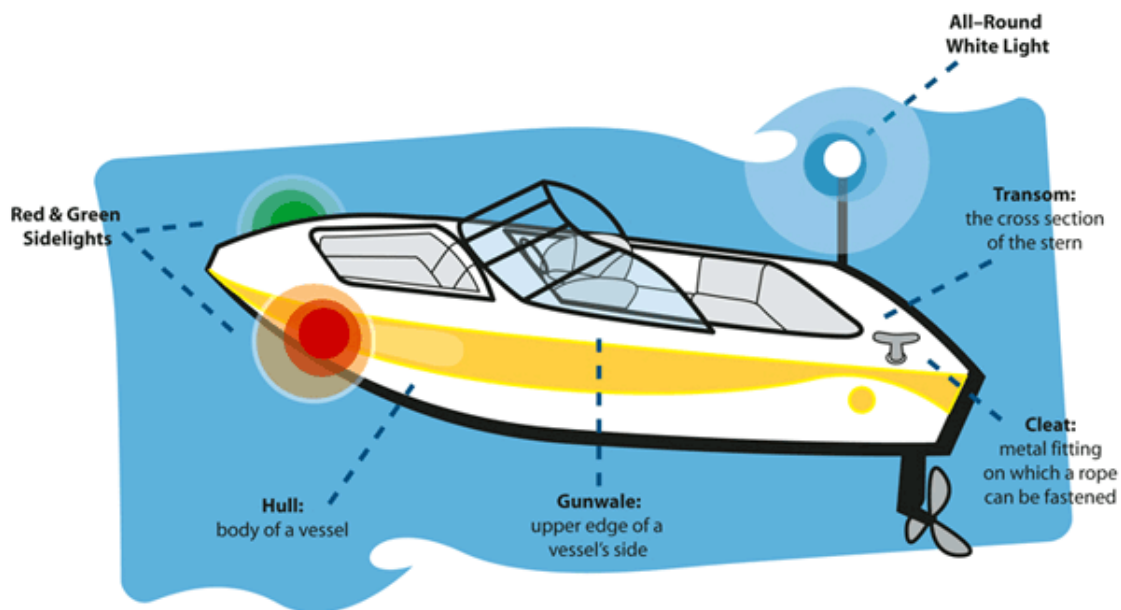


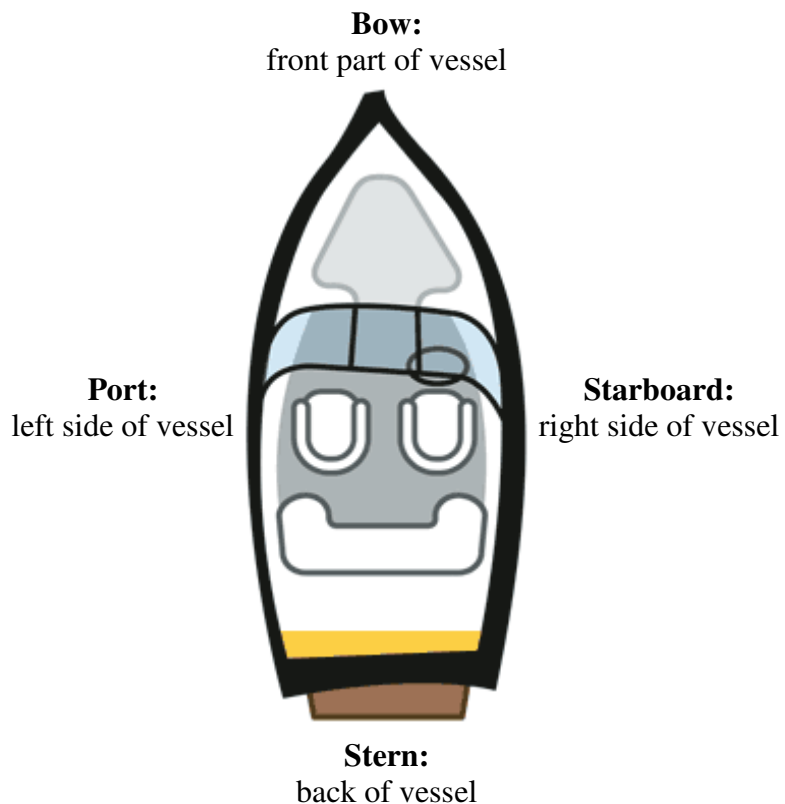
California Safe Boating Course

Chapter 1: The Boat

1.1 Boat Terminology

There are specific boating terms used to describe the various parts of a boat. Each end and side of the boat, the length and width, and boat accessories have specific terms. Every boater should be familiar with the following terms before operating a boat:



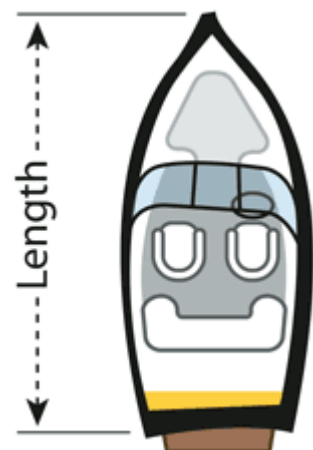


1.2 Boat Lengths

Boats are identified in classes by length. Federal and state laws require certain equipment aboard boats depending on the class or length of the boat.

- **Class A:** less than 16 ft
- **Class 1:** between 16 and 26 ft
- **Class 2:** between 26 and 40 ft
- **Class 3:** between 40 and 65 ft

A boat's length is measured along its centerline from the outside of the bow to the outside of the stern. This measurement does not include any attachments such as swim platforms, wakeboard towers

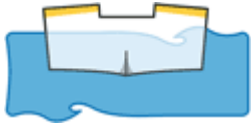


1.3 Boat Hull Designs and Uses

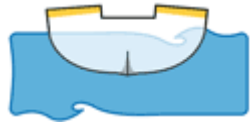
Boat bottoms or 'hulls' come in a variety of shapes and sizes. Each unique hull type is designed to either displace or plane through the water. Sailboats and large cruise ships use displacement hulls because they allow larger boats to move through the water smoothly.

On the other hand, smaller powerboats are typically built with planing hulls that are designed to rise up and ride on top of the water at higher speeds than displacement hull boats.

1.3.1 Hull Types



Flat bottom - These boats are generally designed for slow speeds and calm water. Flat bottom boats tend to be less stable than other hull types in rough water.



Round bottom - Round bottom boats, like canoes, move smoothly through the water with little effort. Boaters must be cautious when loading, entering and exiting a round bottom boat - due to the hull design, these boats roll very easily.



Deep-V hull - The deep V-hull is the most common hull type for powerboats. These boats move through rough water, at higher speeds and a smoother ride than flat bottom or round bottom boats. These boats require larger engines than flat bottom or round bottom boats.



Multi-hull - Multi-hull boats are the most stable of the hull types. These boats require plenty of room to steer and turn. Catamarans and pontoon boats use the multi-hull design.

1.3.2 Engine Types



Outboard - Outboard engines are typically two-stroke engines. Two-stroke engines require oil to be mixed with the fuel to lubricate the engine. An outboard is mounted on the transom of the boat. Steering of outboards is controlled by a hand tiller or a steering wheel which moves the entire engine when steering is adjusted.



Inboard - Inboard engines are typically four-stroke automotive engines that are modified for use on the water. An inboard engine is mounted inside the hull of the boat and powers the drive shaft which is connected to a propeller. Steering is controlled by a rudder, positioned directly behind the propeller.



Stern Drives - Stern drives are often called inboard/outboards (I/O) because they have features found on both inboard and outboard engines. Similar to inboards, stern drives use four-stroke automotive engines that are modified for use on the water. Stern drive engines are mounted inside the boat and attached through the transom and powers the drive shaft which is connected to a propeller. Similar to outboards, the entire engine moves when the steering wheel in a stern drive is adjusted.

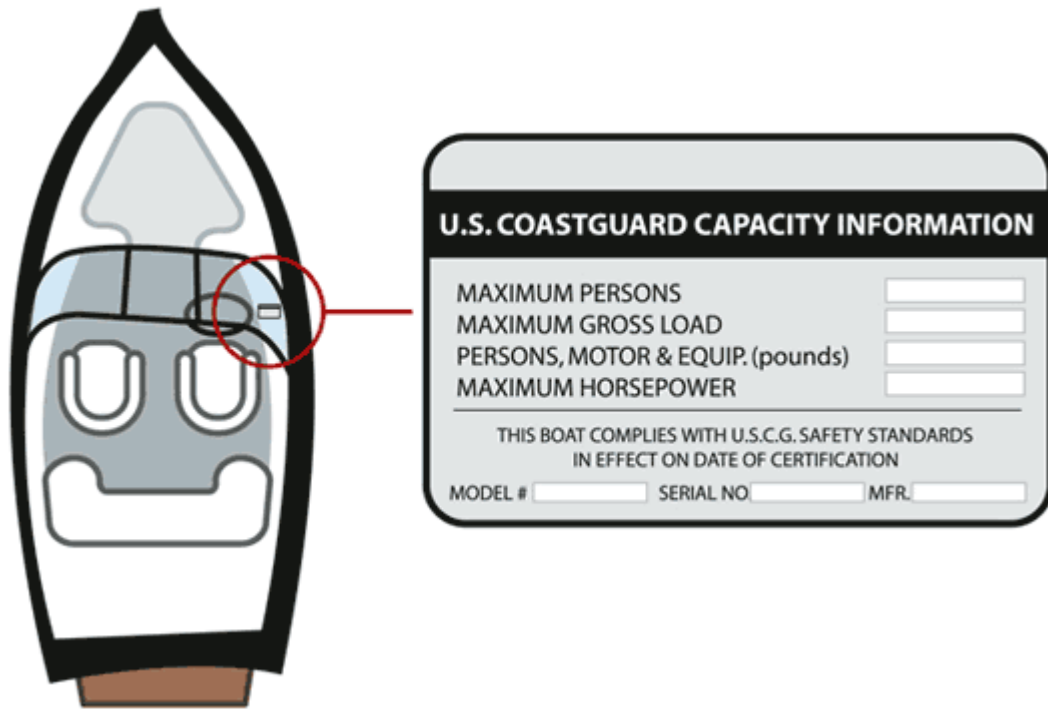
1.4 Boat Capacities

Be aware of the Small Vessel Regulations pertaining to engine power and load capacity.

Federal Law mandates that boats of less than 20 feet in length must have a Capacity Plate in the steering or helm area. As a boat owner or operator you should know that the "recommended gross load capacity" that can be safely carried in the hull concerned:

1. Includes the total weight of persons, equipment, stores, fuel, motor assembly and steering controls;
2. Is indicated with the "equivalent number of adult persons"; and
3. Is indicated on a Capacity Plate which, if fitted, is permanently attached to the pleasure craft.

The capacity plate also indicates the "recommended safe limits of engine power" for the hull concerned. This calculation is based on the recommended gross load capacity.



1.4.1 Overloading or Over-Powering

Beware of Bad Weather

Take much lighter loads in poor weather conditions to ensure boat stability.



An overloaded boat or over-powered boat can be extremely dangerous. An over-powered boat may cause the stern to sit lower in the water, making the vessel susceptible to being swamped by its own wake or that of a passing boat. Similarly, too much weight in the stern or the bow will make the vessel prone to swamping. Additionally, it is important to spread the load evenly throughout the vessel. Too much weight on either side will make the vessel less stable and more apt to capsize. Take extreme caution in loading your vessel properly.

1.4.2 Safe Loading Guidelines (for small boats)

To determine the *Horsepower Capacity* for small, flat-bottomed boats, multiply the boat length (ft) by the transom width (ft) and compare the resulting value to the following chart:

Example

Boat Length = 12 ft
Boat Width = 4 feet

$$12\text{ft} \times 4\text{ft} = 48$$

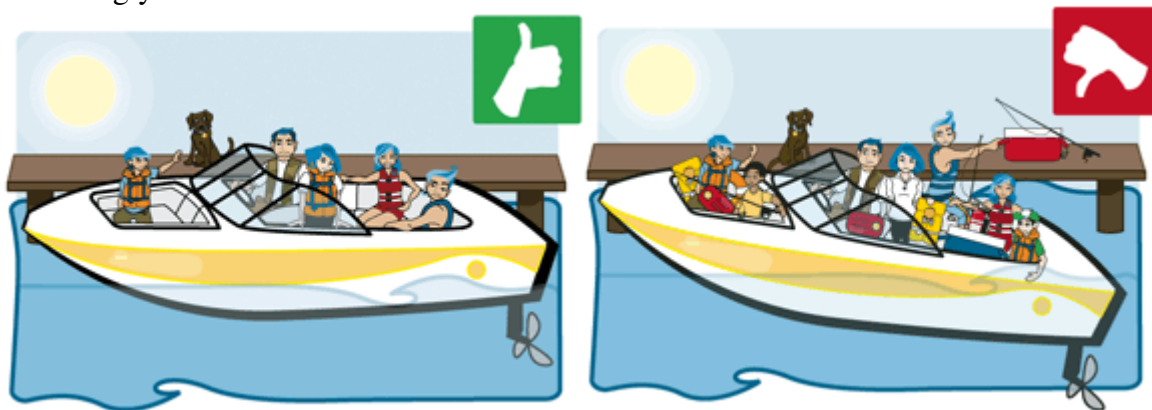
Max HP of 15

Length x Width Max. HP

35 or less	3
36-39	5
40-42	7.5
43-45	10
46-52	15

1.4.3 Person Capacity:

Manufacturers take a number of variables into account when determining the maximum person capacity for a boat (which is displayed on the capacity plate). The maximum person capacity is a guideline. Keep in mind that most manufacturers assume an average weight per person of 150 lbs. If you have passengers over or under 150 lbs - you should adjust the maximum person capacity accordingly.



1.5 Hull Identification Number (HIN)

All new pleasure crafts manufactured since 1972 are permanently marked with a Hull Identification Number (HIN), which is the 12 character serial number of your vessel. To identify and register your vessel properly, HINs are marked at the stern on the starboard (right) side, or as close to that area as possible. You must NOT deface or alter the HIN. The HIN indicates:

- the boat manufacturer
- its serial number
- the month and year of production

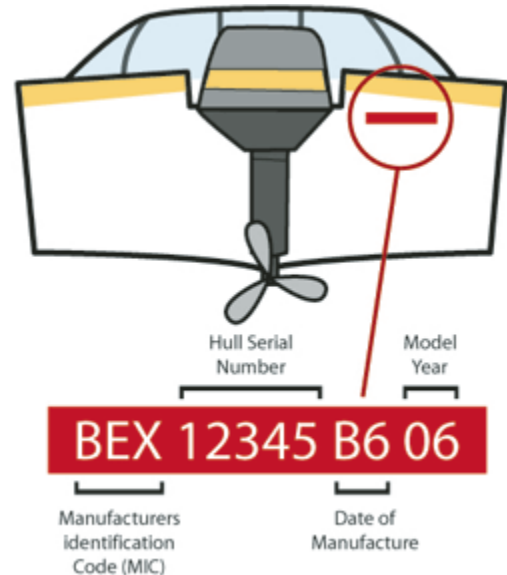
1.6 Boat Registration Requirements

1.6.1 Boat Registration and Numbering

All motorized boats, regardless of state, must be registered. Some other boats must be registered as well.

Federally Documented Vessels: Large recreational boats can be federally registered with the U.S. Coast Guard.

Reciprocity Regulations: All states allow boats registered in another state to operate within state waters for a period of time. Eventually, owners must transfer boat registration to the state of principal use.



1.6.2 California Registration Requirements

California Department of Boating & Waterways (DBW):

The DBW is responsible for regulating the state boating laws in California.

1.6.2.1 Registration/Titling

All vessels may be registered at any California Department of Motor Vehicles (DMV). Upon registration the DMV will issue the boat owner a Certificate of Number as well as a Certificate of Ownership. The following vessels do not require registration in California:

- Manually propelled vessels
- Sailboards and other vessels 8 ft. or less in length propelled solely by sail
- Vessels currently registered in another state and not kept in California for more than 90 consecutive days (after more than 90 days California should be considered the state of principal use)
- Vessels documented with the United States Coast Guard
- Foreign vessels

1.6.2.2 Certificate of Ownership

Boat owners must keep their Certificate Ownership in a safe place. Note that on the reverse of the Certificate of Ownership there is an application for the transfer of ownership.

