers and Runabouts	3800-4900	38-45	345134		14 $\frac{3}{8}$ " x 21"	3
19-22' Cruisers and Runabouts	3400-4200	43-51	345135		14 $\frac{1}{4}$ " x 23"	3
18-21' Runabouts	3200-3700	48-56	345136		14 $\frac{1}{4}$ " x 25"	3
			RH Rotation	LH Rotation		
Dual Engines			345132	345162	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345133	345163	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345134	345164	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345135	345165 $\Delta$	14 $\frac{1}{4}$ " x 23"	3

Mercruiser Diesel						
Engine	Year					
D7.3 Litre Bravo One	1998 Thru Present					
Application				Ballistic		
Boat Description	Approx. Gross Wt.	Current MPH	Product Number		Dia. x Pitch	Blades
			RH Rotation			
28-30' Cruisers	4800-6200	26-35	345131		14 $\frac{7}{8}$ " x 15"	3
26-28' Cruisers	4600-6000	29-38	345132		14 $\frac{3}{4}$ " x 17"	3
24-27' Cruisers	4400-5800	33-40	345133		14 $\frac{1}{2}$ " x 19"	3
23-26' Cruisers and Runabouts	3800-4900	38-48	345134		14 $\frac{3}{8}$ " x 21"	3
22-25' Cruisers and Runabouts	4900-5900	45-55	345135		14 $\frac{1}{4}$ " x 23"	3
21-24' Runabouts	3200-3700	50-56	345136		14 $\frac{1}{4}$ " x 25"	3
			RH Rotation	LH Rotation		
Dual Engines			345132	345162	14 $\frac{3}{4}$ " x 17"	3
Dual Engines			345133	345163	14 $\frac{1}{2}$ " x 19"	3
Dual Engines			345134	345164	14 $\frac{3}{8}$ " x 21"	3
Dual Engines			345135	345165 $\Delta$	14 $\frac{1}{4}$ " x 23"	3

$\Delta$  = New

# YAMAHA STERNDRIVES

Yamaha Stern drives									
Engines	Year								
3.0 Liter, (110-130 HP)	1989-93								
4.3 Liter, (180-205 HP)	1989-93								
Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number		Ballistic-XL Product Number		Dia. x Pitch	Blades	
Boat Description			RH Rotation	LH Rotation	RH Rotation				
21-26' Cruisers	2600-3400	24-34	345931				14 <sup>7</sup> / <sub>8</sub> " x 15"		3
19-24' Cruisers	2500-3200	28-37	345932				14 <sup>3</sup> / <sub>4</sub> " x 17"		3
17-21' Runabouts	2300-2900	35-42	345933				14 <sup>1</sup> / <sub>2</sub> " x 19"		3
16 to 19' Runabouts	2100-2600	39-46	345934				14 <sup>3</sup> / <sub>8</sub> " x 21"		3
15 to 18' High Performance	1900-2400	42-50	345935				14 <sup>1</sup> / <sub>4</sub> " x 23"		3
Up to 17' High Performance	1700-2200	44-53	345936				14 <sup>1</sup> / <sub>4</sub> " x 25"		3
16-20' High Perf. Lifting Hulls	2100-2600	39-46	—		345941 Δ		14 <sup>1</sup> / <sub>2</sub> " x 22"		3 XL
15 to 18' High Perf. Lifting Hulls	1900-2400	42-50	—		345937		14 <sup>1</sup> / <sub>2</sub> " x 24"		3 XL
Up to 17' High Perf. Lifting Hulls	1700-2200	44-53	—		345938		14 <sup>1</sup> / <sub>2</sub> " x 26"		3 XL
			RH Rotation	LH Rotation					
Dual Engines			345932	345962	—		14 <sup>3</sup> / <sub>4</sub> " x 17"		3
Dual Engines			345933	345963	—		14 <sup>1</sup> / <sub>2</sub> " x 19"		3
Dual Engines			345934	345964	—		14 <sup>3</sup> / <sub>8</sub> " x 21"		3
Dual Engines			345935	345965 Δ	—		14 <sup>1</sup> / <sub>4</sub> " x 23"		3

