# RIGGING ESSENTIALS



# CHOOSING THE RIGHT ENGINE IS JUST THE BEGINNING

Selecting the right rigging is a critical step in getting the best performance of your new boat package. This comprehensive guide to all of your rigging essentials from controls to gauges to propellers will help you take total command of your engine and get the most out of your boat.





# EVINRUDE E-TEC G2 STANDARD PANELS

# MATCH YOUR BOAT

THE EVINRUDE E-TEC G2 ENGINE IS THE WORLD'S FIRST OUTBOARD WITH INTERCHANGEABLE SIDE, TOP AND FRONT PANELS, AS WELL AS ACCENT COLOR.

You have hundreds of different color combinations to choose from. Create an Evinrude E-TEC G2 to perfectly match your boat.







# EVINRUDE E-TEC G2 CUSTOM PANELS

### UNIQUE COLORS TO MATCH YOUR BOAT.

Choose from eight specialty paint options or work with an Evinrude dealer to perfectly match the hull of your boat.



### CUSTOM WRAPS TO MATCH YOUR STYLE.

Select one of six standard wraps or work with an Evinrude dealer to design your own custom wrapped panel kit.



# ICON II CONTROLS

# THE INDUSTRY'S MOST ADVANCED ELECTRONIC ENGINE CONTROL

# EVINRUDE PUSHES THE THROTTLE FORWARD WITH NEW ENHANCEMENTS FOR THIS NEXT GENERATION OF DIGITALLY CONTROLLED OUTBOARDS.

- NEW STYLING of the top-mount binnacle, with excellent ergonomics, is designed to reduce fatigue and provide smooth, predictable control.
- RELIABILITY is built in with redundant networks and redundant sensors.
- MULTIPLE ENGINE SUPPORT. Evinrude E-TEC G2 controls are engineered to fit up to 4 engines.
- · MULTIPLE HELM STATIONS. Single station and second station rigging for flying bridge applications.

The result is legendary ICON ergonomics with all new designs and advanced engineering for a new generation of Evinrude E-TEC G2 outboards.











Basic - Single Engine Top Mount Binnacle Control

Basic - Single Engine Concealed Side Mount Control

- A POWERSYNC. Synchronize multiple engine RPMs and control multiple engines by combining shift and throttle functions with the push of a button. Boat operators can now operate multi-engine boats by using a single control lever.
- B ENGINE TRIM. A single master engine trim switch is installed on the shift lever to control all engines. Conveniently located individual trim switches allow easy operation and fine-tuning adjustments.
- **6** F-N-R INDICATORS. Forward-Neutral-Reverse (F-N-R) indicators easily identify gear position for added safety and usability.
- PRPM TUNE. This Evinrude exclusive is a virtual RPM cruise control ranging from idle to wide-open throttle. Press the "RPM" button on the control to fine-tune the engine RPM slightly higher or lower; this makes it easy to find the exact trolling speed or optimize fuel economy at cruise.

DESCRIPTION	PACK QTY	P/N
Dual Engine, Main Station Rigging Kit (Premium)	1	769910
Dual Engine, Second Station Rigging Kit (Premium)	1	769911
Triple Engine, Main Station Rigging Kit (Premium)	1	768756
Triple Engine, Second Station Rigging Kit (Premium)	1	768757
Quad Engine, Main Station Rigging Kit (Premium)	1	769914
Quad Engine, Second Station Rigging Kit (Premium)	1	769915
Single Engine, Main Station Rigging Kit (Premium)	1	768752
Single Engine, Second Station Rigging Kit (Premium)	1	768753
Concealed Side Mount Rigging Kit (Premium)	1	768750
Single Engine, Top Mount Rigging Kit (Standard)	1	769010
Concealed Side Mount Rigging Kit (Standard)	1	769011

# EVINRUDE IDOCK JOYSTICK PILOTING

# NOW ANYONE CAN DOCK LIKE A PRO





The newest feature of the Evinrude Intelligent Piloting System, the all-new Evinrude iDock provides 360 degrees of docking confidence. The intuitive system puts advanced aircraft gyroscope sensor technology into the fingertips of boaters of all experience levels, allowing them to easily maneuver their boat for easy docking in even the toughest conditions. The system connects with the existing integrated hydraulic steering feature of Evinrude E-TEC®  $G2^{TM}$  engines to simply and seamlessly integrate with your boat package. And, because it leverages E-TEC G2 architecture, there are no added costs for additional external pumps or installation. This makes joystick docking attainable and instantly adds to the value of any twin engine boat it's installed on. Because 100% of boaters deserve 100% docking confidence.

### INTUITIVE

Evinrude iDock enables boaters of all experience levels to confidently dock their boats without anxiety, stress, or worry. Gyroscope aircraft sensors combined with an intuitive two-stage joystick allow you to maneuver your boat sideways and pivot in place, for easy docking in even the toughest conditions. Now no one has a reason to steer clear of docking.

### INTEGRATED

Evinrude iDock is a fully integrated system so there are no pumps or modules exposed to wear and tear, cluttering your transom or taking up precious storage space. Because it uses the integrated hydraulic steering of Evinrude E-TEC G2 engines, you can be reassured that your boat will maintain the ability to steer. And, like all rigging and accessories, iDock is covered under the same warranty and B.E.S.T. coverage as your engines.

### ATTAINABLE

With Evinrude iDock, you don't have to sacrifice your wallet to gain total docking confidence. Because iDock leverages E-TEC G2 architecture, there are no added costs for additional pumps or increased labor cost for installation, allowing iDock to add incredible lasting value to your boat. It all adds up to a level of on-the-water confidence you can't afford to live without.

# ICON TOUCH GAUGES

# INCREASED FUNCTIONALITY IN AN LCD WINDOW.



### ICON TOUCH 7.0 CTS COLOR TOUCH SCREEN

ICON TOUCH 7.0 CTS FEATURES A LARGE FORMAT, FULL-COLOR 7.0 INCH TOUCH SCREEN.