1.6.2.3 Certificate of Number

Boat owners must have at least a temporary Certificate of Number before they can operate in state waters. Upon receipt, the permanent Certificate of Number must be signed and carried on-board at all times. All registration fees are paid to the DMV. Vessels are registered for 2 years. After the 2 year period the vessel must be registered again.

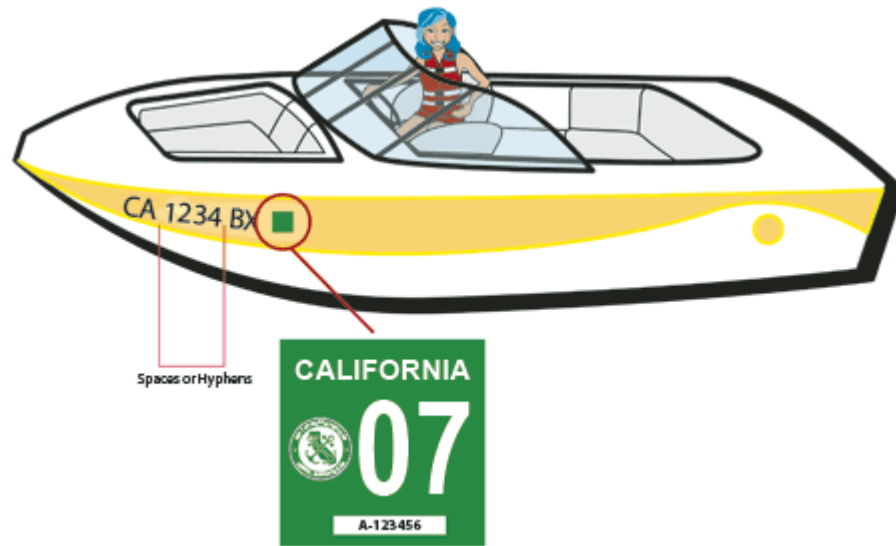
Please note that the California Department of Motor Vehicles must be notified within 15 days if the boater changes residences.

1.6.2.4 Registration & Titling fees

Item	Cost
Registration (including Stickers)	\$9
2 Year Registration Renewal	\$20
Registration Renewal for watercraft purchased in even # years	\$5
Non-Resident, Registration	\$37
Registration - Boat trailer	\$20
Transfer of Ownership	\$15
Duplicate Certificate of Number	\$15
Duplicate Certificate of Ownership	\$15
Duplicate Stickers	\$15
Repossession	\$15
Historical Vessel Plaque	\$20

Successful registration results in a certificate of number, physical boat numbers and a decal. Your registration **MUST** be kept on board the vessel at all times. (It is advisable to keep the registration in a dry-bag on board.) Boat numbers must:

- be affixed on both sides of the bow
- be block letters, three inches high and contrasting with the color of your boat
- have spaces or hyphens between numerals and letters






For example: **CA 1234 BX** or **CA-1234-BX**. This is a federal and state requirement.

Lack of the correct documentation can result in delays and fines. Make sure all boats are properly marked and documented. Its important to keep your papers stored safely - be particularly aware when transferring ownership of your vessel.

Chapter 2: Boating Equipment

2.1 Personal Flotation Device Types and Carriage

Personal Flotation Devices (PFDs, Lifejackets) have the potential to save lives. As such, the U.S. Coast Guard requires PFDs onboard all vessels. When choosing a PFD please ensure the PFD can support your size and weight and is approved by U.S. Coast Guard.

PFD Type	Examples	Best for...	Disadvantages	Notes
 <p>Type I: Offshore Life Jacket</p>		all water, especially open, rough or remote waters where rescue can be delayed	Large and awkward; difficult to swim.	Adult size: 22 lbs of buoyancy. Child size: 11 lbs of buoyancy. Will turn unconscious to face-up position
 <p>Type II: Near-Shore Buoyant Vest</p>		calm, inland water where there is a good chance of rescue	May not turn some unconscious wearers face-up.	Adult size: 15 lbs of buoyancy. Child size: 11 lbs of buoyancy. Infant size: 7 lbs of buoyancy. Will turn some unconscious to face-up position
 <p>Type III: Flotation Aid</p>	float coat, fishing vest, water sport vest	calm, inland water where there is a good chance of rescue	Wearers must put themselves in face-up position.	Wearers must put themselves in face-up position. Same buoyancy as Type II



**Type IV:
Throwable
Device**

cushions,
ring buoys,
horseshoe
buoys

calm, inland
water where
help is present

Not designed to be worn
and is intended to be used
in calm, inland water
with heavy boat traffic,
where help is always
present.

Designed to be thrown
and grasped until
rescued; never worn.



**Type V: Special
Use Device**

deck suits,
work vests,
board sailing
vests

specific
activities;
check approval
condition on
label

Some Type Vs are
designed for cooler
climates and others are
only approved when
worn.

Some Type V devices
provide hypothermia
protection.

2.1.1 Federal Requirements

- The U.S. Coast Guard requires one wearable PFD for **each** person aboard
- At least one Type IV (throwable device) PFD must be kept on board any vessel 16 feet or longer
- Flotation devices that are ripped or in poor condition are not considered approved

2.1.2 California PFD Requirements

Personal Flotation Devices (PFDs)

Children

All boaters or passengers 11 years of age and younger on a vessel that is 26 feet or less must be wearing their PFD while the vessel is underway. California law requires the owner and/or operator of a vessel is responsible to carry, store, maintain, and use the safety equipment required by the federal safety equipment requirements adopted by the U.S. Coast Guard.

- The California Department of Boating and Waterways requires one wearable Type I, II, III, or V PFD for each person aboard a vessel less than 16 feet in length or any length canoe or kayak. Ensure PFDs are readily accessible.

- A Type V is required to be worn to be considered a regulation PFD and must be used only for approved activities.
- Everyone on a personal watercraft and anyone being towed behind a vessel must wear a U.S. Coast Guard-approved Type I, II, III or V PFD.
- Anyone using an underwater maneuvering device is exempt from wearing a PFD. An underwater maneuvering device is any towed or self-powered device designed for underwater use that a person can pilot through diving, turning and surfacing moves.

2.2 PFD Sizing and Availability

To ensure the proper fit of a PFD, have the wearer put on a PFD and adjust straps as necessary to ensure a snug fit (**Step 1**). A properly fitted PFD will not ride higher than the ears or mouth of the wearer. You should also test PFDs in the water to ensure they can hold your weight and you get comfortable swimming with a PFD (**Step 2-4**).



PFDs should be worn when the vessel is in operation, however if stored they must be stowed in readily available areas. It is particularly important to store Type IV - throwable devices - in immediately available areas, free of wrapping and packaging for use in emergency situations.

2.3 Wearing PFDs

PFDs should be worn by ALL boaters when in and around water; not just when operating or riding in a vessel. However, a PFD should be worn especially when encountering dangerous conditions including: high boat traffic, severe weather, dangerous water conditions, dangerous local hazards, distance from shore, operations at night, boating alone, and traveling at high rates of speed. Conditions on and around the water can change very quickly. And though accessible, PFDs take some time to fit securely and properly. In particular, once in the water, a PFD is much more difficult to fit properly. In the event of an emergency, boaters may not have the time to fix a PFD. Therefore, it is highly recommended that boaters wear a PFD properly when on and around the water.

2.4 PFD Serviceability

2.4.1 Proper Care of Your PFD



- PFDs should never be used as a cushion for kneeling or sitting or acting as a fender.
- Regularly check PFDs for buoyancy. To check buoyancy: with a PFD affixed, wade into the water to waist height, bend knees, roll on to your back, and see how well you float.
- Air-dry PFDs in a well ventilated space out of



sunlight.

- Clean with a mild soap and running water.
- Never: dry your PFD close to a direct heat source, clean with strong detergents or dry clean.

Make sure your PFDs are in good shape before boating. Regularly check for rips and tears. In particular, straps and hardware should be checked before leaving the dock. **PFDs with rips, tears, or other damage will NOT meet Coast Guard approval** - and you may be fined.

2.4.2 Inflatable PFDs

Note

Inflatables are not designed for high-speed impact and must be inspected regularly for spent cartridges and excessive wear.

Inflatable PFDs are available in Types I, II, III and V. Only Type IV PFDs - throwable devices, do not come in inflatable form. It is important to note that inflatable PFDs are not inherently buoyant and will not float without inflation. Though inflatable PFDs are comfortable, they are not advised for children or individuals that cannot swim. Regularly check and replace spent cartridges. Inflatable PFDs are not meant for waterskiing, riding personal watercraft or whitewater paddling. An inflatable PFD requires regular maintenance.



Servicing your Inflatables: Replace CO2 cartridges with new ones immediately after cartridge is spent. An inflatable PFD loses buoyancy with even a small tear or leak. Therefore, boaters must check inflatables frequently for leaks. Simply blow the inflatable up manually and leave overnight before a boating trip to check for small leaks and tears.

2.5 Fire Extinguishers

Fire extinguishers are **REQUIRED** aboard a vessel with a motor if **ANY** of the following conditions are present:

- Closed compartments where portable fuel tanks may be stored
- Double bottoms not sealed to the hull which are not completely filled with flotation materials
- Closed living spaces
- Permanently installed fuel tanks



Marine Extinguisher Requirements

Boat Length	Extinguisher Requirement
less than 26 ft	1 B I
26 ft to less than 40 ft	2 B I or 1 B II
40 ft to less than 65 ft	3 B I or 1 B I + 1 B II
greater than 65 ft	must meet federal requirements

Tip

Keep the bilge clean and free of trash to reduce the risk of fire

Though not all motorboats are required to carry a fire extinguisher, it is highly recommended that all motorboats keep some form of fire extinguisher on-hand. To that end, there are numerous types and sizes of fire extinguishers that meet Coast Guard requirements. With any type of marine fire

extinguisher, **accessibility** is of the utmost importance; ensure the fire extinguisher is mounted in a location where it can be easily and quickly retrieved and operated in the event of a fire emergency.

2.5.1 Classifications

Tip

The letter (eg: "B" in a B-1 extinguisher) indicates the type of fire the extinguisher is designed to handle.

Fire extinguishers are classified according to the type and size of fire they can handle. Fire types are:

- **Class A:** combustible solids like wood
- **Class B:** flammable liquids such as gasoline
- **Class C:** electrical fires

Wood or paper fires (Class A) can be handled with water. However, water should never be applied to electrical (Class C) or flammable liquid (Class B) fires as the water will only spread flammable liquid fires and will conduct electricity. Most fire extinguishers can put out Class B and C fires. **For marine use, it is recommended that you find an extinguisher that can put out Class A, B and C fires.**

Marine Fire Extinguisher Classification

Classification	Foam (gals)	CO2 (lbs)	Dry Chem. (lbs)	Halon (lbs)
B I	1.25	4	5	2.5
B II	2.5	15	10	10

2.5.2 Maintenance

Fire extinguishers require monthly inspections to ensure they are in proper working order. A proper inspection should cover the following:

- Check the gauge to make sure the extinguisher is fully charged
- Inspect seals to ensure they have not been broken
- Look at hoses; replace any cracked or broken hoses
- Weigh extinguishers to make sure they meet the minimum weight levels stated on the label

2.6 Back-Fire Flame Control Device

Each carburetor on an inboard mounted gasoline engine must be equipped with a U.S. Coast Guard, Society of American Engineers or United Laboratories approved back-fire flame arrestor. Arrestors are designed to prevent a back-fire - which can result when unburned exhaust collects in the engine area and is ignited. Make a point to include arrestors in your monthly fire extinguisher inspection. Arrestors need to be cleaned periodically. During cleaning, ensure arrestors are securely fastened and check for damage.

2.7 Ventilation Systems

CO Poisoning

The best precaution against carbon monoxide poisoning is to keep air flowing through the vessel

In motorized vessels, flammable gases can gather which have the potential to create a powerful and extremely dangerous explosion. As such, a proper ventilation system is required for all vessels built after 1940 and powered by gasoline. Ventilation systems can be natural or powered:



Natural Ventilation Systems - minimum of 2 ventilator ducts (1 intake duct, 1 exhaust duct) fitted with cowls (*hooded opening*) to remove stagnant fumes.

Powered Ventilation Systems - required on vessels built after 1982 with installed fuel tanks or an enclosed engine. Consists of 1 or more exhaust blowers. *NOTE: ensure intake ducts are above normal accumulation of bilge water.* Powered ventilation systems should be turned on for **FOUR** minutes before starting the engine to ensure all gasoline vapors have been removed before ignition.

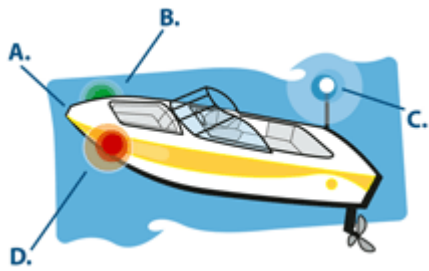
2.8 Navigation Light Equipment

Boat operators are required to ensure their vessel is equipped with the proper navigation lights when: away from the dock between sunset and sunrise and during periods of reduced visibility from fog or rain.

Navigation light requirements differ across different types and sizes of boats. The navigation light configurations and requirements for recreational boats are the following:

2.8.1 Power-Driven Vessels

Power-driven vessels must exhibit the following navigation light configurations.



A Bow

B Starboard Sidelight (Green): must be visible up to 1 mile

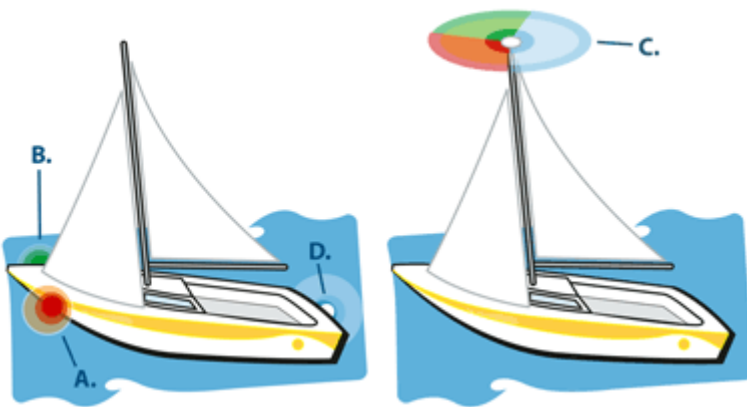
C All around: must be visible up to 2 miles and 3.3 feet higher than the sidelights

D Port Sidelight (Red): must be visible up to 1 mile

Figure 1: Navigation light requirements for power-driven vessels

2.8.2 Sailing Vessels

Vessels under sail must exhibit of the following navigation light configurations:



A Port Sidelights (Red): must be visible up to 1 mile

B Starboard Sidelights (Green): must be visible up to 1 mile

C All-Round light - exhibiting Port, Starboard and Stern lights

D Stern: must be visible up to 2 miles

Figure 2: Navigation light requirements for sailing vessels

2.8.3 Vessels Under Oars or Paddles

Vessels under paddles or oars should exhibit the same navigation lights as sailing vessels if practical. If not practical, un-powered vessels less than 23 ft must have on-hand, one lantern or flashlight shining a white light as shown in Figure 2 below. **A flashlight should always be aboard any vessel at all times.** One cannot predict when navigation lights will burn out or when day-trips will last through nightfall - a flashlight helps in preparation for unforeseen situations.

Figure 3: Navigation lights for vessels under oars or paddles and Sailboats under 23 feet.



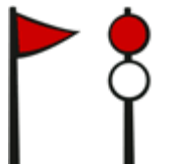
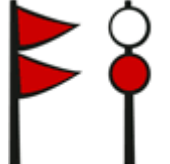
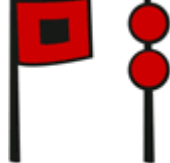



Chapter 3: Trip Planning and Preparation

3.1 Checking Local Weather and Water Conditions

3.1.1 Check Forecast and Monitor on the Water

It is important to check short-term and long-term local weather forecasts on **radio**, **TV** or the **Internet** before any boating trip. The weather forecast should always be taken into consideration when preparing your trip plan. Avoid boating in heavy fog. Be particularly mindful of hurricane warnings - never venture out on the water in a hurricane warning.

