

# Basic Studies of Marine Boat Engines- Outboard & Inboard Engines

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# Introduction

- Inboard and outboard motor of boat is depending on our needs.
- Inboard motors provide superior stability and are ideally suited for offshore, commercial, and some specific water skiing applications.
- Outboard motors are more of a general purpose motor that offers convenient control, replacement, and maintenance.



# Outboard Engines

- An outboard engine, also known as an outboard motor, is a unit containing the engine, gearbox and propeller.
- It is mounted to the back of the boat and hangs outside the hull.
- An outboard engine is used to power and steer the boat.



# Outboard Engines

- This means the entire engine needs to be able to move side to side while steering, as well as up and down for trimming and trailering.
- Smaller boats allow the engine to be steered manually using a hand tiller, while larger vessels are equipped with steering wheels.



# Outboard Engines

- The engine propeller and gear case are underwater during use, giving the boat the ability to plane quickly and be very agile while turning and docking.
- Outboards are versatile and commonly used for fishing, water sports and pleasure boating.



# Outboard Engines

- **Outboards are more easily accessible for repairs and servicing.**
- **Removal for replacement is also much easier.**
- **It is usually possible to raise the motor to get the prop out of the water.**
- **This helps to reduce the drag while sailing.**
- **It is sometimes possible to improve the boat's steering capability, depending on the engine's mounting.**
- **The cost of an outboard is cheaper and there are minimal vibrations.**

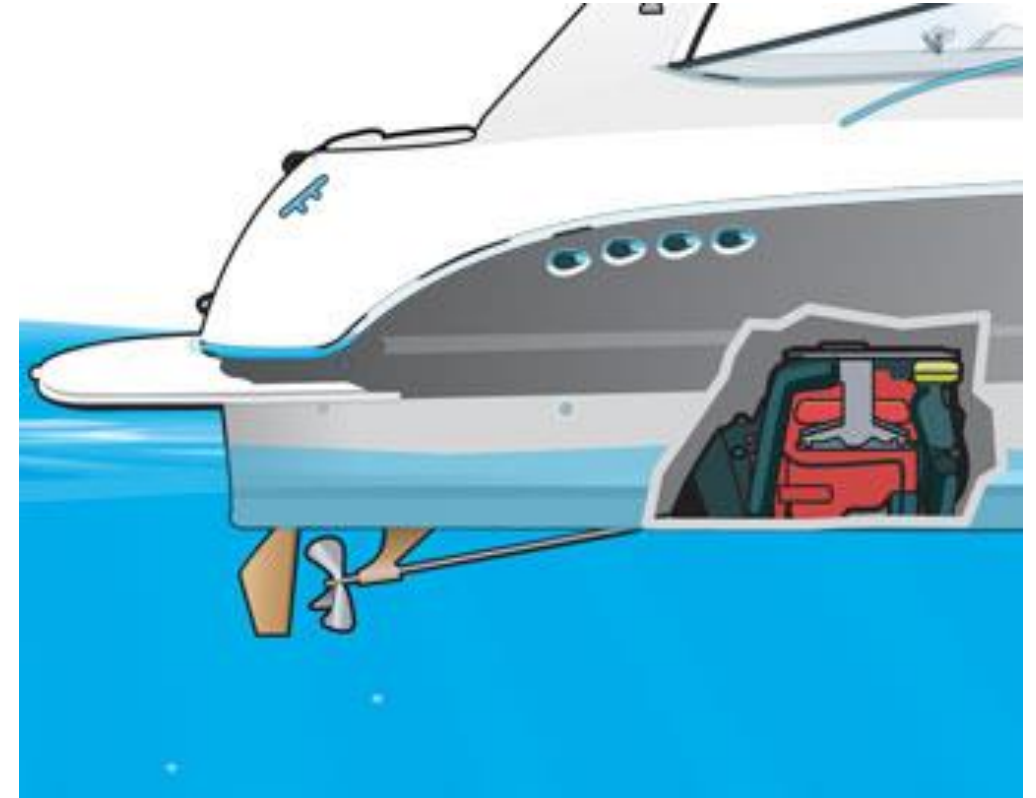
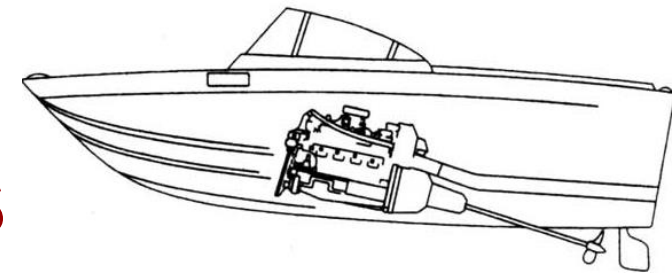
# Outboard Motor Benefits