### MAJOR FUNCTIONS AND SUPPORT INCLUDE:

- Color touch screen with easy to access information in multiple views.
- 1, 2, 3 or 4 engine support.
- Mode control for adjusting iSteer, iTrim, and with concealed side mount, switching between hand and foot throttle.
- Fuel tank levels up to 4 tanks
- Engine oil level and accessory oil tank levels.
- Water tank levels up to 3 tanks / 3 water types.
- Accessory display of engine water pressure, depth, SOW and water temperatures of sea water, live well and bait well
- Can be displayed in English, French, Italian, German or Spanish.
- Descriptive text for fault codes and procedures.

# BOAT SYSTEMS INFORMATION VIA SIX SCREEN GROUPINGS:

- Home page general cruising and performance information including RPM, trim level, engine water temperature, fuel economy MPG, fuel consumption GPH and boat speed.
- Engine page in-depth monitoring of one or up to 4 Evinrude E-TEC G2 outboards.
- Fuel/Fluids page precise readouts of fuel levels up to 4 tanks, engine oil levels and water tanks.
- Vessel page accurate readouts of battery voltage, boat speed, and fuel economy.
- Trip Logs page offers detailed information regarding trip distance, fuel economy, average speed and more.
- Eco view page fuel management information allows the user to optimize engine throttle and trim adjustment for instant changes and the most efficient operation.
- A status bar is always visible with gear position, GPS clock, active throttle, and fault notifications.

### **INSTALLATION REQUIREMENTS**

- Surface mount dimensions 10" / 25.4cm wide x 6" / 15.24cm tall.
- Includes drill template, mounting hardware and GPS antenna



COLOR TOUCH 4.3 CTS

FULL-COLOR 4.3-INCH TOUCH SCREEN.

- Color touch screen with easy to access information in multiple views.
- 1 or 2 engine support.
- Mode control for adjustments to power steering, trim assist and for concealed side mount, switching between hand and foot throttle operation.
- Fuel tank levels up to 4 tanks.
- Engine oil level and accessory oil tank levels.
- Water tank levels up to 1 tank / 1 water type.
- Accessory display of engine water pressure, depth, SOW and water temperatures of sea water, live well and bait well.
- Can be displayed in English, French, Italian, German or Spanish.
- · Descriptive text for fault codes and procedures.

# BOAT SYSTEMS INFORMATION VIA 6 SCREEN GROUPINGS:

- Home page general cruising and performance information including RPM, trim level, engine water temperature, fuel economy MPG, fuel consumption GPH and boat speed.
- Engine page in-depth monitoring of one or up to 2 Evinrude E-TEC G2 outboards.
- Fuel/Fluids page precise readouts of fuel levels up to 4 tanks, engine oil levels and water tanks.
- Vessel page accurate readouts of battery voltage, boat speed, and fuel economy.
- Trip Logs page offers detailed information regarding trip distance, fuel economy, average speed and more.
- Eco View page fuel management information allows the user to optimize engine throttle and trim adjustment for instant changes and the most efficient operation.
- A status bar is always visible with gear position, GPS clock, active throttle, and fault notifications.

### INSTALLATION REQUIREMENTS

- Surface mount dimensions 7.5"/ 19.05cm wide x 4" / 10.16cm tall.
- Includes drill template, mounting hardware and GPS antenna.



ICON TOUCH 3.5 CS COLOR SCREEN

FEATURES A FULL-COLOR 3.5-INCH SCREEN.

- Color Screen Easy to access information.
- 1 engine support.
- Mode control for adjustments to power steering, trim assist and for concealed side mount, switching between hand and foot throttle operation.
- Fuel tank levels up to 2 tanks.
- Engine oil level and accessory oil tank levels.
- Accessory display of engine water pressure.
- Can be displayed in English, French, Italian, German or Spanish.
- Descriptive text for fault codes and procedures.

# BOAT SYSTEMS INFORMATION VIA 5 SCREEN GROUPINGS:

- Home page with two modes: one for general cruising information and another for just basic information such as RPM, trim level, engine water pressure and boat speed.
- Engine page in-depth monitoring of one Evinrude® E-TEC G2 outboard.
- Fuel/Fluids page precise readouts of fuel levels up to 2 tanks and engine oil levels.
- Vessel page accurate readouts of battery voltage, boat speed, and fuel economy.
- Eco View page fuel management information allows the user to optimize engine throttle and trim adjustment for instant changes and the most efficient operation.

### **INSTALLATION REQUIREMENTS**

- Surface mount dimensions 4" / 10.16cm wide x 4" / 10.16cm tall.
- Fits standard 3 3/8" round hole.

DESCRIPTION	PACK QTY	P/N
ICON Touch 7.0 CTS - Single, Twin, Triple or Quad Engines with GPS	1	769942
ICON Touch 4.5 CTS - Single or Twin Engines with GPS	1	769943
ICON 3.5 CS - Single Engine without GPS	1	769944
ICON 3.5 CS - Single Engine with GPS	1	769945

# ICON GAUGES

# FROM THE FUNCTION-FILLED PRO SERIES TO THE NO-NONSENSE BASIC SERIES

### FUNCTIONALITY AND ACCURACY

An analog look in a digital world working together seamlessly. Contemporary styling and high-end performance available in small and large displays. Multi-function gauges offer high visibility of information, including fuel-management functions. It's all there.

### A HOST OF OPTIONS

Evinrude offers a selection of ICON gauges, allowing you to customize your console to your exact needs. Select ICON main gauges from the Pro Series, Basic 3-n-1 or Basic series. Available in two colors, accenting your boat is as simple as black and white



## ICON GAUGES - PRO SERIES

# INCREASED FUNCTIONALITY IN AN LCD WINDOW

ICON PRO. Offers digital performance wrapped in an analog look with increased functionality in an LCD window.

SPECIALIZED FUNCTIONS. Including GPS speed, fuel management, fuel economy, trip logs and many more.

IT'S PLUG AND PLAY. Connects directly into the existing Evinrude NMEA 2000 network.

VERSATILE. Works on Evinrude E-TEC 40-hp through 300-hp

INTERNATIONAL. Supports multi-language

VISIBLE. Features anti-fog lens

SECURITY. Includes engine fault display



ICON PRO 3.5 3.5 IN. (89mm)







768055 Black



Black



768008 White



768056 White



White

# ICON GAUGES - BASIC SERIES

# HIGH PERFORMANCE IN TRADITIONAL STYLING

BASIC FUNCTIONS. Packaged in a high value, lower cost gauge.