NOAA Weather Radio broadcasts on the following frequencies: Channel 1 - 162.000 MHz, Channel 2 - 162.475 MHz, Channel 3 - 162.500 MHz. NOAA radio updates weather information such as: temperature, humidity, wave conditions, barometric pressure, and wind speed and direction. NOAA uses the following language to describe severe weather conditions:

Warning Flag	Language	Meaning
	Small Craft Advisory	observed or forecast winds of 18-33 knots
	Gale Warning	observed or forecast winds of 34-47 knots
	Storm Warning	observed or forecast winds of 48 knots or greater
	Tropical Storm Warning	observed or forecast winds of 34-64 knots
	Hurricane Warning	observed or forecast winds of 64 knots or greater
	Special Marine Warning	observed or forecast winds of 34 knots or higher, coupled with a storm to last more than two hours

But weather forecasts, particularly on the water, can change quickly. Therefore, it is imperative to be able to **anticipate** and **monitor** changing weather.

- Keep an eye to the sky: fog, dark clouds and lightning are obvious indications that bad weather is approaching.
- Barometric readings: a rising barometer indicates fair weather while a falling barometer indicates foul weather.
- Pay particular attention to shifts in wind direction and temperature - which both indicate that weather is changing.
- Be mindful of the West - foul weather usually approaches out of the West; however storms from the East tend to be more powerful.
- Be vigilant of other boaters' movements and monitor radio and weather channels frequently. Ask for recommendations via radio if in unfamiliar waters.



3.1.2 Coping With Foul Weather

Preparation for a storm

- Ensure all passengers wear PFDs that are secured properly.
- Reduce speed and proceed with caution, keeping an eye on approaching boats and floating debris.
- Close all hatches and ports to avoid swamping.
- All passengers should be low in the boat and near the centerline.
- Secure all loose items in the boat to avoid losing them overboard.
- Pump out bilges to keep boat high in the water.
- Head for the nearest shoreline.
- Check marine charts for the nearest shelter and note hazards.

When the Storm Hits

Tip

When boating in stormy weather, the first precaution that should be taken by the boat operator is to **ensure that all aboard are wearing USCG-approved PFDs.**

- If lightning is present: unplug all electrical equipment, keep low in the boat and away from metal objects.
- Head the bow of the boat into waves at a 45 degree angle to keep the boat in the most stable position.
- If engine stops, drop anchor from the bow to combat drifting and swamping.

3.2 Checking Local Hazards

Before boating in any new or unfamiliar waterways, boaters should secure local marine charts. If local charts are unavailable, consulting with local boaters and marinas is wise as these sources usually have a wealth of knowledge about local hazards to avoid. Always consult with local authorities to obtain any local rules or restrictions such as: motorized operation restrictions or hours of operation and access to locking operations.

Local Hazards to be wary of:

- Whitewater areas
- Shoaling areas (marked and unmarked) - these areas become shallow gradually and often difficult to spot with local charts.
- Hazardous inlets
- Abnormal tides or currents

Note

Low Head Dams pose a hazard both below and above the dam.

- Dams. In particular, pay attention to markers, buoys and all warning signs to keep well clear of low-head dams. Low-head dams are difficult to detect downstream and present a real danger when river levels are up.
- Locks
- Power-line risks
- Low seasonal waters
- Obstructions

3.3 Filing a Float Plan

A Float Plan left with a responsible person is a wise decision for any boating trip - but for longer trips in particular. It is advised that you fill out a Float Plan similar to the sample below and leave it with a responsible family member, friend or local marina before leaving the dock. A Float Plan left with a responsible person could save your life should foul weather or an emergency situation arise. At the very least - you should always let a responsible person know the approximate location you plan to boat and when you expect to arrive home, so that they know an appropriate date and time to contact authorities if an emergency situation arises.



Float Plan

- **Step 1** - fill out applicable information for EACH VOYAGE
- **Step 2** - mariners are expected, and encouraged to, file Float Plans with a responsible person
- **Step 3** - close Float plan upon termination of voyage

Owner's Name & Address _____ Telephone Number _____

Vessel's Name & License Number _____ Sail _____ Power _____

Size and Type _____

Color _____ Hull _____ Deck _____ Cabin _____

Type of Engine _____ Other Distinguishing Features _____

Radio Channels Monitored: HF _____ VHF _____ MF _____

Satellite or Cellular Telephone Number _____

Safety Equipment on Board

Life Rafts _____ Dinghy / Small Boat (inc color) _____

Flares (Qty and type) _____ Lifejackets/PFDs (Qty) _____

Other _____

Search and Rescue Telephone Number _____

Trip Details (include these details every trip)

Date of Departure _____ Time of Departure _____

Leaving From _____ Heading To _____

Proposed Route _____ Est. Date/Time of Arrival _____

Stop Over Point _____ Number of Persons on Board _____

Passenger Allergies/Illnesses (if any) _____

3.4 Boat Preventive Maintenance

Proper maintenance of your boat can extend its useful life and also ensure you and your passengers have an enjoyable and safe boating experience.

Engine

- Change oil at least once a season. Check manufacturer's recommendations for oil changing.
- Inspect belts and hoses before every voyage and replace those that are worn or torn.
- Check for corrosion and oxidation and take preventive measures before they become serious problems.
- Check and service transmissions and change fluids according to recommended schedule.

General Maintenance

- Always use marine parts - never automotive parts!
- Store vessels in dry place out of the sun.
- Check any through-hull fittings - like engine-cooling intakes. A leaks and opening could sink your boat if not attended properly.
- Keep the decks and hull cleaned and waxed for better fuel efficiency and longer life.
- Electrical connections need to be cleaned and greased to prevent corrosion.

3.5 Transporting and Trailering

3.5.1 Safe Towing Preparation

Tip

Each time you stop, ensure the hitch/ball and safety chains are secure.

It is imperative that you ensure the towing vehicle can handle the towing load and has an appropriate trailer, hitch and safety chains. Trailers, like boats, have capacity plates attached. Make sure your trailer has the capacity to carry your boat AND motor, fuel and any additional gear on-board before you begin a road trip. Pay particular attention to the Tongue Weight. A tongue that is too heavy will create steering difficulties while a light tongue can result in fishtailing.

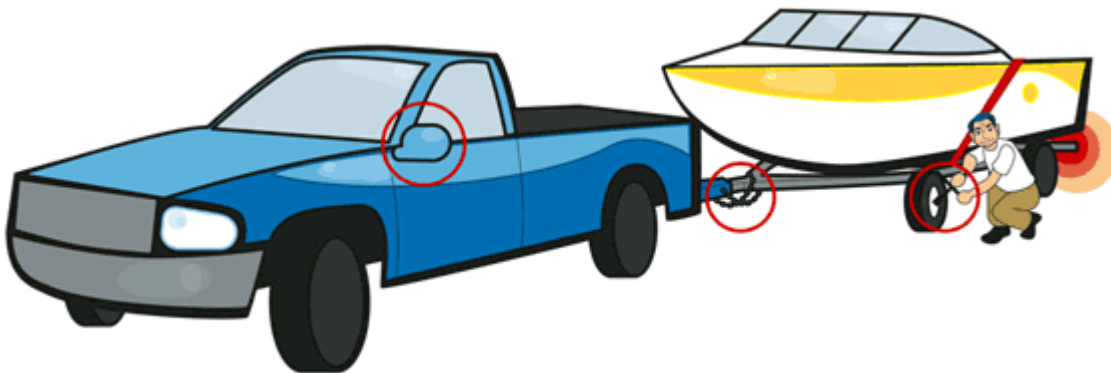
Match the trailer Class with the proper hitch. The coupler should never be smaller than the size of the ball hitch. Always ensure that the hitch and ball are correct and secure.

Trailer Class	Towing Weight
Class 1	not to exceed 2000 lbs
Class 2	2001 lbs to 3500 lbs
Class 3	3501 lbs to 5000 lbs
Class 4	over 5000 lbs

3.5.2 Gross Axle Weight Rating (GAWR) & Gross Vehicle Weight Rating (GVWR)

Both your towing vehicle and trailer will have GAWR and GVWR guidelines for towing and weight capacities in the owner's manuals. Never exceed 90% of the recommended GAWR or GVWR. Consult with your dealer when buying any trailer or towing vehicle to accurately meet your towing requirements.

3.5.3 Final Preparation



- Make sure boat is centered on trailer and fuel and gear is distributed evenly throughout the boat; an uneven load can cause instability and makes steering and maneuvering much more difficult.
- Tie down all loose items and equipment in the boat being towed.
- **Criss-cross chains** under the frame when attaching the trailer to the towing vehicle. Make sure chains can support the weight of the entire load - should the hitch break.
- Make sure trailer brake lights and directional lights are working so other drivers will be notified of any stops, braking or turning.
- Check tire pressure and ensure lug nuts are tight and secure.
- Adjust side view mirrors as necessary to get a clear view of the trailer and any traffic behind.
- Practice turning and backing up with the trailer attached. It takes some time to get used to these maneuvers. Practicing will build confidence and competency.
- Tie down boat with additional straps to trailer frame.

3.5.4 Road Handling

Driving with a cumbersome load will require some special considerations on the road. First, the load will make the towing vehicle less responsive. As a result, it is advisable to reduce your speed and give vehicles in front more room, and thus time to maneuver and react. Remember, you have another vehicle attached behind - take corners more slowly and widely to get the trailer around safely.

3.5.5 Launching a Boat

Tip

If you anticipate engine problems, start the engine and let it warm up while still attached to the winch line. It is much easier to retrieve the boat when still on the trailer.



- Prepare for launch: Prepare the boat away from the launch so as not to block any boaters that are waiting to launch or retrieving their boat. (Preparation may involve: removing all tie-downs except the winch line, loading additional supplies and equipment into boat, **inserting the drain plug if not already done**, disconnecting trailer brake lights - to prevent burnt bulbs, remove the motor travel supports if applicable, and put the trim up - to prevent hitting the prop when launching, insert the key in the ignition to start the engine if applicable).
- Attach a bow line to steady the boat upon release, may not be required if two persons are launching the boat, and one is in the boat.
- Back into the water far enough so that the lower unit cooling water intake holes are submerged. (NOTE: use parking brake on towing vehicle at this point and do not allow the tow vehicle's wheels in the water unless necessary)
- Release the winch line and slowly reverse the boat off the trailer.
- Secure the boat to the dock and promptly move the tow vehicle and trailer away from the launch so as to not block any boaters waiting to launch or retrieve their boat.

3.5.6 Retrieving a Boat

Tip

To stop the spread of aquatic species, it is best to clean your boat before you leave the ramp area.



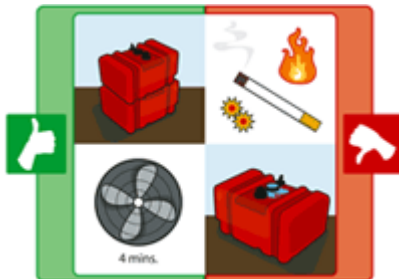
If the ramp is steep, ensure someone 'spots' for you before you drive up the ramp. Be aware of pedestrians and other boats.

- Proper Etiquette: Unload fuel and equipment away from the ramp if possible and feasible. Prepare truck and trailer for retrieval and wait for your turn.
- Back the trailer into the water until two-thirds of the bunks or rollers are submerged. (Make sure the towing vehicles' wheels stay short of the water unless necessary)
- Attach a bow line to steady the retrieval.
- Maneuver the boat close enough or drive it onto the trailer to attach the winch line.
- Shut off the engine and trim or raise the outboard or stern drive.
- Pull the boat up the trailer by cranking the winch line.
- After retrieving the boat, pull the trailer out of the water and well away from the boat ramp; out of the way of others.
- Begin your preparation for the road once more, remembering to remove the drain plug and pump or drain any water out of the bilge first, and drain the live-wells or bait-wells if applicable.

3.6 Fueling Procedures

Tip

Keep the bilge clean and free of trash to reduce the risk of fire



Gasoline and its vapors are a major cause of marine fires. Therefore, boaters must take care when fueling to avoid spills and the spread of gasoline vapors. Gasoline fumes are most likely to accumulate in the bilge.

- Secure the boat to the fueling dock and turn off the engine.
- Unload portable tanks and all passengers prior to fueling these portable tanks.
- **No smoking** or flames should be present.
- If doors are present - make sure they are closed.
- Hold nozzle firmly against fill pipe opening to ground any static buildup.
- **Never fully fill a tank** , always leave room for gas to expand and avoid overflow. (Ensure air vents/valves to gas tank are open.)
- Put the gas cap on tightly after fueling to avoid vapor escape. Always wipe away any spills or leakage immediately with a rag.
- Before starting the engine again, it is advisable to sniff for fumes that may have escaped. Turn on the blower for **FOUR** minutes on inboard gasoline engines to remove any fumes before starting the engine again.
- Place portable tanks filled with fuel in well ventilated areas away from the engine and electrical equipment on-board.

3.6.1 Fuel Conservation

Tip

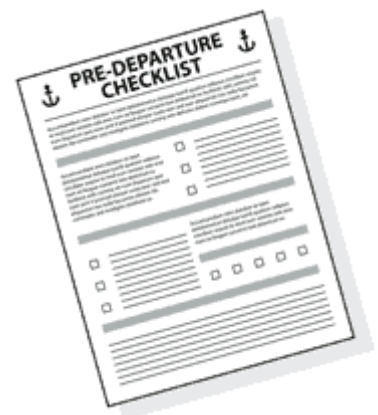
Adjust the tilt on your motor when starting and reaching a plane.

The following are tips to conserve fuel for better mileage and to reduce the environmental impact that gasoline can have on marine life.

- Make sure the engine is adequate for the size and weight of the boat and keep the engine in good shape with regular maintenance and replace sparkplugs regularly.
- Use the correct propeller and regularly check for damage
- Drain all water from the bilge before leaving the dock and keep the hull clean to reduce friction. Use a bailing can or a portable bilge on smaller boats.
- Distribute equipment, fuel and passengers evenly throughout the boat and do not overload
- Shut the engine off when stopped or docked
- Plane smoothly and evenly at take-off, then throttle back to cruising speed

3.7 Pre-Departure Checklist & Passenger Communication

No two boating trips will mirror one another; every experience is different. It is important not to take any boating trip lightly. In addition, not every boater has the same comfort level or experience on the water. Accidents occur when proper precautions are overlooked. A pre-departure checklist should be used before each trip - regardless of length. The checklist is easy to review and will also ensure new passengers are informed and comfortable.



Pre-Departure Checklist

Personal Floatation Devices

- At least one Coast Guard approved PFD per passenger and a minimum of two PFDs total
- A throwable device if the boat is greater than 16 feet
- Inform all passengers of PFD locations

Sound producing devices

- Horn, whistle or bell present (preferably more than one)
- If a portable air horn, have a spare can of air

Lights

- All required navigation lights
- Check instrumental lights
- Flashlight

Distress Signals

- Flares: stored in an accessible, dry location
- Inform all passengers of signal location and use

Docking and Anchoring

- At least one anchor set up to anchor line
- Two or three extra docklines
- Inspect dock and anchor lines for wear and tear, replace if frayed

Fire Extinguishers

- Accessible, Coast Guard approved fire extinguisher
- Ensure mounts are secure
- Inform all passengers of fire extinguisher location(s)

Tools and Spares

- Basic tool box
- Box of spares aboard. e.g.: Fuel filter, light bulbs, etc...

Emergency Boat Operation

- Storm Weather and Falls Overboard procedures
- Radio Operations
- First Aid Kit (on board and accessible)

Fuel and Oil

- Make sure tanks are full
- Check the engine oil and coolant levels

Ventilation

- On powered vessels, ensure interior spaces are well ventilated
- Run blower before starting if fumes are present
- If fumes are present after blowing, look for a leak or spill.