Yamaha Stern drives									
Engines	Year								
5.0 Litre (210-230 HP)	1989-93								
5.7 Litre (240-260 HP)	1989-93								
7.4 Litre (300 HP)	1992-93								
Application	Approx. Gross Wt.	Current MPH	Ballistic Product Number				Dia. x Pitch	Blades	
Boat Description			RH Rotation	LH Rotation					
22-30' Cruisers	3200-5800	28-38	345931				14 <sup>7</sup> / <sub>8</sub> " x 15"		3
20-27' Cruisers and Runabouts	3000-5400	34-44	345932				14 <sup>3</sup> / <sub>4</sub> " x 17"		3
17-22' Runabouts	2300-3400	39-50	345933				14 <sup>1</sup> / <sub>2</sub> " x 19"		3
16-20' Runabouts	2100-2800	44-57	345934				14 <sup>3</sup> / <sub>8</sub> " x 21"		3
High Performance	1800-2500	48-62	345935				14 <sup>1</sup> / <sub>4</sub> " x 23"		3
			RH Rotation	LH Rotation					
Dual Engines			345932	345962			14 <sup>3</sup> / <sub>4</sub> " x 17"		3
Dual Engines			345933	345963			14 <sup>1</sup> / <sub>2</sub> " x 19"		3
Dual Engines			345934	345964			14 <sup>3</sup> / <sub>8</sub> " x 21"		3
Dual Engines			345935	345965 Δ	—		14 <sup>1</sup> / <sub>4</sub> " x 23"		3

Δ = New

# Advantages That Make A Difference.

Optimized power tip for peak efficiency; blade tip and cup combine to improve bite and reduce power losses caused by cavitation

High luster mirror finish adds appeal and enhances corrosion resistance

Shock-absorbing hub prevents damage to gears and shaft caused by shifting and prop impact

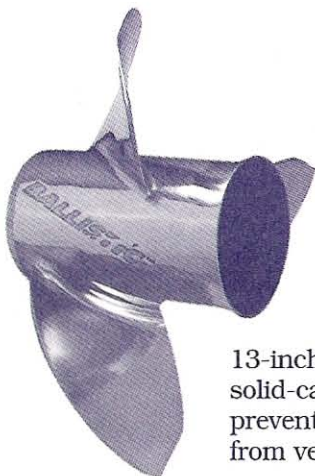
Highly cambered blade sections provide for higher speed and better bow lift

Tapered leading edge minimizes drag, provides performance characteristics of racing style props while maintaining optimum blade strength and thickness

One-piece investment cast construction from 15-5ph stainless steel, the ideal material for strength and corrosion resistance

Use of standard OEM hub geometry simplifies installation, repair and replacement

Blades are hand balanced during finishing to assure consistency and minimize vibration



13-inch models feature solid-cast flared hub to prevent performance loss from ventilation



14-inch models with high pitch (23" and 25") have a vented hub design that allows the engine to come up to speed and get on plane quickly

## Warranty Statement for Ballistic Propellers

Michigan Wheel Corporation warrants to the original consumer purchaser that for the life of the motor originally fitted with the Ballistic Propeller, under normal pleasure boat usage, the body of the propeller will be free of any defect in material or workmanship that results in blade or hub fracture or failure. Michigan Wheel Corporation also warrants to the original consumer purchaser, under the same parameters of use described above, that the propeller bushing will be free from any defect in material or workmanship for a period of one year from the date of purchase.

Some surface discoloration is unavoidable in a cast stainless steel alloy, and will not be covered by this warranty. This warranty also does not cover normal wear, accidental damage, modification, improper installation, improper maintenance, or other circumstances that are not the direct result of a defect in the material or workmanship of the propeller.

The sole obligation of Michigan Wheel Corporation under this warranty is to repair or replace the propeller, in the sole discretion of Michigan Wheel Corporation, and at its expense. In order to make a replacement claim, please contact the Michigan Wheel Corporation Customer Service Department, at (616) 452-6941, for a "Return Goods Authorization" number (RGA#), and shipping address instructions. The warranty will not cover any expense of propeller removal, shipping, or reinstallation of the propeller. The RGA# is to be indicated along with our given address on the label, and the shipping carton should include your return shipping address, your phone number, and your original purchase receipt.

The above warranty is Michigan Wheel Corporation's sole warranty for the Ballistic propeller. Michigan Wheel Corporation expressly disclaims all other warranties, expressed or implied, including, without limitation, the warranties of merchantability and fitness for a particular purpose and excludes all liability for incidental or consequential damages, loss of use of a propeller, costs, and expenses.

Any actions arising out of this warranty and the sale of this product shall be governed by Michigan law and may only be brought, heard and decided in Kent County Circuit Court, in the State of Michigan, U.S.A., or in the United States District Court for the Western District of Michigan.

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# **MICHIGAN WHEEL**

C O R P O R A T I O N

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