USER FRIENDLY. No buttons to push, no setup required. Just straight accurate engine information

IT'S PLUG AND PLAY. Connects directly into the existing Evinrude NMEA 2000 network.

SIMPLE. Daisy chain connections between the tachometer and accessory gauges simplify wiring.

VERSATILE. Works on Evinrude E-TEC 40-hp through 300-hp

FLEXIBLE. Supports up to 2 engines and up to 2 fuel tanks

MULTI-FUNCTION 3-N-1. gauges offer high visibility and compact installation. Two gauges offer 7 major functions.

VISIBLE. Features anti-fog lens

SECURITY. Includes engine fault warning lights



ICON BASIC 3-N-1 5 IN. (127mm)

ICON BASIC







766183 White with Engine Temp. & Trim



766166 Black with Fuel & Volt



766189 White with Fuel & Volt



766159 Black



766182 White



766165 Black



766188 White



766164 Black



766163 Black



766187 White



766186 White

# ICON GAUGES - ACCESSORY SERIES

# PERFECT COMPLEMENT TO THE ICON PRO, ICON BASIC 3-N-1 & ICON BASIC GAUGES

ACCESSORY GAUGES. Provide dedicated display of water pressure, fuel level, battery volts, engine trim, engine temperature and oil tank level.



ICON ACCESSORY 2 IN. (51mm)



### ADDITIONAL ACCESSORIES

DESCRIPTION	P/N
ICON Basic backlight adjustment kit Note: Optional with ICON Basic gauge to provide backlight dimming.	766114
Harness, fuel level input, 3rd & 4th tank level display  Note: Needed to add Fuel Tank input for Tank 3 and 4.  Use on ICON PRO.	765510
GPS antenna - SOG input	765349
Paddle Wheel Kit - SOW input	764193
Triducer, transom mount, SOW/Depth/Seawater temp	764671
Triducer, thru-hull, plastic, SOW/Depth/Seawater temp	764673
Transducer, transom mount, Depth/Seawater temp (no Speed)	764672

### WATER PRESSURE SENSORS

DESCRIPTION	HP RANGE	MODEL YEAR	PRESSURE RANGE	P/N
Block Mounted Sensor	115HP-300HP	2008 - 2011	0 - 30 PSI	5008300
Block Mounted Sensor	115HP-300HP	2012 & newer	0 - 50 PSI	5008640
NMEA Network Based Sensor	40HP-90HP	2008 & newer	0 - 100 PSI	765038

### ICON GAUGE NETWORK PARTS

DESCRIPTION	P/N
Engine EMM Harness – per engine	766026
Power Supply – per boat	764157
Terminator Kit – per boat	764155
Backbone – 25 feet, – per boat	764163
GPS Module – per boat	767488

# UNIVERSAL REPOWER RIGGING SYSTEM

# USE EXISTING MECHANICAL ENGINE CONTROLS & GAUGES FOR A REDUCED-COST RIGGING SOLUTION



# CONVERTS MECHANICAL MOTIONS OF STANDARD SHIFT AND THROTTLE CABLES INTO DIGITAL EST COMMANDS

- Compatible with competitive controls and SAE type control cables
- Includes integrated digital to analog converter allowing the reuse of existing gauges
- Offers the lowest cost repower rigging solution
- Recommended for single and twin engine applications

### UNIVERSAL REPOWER RIGGING SYSTEM COMPATIBILITY

ENGINE BRAND	EVINRUDE JOHNSON 1995 - OLDER	EVINRUDE JOHNSON 1996 - NEWER 2 OR 4 STROKE	YAMAHA* 2 OR 4 STROKE	MERCURY* 2 OR 4 STROKE	SUZUKI 4 STROKE	HONDA 4 STROKE
Reuse Existing Control Box	YES	YES	YES	YES	YES	YES
Reuse Existing Control Cables	YES	YES	Required Cable Adapter Included in Rigging Selection			
Reuse Existing Wire Harness	Required Harness Included in Rigging Selection	YES	Required Harness Included in Rigging Selection			
Reuse Existing Ignition Switch	Required Key Switch Included in Rigging Selection	YES	Required Key Switch Included in Rigging Selection			

Not compatible with Mercury Verado and Yamaha Command Link models

Note: If purchased out of program, Evinrude SystemCheck gauge recommended. For Mercury applications, an Evinrude trim gauge will also be included.

DESCRIPTION	PACK QTY	P/N
Universal Repower Rigging System	1	767682

## EVINRUDE ILINK

# CONVENIENCE OF A VIRTUAL DASHBOARD ON YOUR MOBILE DEVICE



Phone or tablet not included.

#### EVINRUDE E-TEC G2 ENGINE DATA DISPLAYED ON A MOBILE PHONE OR TABLET

- Plug and play Wi-Fi connection to engine and vessel via NEMA 2000 network
- Displays engine information including RPM, fuel flow, trim position, oil level and more
- · Displays vessel and accessory information including fuel levels, battery voltage, water depth and more

#### DIRECT CONTROL OF IMPORTANT ENGINE FEATURES

- Provides engine mode adjustment to Evinrude Intelligent Piloting System features including iTrim engine trim control, iSteer dynamic power steering level adjustment and auto-winterization.
- Concierge feature includes links to "find a dealer" and Evinrude E-Nation social media site with option to send engine data to your dealer via email.

### AN ALTERNATIVE TO TRADITIONAL MARINE INSTRUMENTATION

- · Provides the same information and functionality available through Evinrude ICON Touch digital marine gauges
- Provides ECO View function to monitor average fuel economy, estimated range and instantaneous fuel use to maximize boat efficiency.

Purchase includes the Evinrude iLink Wi-Fi module and a free App download with no membership or subscription fees.