- Keep two fenders for docking

Documentation

- Keep registration, radio license, fishing permit, boater's operator card on board
- Keep local charts on-hand for quick reference

Bilges

- Make sure bilge is dry and pump is functional
- Clean bilge of any spills or waste

Battery Care

- Make sure all powered equipment is working
- Spare batteries for accessories such as a handheld radio, flashlight
- Make sure rechargeable batteries are charged

Weather Forecast

- Did you check the weather forecast?
- Hand-held radio to monitor weather

Chapter 4: Marine Environment

4.1 Environmental Laws and Regulations

4.1.1 Submersed aquatic vegetation (SAV)

Tip

To stop the spread of aquatic species, it is best to clean your boat before you leave the body of water.

Submersed aquatic vegetation (or SAV) consists of underwater plants often found in shallow (usually less than 6 ft) areas. They are important habitat for fish and shellfish, and are a food source for several waterfowl species. Scientific studies have shown that SAV beds can be scarred by boat propellers or by larger craft if they run aground. When operating your boat in shallow areas be careful to avoid damaging SAV. Do not operate a PWC in such areas.



4.1.2 Aquatic Nuisance

Non-native aquatic species, plants, fish and animals are invading coastal and inland waters. These pests can increase dramatically under the right conditions, displacing native species, clogging waterways, and impacting navigation and recreation. Once introduced, they are nearly impossible to eliminate. Hydrilla, Egeria Densa, Water Hyacinth and Zebra Mussels are nuisance species that can be accidentally transported by recreational boaters when caught in propellers, intakes or attached to hulls. Controlling Water Hyacinth and Egeria Densa is a multi-million dollar problem.

You can help prevent the introduction and spread of non-native species from one body of water to another.

- Inspect your boat and remove aquatic plants or animals before you leave any body of water.
- Flush raw-water cooling systems and clean sea strainers before moving your boat from one body of water to another.
- Empty bait buckets and remove any plant fragments from bait wells, fishing gear, trailers, dive gear or props. Dispose on land into a garbage receptacle.
- Drain water from your motor, live wells and bilge.
- Wash your boat before putting it into a new body of water.
- Report new infestation of non-native aquatic species to the U.S. Fish and Wildlife Service.

4.1.3 Additional Environmental Considerations

Be cautious when refueling your vessel in or near the water. Gas or oil spills can have significant negative effects on the environment.

Respect the wildlife and never use your vessel in a manner to harass the local wildlife.

Reduce speed to "No Wake" speed when approaching shorelines or in narrow channels, thus reducing possible erosion from a larger wake.

4.1.4 Garbage Disposal

The U.S. Coast Guard prohibits dumping of plastic or garbage mixed with plastic in any waters.

Distance from shore	It is illegal to dump:
Inside 3 miles and in U.S. Lakes, Rivers, Bays and Sounds and anywhere on the Great Lakes no matter how far from shore:	Plastic, dunnage, lining, and packing materials that float and any garbage except dishwater/graywater/fresh fish parts.
3 to 12 miles	Plastic, dunnage, lining, and packing materials that float and any garbage not ground to less than one square inch.
12 to 25 miles	Plastic, dunnage, lining, and packing materials that float.
Outside 25 miles	Plastic

NOTE: Dunnage refers to packing materials like foam or pellets

Additionally, Vessels of greater than 26 feet and operating in Federal waters must display a 4x8 inch SOS (Save our Seas) placard in a conspicuous place that outlines waste disposal regulations. Waste disposal placards can be purchased at most dealer locations and marinas.

4.1.5 Waste Liquids

Raw sewage can ONLY be dumped when greater than 3 nautical miles from shore. Some States and Canada also have regulations for dumping gray-water (dish water, shower water, laundry water) and treated waste. Consult your local authorities to ascertain the local laws.

4.1.6 Waste Management Plans

Any vessel longer than 40 feet, with a berth and a galley, and certified to operate beyond 3 nautical miles from shore: MUST have a written Waste Management Plan. The Waste Management Plan must be written and implemented by the boat captain. A Waste Management Plan should provide directions to passengers and crew as to the procedure for dealing with the discharge of the following:

- Sewage and hazardous waste
- Garbage and food waste
- Plastics, glass and aluminum
- Oily discharges and gasoline spills

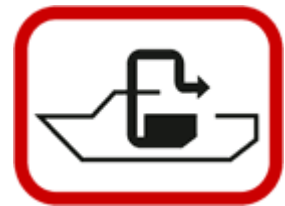
Note

Untreated human waste may NEVER be dumped in inland waters.

4.2 Human Waste Disposal

4.2.1 Marine Sanitation Device (MSD)

Boats operating in-land with an installed toilet must also have a sanitation system to prevent pollution and discharge of raw sewage. A typical sanitation system consists of: an installed toilet, a waste treatment system (MSD), and/or a holding tank. Be sure to check your MSD for U.S. Coast Guard Certification.



MSD Type	Legal for...	Functionality
Type I	boats under 65 ft	treat waste and discharge overboard
Type II	any vessel	more powerful treatment of waste discharge
Type III	any vessel	collect waste in holding tank for removal at Pump-out stations (most common)
Portable Toilet	all vessels on all waters	collect waste in holding tank - do not treat waste

Pump-Out Signs are displayed at marinas with Pump-Out facilities throughout the United States (*Figure 1 is a sample of a Pump-Out Sign*). Check with local marinas to locate convenient Pump-Out Stations prior to your voyage.

Figure 1: Pump-Out Station Sign

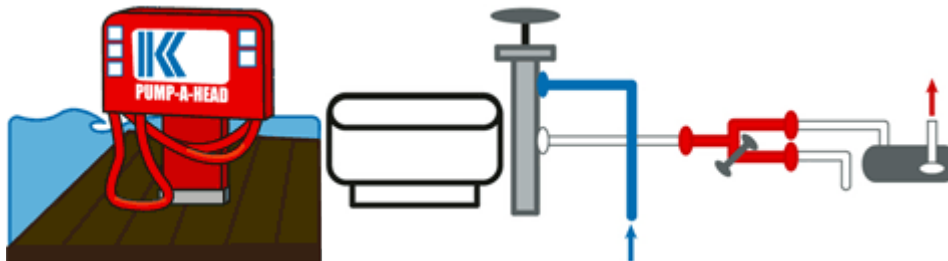


Figure 2: Pump-Out Station Functionality

4.2.2 California MSD Regulations

California does not mandate the use of MSDs. However, the state does prohibit Y-valve through hull discharge as well as require the Y-valve be locked.

4.2.3 No Discharge Zones

Type I and Type II MSDs (those that discharge treated waste) cannot be used in designated No Discharge Zones. No Discharge Zones are generally designated when a body of water has no navigable connections to other bodies of water. In these Zones: Type I and Type II MSDs must not be used and in fact, must be secured to prevent discharge. The following States are known to have No Discharge Zones with more States following suit each year: California, Florida, Massachusetts, Michigan, Minnesota, Missouri, Mississippi, New Hampshire, New Mexico, New York, Rhode Island, Texas, Vermont, and Wisconsin. Please consult your local boating authority before discharging waste to obtain the local regulations.

4.3 Disposal of Toxic Substances

The Refuse Act of 1899: prohibits throwing, discharging or depositing any refuse matter of any kind into United States waters. Refuse includes: garbage, trash, oil and other liquid pollutants.

Vessels of greater than 26 feet and operating in Federal waters must display a 5x8 placard in a conspicuous place that states the following:



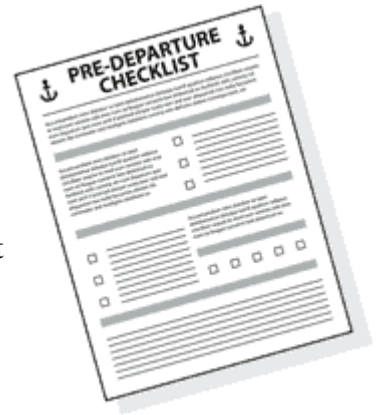
Therefore, boat operators are not allowed to dump oil into the bilge of the boat without means for proper disposal. Oil must be kept on board in a receptacle until it can be properly disposed. If oil is discharged accidentally contact the Coast Guard at: 800-424-8802 to report the accident.

Chapter 5: Safe Boat Operation

5.1 Operator Responsibilities

Ultimately, the boat operator is responsible for the safety and activity of all passengers. Additionally, the boat operator must respect other boaters and property. Before casting off the operator should:

- Complete a Pre-departure checklist to avoid emergencies later
- Ensure the vessel is cared for, is in good working order, and is seaworthy
- Ensure all passengers are comfortable with the safety equipment and procedures in case of emergency
- File a float plan for lengthy or unfamiliar trips
- Check local hazards
- Check local weather forecast and conditions



In California a boater can not operate a watercraft of 15 horsepower or more without adult supervision until they are at least 16 years of age. All boaters between the ages of 12 and 15 require adult supervision. Further, minimum operator age is 12 years old.

Moreover there is also a minimum age requirement of 16 years old, for those who wish to operate a Personal Watercraft (PWC) while unaccompanied by an adult. An adult must be present if the personal watercraft (PWC) operator is under 12-15 years of age. No person under 12 years of age is permitted to operate a PWC.

5.1.1 Age Restrictions

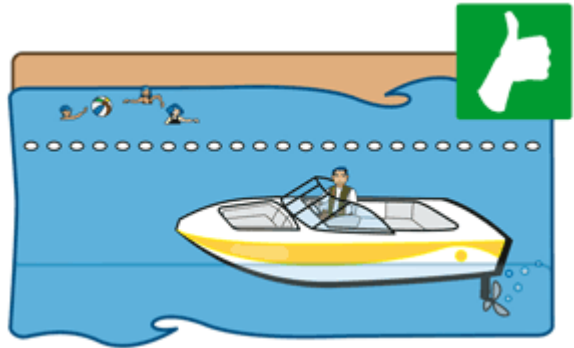
In California a boater cannot operate a vessel without adult supervision until they are at least 16 years of age. All boaters between the ages of 12 and 15 require adult supervision. The minimum operator age is 12 years old.

Moreover, there is also a minimum age requirement of 16 years old, for those who wish to operate a Personal Watercraft (PWC) while unaccompanied by an adult. An adult must be present if the personal watercraft (PWC) operator is under 16 years of age.

5.1.2 Courtesy

Other boaters and property owners wish to enjoy the water as well. As a courtesy to other boaters, swimmers and property owners, be sure to monitor your wake, noise level and boat speed around other boats and shoreline properties. You are responsible for any damage caused by your wake. Be sure to take the time to review proper safety and operation procedures if you let someone else operate your boat.

Be particularly mindful of your boat noise in the early morning and late evening. Leave the water as you found it: clean up any waste you encounter and be sure to collect any of your own waste in a garbage bag and dispose properly once you get to shore.



5.1.3 No Wake

"No wake" is defined as "The slowest possible speed required in order to maintain steerage and headway."

In California, it is unlawful to operate any motorboat or personal watercraft at greater than "no wake" speed (Maximum 5mph) when within 200 feet or less of docks, marinas, piers, moorages, boathouses, and boat ramps. When approaching a swimmer, operators must slow to no wake speed and stay at least 100ft away.



5.1.4 Slacken Speed

Operators in California must reduce speed to avoid endangering persons or a person's property from the effect of their vessels' wake. Reduce speed when approaching or passing the following:

- Watercraft under way, lying to, at anchor, or made fast to the shore
- Piers, docks, and boathouses
- Someone in the water
- Someone waterskiing or otherwise being towed
- Someone on a surfboard



An example of violating this would be if your boat runs over, or into, an object because you are traveling too fast to stop in time.

Certain bodies of water in California may have local restrictions as to type and size of watercraft or motor horsepower, restricted use areas, boat speed, and times for use. Check with the local authorities for these additional restrictions.

5.1.5 Mufflers and Noise Levels

Every watercraft operating on an internal combustion engine is required to have a muffling system. Generally most new outboards are equipped with a muffling system that meets the state requirements.

No motorboat exhaust sound can exceed the following when at 50 ft; 86 dBA if the boat was manufactured before Jan. 1, 1976 or 84 dBA if boat was manufactured between Jan. 1, 1977 & Dec. 31, 1978. All motorized watercraft manufactured after Jan. 1, 1978 must not exceed 82 dBA.

5.1.6 Negligence

Watch your Wake!

When operating a boat near other boats or when entering a congested area, watch your wake as it may cause personal injury or damage.

Any type of boating vessel demands an operator's respect and attention. Careless or reckless behavior aboard any vessel can result in dangerous consequences. A boat is not a toy. Enjoy your boating experience, but be mindful of the power of many vessels and the inherent dangers that water presents.

5.1.7 Unsafe Practices

The following acts and maneuvers are considered dangerous & illegal while boating in California:

- **Careless Operation.** It is illegal to operate a vessel in a manner that endangers the ability to conserve the safety, rights or property of others. The following are a few examples:

- Endangering others or their property, by allowing the wake of your vessel to potentially harm another or their property
- Jumping the wake of a vessel unnecessarily close to another vessel
- Failing to conform to boating signage such as posted speeds, indicated restricted entry zones, diver or skier down flags, etc.



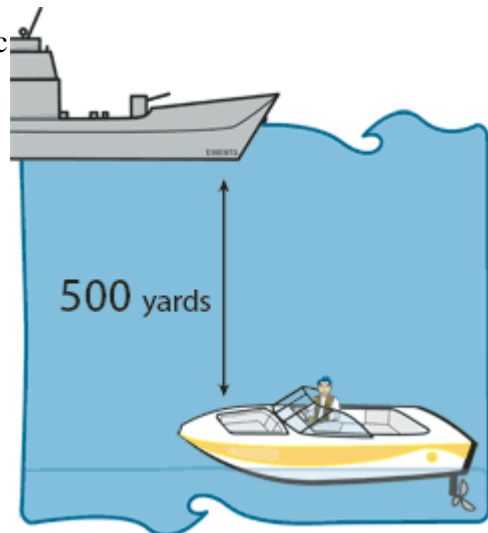
- **Operating at an unsafe speed.** Boaters must always operate their vessel at a safe speed as discussed earlier in this chapter as well as adhering to any indicated speed limitations.
- **Failing to maintain adequate distance.** Boaters must maintain the designated no wake speed in the circumstances discussed above as well as keeping their distance from water skiers or vessels towing someone on another device.
- **Exceeding maximum capacity.** The recommended capacity indicated on the boats' capacity plate should not be exceeded.
- **Not maintaining a lookout.** All operators are required to keep a constant lookout for other vessels and/or people in the water.
- **Dangerous operation.** Boaters must make sure that the vessel is being operated in such a manner that its occupants or others sharing the water are not in any danger. If an officer observes that someone's safety may be endangered, the operator may be forced to head to the closest moorage. Examples of such operation could be: operating without all the required equipment, operating the vessel with more power than recommended, or operating the vessel with a fuel leak.
- **Not maintaining proper seating regulations aboard your vessel.** In California, it is unlawful to allow any person to ride or sit on the bow, gunwales, transom, or on the decking over the bow of the vessel while underway unless such motorboat is provided with adequate guards or railing to prevent passengers from falling overboard. Passengers or other persons aboard a vessel may occupy these areas of the vessel to moor or anchor the vessel, to cast off, or for any other necessary purpose.

For obvious safety reasons it is recommended that boaters do not stop or anchor beneath bridges or in a channel.

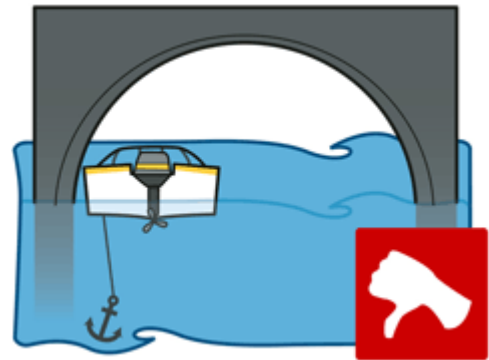
5.1.8 Homeland Security Measures

Federal, state and local governments have enacted specific measures since the events of September 11, 2001 to help deter unlawful or dangerous operations on our nation's waterways. Homeland Security Measures violations can result in sever consequences. Please be aware of the following Homeland Security Measures and act accordingly to keep our waterways safe and secure:

- Do not approach closer than 100 yards from all military, cruise-line, or commercial shipping vessels.
- Slow to 'no wake' speed within 500 yards of any large U.S. Naval vessel.
- Observe and avoid all security zones.
 - Avoid areas with military, cruise-line, or petroleum facilities. For information in port areas, call 1-800-682-1796 or go to www.uscg.mil/safeports/, or check with local authorities.
 - Observe other restricted areas near dams, power plants, etc.