- Full portability
- Far easier maintenance – just tilt
- Simple operation procedure and space-saving storage
- A Significantly lower price tag
- Extra interior space
- Higher potential top speed

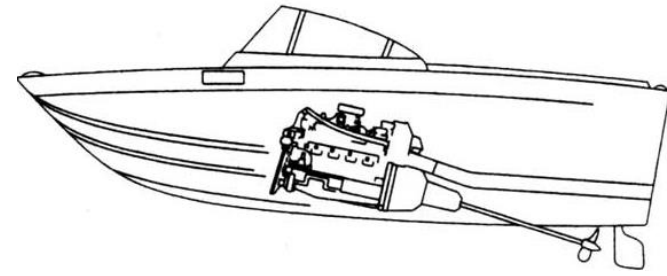


# Inboard Motor Benefits

- Inboard motors are high-performance engines repurposed for marine use.
- Inboard engines are mounted inside the hull at midships (middle of the boat).
- The propeller is turned by the propeller shaft, which runs through the bottom of the boat and exits near the transom (back of the boat).



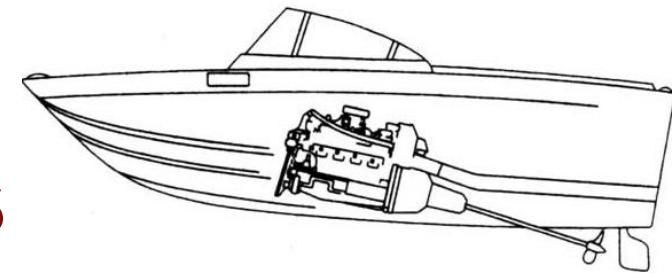
# Inboard Motor Benefits



- Steering is controlled by a rudder that directs the flow of water as it passes and allows the operator to maneuver the boat with a steering wheel.
- An inboard is a four-stroke automotive engine adapted for marine use.
- Inboards are usually diesel engines with lower running and maintenance costs and higher reliability.



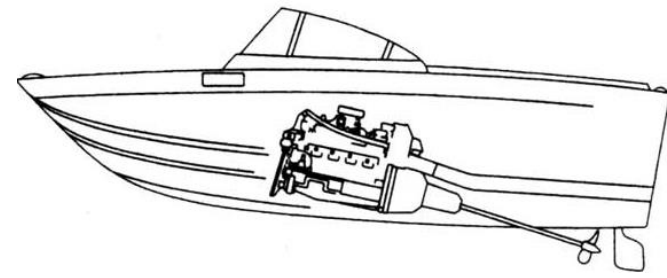
# Inboard Motor Benefits



- The weight of the inboard is low in the hull, which contributes as ballast for enhanced stability.
- Inboard does not compromise the boat's aesthetic appearance because it stays out of sight.
- The benefit is that the prop is lower in the water, which reduces the chances of cavitating in steep waves and considerable water movement.



# Inboard Motor Benefits



- The disadvantage of inboards is that they are heavier and tend to slow down the boat.
- The engine is typically mounted in a tight space, which makes it more difficult to work on.
- Removing the engine for replacement or overhaul can be very costly, and may even require cutting through the fiberglass.
- The risk of water leaking into the boat may be slightly higher with an inboard engine.
- The basic cost of an inboard engine is considerably higher than an outboard of similar size.



# Advantages Of Inboard Engines

- Excellent fuel efficiency
- Quiet operation
- Increased longevity – usually beyond 6,000 hours
- Superior torque and power



# Differentiating between Inboards and Outboards

- Outboard engines are popular because their mounting position high upon on the transom ensures easy access.
- It is easy to tilt them completely out of the water when not in use.
- In terms of reliability and efficiency, many seasoned boaters prefer the outboard motor.
- The inboard motors are mounted amidship and drive a propeller shaft that goes through the bottom of the hull.
- A good inboard system usually relies upon a separate rudder to facilitate steering.
- The inboard systems are more appropriate for heavy vessels that require large sized motors.
- For a small recreational boat, they are unwieldy, expensive, and more difficult to load.

Thank  
You