DESCRIPTION	PACK QTY	P/N
Evinrude iLINK	1	768403

RIGGING ACCESSORIES 15

## FABRIC ENGINE COVER

# A CUSTOM STYLED AND DESIGNED COVER TO PROTECT EVINRUDE E-TEC G2 FROM WEATHER AND ABRASION

- Contoured and sewn to fit the exact shape of the engine cowling
- A custom fit and easy to install
- Solution dyed water repellent polyester fabric
- Special woven-in soft inner liner won't scratch
- Designed for over the road towing
- Key areas reinforced against wear
- Elastic stretch cords plus hook and loop straps keep the cover tight and secure
- No loose edges to flap in the wind and abrade the finish
- No zippers or drawstrings
- Not designed for engine operation when installed

DESCRIPTION	PACK QTY	P/N
Fabric Engine Cover for 200 H.O300 HP	1	768133
Fabric Engine Cover for 150 HP-200 HP	1	768856



# FOOT THROTTLES

# TAKE YOUR EVINRUDE E-TEC G2 BOATING EXPERIENCE TO A NEW LEVEL OF CONTROL

- Switch between foot and hand operation with ICON display
- Available in bulkhead floor throttle for footwell areas with built in foot rests and floor mount kit for alternate installations
- Smooth and predictable automotive-like driving experience
- Improved control of keeping both hands on the steering wheel

DESCRIPTION	PACK QTY	P/N
Foot Throttle Floor Mount	1	766567
Foot Throttle Bulkhead Mount	1	767747



# STEERING SUPPORT BRACE

# MAINTAINS STRAIGHT-AHEAD ALIGNMENT OF THE EVINRUDE E-TEC G2 DURING OVER THE ROAD TOWING.







- · Prevents engine contact with anchor poles, poling stands and auxiliary engines
- Installs easily between the lower motor mount and stern bracket, with no tools
- Prevents steering movement while towing
- Fits any shaft length
- · Lightweight one-piece design
- Tough powder paint coating resists chips and scratches

DESCRIPTION	PACK QTY	P/N
Steering Support Brace	1	768606

# ENGINE FLUSH KIT

# A FRONT MOUNTED FLUSHING ACCESSORY FOR EVINBUDE E-TEC G2

- Easy access, front mounted flushing
- Hides away when not needed
- Port or starboard installation
- Quick connect couplings
- Uses standard garden hose connection
- Easy to install with normal tools





DESCRIPTION	PACK QTY	P/N
Front Mount ENgine Flush Kit	1	5010004

RIGGING ACCESSORIES 17

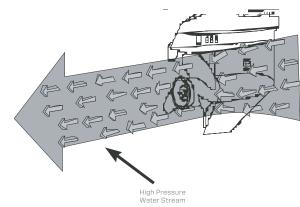
## PROPELLER

## WHERE THE POWER MEETS THE WATER!

Choosing the right propeller is the single most important decision you can make to get the best performance from your boat and outboard! Propeller choice can affect boat top speed by as much as 5 to 10 MPH. It also has a direct effect on acceleration, cornering, pulling power, and fuel economy. With some boats, you may need to change propellers for different activities, such as high speed cruising, water skiing, or carrying heavy loads. Using the wrong propeller in any of these applications will not only hurt performance, but could also cause engine damage.

### HOW DOES A PROPELLER WORK?

A propeller is a set of identical twisted blades, spaced evenly around a hub. Most propellers have a splined bushing in the hub that mounts on the outboard. The bushing attaches to the propeller with flexible rubber that acts like a shock absorber. If the propeller strikes something hard, the rubber helps protect against damage. Newer propellers may use a multi-piece interchangeable hub system. Refer to Propeller Hub Systems on Page 24. Each propeller blade has two surfaces that displace water to move the boat. As the propeller rotates, the blade back creates a low pressure that helps pull the boat forward. The blade face creates high pressure as it rotates. This pressure forces a stream of water away from the propeller. As the water is pushed to the rear, an equal force pushes the boat forward.





### BASIC PROPELLER TERMS

- A LEADING EDGE. The edge of the blade closest to the boat.
- B TRAILING EDGE. The edge of the blade farthest from the boat.
- BLADE TIP. The point on the blade farthest from the hub. It separates the leading edge from the trailing edge.
- BLADE ROOT. The area where the blade attaches to the hub.
- **E** BLADE BACK. The side of the blade closest to the boat (low pressure side).
- F BLADE FACE. The side of the blade opposite to the boat (high pressure side).





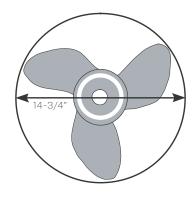
PROPELLER TERMS

# PROPELLER

# TERMINOLOGY

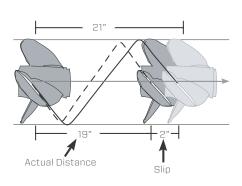
### WHAT TO CONSIDER WHEN SHOPPING FOR A PROP

Several characteristics affect how a propeller will perform. Especially important are propeller diameter, pitch, rake, and cup. Most propellers are identified by their diameter and pitch. Look for a number like 14-3/4 X 21. The first number is the diameter, the second is the pitch. In addition, it is important to understand the effects of ventilation, cavitation, materials, and other application variables on propeller performance.



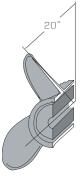
### DIAMETER

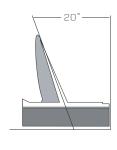
Diameter is the width of the circle described by the tips of the rotating blades. Propeller diameter determines the amount of power a propeller can apply to the water—how much load the propeller can push. Generally, heavy loads require larger diameter propellers while small, fast boats are more efficient with a smaller diameter. However, diameter is not usually a critical option when choosing a propeller. Focus instead on propeller style and pitch.



### PITCH

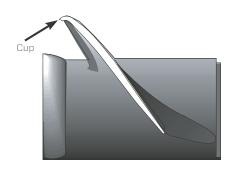
Pitch is the theoretical distance a propeller will travel in one complete revolution. For example, a 14-1/2 X 21 propeller would ideally move 21 inches forward with each revolution. In practice, the actual distance travelled is less than the pitch because of "slip" which is necessary to produce thrust. Lower pitched propellers are like the lower gears on a car or bicycle. They create less forward travel with each revolution. A low pitch allows engine RPM to build up quickly, which gives faster acceleration and more pulling power. This works well for heavy loads, but results in slower top speeds. Higher pitched propellers are similar to high gears. They create more forward travel with each revolution. A high pitch puts more load on the engine, which reduces low speed pulling power and acceleration, but usually provides more top speed.