- Do not stop or anchor beneath bridges or in the channel.
- Report suspicious activities.
 - Report any suspicious activity immediately to local authorities, the U.S. Coast Guard, or marine security personnel.
 - Or call the National Response Center's Terrorist Hotline at 1-800-424-8802. Do not approach or challenge those acting in a suspicious manner.
 - Never confront the suspicious party.
- Ensure your boat is always locked and secured when unattended and always take the boat keys with you.



5.2 Influence of Drugs and Alcohol on Boat Operation

5.2.1 Drive Sober

Because of the fatiguing effects of the sun, wind, and the motion of the boat, one drink on board is like three on shore! It means: if you are drinking at all, then you should not be behind the wheel!



Do not jeopardize your safety or the safety of the passengers in your care and other boaters. Your balance, vision, coordination and judgment are all affected adversely with the consumption of even one alcoholic drink. Coupled with environmental elements (sun, glare, wind, motion) - alcohol can have very serious consequences on the water. Please, be responsible when operating your boat. If you are operating a vessel - you should avoid alcohol consumption.

Myths	Reality
"A few beers won't hurt"	Even in small amounts, alcohol affects coordination and judgment. A bottle of beer, a glass of wine, or a drink of liquor - all produce the same effect.
"Most drowning accidents result from swimming"	More than 60% of drowning accidents occur after the victim accidentally falls off a dock, shoreline or vessel into the water. Autopsies show that more than one-third of the victims of such falls (mostly men) were impaired by alcohol at the time of the accident.
"Drinking alcohol while operating a boat is not a serious offence"	Operating a boat while intoxicated is just as dangerous as operating a car. The marine police are equipped with breathalyzers. If the results are positive, the police may lay charges.
"There's no harm in	Alcohol affects judgment. The person drinking can easily overestimate



drinking alcohol on the beach before swimming" their abilities or misjudge a risk they would not take under normal circumstances. Furthermore, it is illegal to drink in some public places, such as a beach or a dock.

"People who stand up in a boat rarely fall" More than one-half of boating accidents occur when occupants are standing. Given that alcohol affects balance, anyone who stands up in a boat after drinking alcohol is more likely to fall overboard. Drinking alcohol also increases urination.

"Water and Alcohol - Myths and Realities" - Red Cross Society

5.2.2 Boating While Intoxicated: Serious Penalties

No one shall operate a vessel or towed device (water skis, wake board, etc.) while under the influence of intoxicating liquor or drugs.

A boater with a blood alcohol content of .08% or more shall be presumed to be under the influence of alcohol. A blood alcohol content level of at least .05% but less than .08% may be used with other evidence in determining whether the person was under the influence of alcohol. A person convicted of intoxicated boat operation could receive up to a \$1,000 fine and six months in jail.

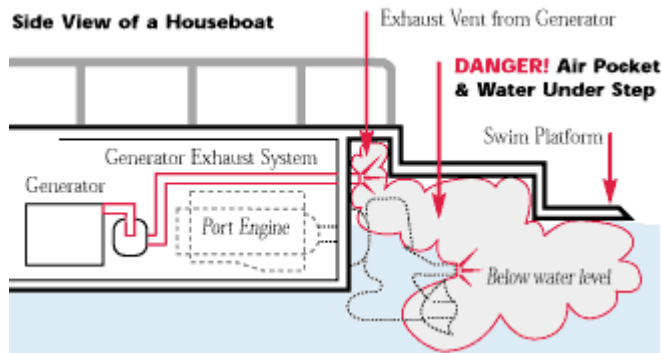
"Zero Tolerance" prohibits anyone younger than 21 from consuming alcohol and operating a watercraft with any measurable alcohol level above .01%. Penalties may include a fine of up to \$250, and participation in an alcohol education or community service program.

5.3 Carbon Monoxide: Protect yourself from this silent killer

Carbon monoxide can collect within, along side or behind a boat in minutes and in a variety of ways.

5.3.1 Avoid these Death Zones!

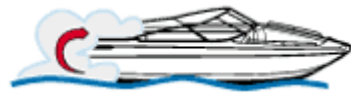
Swimming near or under the back deck or swim platform. Carbon monoxide from exhaust pipes of inboard engines, outboard engines and generators build up inside and outside the boat in areas near exhaust vents. **STAY AWAY** from these exhaust vent areas and **DO NOT** swim in these areas when the motor or generator is operating. On calm days, wait at least 15 minutes after the motor or generator has been shut off before entering these areas. **NEVER** enter an enclosed area under a swim platform where exhaust is vented, not even for a second. It only takes one or two breaths of the air in this "death chamber" for it to be fatal.



Blockage of exhaust outlets can cause carbon monoxide to accumulate in the cabin and cockpit area -even when hatches, windows, portholes, and doors are closed.



Exhaust from another vessel that is docked, beached, or anchored alongside your boat can emit poisonous carbon monoxide gas into the cabin and cockpit of your boat. Even with properly vented exhaust, your boat should be a minimum of 20 feet from the nearest boat that is running a generator or engine.

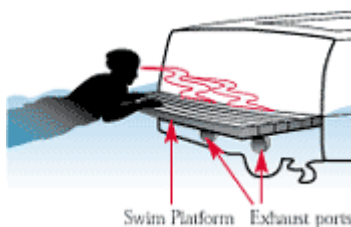


Slow speeds or idling in the water can cause carbon monoxide gas to accumulate in the cabin, cockpit, bridge, and aft deck, **even in an open area**. A tailwind (force of wind entering from aft section of the motorboat) can also increase accumulation.



The "station wagon effect," or backdrafting can cause carbon monoxide to accumulate inside the cabin, cockpit and bridge when operating the boat at a high bow angle, with improper or heavy loading or if there is an opening which draws in exhaust.

This effect can also cause carbon monoxide to accumulate inside the cabin, cockpit, aft deck, and bridge when protective coverings are used and the boat is underway.



Teak surfing, dragging and water skiing within 20 feet of a moving watercraft can be fatal.

5.3.2 What to do

- The best precaution against carbon monoxide poisoning is to keep air flowing through the vessel
- Educate family and friends about carbon monoxide so they are aware of what the early poisoning signs are
- If your boat has rear-vented generator exhaust, check with the boat manufacturer for possible recall or reroute the exhaust to a safe area.
- Assign an adult to watch when anyone is swimming or playing in the water.
- Schedule regular engine and exhaust system maintenance inspections by experienced and trained technicians.
- Keep forward-facing hatches open, even in inclement weather, to allow fresh air circulation in living spaces. When possible, run the boat so that prevailing winds will help dissipate the exhaust.
- Do not confuse carbon monoxide poisoning with seasickness, intoxication or heat stress. If someone on board complains of irritated eyes, headache, nausea, weakness or dizziness, immediately move the person to fresh air, investigate the cause and take corrective action. Seek medical attention, if necessary.
- Install a carbon monoxide detector in each accommodation space on your boat. Check detectors before each trip to be sure they are functioning properly. If the detector goes off, believe it!

5.3.3 Facts

Carbon monoxide is a potentially deadly gas produced any time a carbon-based fuel, such as gasoline, propane, charcoal or oil, burns. Sources on your boat include gasoline engines, generators, cooking ranges, and space and water heaters. Cold or poorly tuned engines produce more carbon monoxide than warm, properly tuned engines.

Carbon monoxide is colorless, odorless and tasteless and mixes evenly with the air. It enters your bloodstream through the lungs and displaces the oxygen your body needs. Early symptoms of carbon monoxide poisoning - irritated eyes, headache, nausea, weakness, and dizziness - are often confused with seasickness or intoxication. Prolonged exposure to low concentrations or very short exposure to high concentrations can lead to death.

Each year, boaters are injured or killed by carbon monoxide. Most incidents occur on older boats and within the cabin or other enclosed areas. Exhaust leaks, the leading cause of death by carbon monoxide, can allow carbon monoxide to migrate throughout the boat and into enclosed areas. New areas of concern are the rear deck near the swim platform with the generator or engines running and teak surfing or dragging behind a slow moving boat. Regular maintenance and proper boat operation can reduce the risk of injury from carbon monoxide.

5.3.4 California Carbon Monoxide Regulations

How are people exposed to carbon monoxide in a marine environment?

Traditionally, carbon monoxide poisonings have occurred on houseboats, vessels with overhead canopies or other vessels that have poor ventilation. Carbon monoxide also accumulates onboard a vessel through a process known as the 'station wagon effect.' This occurs as air moves around a boat and forms a low pressure area immediately behind the broad, flat transom. Carbon monoxide from the exhaust system enters the low-pressure area and is fed back into the cockpit and into cabin.

Many recent cases of carbon monoxide inhalation have involved a recreational activity known as 'teak surfing'. 'Teak surfing' involves holding onto the swim platform or transom of an underway vessel to bodysurf on the wake of the vessel. As of January 1, 2005 , 'teak surfing' and other similar recreational activities are against the law in California.

How can I get California-approved carbon monoxide warning decals for my boat?

Assembly Bill 2222 (Koretz) requires that a set of carbon monoxide warning stickers be placed on the transom and helm of all new and used motorized vessels sold in California beginning May 1, 2005.

The Department of Boating and Waterways has coordinated with nationwide boating interests to develop a set of universal carbon monoxide decals. The Department of Motor Vehicles will send the decals and an informational brochure out with all vessel registrations for the next four years. Boat manufacturers and dealers should order decals from the National Marine Manufacturers Association (NMMA). Decals will also be available to [order online](#) from the DBW Website. Scroll down to the "Other" section of the publications list and look for "Carbon Monoxide Danger." DBW provides the decal and brochures as a set.

5.3.5 Prevention Checklist

All carbon monoxide poisonings are preventable!

Checklist - Each Trip

- Educate all passengers about carbon monoxide poisoning.
- Make sure all exhaust clamps are in place and secure.
- Look for exhaust leaking from exhaust system components, indicated by rust and/or black streaking, water leaks, or corroded or cracked fittings.
- Inspect rubber exhaust hoses for burned or cracked sections. All rubber hoses should be pliable and free of kinks.
- Confirm that water flows from the exhaust outlet when the engines and generator are started.
- Listen for any change in exhaust sound that could indicate an exhaust component failure.
- Test the operation of each carbon monoxide detector by pressing the test button. Make sure the battery is installed properly and is in good condition. Never remove the battery unless

replacing it with a new battery

Checklist - At Least Annually

- Replace exhaust hoses if any evidence of cracking, charring or deterioration is found.
- Inspect each water pump impeller and the water pump housing, and replace if worn. Make sure cooling systems are in proper working condition to prevent overheating and burn through the exhaust system. (Refer to the engine and generator manuals for further information.)
- Inspect each of the metallic exhaust components for cracking, rusting, leaking or loosening. Pay particular attention to the cylinder head, exhaust manifold, water injection elbow, and the threaded adapter nipple between the manifold and the elbow.
- Clean, inspect, and confirm proper operation of the generator cooling water anti-siphon valve (if equipped).

Annual Checklist must be performed by a qualified marine technician.

Chapter 6: Navigation Rules of the Road

Disclaimer

The navigation rules of the road contained in this course summarize basic navigation rules for which a boat operator is responsible. Additional and more in-depth rules apply regarding various types of waterways and operation in relation to commercial vessels and other watercraft. It is the responsibility of a boat operator to know and follow all the navigation rules.

A navigation rule can be overlooked if necessary to **avoid immediate danger**.

For a complete listing of the navigation rules, refer to the document "Navigation Rules of the Road" published by the U.S. Coast Guard (COMDTINST 16672.2 Series) and available through the U.S. Government printing office or on the web at <http://www.uscg.mil/vtm/navrules/navrules.pdf>

6.1 Definitions Relevant to Navigation Rules

Term	Definition
Vessel	Vessel includes every description of watercraft, including non-displacement craft and seaplanes, used or capable of being used as a means of transportation on water.
Power-Driven	Propelled by machinery
Sailing	Under sail provided that propelling machinery, if fitted, is not being used.
Vessel Engaged in Fishing	Vessel Engaged in Fishing means any vessel fishing with nets, lines, trawls, or other fishing apparatus which restrict maneuverability, but does not include a vessel fishing with trolling lines or other fishing apparatus which do not restrict maneuverability.
Seaplane	Seaplane includes any aircraft designed to maneuver on the water.
Length and Breadth	Length and Breadth of a vessel mean her length overall and greatest breadth.
In sight of one another	Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other.
Stand-on-Vessel	When encountering another vessel, the stand-on must: <ol style="list-style-type: none">1. At first, maintain course and speed2. Keep a proper lookout and return communication with the give-way vessel

3. Do all it can to avoid collision

Give-way-Vessel	The vessel that must take EARLY and SUBSTANTIAL action to keep WELL clear of the stand-on-vessel.
Underway	When a vessel is not at anchor, or made fast to the shore, or aground.
Restricted Visibility	Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms or any other similar causes.
Inland Waters	The navigable waters of the United States shoreward of the navigational demarcation lines dividing the high seas from harbors, rivers and other inland waters of the United States and the waters of the Great Lakes on the United States side of the International Boundary.

6.2 Sound Signaling Equipment

6.2.1 Legal Requirements

Boats less than 40ft

An efficient sound producing device, such as an air horn or whistle is required



Boats 40ft to less than 65ft

A bell is required



6.2.2 When and How to Sound Off

When two power-driven vessels encounter each other within mile sound signals must be used. The initiating vessel indicates a maneuver and the responding vessel agrees or disagrees.

Signal	Maneuver
1 short blast (1 second)	I want to pass you on my port side (<i>Hint: PORT = 1 syllable = 1 short blast</i>)
2 short blasts	I want to pass you on my starboard side. (<i>Hint: STARBOARD = 2 syllables = 2 short blasts</i>)
3 short blasts	Engine is in reverse
5 short blasts	Danger or do not understand approaching boat's intentions
1 prolonged blast (4-6 seconds)	Warning (entering or exiting a blind turn)
1 prolonged blast every 2 minutes	Power-driven vessel operating in Low or Restricted Visibility

1 prolonged blast
+ 2 short blasts every 2 minutes

Sailing vessel operating in Low or Restricted Visibility

6.3 Rule of Responsibility

Earlier, we indicated the responsibility of the vessel operator to act in a prudent and reasonable manner consistent with the ordinary practices of boating.

- Stay active
- Stay alert
- Respect the weather, the water, your passengers, fellow boaters, divers, swimmers and property owners



In summary: vessel operators need to pay attention and operate their vessels defensively.

6.3.1 Proper Lookout

There are many distractions on the water. As the boat operator, it is your responsibility to constantly monitor your surroundings, on all boats at all hours. Make sure no passengers or equipment can impede your line of sight. Scan the bow, starboard and port sides for boaters, swimmers, dive flags and floating debris. You are required to use every available means, including radar and radio (if equipped), to determine whether there is any risk of collision with another vessel. **That is not only common sense - that is the law!**



6.3.2 Safe Speed

All vessels should be operated at a speed that allows time and distance to take necessary action to avoid a collision. Obviously, different conditions and levels of expertise will warrant different speeds.

To determine a 'safe speed' for your boat, take into account the following factors:

- The visibility conditions (fog, mist, rain, darkness)
- The wind, water conditions and currents
- Traffic density, type of vessels in the area and their



- proximity
- Vessel responsiveness (larger, more powerful boats require a larger turning radius and have a higher top-end speed - thus requiring more time and distance to stop)
- The proximity of any navigational hazards

Certain areas of California enforce local speed limits. Check with your local boating authority before heading out on the water to determine speed limits (if any) in your area.

Lastly, your wake can cause damages to property and other vessels. Always take into account the effects your wake might create when adjusting your speed.

6.4 Collision Avoidance Rules

Avoiding collisions involves precautionary measures (proper lookout, use of radar, if present), but more importantly, collision avoidance is made possible when boat operators know how to deal with situations appropriately. Boats in constant motion will meet quickly - take early and substantial action to avoid collisions.



