RadioControlOutboards.com Motor Boating Guide

Successful outboard motor boating requires some knowledge of boat stability, boat/motor sizing, boat operation, water and weather conditions, battery management, and boat retrieval. This guide is provided so that you may prevent undesirable outcomes such as capsizing, damage, and loss.

Boat Stability

A boat must be adequately stable to carry a given motor. Larger size generally translates to greater stability. Stability is also influenced by shape. Excluding keeled sailboats, rounder hulls tend to be less stable. Flat bottom hulls more stable. RadioControlOutboards.com will provide a minimum recommended flat bottom boat size for a motor. It is up to you to ensure your boat adequately stable.

For most boats it is best if they ride with the bow slightly higher than the stern. If a boat is riding with the bow to high, adjust the motor tilt so that the prop shaft points deeper into the water. If a boat is riding with the bow to low and plowing into the water, adjust the motor tilt so that the prop shaft points more towards the surface.

Motor Sizing

To prevent overheating and damage to a motor the drag caused by the boat must not exceed the capacity of the motor. The amount of drag generated depends on the weight of the boat and the shape of the hull. RadioControlOutboards.com will provide a maximum recommended boat weight for a given motor. This rating is for essentially flat bottom boats which skim or “plane” over the surface. Heavier boats or boats with hulls which plow through the water may cause overheating. If overheating occurs, the ESC will shut down until it cools. This typically happens within 30 seconds and the boat may be driven back to shore.

Boat Operation

Warning: Never operate a Radio Control Outboard motor near people or pets. The spinning propeller and shaft may cause serious injury. Do not operate a Radio Control Outboard motor out of water. Operate only on a suitable boat or test stand in clean fresh water.

When it is time to launch, before placing the boat in the water, ensure...

1. Motor is properly tilted and the clamps are tightened.
2. The battery is charged, secured and plugged into the motor.
3. The transmitter is on and the steering responds to the wheel.

When in the water, before releasing the boat, test the throttle to ensure the prop spins.

Squeezing the throttle to go forward at different speeds and using the steering wheel is self explanatory. Pushing the throttle out will activate reverse.

Although it seems obvious, it is important to state that colliding the boat with the shore, other boats, or anything else may cause damage. Be sure to learn the characteristics of the boat.

When you use reverse, use it with care. Full throttle reverse may lift the prop out of the water and you may not be able to get it back down in the water. This will leave the boat stranded.

Rapid turning may cause your boat to capsize. Turns poorly timed against wind and waves very often capsize craft.

Water and Weather Conditions

Always consider the water and weather conditions before launching your boat.

The motors at RadioControlOutboards.com are not recommended for marine (saltwater) applications.

Be sure to understand the nature of the water and the surroundings you have chosen for your boating. When considering more natural water settings, take into account the following...

1. How big is the body of water?
2. How likely is it to be “blown out to sea” on a large body of water?
3. How much of the shore is accessible for boat retrieval?
4. If the boat fails for any reason, which way will the wind blow it and will it be possible to retrieve it? How likely is it for the wind to change direction? How strong is the wind? How long will it be before a failed boat is blown into trouble?
5. Is the water deep enough throughout the entire area?
6. Are there any submerged obstacles such as weeds, structures, sand bars, etc which may foul the prop?
7. Does the water contain solid materials such as dead leaves and grasses, garbage such as plastic bags, live plants, fishing line, or anything else which may block the boat or foul the propeller?
8. Is the water to cloudy to tell?
9. Is there a current? If so, where will it take the boat if it fails?
10. Is there other boat traffic, radio controlled or full size?

It is important to consider these factors against your ability to retrieve a failed boat. Whenever possible, control the boat from the downwind side of the water so that if it fails it will be blown to you. We recommend you do not operate your boat

where it may be blown out into a large body of water. Unless a full size boat is available for rescue, the model may be lost.

While the motors do not often fail when operated on a properly sized boat, stranding by spent batteries or fouled propellers does happen. Be sure to read the Boat Retrieval section later in this guide.