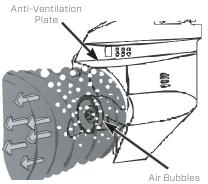




### RAKE

Rake is the angle the blade tip tilts away from the gearcase. The angle is measured on a line extending from the center of the hub through the center of the blade. Rake can be either flat or progressive. Progressive rake means that the rake angle increases with distance from the hub. Most propellers have between 0° and 20° rake. High rake propellers tend to lift the bow of the boat. On fast, lightweight, V-bottom boats, a high rake propeller should increase speed by reducing the amount of wetted hull surface. When operated partially surfacing, high rake propellers reduce the amount of water being thrown off the blade by centrifugal force as the blade leaves the water. This allows high rake propellers to work more effectively in these applications. Tunnel boats and other air entrapment type hulls may become unstable when using a high rake propeller. In these applications, a propeller with less bow lift would be a more appropriate selection.





# 

### CUP

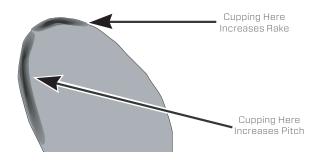
Cup is the small curved lip added to the edges of some propellers. Cupping acts like a seal on the edge of the blade. It keeps water on the high pressure blade face from flowing around the trailing edge to the low pressure area on the blade back. This reduces ventilation and slipping, especially when operating in disturbed or aerated water. Propellers with cup excel in sharp turns and applications where the engine is mounted higher than normal. Cupping also allows the outboard to be trimmed higher for more bow lift. Cupping the tips of the blades increases the effective rake, adding to the bow lift capabilities of the propeller. Adding cup to the trailing edge of the blades has the effect of increasing pitch. As a result, you can expect a slight loss of engine speed (150-300 RPM) when cup is added. However, the additional cup may allow the propeller to work at a higher transom height. Raising the motor will reduce drag on the gearcase and will often recover the engine speed.

### VENTILATION

Ventilation is the result of air bubbles from surface air or exhaust gases being drawn into the blades. These pockets of air make a propeller lose its bite or thrust. Your RPM may climb wildly, yet you may not gain or lose speed. This is most common with high transom mountings, extreme trim settings, or sharp turns. To help prevent ventilation, the outboard has an anti-ventilation plate directly above the propeller. For most applications, this plate should be within an inch above or below the bottom of the boat. On a high-performance boat, this rule does not necessarily apply. The anti-ventilation plate may be several inches above the boat bottom. Water testing is the best way to determine the correct engine mounting height. Cupped or high performance propellers help minimize ventilation.

### CAVITATION

Cavitation is caused by a disturbance of the water flow in front of the propeller. An irregularity in the boat bottom or gearcase, a misplaced transducer or speedometer pickup, or even a loose rivet can cause this problem. Cavitation begins when a disturbance creates a lowpressure area in the water flow. As speed increases, the low pressure intensifies enough to vaporize (boil) some of the surrounding water. When the vapor bubbles approach a high pressure area, they collapse, releasing energy and causing damage. The results of cavitation usually appear as burned areas on the gearcase or propeller blades. If the damage is substantial, performance is lost and the propeller should be replaced. In addition, the cause of the disturbance should be repaired to prevent further problems.





PROPELLER TERMINOLOGY

# PROPELLER SELECTION

## SELECT THE RIGHT PROPELLER FOR YOUR BOAT & OUTBOARD



### MATERIAL

Aluminum propellers provide a good balance of cost, performance, and durability for most applications.

Stainless steel propellers offer improved performance, fuel economy, and durability. Because stainless steel is five times stronger than aluminum, it is much less susceptible to damage from striking underwater

objects. However, the main advantage of stainless steel is in performance. Because of its strength, stainless propeller blades can be cast much thinner, which reduces drag. Stainless steel blades are also stiffer, which increases efficiency. Composite and plastic propellers are generally used for emergency situations.

### BLADE COUNT

Theoretically, the fewer number of blades a propeller has, the more efficient it will be. But as the number of blades is increased, vibration is decreased. For most applications, three blade propellers provide the best balance between efficiency and smoothness. However, BRP/ Evinrude engineers have created a series of four blade propellers that provide increased efficiency and a superior grip on the water. The result is improved acceleration and better cornering in all water conditions. In addition, when operated in a surfacing application, a four blade propeller keeps more blades in the water for maximum thrust and efficiency.

### ROTATION

Right-hand propellers are considered standard rotation propellers. To move the boat forward, the propeller rotates in a right-hand (clockwise) direction as viewed from the rear. Left-hand propellers are considered counter-rotation propellers. To move the boat forward, the propeller rotates in a left-hand (counterclockwise)

direction as viewed from the rear. Lefthand propellers must ONLY be used on an outboard equipped with a counterrotation gearcase. In a dual-outboard installation, the use of both right-hand and left-hand propellers balances the torque created by the rotation of the propellers. This helps to reduce the effort needed in steering and also helps to keep the boat level from side to side.

# **WARNING**

For dual-outboard installations, always check to be sure propellers are installed on the correct engines before aggressively operating the boat.

### STEP ONE

Choose the propeller type designed for the way the boat will be used:

- Fishing, skiing, cruising, commercial, racing, etc?
- How many people will be on board?
- Is the water shallow, or are there rocks or other underwater objects?
- Will the boat be used for multiple purposes?

Use the propeller family descriptions in the following pages as a guide. For example, a Rebel™ propeller could be a good choice for a large, offshore boat. In contrast, a Raker® propeller provides bow lift, for increased top speed, on small, fast boats.

#### STEP TWO

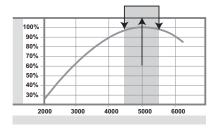
Find the correct sized propeller for your specific outboard, boat, and load combination. When selecting a propeller, start with the propeller charts in the following pages. These charts group all of the propellers designed for a particular outboard and provide detailed information such as pitch, diameter, style, and the number of blades.

To complete the selection process, you must perform a water test. During this running test, you will determine the best combination of engine mounting height, propeller style, and propeller pitch.