The following considerations should be taken into account when determining the risk of a collision:

1. A risk of collision may exist if the direction of an approaching vessel does not change significantly;
2. A risk of collision may also exist even when an approaching vessel makes a significant change of direction, particularly when the approaching vessel is a very large vessel or a tow or at close range.

Port

If a power-driven vessel approaches within this sector, maintain with caution, your course and speed.

Starboard

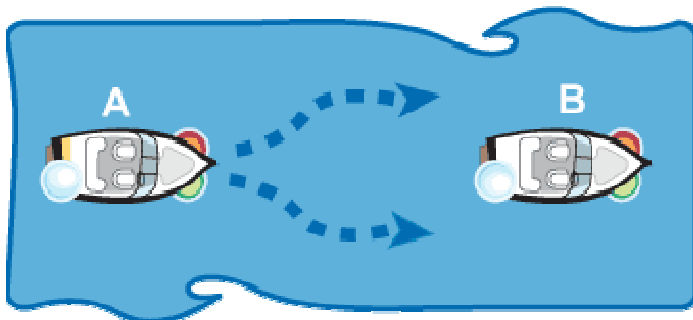
If any vessel approaches within this sector, keep out of its way by either going right or slowing down as you are the give-way vessel. A vessel approaching from your starboard is the stand-on vessel.

Stern (rear side)

If any vessel approaches this sector, you are the stand-on vessel - keep a steady lookout and maintain with caution, your course and speed.

6.4.1 Two Power-Driven Vessels Approaching Each Other: Overtaking

The overtaking vessel (**A**) is a give-way vessel. The other vessel (**B**) is a stand-on vessel. As the give-way vessel, **A** must take **EARLY** and **SUBSTANTIAL** action to keep clear of the stand-on vessel (**B**).



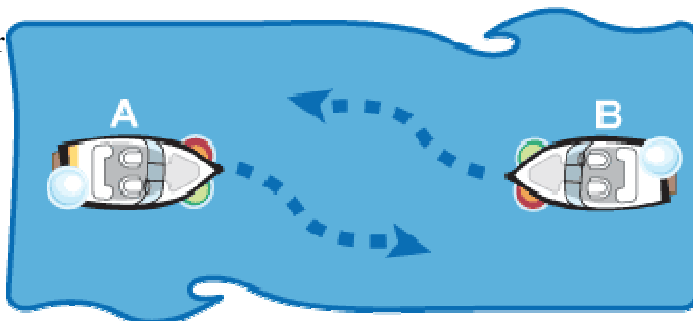
Note

Sailing vessels stand-on when being overtaken and give-way when overtaking.

If both vessels are power-driven - sound signals are required. **A** must blow one short blast and alter course to starboard - or blow two short blasts and alter course to port and **B** must return the same sound signal(s) to indicate understanding

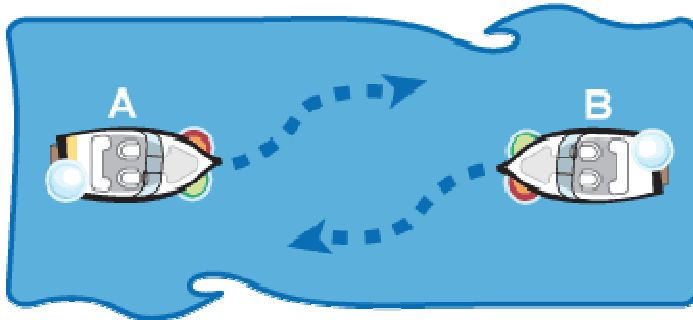
6.4.2 Two Power-Driven Vessels Approaching Each Other: Meeting Head-On

Neither Power-driven **A** nor Power-driven **B** gives way or stands on in a head-on encounter. Therefore, some communication is needed between **A** and **B**. The most common response, in a head-on meeting between Power-driven vessels is to signal an intention to pass port-to-port with one short blast. A short blast should be returned from the approaching vessel indicating a move to the starboard side.



A must blow one short blast and alter course to starboard

B must blow one short blast - to indicate understanding - and alter course to starboard



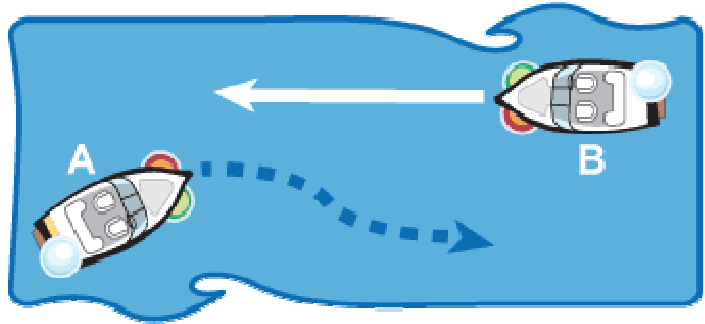
If it is not possible to pass port-to-port, due to an obstruction or shoreline, a starboard-to-starboard pass should be signaled with two short blasts. Two short blasts should be returned from the approaching vessel indicating a move to the port side.

A must blow two short blasts and alter course to port

B must return two short blasts - to indicate understanding - and alter course to port

6.4.3 Two Power-Driven Vessels Approaching Each Other: Crossing

Power-driven A approaches the port side of Power-driven B. A is considered the give-way vessel. As the give-way vessel, A must take **EARLY** and **SUBSTANTIAL** action to keep clear and avoid crossing the stand-on vessel (B).

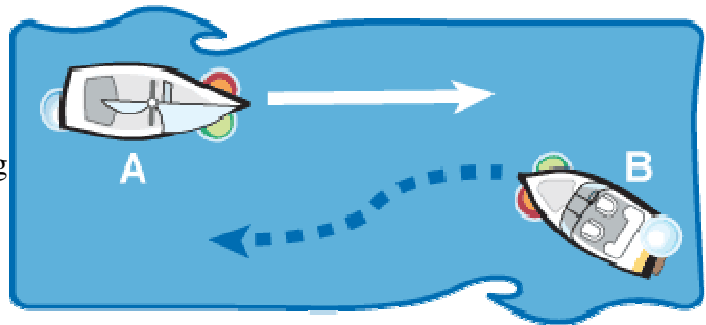


A must blow one short blast and alter course to starboard

B must blow one short blast - to indicate understanding - and maintain course.

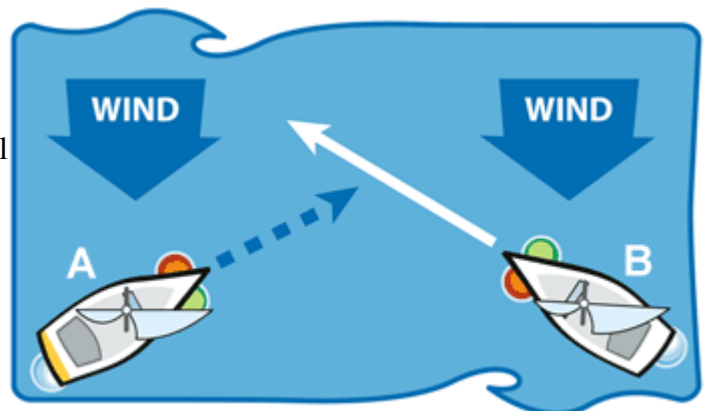
6.4.4 Sailing Vessel and Power-driven Vessel Approaching

When a Power-driven vessel (B) encounters a Sailing vessel (A), the Sailing vessel is **ALWAYS** the stand-on vessel (unless a Sailing vessel is overtaking). In the case above - Power-driven vessel (B) must take **EARLY** and **SUBSTANTIAL** action to keep clear sailing vessel (A).



6.4.5 Two Sailing Vessels Approaching Each Other

When each sailing vessel has the wind on a different side, the vessel that has the wind on its port (left) side is considered the give-way vessel. In our illustration, Sailing vessel A must take **EARLY** and **SUBSTANTIAL** action to keep clear of Sailing vessel B.

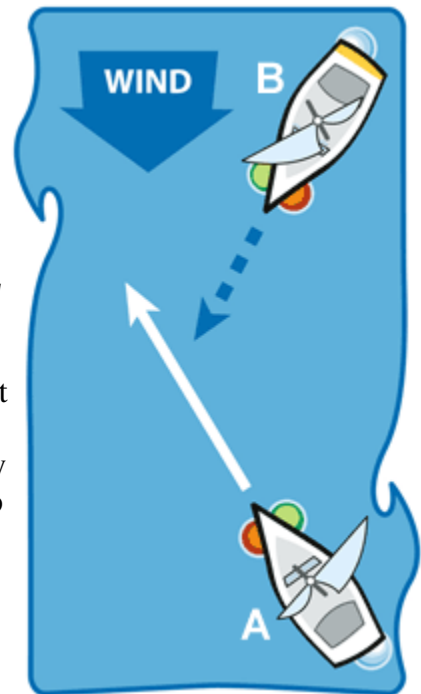


Note

The windward side is defined as the side opposite to that of which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest for-and-aft sail is carried.

When both sailing vessels have the wind on the same side, the vessel closer to the wind (upwind) is the give-way vessel and the vessel further from the wind (downwind) is the stand-on vessel. In the illustration above - **B** must take **EARLY** and **SUBSTANTIAL** action to keep clear of **A**.

If a sailing vessel has the wind on its port side and the sailor cannot determine with certainty whether the other vessel has the wind on its port or starboard side, the first vessel is considered the give-way vessel and must take **EARLY** and **SUBSTANTIAL** action to keep clear of the second sailing vessel.



6.4.6 Heavy Traffic

When boat traffic is heavy - with many boats moving in different directions and speeds - the boat operator **MUST** slow down or stop to navigate safely.

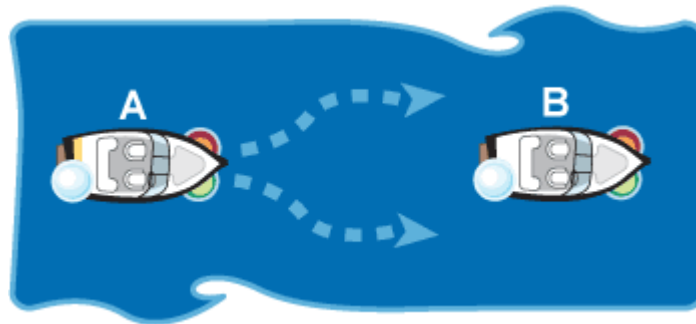
6.4.7 Operation Within Narrow Channels

When approaching a narrow channel, stay to the starboard side and announce your approach to vessels that may be around the bend, with a prolonged blast. When operating within a narrow channel: **Vessels must keep as near as is safe and practical to the outer limit of a narrow channel on their starboard side**. Sailing vessels and vessels less than 20 meters in length cannot block the passage of a vessel that can only navigate within a narrow channel (ie: Recreational boaters traveling in a main channel should give way to larger vessels such as tugboats). For Homeland Security, avoid anchoring in narrow channels and beneath bridges.

6.4.8 Operation in Darkness

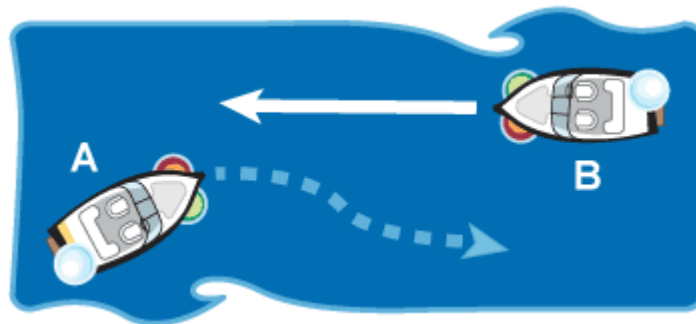
During darkness navigation lights **MUST** be displayed. Navigation lights help you determine whether an approaching vessel is operating under power or sail, and its direction. Remember these quick rules for reference when encountering other vessels in darkness:

6.5 Operation in Darkness Actions



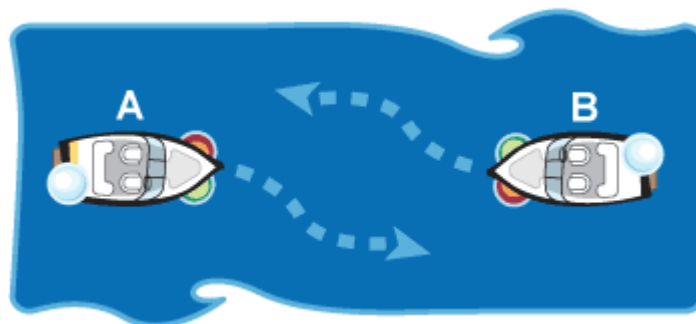
PowerBoat A: When only a white light is visible... you may be overtaking another vessel. Give-way to either side.

PowerBoat B: You are being overtaken. Stand-on.



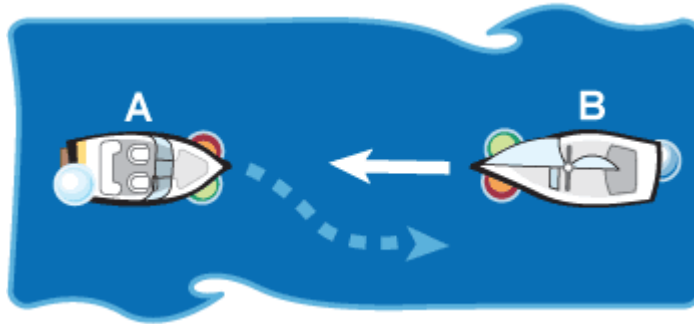
PowerBoat A: When only white and red lights are visible...you are approaching the port-side of a powerboat. Give-way to your starboard side.

PowerBoat B: When only white and green lights are visible...you are approaching the starboard side of a powerboat. Stand-on.



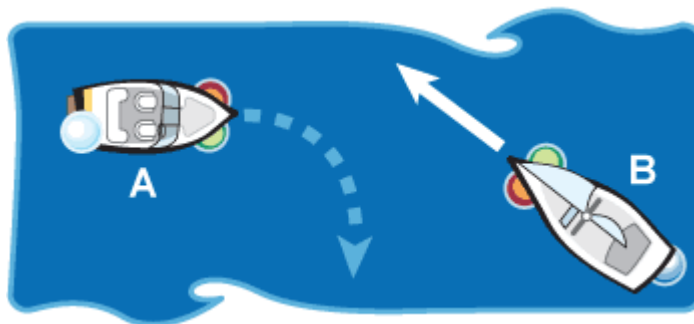
PowerBoat A: When white, red, and green lights are visible...you are approaching a powerboat head-on. Give-way to your starboard side.

PowerBoat B: When white, red, and green lights are visible...you are approaching a powerboat head-on. Give-way to your starboard side.



PowerBoat A: When only red, and green lights are visible...you are approaching a sailboat head-on. Give-way to your starboard side.

SailBoat B: When white, red, and green lights are visible...you are approaching a powerboat head-on. Stand-on.



PowerBoat A: When only a red light is visible...you are approaching the port side of a sailboat. Give-way to your starboard side.

SailBoat B: When white and green lights are visible...you are approaching the starboard side of a powerboat. Stand-on.



PowerBoat A: When only a green light is visible...you are approaching the starboard side of a sailboat. Give-way to your port side.

SailBoat B: When white and red lights are visible...you are approaching the port side of a powerboat. Stand-on.

6.5.1 Operation in Restricted Visibility

During periods of restricted visibility (such as: rain, mist, and heavy fog) you should slow your speed to give your vessel an opportunity to maneuver should the risk of a collision arise.

When visibility is restricted by fog or smoke, additional sound signals are required:

Vessel Type	Situation	Sound Requirement
Power Vessel	underway	prolonged blast every 2 minutes
Sailing Vessel	underway	prolonged blast + two short blasts every 2 minutes
Power Vessel	underway - but making no-way	two prolonged blasts
Any Vessel	anchored	5 seconds of rapid bell ringing
Any Vessel	aground	3 bell strokes + 5 seconds of rapid bell ringing + 3 bell strokes

Unless the risk of a collision is present - you should reduce your speed to the minimum to be kept on course when you hear any of the sound signals above.