Know the draft of your boat. Verify the water is deep enough for the motor. Don't assume a pond's depth based on one location. If a boat runs aground, they typically never drift back to shore and recovery may be difficult. Watch for shallow areas with weeds and other submerged objects.

Leaves, grass, weeds, and other materials are common in lakes and ponds. These can easily foul you propeller and leave the boat stranded. Clear plastic bags are particularly difficult to see and will often wrap up the propeller badly and require retrieval and manual un-wrapping. Many smaller leaves and grass may be cleared from the propeller by running in reverse for a moment. The motor will often be slowed by debris on the down shaft or propeller. Watch for this and clear debris as it occurs.

Do not use the boat to harass or chase wildlife. Doing so may be illegal. Do not use the boat to interfere with the operation of full scale vessels.

Battery Management and Wiring

Radio control outboards may stop operating for several known and expected reasons. The first and most likely is a spent battery. To avoid this you can first estimate the time you have available by comparing the batteries capacity to the full throttle nominal current given for the motor at the batteries voltage. For example, consider the Synchro30. With a 7.4 lipo battery the full throttle nominal current is 5.0 amps. How long wold a battery rated for 1800 Mah last? Mah stands for Milliamp–hour. One Millamp-hour = .001 amp-hour. So the battery rating in amp-hours is

1800 x .001 = 1.8 amp-hours, then this battery capacity divided by the nominal current in amps will give us some idea of how long the battery should last in hours.

1.8 amp-hours/5.0 amps = .36 hours and,
0.36hours x 60 minutes/hour = 21.6 minutes

So to start with it should be fine to drive the boat a full throttle for at least 10 or 15 minutes. Then by observing the amount required to recharged it, it may be determined if more time was available.

The electronic speed control (esc) may provide a low voltage shutoff. When a motor shuts down for low voltage the battery usually recovers enough that the boat will restart and run for a short time. This will allow for the boat to be driven back to shore. Always recharge your batteries as soon as possible. If a lipo battery cell drops below 3.0 volts it is often permanently damaged.

In general, it is best if electrical circuits and devices are kept free of moisture. Even clean fresh water will alter the impedance of many circuits to the point where they will no longer work. Water may also cause corrosion. In both cases the damage can be permanent. While it is important for the sensitive electronics to be kept as dry as possible, low voltage battery wiring is less sensitive.

Boat Retrieval

Before boating it is important to consider and develop a retrieval plan. Retrieving the boat with a full size boat works well. Be sure to observe local boating regulations when doing so. Except for those few places where swimming is allowed, we do not recommend swimming after the boat. Only enter the water where swimming is allowed when rescue is immediately available. Small ponds and many other bodies of water contain hidden dangers. Soft mud near shorelines may be particularly dangerous. Often, it may be impossible to get out of the water once one has gone in.

Boating from the down wind side of a body of water works pretty well as a retrieval plan. If the boat is kept upwind and there are no obstacles. The boat is likely to return to you. Be sure to watch the wind while boating to ensure the direction does not change. Also be wary of anything in the water which may prevent a failed boat from drifting to you.

Another effective retrieval plan is a fishing pole with a retrieval float. A piece of foam, a piece of wood, or any other floating object may work. While it takes some talent, if the boat fails the object may be cast past the boat and dragged across it. This situation may also be enhanced by adding magnets to the object and adding steel to the boat at the waterline. The metal from tin cans works well. Do not use fishing hooks. In many locations fishing is prohibited and as soon as you put a hook into the water it is considered fishing.

If a boat capsizes, it is important to release the throttle immediately and retrieve the boat as soon as possible. Once retrieved, immediately disconnect the battery and turn off the transmitter. Dry the motor and battery. If the motor has any vents, check for and remove any moisture observed. If moisture is found within and enclosure, leave the vent open and leave the motor in a warm dry place overnight before operating again.

When You are Done Boating

Because the water in many lakes and ponds contain microbes which can be hazardous we recommend rinsing the boat and motor lower unit thoroughly with clean water. Ensure the boat is clean before storage. Disconnect all batteries. Recharge all Lipo (Lithium Polymer) batteries to ensure they do not drop below 3.0 volts/cell. Perform any recommended motor maintenance.