All Evinrude and Johnson outboards have a recommended full throttle operating range. This means that, at full throttle, engine RPM must never be below or above this range. These specifications can be found in the Operator's Guide.

The propeller provides the load that controls engine RPM. Reducing propeller pitch size will increase engine RPM at full throttle. Increasing propeller pitch size will decrease engine RPM at full throttle.

You have the correct propeller pitch when the engine runs at the midpoint of the full throttle operating RPM range with the normal, expected load in the boat. This is usually the point of peak horsepower. Choosing the correct propeller pitch for a given boat and application will ensure long engine life, along with best overall fuel economy and performance.



When you have a selection of propellers ready for testing:

- Use an accurate tachometer to measure RPM and an accurate speedometer to measure boat speed.
- 2. Testing should be performed with the typical load—number of people, gear, water in live wells, etc.
- 3. Make sure that every test is with an identical setup.
- 4. Test each propeller at wide open throttle (WOT).
- 5. Engines should be tested at their optimum trim angle. This is the highest trim position the engine can be run without excessive ventilation, either in a straight line or in turns.
- 6. If the RPM is too low at WOT, try a reduced pitch and retest.
- 7. If the RPM is too high at WOT, test a propeller with more pitch. One pitch size usually results in a change of 200-300 RPM.
- 8. If the boat will be used for two applications, like water skiing and cruising, it may be necessary to test propellers for each type of use.

### STEP THREE

Adjust the engine mounting height for peak performance. The ideal engine mounting height provides the fastest boat speed without sacrificing acceleration, maneuverability, or engine water pressure. It is achieved by a trial and error method.

- 1. Start with the outboard's antiventilation plate even with the bottom of the boat.
- 2. Raise the outboard one mounting hole at a time until engine performance is no longer acceptable. Then, lower the outboard back down one hole. Optimum engine height is affected by propeller style, diameter, and pitch. As you raise the engine, you may need to experiment with a variety of propellers to maximize performance.

### THINGS TO REMEMBER

Check full throttle RPM often. It is possible that the propeller pitch size may have to change as the boating application or load changes

Adding or removing people can significantly change the power requirements placed on the engine.

Changes in atmospheric pressure, temperature, and humidity all affect engine performance, which directly affects propeller performance

Salt water is more buoyant than fresh water; this may cause some hulls to run faster when moving from a fresh water to salt water location.

The accumulation of marine growth or dirt—moss, barnacles, lime deposits, etc—is a major cause of poor boat performance.

PROPELLER SELECTION 2

# PROPELLER HUB SYSTEMS

# DID YOU KNOW EVINRUDE JOHNSON GENUINE PARTS HAS PROPELLERS TO FIT EVERY BRAND OF OUTBOARD ENGINE?

Evinrude and Johnson has been a leader in propeller performance for over 40 years. Since 1982 our engineers have laid claim to defining new levels of speed and performance with the legendary Raker and now the Raker II propellers. Since the Nineties, the Viper propeller has unleashed previously unknown performance in the everyday runabout. As an extra bonus every Evinrude Johnson propeller comes with a 3 year limited warranty.

Evinrude Johnson Genuine Parts has been expanding our propeller line to include a select group of V4 and V6 propellers with interchangeable hub systems.

The Evinrude Johnson interchangeable hub offering begins with V4 and V6 aluminum propellers, commonly referenced in the aftermarket as D Series and E Series. They use the "Aluminum Interchangeable Hub" system and can be fitted with accessory hub kits designed to match the propeller shaft of all brands of outboard engines.

The expanded lineup continues into the V6, E Series stainless steel propellers comprised of SSP, Viper, Rebel, Cyclone, Raker H.O. with VVP and RX4 with VVP propellers. These props use the TBX hub system designed specifically for the heavy load requirements of high horsepower outboards. With only one additional TBX hub kit these propellers can also be fitted to virtually every competitive brand of V6 outboard engine.

# PROPELLER HUB SYSTEM - V6 STAINLESS STEEL PROPELLER INTERCHANGEABLE CHART

DESCRIPTION	P/N
Evinrude E-TEC G2 TBX™ bushing kit (POP) - PY2015 thru	767683
TBX™ bushing kit (POP) - Evinrude®/Johnson® outboards V6 (1997 thru 2015)	177283
TBX™ bushing kit (POP) - competitive outboards V6	177288



### PROPELLER HUB SYSTEM - ALUMINUM PROPELLER INTERCHANGEABLE

MATERIAL/FAMILY	SPLINE	YEAR	P/N
Evinrude®/Johnson® V4 45-75 HP, large gearcase 4 1/4"	13	1968-current	765195
Evinrude®/Johnson® V4 85-140 HP	13	1969-current	765195
Evinrude®/Johnson® 90-140 HP, large gearcase	15	1991-current	765190
Force® 75-150 HP	15	1995-current	765192
Honda® 75-150 HP	15	1995-1998	765192
Honda® BF 135 HP, 150 HP, 200 & 225 HP	15	2003-current	765192
Mercury®/Mariner®/MerCruiser® 60 HP Bigfoot	15		765192
Mercury®/Mariner®/MerCruiser® 70-140 HP (except 135 HP), XR-4, XR-6	15	1961-current	765192
Mercury®/Mariner®/MerCruiser® 135 HP	15	1987-current	765192
Mercury®/Mariner®/MerCruiser® 150-300 HP	15	1978-current	765192
Yamaha® 80-140 HP	15	1978-1983	765192
Yamaha® 150-175 HP	15	1978-1983	765192
Yamaha® 115 HP, FS115 (4-stroke), 130 HP	15	1984-current	765193
Yamaha® 150-130 HP	15	1984-current	765193
Yamaha® Sterndrives	15	1989-1993	765193
OMC Cobra® SX	19	1994-current	765194
Volvo® SX Sterndrives	19	1994-current	765194
Honda® 75-90 HP	15	1999-current	765196
Honda® 115-130 HP	15	1999-current	765196
Nissan®/Tohatsu® 90-140 HP	15	1987-current	765197
Mercury®/Mariner®/MerCruiser® 225 EFI (4-stroke) manufactured by Yamaha®	15		765198
Evinrude®/Johnson® 90, 115 HP (4-stroke)	15	2003-current	765199
Suzuki® DF90, DF115 (4-stroke)	15	2001-current	765199
Suzuki® DF140 (4-stroke)	15	2001-current	765200

## PROPELLER

## FAMILY DESCRIPTIONS

Choosing the right propeller is the single most important decision you can make to get the best performance from your boat and outboard. It helps get the most performance, fuel economy, and top speed out of your boat. Evinrude propellers come with a 3 year warranty, and if purchased with an engine, will match the engine coverage.