6.5.2 Visual Distress Signals

Knowing the following distress signals will help you call for help in an emergency and recognize those in trouble. Visual distress signals are taken very seriously. False alarms commit search and rescue personnel and make them potentially unavailable for real emergencies. Distress signals are **required** on Coastal Water, Great Lakes and Territorial Seas and those waters connected or diverted to them, up to the point where the body is 2 miles wide. Consult with your State boating authorities to determine the Visual Distress Signals that are mandatory in your State.

When a vessel is in distress, it can use or exhibit the following signals. Be sure to use appropriate signals for daylight and darkness (code flags, distress cloths, dye marker, and arm signals are less effective in darkness).

Standard Marine Distress Signals

Marine Radio

- 2182 Khz (MF)
- Channel 16, 158.6 Mhz (VHF)
- DSC alert, channel 70 (only for DSC type radios and where the service is



offered)

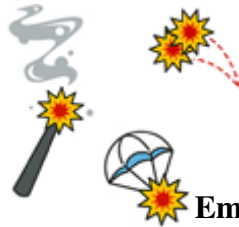
Sound Signals

- Continuous sound with any foghorn, bell or whistle
- Gun or other explosive signal fired at 1 minute intervals



Flares

- **Type A:** Parachute flare
- **Type B:** Multi-star flare
- **Type C:** Handheld flare
- **Type D:** Orange smoke flares



Emergency Position Indicating

Radiobeacon (EPIRB)

- Use alarm signal

Code Flags

- N over C
- **Ball** over or under **Square**



Distress Cloth

- To attract attention spread on cabin, deck top, or fly from mast.



Dye Marker

- To attract attention release orange dye into water



Flashlight

- Flash S.O.S. signal (short-short-short-long-long-long-short-short-short)



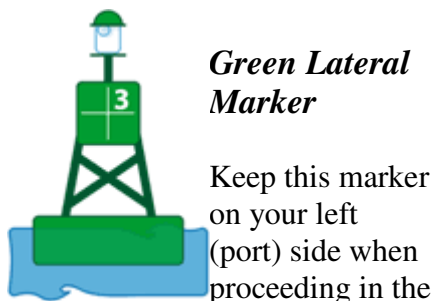
Arm Signal

- Raise and lower outstretched arms repeatedly



6.6 Aids to Navigation

6.6.1 U.S. Aids to Navigation System (ATON)



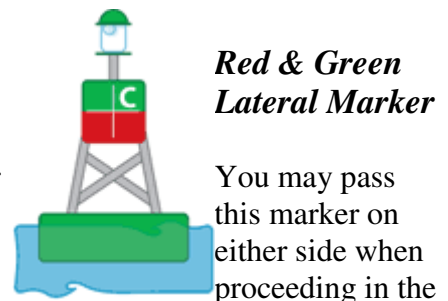
Green Lateral Marker

Keep this marker on your left (port) side when proceeding in the upstream (returning from sea) direction. Odd numbers will be displayed and will increase as you head upstream.



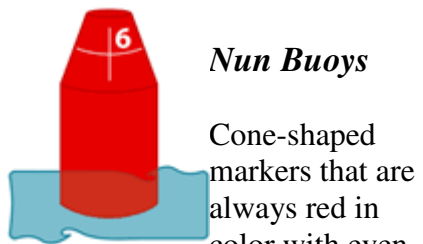
Red Lateral Marker

Keep this marker on your right (starboard) side when proceeding in the upstream (returning from sea) direction. Even numbers will be displayed and will increase as you head upstream.



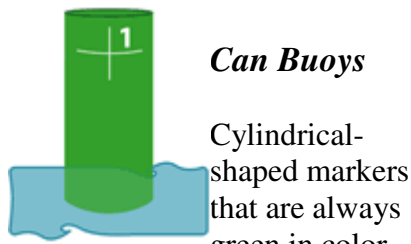
Red & Green Lateral Marker

You may pass this marker on either side when proceeding in the upstream direction, but the main or preferred channel is indicated by the color of the topmost band. For example: The marker above indicates the preferred channel is to the right.



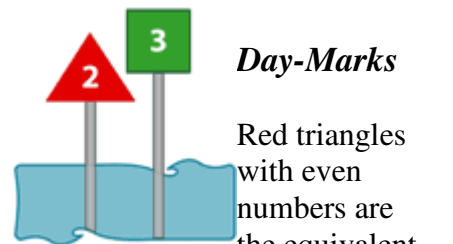
Nun Buoys

Cone-shaped markers that are always red in color with even numbers. Keep this marker on your right (starboard) side when proceeding in the upstream (returning from sea) direction.



Can Buoys

Cylindrical-shaped markers that are always green in color with odd numbers. Keep this marker on your left (port) side when proceeding in the upstream (returning from sea) direction.

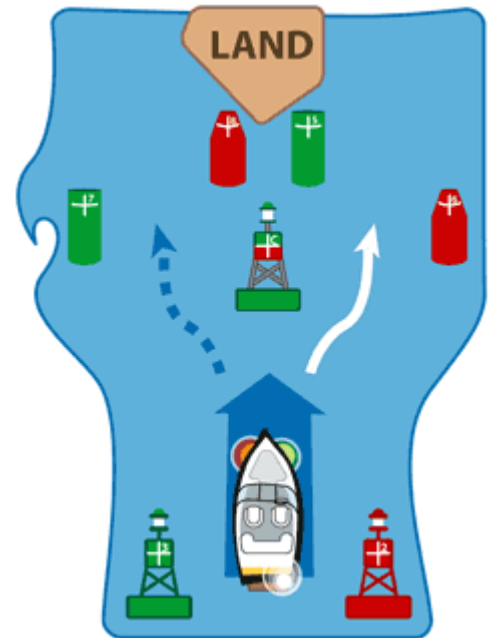


Day-Marks

Red triangles with even numbers are the equivalent of Nun Buoys - keep this marker on your right side. Green squares with odd numbers are the equivalent of Can Buoys - keep this marker on your left side. Both red triangles and green squares can be lighted as well.

General Rule of Thumb:

Red-Right-Returning - keep the **red** markers on your **right** side when **returning** upstream from sea.



6.6.2 The Uniform State Waterways Marking System

The most common non-lateral markers are white and have orange markings and black lettering:



Information (Square)

Displays information such as locality, marina, campsite, food etc. Be guided by the information inside the orange square.



Hazard (Diamond)

Marks random hazards such as shoals and rocks. Information concerning the hazard is illustrated within the orange diamond.



Control (Circle)

Indicates speed limits, wash restrictions etc. Obey the restrictions illustrated within the orange circle.



Keep-Out (Diamond with crossing lines)

Indicates areas where boats are prohibited.



Obstruction Marker

Indicate an obstruction to navigation. Do not pass between this marker and the shoreline.

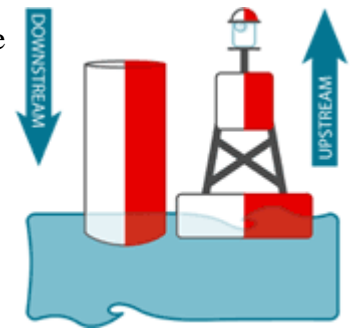


Mooring Marker

A mooring marker is used for mooring or securing vessels; be aware that a vessel may be secured to such a marker.

Safe Water Marker

Indicates safe water. This marker is used to indicate landfalls, channel entrances or channel centers. It may be passed on either side but should be kept to the left (port) side when proceeding in either direction.



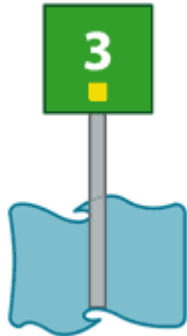
Diving Marker

Indicates diving activity in the area. Particular care must be taken when boating in waters where there are divers. A vessel engaged in diving must display a blue and white flag (see left). A red and white flag carried on a buoy is used to mark areas where diving is in progress, although divers may stray from the boundaries of the marked areas. As a general rule - stay at least 100 feet from any diving activity. Consult your State boating authorities for State specific diving requirements.



6.6.3 Intracoastal Waterway (ICW)

The Intracoastal Waterway (ICW) is a series of tributaries running parallel along the Atlantic and Gulf of Mexico coasts. The ICW runs from New Jersey to Texas. Navigation aids along the ICW are the same as any other U.S. Waterway with the exception of yellow markings. The yellow markings override the shape or color of the lateral markers they are affixed on, if you want to continue on the ICW.



Yellow Squares - indicate you should keep this marker on your left (port) side.



Yellow Triangles - indicate you should keep this marker on your right (starboard) side.

6.6.4 Western Rivers System

The Mississippi River and its tributaries above Louisiana use the Western Rivers System of navigation aids. Unlike the Lateral Markers in the U.S. Aids to Navigation System (ATON), the Western Rivers System does not use numbers. Instead, numbers are fixed below Day-Marks which indicate the distance to the river mouth.

6.7 Docking and Mooring

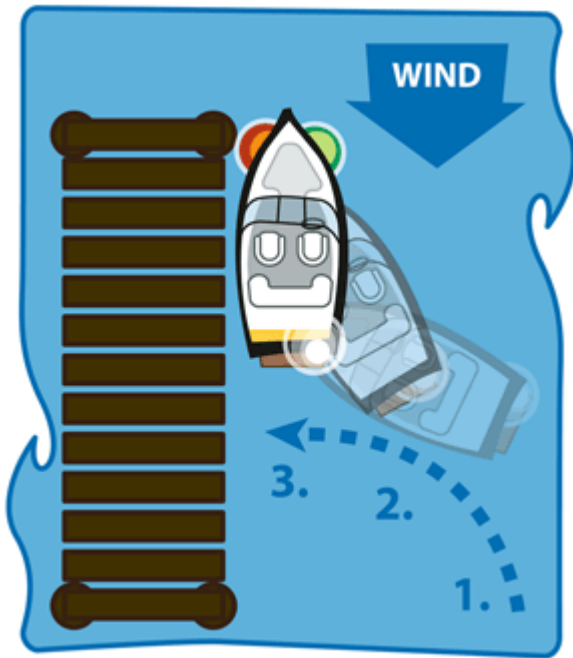
Docking or mooring your vessel can be the most challenging of boating operations. Maneuvering your vessel into a dock or a mooring marker in calm conditions is hard enough - add in high traffic, choppy water and windy conditions to the mix and you quickly realize that proper docking and mooring is a real skill. Keep the following factors in mind for effective docking and mooring:



- **Preparation** - when you approach the dock: slow your speed, secure fenders on the docking side, and ready the docking lines.
- **Traffic** - if you are headed to a marina with limited docking stations you may have to wait until stations open up. Be patient and courteous - only approach when you see an open station and have communicated your intention to other vessels that are departing and waiting.
- **Wind** - the direction of the wind has a huge impact on docking.

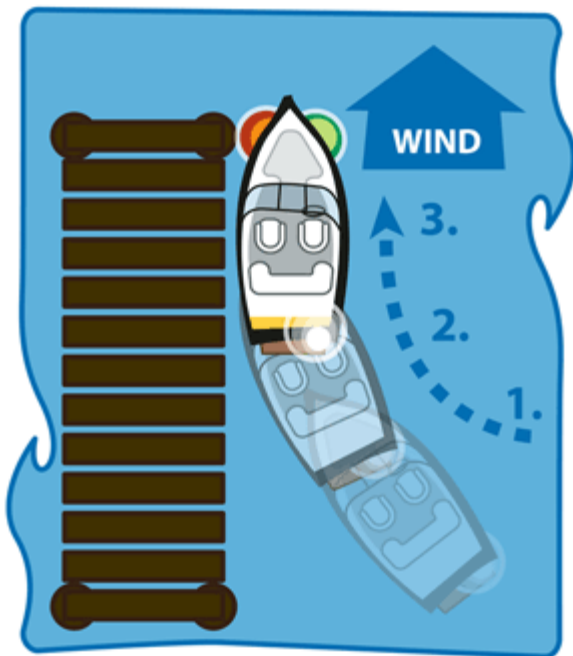
In your face

If the wind is in your face you will need to approach the dock at a steep angle (30-45) and swing the boat quickly. Secure the bow first and reverse until the stern swings in.



At your back

If the wind is at your back you should approach the dock with a shallow angle, (10-20) stop the boat and allow the wind to drift the boat into the dock.



Note

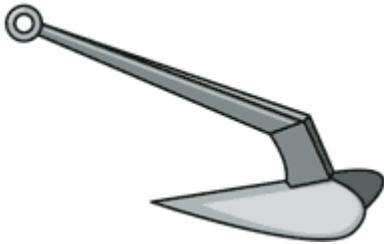
If possible approach the dock with the wind into your face - you have much more control when docking into the wind.

6.8 Anchoring

Though anchors are not required by Federal Law - many States have anchor requirements - it is advisable to carry an anchor for both recreational and emergency use.

There are a number of anchor types - the most common recreational anchors are listed below. Choose the anchor type that meets your anchor requirements:

Plow



Description:

pivoting flukes bury the anchor

Best for...

soft mud, grass

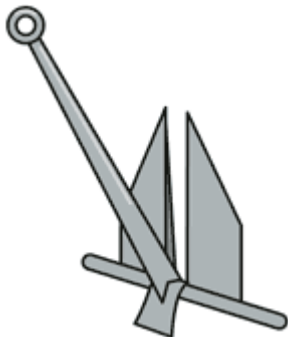
Description:

lands sideways - buries when pulled

Best for...

rocky bottoms, weeds, grass

Danforth



Description:

for canoes and inflatables

Mushroom

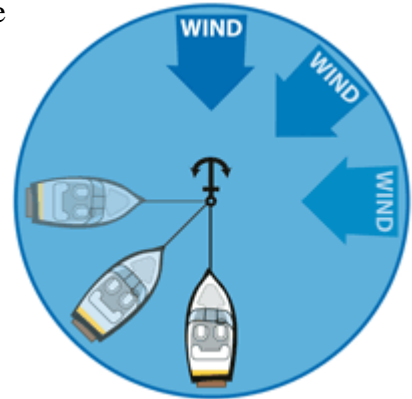


Best for...

flat bottoms

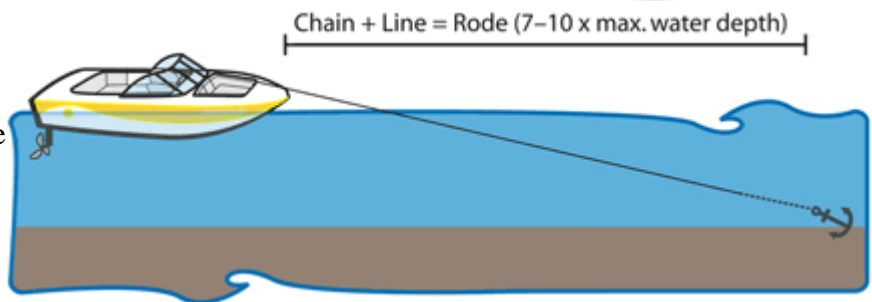
Anchors should have: line, chain (called 'rode') and anchor (all items together are called 'ground tackle'). The chain helps to set and retrieve the anchor. The amount of rode (line + chain) to have out depends on the water depth you plan to set anchor. As a general rule of thumb, your rode should be **7-10 times** the depth of the water in which you will anchor. You will need more rode in bad weather or rough water.

Anchors can be of assistance in emergency situations - especially engine failure in rough waters or currents. As such, make sure the anchor is accessible and the rode is free of entanglements.



6.8.1 Tips for Anchoring

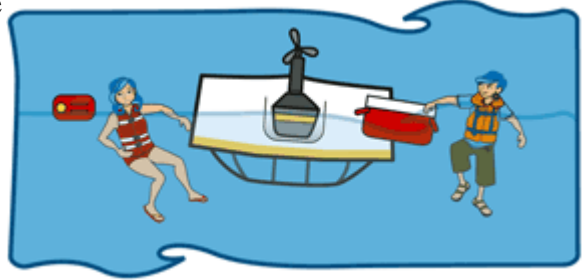
- Remember: the wind or tide will move your boat around the anchor - you should allow a 360 degree area for movement.
- Pick a spot upwind from where you wish to end up (once you set anchor you will drift downwind).
- Calculate the amount of rode needed to set anchor (**rode = water depth x 7-10**).
- Ready rode in a fashion that will allow the anchor to release smoothly to the bottom; ensure no feet or equipment is entangled in the rode.
- Slowly lower the anchor from the bow, rather than the stern, to avoid capsizing or swamping.
- When the anchor has hit bottom - and sufficient rode is given out - give a solid pull to set the anchor.
- Secure the line to a bow cleat. **Never** tie the line to the stern - the additional weight could bring-on water.



