



Riverside Outboards_{LLC}

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WHAT'S BEEN DONE TO MY ETEC ENGINE?

- Compression Tested to Insure OK cylinder, rings, and pistons
- Ignition System calibrated, tested under sustained high RPM, evaluated spark strength, timing Set for best low idle & top RPM, EMM fault codes checked/cleared if present. Oil system primed.
- Fuel System checked for correct pump function, filters checked and/or changed as needed, injectors verified to EMM
- Gearcase seals tested, fluid changed & run under high RPMs, also run in Forward, Neutral, and Reverse
- Cooling System Evaluated for a minimum of 5 minutes of Wide Open Throttle (motors overheat within 30 seconds if the cooling system is in need of service). Impeller/Thermostat serviced as necessary.
- Lubricated articulations as necessary, mechanically evaluated for passable normal usage

WHEN 1ST USING YOUR MOTOR, DO THE FOLLOWING:

1. **Read the owner's manual**, available free to download at <http://riversidesoutboards.com>
2. Make sure your fuel tank is no more than 18" below the height of the motor (may interfere with fuel pump operation)
3. **Follow the correct start procedure to start the motor if it hasn't run for awhile. Prime BOTH fuel and oil bulbs (if external oil tank is present).** DO NOT advance throttle. Turn key to start motor, EMM automates starting.
4. **USE 87 OCTANE fuel.** High octane, non-ethanol, or special fuels aren't necessary. Super high octane fuels can make the engine run wrong. **Use FULL SYNTHETIC TC-W3 OIL, PREFERABLY XD-50 OR HIGHER oil.**
5. It is recommended to still premix your fuel at 200:1. This is not required, but provides superior lubrication to your injectors and fuel pumps.

COMMON MISTAKES PEOPLE MAKE WITH OUTBOARD MOTORS

1. **Make sure to hold the primer bulb vertically with arrow pointing UP when squeezing or it won't work.** *DON'T USE OLD FUEL.* This voids in full the 30-day tune up policy provided. Beware of bad connectors, lines, & tanks.
2. **Load the boat with friends and family the first time out so that it turns into a huge debacle due to inexperience.** If you are not familiar with 2-stroke motors, it is recommended you use the engine with a friend 2-3 times and expect to make a few mistakes while learning.
3. **Use incorrect starting procedures and engage the starter continuously for 10+ seconds.** This will cause the starter to burn out and fail prematurely. If you keep repeating the same steps and see the same results, then you need to change your approach because what you are doing is not working. Don't repeat the same mistake and expect a different outcome.
4. **Believe the engine shakes excessively in neutral when throttle is advanced (not in gear).** ETEC motors are programmed to prevent from over-revving the motor while in neutral. Advancing the throttle beyond 1200 RPM results in the EMM preventing the motor from winding out. It will appear to shake in this scenario.
5. **PANIC if the engine doesn't start.** Panicking does nothing to solve the problem, but a clear mind does. Usually it is something simple; no fuel (kinked fuel line), safety lanyard is ajar or missing, a blown fuse, etc. Work the problem and solve the issue rather than wasting energy panicking.
6. **Fail to maintain the engine.** Every 100hrs or every other year – water pump & fuel/water separator/filter. Every 50hrs check spark plugs. Winterize the engine at the end of each season. It's YOUR responsibility to take care of the engine by bringing it in for annual service.
7. **Motor Smokes During Initial Start.** This is normal for a 2-stroke motor. It is simply oil burning off in a cold motor.

PROPELLERS - FAILURE TO MONITOR YOUR RPMS WILL CAUSE ENGINE FAILURE.

Your engine has a specific operating range that is very important to understand. When you run the engine at full throttle, it **MUST** be able to achieve the RPMs it was designed for or **you will damage your engine and cause it to fail.** Most outboards are designed to run between 5000-6000 RPMs when at full throttle, and the boat is trimmed up (bow lifted from the water). The following factors directly influence RPMS:

1. Vessel **load**, vessel **type**, **hull fouling**, and **weather conditions** affect motor performance.
2. **Propeller diameter** – the cross measurement of the propeller blades.
3. **Propeller pitch** – blade angle. The higher the pitch, the more aggressive angle the propeller has.

Between all factors, **PITCH** has the largest effect on the RPMs your motor will turn at all throttle ranges, particularly at Wide Open Throttle (WOT).

You **LOSE 150-200 RPMs** each pitch **UP** you go. You **GAIN 150-200 RPMs** each pitch **DOWN** you go.

You need to have a properly calibrated tachometer to determine what RPMs your motor can turn while at full throttle, vessel trimmed.

2012 RPM QUICK REFERENCE CHART

| Model | Recommended Operating Range | Optimum RPM Range | RPM @ Rated HP |
|-------------------------------|-----------------------------|-------------------|----------------|
| 15 H.O. | 5000 – 5500 | 5000 – 5250 | 5250 |
| 25 HP | 5500 – 6000 | 5400 – 5750 | 5750 |
| 30 HP | 5500 – 6000 | 5400 – 5750 | 5750 |
| 40 HP | 5000 – 6000 | 5400 – 5600 | 5500 |
| 50 HP | 5500 – 6000 | 5600 – 5750 | 5750 |
| 60 HP | 5500 – 6000 | 5600 – 5750 | 5750 |
| 65 HP Commercial | 5500 – 6000 | 5600 – 5750 | 5750 |
| 75 HP | 4500 – 5500 | 5000 – 5200 | 5000 |
| 90 HP | 4500 – 5500 | 5000 – 5200 | 5000 |
| 115 – 130 HP 60° V4 | 5500 – 6000 | 5500 – 5750 | 5750 |
| 150 HP/150 H.O. 60° V6 | 4850 – 5850 | 5500 – 5600 | 5350 |
| 175 HP 60° V6 | 4850 – 5850 | 5500 – 5600 | 5350 |
| 200 HP 60° V6 | 4850 – 5850 | 5600 – 5850 | 5350 |
| 200 H.O. 90° V6 (3.3L) | 4500 – 5800 | 5500 – 5700 | 5150 |
| 225 HP/225 H.O. 90° V6 (3.3L) | 4500 – 5800 | 5500 – 5700 | 5150 |
| 250 HP 90° V6 (3.3L) | 4500 – 5800 | 5500 – 5700 | 5150 |
| 250 H.O. 90° V6 (3.4L) | 4500 – 6000 | 5500 – 5800 | 5250 |
| 300 HP 90° V6 (3.4L) | 5000 – 6000 | 5500 – 5800 | 5500 |

How to Use the RPM Quick Reference Chart

When selecting a propeller for an outboard and boat application, refer to the recommended wide open throttle operating range for the outboard model.

When determining propeller selection, choose a propeller that will best suit the customer's needs. For example:

- choose a higher pitch propeller for low-to-mid rpm for light load cruising.
- choose a lower pitch propeller to attain top rpm for water skiing or other high load applications.

For best overall performance choose a propeller that allows the outboard to run in the optimum rpm range, which is usually the point of peak horsepower.

Remember, only a thorough water test will determine which propeller works best for a particular application.