## RX4

MASTER THE E-TEC G2 POWER CURVE

- Bowlift, fuel economy
- Rough water traction and grip
- VVP Variable Vent Port



BASS & HIGH PERFORMANCE

- Fast, Fast, Fast
- Superior bow lift
- VVP Variable Vent Port

Custom tune the acceleration power of your propeller by adjusting the opening of the vent ports

**VVP - VARIABLE VENT PORT** 



OFFSHORE & CRUISING

- Longer cruise range
- Mid-range fuel economy
- Large diameter blade area



- Fast to plane
- Balance of speed and efficiency
- Versatile 3-blade performance



## FAMILY APPLICATION

ENGINE TYPE	ALUMINUM	HYDRUS	SSP	ROGUE	RX4	RAKER	VIPER	REBEL	CYCLONE
12 40-60 HP	•	•	•			•			
13 75-90 HP	•	•	•	•		•	•		
V4 115-130 HP	•	•	•	•		•	•		
V6 150-300 HP	•		•		•	•	•	•	•
Rotation - Standard RH	•	•	•	•	•	•	•	•	•
Rotation - Counter LH			•		•		•	•	•

BOAT TYPE	ALUMINUM	HYDRUS	SSP	ROGUE	RX4	RAKER	VIPER	REBEL	CYCLONE
Runabout - Fiberglass	•				•				
Runabout - Aluminum	•		•	•	•		•		•
Deck Boat	•				•		•	•	•
Flats Boat	•			•			•		•
Bay Boat	•						•		
Multi-Species Boat - Aluminum	•				•		•		•
Multi-Species Boat - Fiberglass					•	•	•		
Bass Boat					•	•			•
Sport Runabout 150 HP+					•	•			
Offshore - small, single engine	•			•	•		•		•
Offshore - multiple engine					•		•		•
Offshore - multiple engine w/iDock									
Pontoon - twin log	•	•	•	•					
Pontoon - triple log					•				
Pontoon - multiple engine w/iDock									

# PROPELLER QUICK REFERENCE GUIDE

All aluminum propellers fitting 40-140HP 2-stroke, 13 spline and V6 aluminum propellers, 15 spline are packaged with Aluminum Interchangeable Hub kit. All V6 stainless steel propellers are packaged with the Evinrude / Johnson TBX hub kit. Refer to the Interchangeable hub kit chart to order kits to fit competitors outboards.

All Evinrude®/Johnson® Propellers have a 3-Year Limited Warranty!

15H.O.-30 HP EVINRUDE® E-TEC®

P/N	MATERIAL/FAMILY	BLADE COUNT	DIAMETER	PITCH	NOTES
5008225	Aluminum	4	11"	7"	15 H.O. High Thrust
765048	Aluminum	3	11"	9"	General Purpose and Economy
765049	Aluminum	3	10 1/2"	11"	General Purpose and Economy
765135	Aluminum	4	10.2"	11"	General Purpose and Economy
765050	Aluminum	3	10.3"	12"	General Purpose and Economy
765136	Aluminum	4	10.1"	12"	General Purpose and Economy
778863	Aluminum	3	10.3"	13"	General Purpose and Economy
765137	Aluminum	4	10"	13"	General Purpose and Economy
765138	Aluminum	4	10"	14"	General Purpose and Economy
763486	Aluminum	3	10"	15"	General Purpose and Economy
765139	Aluminum	4	10"	15"	General Purpose and Economy
765176	Aluminum	3	10"	11"	Durability & General Purpose
765174	Aluminum	4	10"	11"	Durability & General Purpose
765177	Aluminum	3	10"	12"	Durability & General Purpose
765175	Aluminum	4	10"	12"	Durability & General Purpose
765178	Aluminum	3	10"	13"	Durability & General Purpose
766153	Aluminum	4	10"	13"	Durability & General Purpose
765179	Aluminum	3	10"	14"	Durability & General Purpose
765180	Aluminum	3	10"	15"	Durability & General Purpose

## 40-130 HP EVINRUDE® E-TEC® (EXCLUDES 25" MODELS)

P/N	MATERIAL/FAMILY	BLADE COUNT	DIAMETER	PITCH	NOTES
763300	Aluminum	3	14"	9"	General Purpose and Economy
763301	Aluminum	3	14"	11"	General Purpose and Economy
765181	Aluminum	3	13 3/4"	13"	General Purpose and Economy
765182	Aluminum	3	13 1/2"	15"	General Purpose and Economy
765183	Aluminum	3	13 1/4"	17"	General Purpose and Economy
765184	Aluminum	3	13.2"	19"	General Purpose and Economy
765185	Aluminum	3	13.2"	21"	General Purpose and Economy
177201	Hydrus™ Aluminum	3	13 7/8"	9"	Pontoon boats, High Reverse Thrust
177202	Hydrus™ Aluminum	3	13 7/8"	11"	Pontoon boats, High Reverse Thrust
177203	Hydrus™ Aluminum	3	13 7/8"	13"	Pontoon boats, High Reverse Thrust
763957	SSP	3	13 3/4"	13"	Durability and General PurposE
763950	SSP	3	13 1/2"	15"	Durability and General PurposE
763951	SSP	3	13 1/4"	17"	Durability and General PurposE
763952	SSP	3	13"	19"	Durability and General PurposE
763929	Viper™	3	13 7/8"	15"	Swept blade design, General use, Bow Lifter
763930	Viper™	3	13 7/8"	17"	Swept blade design, General use, Bow Lifter
763931	Viper™	3	13 7/8"	19"	Swept blade design, General use, Bow Lifter
763932	Viper™	3	13 7/8"	21"	Swept blade design, General use, Bow Lifter
763953	Raker®	3	13 1/2"	18"	High Performance Bow Lifter
763954	Raker®	3	13 1/2"	20"	High Performance Bow Lifter
763956	Raker®	3	13 1/2"	24"	High Performance Bow Lifter
763964	Rogue™	4	13 1/2"	13"	Flat Boats and Runabouts
763965	Rogue™	4	13 1/4"	15"	Flat Boats and Runabouts
763966	Rogue™	4	13"	17"	Flat Boats and Runabouts
763967	Rogue™	4	13"	19"	Flat Boats and Runabouts
763968	Rogue™	4	13"	21"	Flat Boats and Runabouts

150 - 300 HP EVINRUDE® E-TEC®, 25" MODELS - 90, 115, 130 EVINRUDE® E-TEC®

RIGHT HAND	LEFT HAND	MATERIAL/	BLADE COUNT	DIAMETER	PITCH	NOTES
(STANDARD ROTATION)	(COUNTER ROTATION	_		15 1/2"	11"	
767620 763453		Aluminum Aluminum	3 3	15 1/2"	13"	General Purpose and Economy
765186			3	15"	15"	General Purpose and Economy
		Aluminum				General Purpose and Economy
765187		Aluminum	3	14 7/8"	17"	General Purpose and Economy
765188		Aluminum	3	14 1/2	19"	General Purpose and Economy
765189		Aluminum	3	14.3"	21"	General Purpose and Economy
763470 763959		Aluminum	<u>3</u> 3	14 1/4"	<u>23"</u> 11"	General Purpose and Economy
	700001	SSP TBX™		15 5/8"		Durability and General Purpose
763960	763961	SSP TBX™	3	15 5/8" 15"	<u>13"</u> 15"	Durability and General Purpose
763962 763910	763963 763911	SSP TBX™ Viper™ TBX™	3	15"	14"	Durability and General Purpose
763910	763913	Viper™ TBX™	<u>3</u> 3	14 3/4"	16"	All-around General Purpose, Bow Lifter All-around General Purpose, Bow Lifter
763912	763915	Viper™ TBX™	3	14 3/4"	17"	All-around General Purpose, Bow Lifter
763914	763917	Viper™ TBX™	<u>3</u> 3	14 3/4"	18"	All-around General Purpose, Bow Lifter
763918	763919	Viper™ TBX™	3	14 3/4"	19"	All-around General Purpose, Bow Lifter
763920	763921	Viper™ TBX™	3	14 3/4"	20"	All-around General Purpose, Bow Lifter
763920	763923	Viper™ TBX™	3	14 1/2"	21"	All-around General Purpose, Bow Lifter
763924	763925	Viper™ TBX™	3	14 1/4"	22"	All-around General Purpose, Bow Lifter
763936	763923	Cyclone™ TBX™	4	14 1/2"	<u></u>	Cruising and Transom Lift
763938	763939	Cyclone™ TBX™	4	14 1/4"	17"	Cruising and Transom Lift
763940	763941	Cyclone™ TBX™	4	14 1/8"	18"	Cruising and Transom Lift
763942	763943	Cyclone™ TBX™	4	14 1/8"	19"	Cruising and Transom Lift
763944	763945	Cyclone™ TBX™	4	14"	20"	Cruising and Transom Lift
763946	763947	Cyclone™ TBX™	4	14"	21"	Cruising and Transom Lift
763948	763949	Cyclone™ TBX™	4	14"	23"	Cruising and Transom Lift
177264	7000-0	Raker II® TBX™	3	14 1/2"	22"	High Performance Bow Lifter
177265		Raker II® TBX™	3	4 1/2"	24"	High Performance Bow Lifter
177299		Raker II® TBX™	3	14 1/2"	25"	High Performance Bow Lifter
177266		Raker II® TBX™	3	14 1/2"	26"	High Performance Bow Lifter
177267		Raker II® TBX™	3	14 1/2"	28"	High Performance Bow Lifter
763984	763985	Rebel TBX™	3	15 3/4"	 15"	Faster Cruising Speeds & Improved Fuel Economy
763986	763987	Rebel TBX™	3	15 1/2"	17"	Faster Cruising Speeds & Improved Fuel Economy
763988	763989	Rebel TBX™	3	15 3/8"	18"	Faster Cruising Speeds & Improved Fuel Economy
763990	763991	Rebel TBX™	3	15 1/4"	19"	Faster Cruising Speeds & Improved Fuel Economy
763992	763993	Rebel TBX™	3	15 1/8"	20"	Faster Cruising Speeds & Improved Fuel Economy
763994	763995	Rebel TBX™	3	15"	21"	Faster Cruising Speeds & Improved Fuel Economy
763996	763997	Rebel TBX™	3	14 7/8"	22"	Faster Cruising Speeds & Improved Fuel Economy
763998	763999	Rebel TBX™	3	14 3/4"	23"	Faster Cruising Speeds & Improved Fuel Economy
764000	764001	Rebel TBX™	3	14 1/2"	25"	Faster Cruising Speeds & Improved Fuel Economy
RAKER® H.O. WITH VA	ARIABLE VENT PO	ORTS (NO TBX™ HUB)				
177304		Raker® H.O.	3	14 1/2"	22"	Maximize speed and optimize acceleration
177305		Raker® H.O.	3	14 1/2"	24"	Maximize speed and optimize acceleration
177308		Raker® H.O.	3	14 1/2"	25"	Maximize speed and optimize acceleration
177306		Raker® H.O.	3	14 1/2"	26"	Maximize speed and optimize acceleration
177307		Raker® H.O.	3	14 1/2"	28"	Maximize speed and optimize acceleration
RX4™ WITH VARIABL	E VENT PORTS (I	NO TBX™ HUB)				
177340	177341	Rx4™	4	15"	16"	
177320	177321	Rx4™	4	15"	18"	
177322	177323	Rx4™	4	15"	20"	For optimal mid-range fuel economy,
177324	177325	Rx4™	4	15"	22"	roughwater bite and bow lift - offshore,
177326	177327	Rx4™	4	15"	24"	inshore, pontoon, runabouts
177328		Rx4™	4	15"	25"	
177330		Rx4™	4	15"	26"	



ski-doo. Lynx. Sec-200. Evinrude. Rotax. Can-am.