Chapter 7: Emergency Preparedness

7.1 Rendering Assistance

If you are involved in an accident, you should exchange information and assist those in the accident without endangering your own life or the safety of your vessel. If you see a distress signal, you should assist those in distress if you can do so without putting your vessel or crew at risk. If you cannot assist, make sure you notify the nearest boaters or authorities who can assist.



7.2 Capsizing Emergencies



Capsizing - the overturning of a vessel on its side or turned over - is most common in small sailboats and canoes. Capsizing can occur from operator error or from heavy winds and rough waters. Capsizing illustrates the importance of always wearing a PFD. Luckily; these smaller boats will usually stay afloat after capsizing and provide support to the victims.

Surviving a capsizing:

- Stay calm and conserve energy. If possible, take a headcount and signal for rescue.
- Stay with the boat unless the boat is headed for a hazard.
- If possible, try to right the boat. At the very least, you should try to get as much of your body out of the water and onto the capsized boat as possible to conserve energy and delay the onset of hypothermia (cold water).
- Improvise flotation: If the boat is not nearby - use floating items around you to help you stay out of the water and afloat (empty cooler, fuel tank, fender).
- When separated from your boat in a swift river current, you should float on your back with your feet downstream.

Prevention of capsizing:

- Do not overload the vessel and ensure the load is distributed evenly.
- Take corners at a safe speed and angle.
- Watch for other boats' waves and take them head-on off the bow.
- Reduce your speed or avoid boating in bad weather that creates rough water.

- Remember to never tie an anchor rode line to the stern of the boat. This will place even more weight at the back of the boat and increase the chances of swamping.

7.3 Falls Overboard Emergencies

The **major cause of fatalities** involving small boats is drownings from falls overboard. In certain weather conditions and on some vessels, boaters are wise to wear a safety harness with a safety line secured to the vessel.

7.3.1 Coldwater Immersion

Initial Reaction: If you fall in cold water - your body's initial reaction is a 'gasp reflex'. This initial reaction can result in swallowed water. If operating in cold water, ensure your PFD has enough freeboard to keep you high in the water and reduce the possibility of face immersions.

Short-Term Immersion: If you do end up in the water, particularly in cold water, it is most important to find a way to get your body out of the water as soon as possible. In cold water, you may only retain the motor skills to swim for between 10 and 30 minutes. In cold water immersion cases, boaters drown as a result of swimming failure rather than hypothermia.



- Slow down, stop if possible, and throw something buoyant to assist the person overboard (this will also help to briefly mark the spot if the person overboard submerges)
- Assign one person to keep sight of the overboard person and have him/her continuously point to the victim's location
- Carefully maneuver to recover the overboard person - keep them on the operator side of the boat for powerboats

Establish contact with the victim using a buoyant heaving line or lifebuoy secured to the boat with a line, and recover the person. Be sure to turn off the prop - if retrieving from the stern. A heavy rope, chain or cable secured at both ends and draped over the side, almost touching the water, can provide a makeshift step if no boarding ladder is available.

Learn a recovery technique that works - and PRACTICE!

7.4 Hypothermia Prevention

Even in the warmest waters - boaters should be aware of the risk of hypothermia from prolonged exposure to the elements in wet clothing or from direct immersion.

Hypothermia - is a drop in body temperature below the normal level. Hypothermic victims should receive immediate medical treatment.

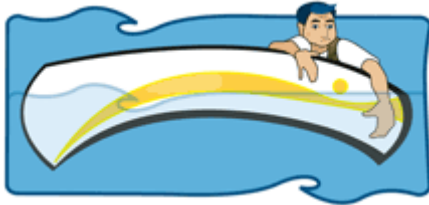
At this lower temperature a person's muscle and mental functions are affected. A person exposed to cold water, and becoming hypothermic, can exhibit certain progressive signs and symptoms:

- **Early stage** - shivering and slurred speech, conscious but withdrawn
- **Intermediate stage** - slow and weak pulse, slow respiration, lacks coordination, irrational, confused and sleepy
- **Final stage** - weak, irregular or absent pulse or respiration, loss of consciousness

If rescue is not imminent - you must conserve energy and body heat. You may extend your survival time by adhering to the following tips:



Wear your PFD or lifejacket. You can expend valuable energy treading water without it.



Try to get as much of your body out of the water as possible. Climb onto your boat or any nearby floating objects or debris if possible.



H.E.L.P. - 'heat escape lessening posture.' You want to keep as much body heat as possible from escaping. If you are alone, cross your arms tightly against the chest and bring your knees up close to the chest.



If other passengers are in the water as well, use the 'Huddle' technique to maintain body heat. Get the sides of everyone's chest close together with arms around the back and legs intertwined.

Additional Hypothermia Protection:

- **Floater suit** - a full nose-to-toes PFD
- **An anti-exposure worksuit** - a PFD with a thermal protection rating
- **A dry suit** - to be used in conjunction with a flotation device and a thermal liner
- **A wet suit** - traps and heats water against your body
- **An immersion suit** - to be used in extreme conditions upon abandoning vessel (usually for off-shore use)

7.5 Fire Emergency Preparedness



Gasoline fumes are heavier than air. Fuel and fumes on-board need only a spark to explode or start a blaze. Fires need three things: heat (like a match or spark from the ignition), fuel (gasoline propane etc.), and oxygen (air). Removing any of the aforementioned fire elements can extinguish the fire.



If your boat is underway and fire starts:

- Stop the engine immediately - this should always be your **FIRST** action!
- Position the boat - so the wind will blow the fire away from the boat.
- Try to separate the fuel source from the fire.
- Grab the extinguisher.

Using a Fire Extinguisher:

- Aim the extinguisher at **the base** of the fire.
- Pull the pin and squeeze the two levers together.
- Use a sweeping motion with the extinguisher while maintaining focus on the base of the fire.
- Continue to extinguish until the fire is **COMPLETELY** out.

7.6 Running Aground Prevention and Response

Running aground is a common occurrence among boaters, though it does not have to be. The best way to prevent running aground is to follow general safe boating guidelines:



- Secure a nautical chart of new or unfamiliar waterways or seek the advice and knowledge from local marinas and boaters before heading out.
- Keep a proper lookout - this includes keeping your eye out for shallows and sandbars.
- Maintain a safe speed - a speed at which you can take necessary action to avoid grounding.
- If you have a depth finder: set your finder to shallow alarm alert. Continue to monitor the bottom visually and with the depth finder.
- Look for any marker buoys indicating shallowness.

Tip

If you have no major structural damage you may be able to pry yourself loose. Try shifting some weight to the opposite end of the boat, stop the engine, lift the outdrive, and try pushing off with paddles or oars.

Should you ground your boat, follow these tips:

- Survey and assess the situation: Is anyone hurt? (your passengers are your first priority) Is there damage to the hull? Look for leakage.
- If you have serious damage or injuries use distress signals to alert other boaters of your situation.
- Stay aground - If you have suffered serious damage to the hull then you should **STAY** put rather than venturing to deeper water. Flag down a fellow boater and secure a tow if practical.
- Back off - If you are not ground too deep you may be able to reverse the vessel off the rocks, mud or sand. Shift weight away from the point of impact and push off.
- If you are aground on a sandbar - you may be able to get on the bar, lift the bow or raise the motor and push to deeper water.

Fact

Surprisingly, most accidents occur during calm, clear weather with light winds

Note

Failure to provide assistance or identify yourself when involved in an accident can result in stiff fines and even imprisonment.

7.7 Accident Reports

If you are involved in a boating accident you need to know what is required by law. Examples of reportable accidents include: injuries requiring medical treatment, death, disappearance of a person, or property damage. If you are involved in an accident you are required to:

- Stop
- Identify yourself and your boat
- Provide assistance, if possible and warranted
- Take down pertinent information with dates, time and conditions
- File an accident report with the local law enforcement authority (Federal Law)



7.7.1 Accident Reporting in California

Immediately following an accident, both boat operators must exchange their personal information such as name and address. An attempt must be made to render assistance to anyone in need following an accident.

In California, operators must report any accident involving \$500.00 or more in damages, complete loss of a vessel, and injuries to any person requiring treatment greater than first aid or the death or disappearance of any person.

When an accident occurs that requires a written report, the operator shall, without delay, by the quickest means available, notify the Department of Boating and Waterways and file an accident report form:

- within 48 hours of an accident resulting in death or injury
- within 10 days of an accident causing property/equipment damage only

Failure by a boat operator to abide with the State regulations is punishable by law and the boater may be issued a fine of up to \$1,000 and/or a maximum jail sentence of 6 months.

7.8 Boating Accident Report Form

To download the [California Boating Accident Report Form](#) in Adobe PDF format, please click on the following link:

 [California Boating Accident Report Form](#)

Chapter 8: Other Water Activities

8.1 Personal Watercraft and other Jet Propelled Watercraft

8.1.1 Operational Characteristics of PWCs

A Personal Watercraft (PWC) is propelled by an inboard engine powering a water jet pump. The PWC generates its power by drawing water in through the bottom of the boat by an internal propeller (impeller) and accelerates the water through a nozzle at the back of the boat. Most PWCs are designed for 2, 3 and even 4 people.



8.1.2 Off-Throttle Steering

As mentioned, PWCs generate their power by pulling water through the impeller and out the nozzle. The stream of accelerated water that moves through the nozzle also provides the steering ability for the vessel. A PWC will continue on the same course - even if the steering wheel is turned - once the throttle is off. Unlike a power-driven vessel - where slowing down or turning off the motor and steering through obstacles is advised - a PWC can only maintain its steering ability with the throttle applied. You must apply the throttle and steer away to avoid obstacles - once you release the throttle, you lose the ability to steer the craft. Also - Newer PWCs are equipped with off-throttle steering capabilities.

8.1.3 Stopping Ability

Inexperienced drivers must be particularly careful when driving a PWC back to dock or into shore because PWCs cannot stop quickly. PWCs have no brakes and have no ability to stop other than turning around. Give yourself enough time and space to slow down; it takes most PWC's a few hundred feet to come to a stop after being at full throttle.

8.1.4 PWC Load Capacities

Load capacities will vary for PWCs. There are a number of different sizes of PWCs: from single to four-person vessels. Consult your User's Manual for your PWC's load capacities - and never exceed the manufacturer's recommendations.

Tip

Practice re-boarding a few times in calmer waters before putting your re-boarding skills to the test on the open water.

8.1.5 Re-boarding a PWC

A PWC is relatively easy to right if it overturns. Most have a decal attached to the back of the vessel which indicates the proper direction to turn the PWC to the upright position. Consult with your User's Manual if a decal is not present - contrary to popular belief, there is a proper direction to turn it over, and you can do damage if the PWC is turned the wrong way.



While righting a PWC is a relatively easy task - re-boarding can be more challenging. It is especially difficult to re-board a PWC when you are tired and in rough waters.

To re-board a PWC:

- Always approach from the direction marked on the hull
- Pull yourself up high enough to kneel on the running board



Tip

Always attach the lanyard to your PFD or your wrist before jetting off.

8.1.6 The Purpose and Use of a Lanyard

Your PWC will not start unless the lanyard is attached to the start/stop switch. The lanyard is there for your protection. PWCs are fun to drive with their quick acceleration and sharp turning ability. This also means that PWC operators inevitably end up in the water and off their vessel.

If you fall off the PWC the lanyard will be pulled off the start/stop switch and the PWC will stop relatively quickly. The lanyard ensures a 'runaway' PWC does not endanger other swimmers or boaters. And, when the lanyard stops the engine - you won't have to swim so far to get back on for another ride!

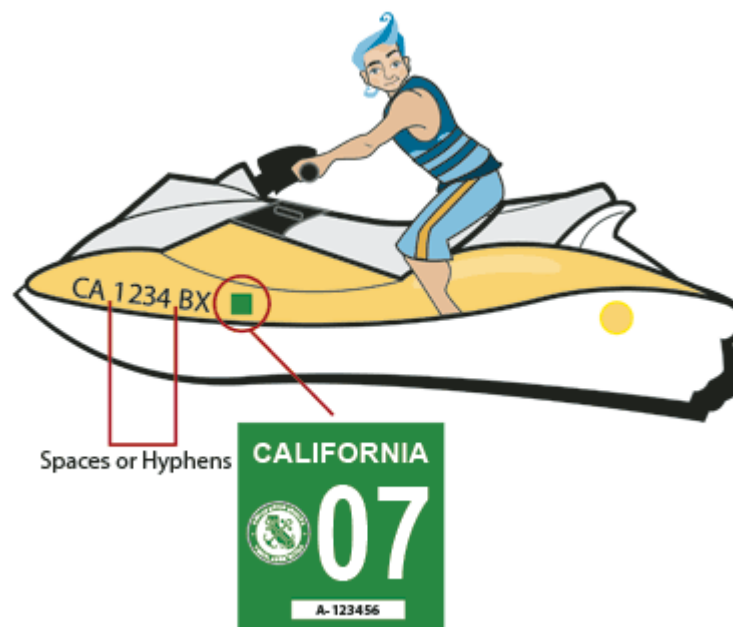


8.1.7 The Purpose and Use of a Fuel Reserve Tank

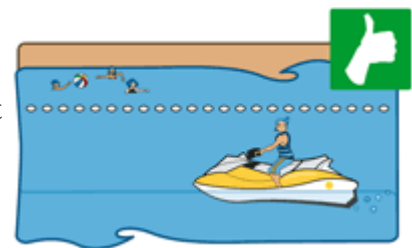
Riding a PWC can be a ton of fun - it is easy to lose track of time when you are darting about the waterways. But a PWC does not have room for oars to row ashore! Most PWCs have a built-in reserve fuel tank that holds a gallon of fuel. Keep a close eye on fuel levels and head for shore if you must use the reserve fuel tank.

8.1.8 Laws and Regulations

Do not underestimate PWC - they are very powerful for their small size and demand the same respect as any boat. In fact, PWC operation must adhere to the same rules and regulations as any other powerboat - including registration with the state and a **B-1 class fire extinguisher** aboard. Plus PWC have some additional requirements:



- The operator as well as all passengers of a PWC must be wearing a PFD
- When towing someone on a tube or on water skis there must be capacity on the PWC to accommodate the operator and the observer
- PWC being operated in California waters are required to have a kill switch with lanyard or a self-circling device. Please note that the lanyard must be fastened to the operator, his clothing or his PFD
- Please consult your local marinas or municipalities for the zones of restricted operation
- Wake jumping cannot be done within 100 ft of another vessels stern
- PWC must stay at a distance of 200 ft from other water skiers or others being towed behind a watercraft



- Operate at slow no wake speed, maximum 5 mph when:
 - Within 200ft of a surfer, diving flag, bank or wading angler, dock, swim float, boat launch, ramp, pier, marina, floating home, moorage area, or boathouse
 - Within 100 ft of a swimmer
 - Within 200 ft of shoreline on all lakes, reservoirs, and bays

Watch your Wake!

When operating a boat near other boats or when entering a congested area, watch your wake as it may cause personal injury or damage.

8.1.9 Accident Prevention

Many of the aforementioned regulations are simply common sense and use of respect on the waterways. PWCs ride lower in the water, as a result, they are more difficult to spot and can often be shielded by other boats.

- Keep your distance from other boats to avoid blind-spots and respect boaters' space.
- Also keep a safe distance from other PWCs. Because the vessels can turn so quickly and accelerate rapidly - it is even more important to leave yourself enough time and space to react to other PWC operators and swimmers.
- Take a look behind you before you make a turn and please be mindful of your wake. A PWC can send a powerful stream of water from the nozzle that could harm or at the least, distract or annoy other operators.
- Be careful that your spray does not affect other boaters, swimmers or passengers that may slip off the back during a hard acceleration.

Have fun - but be courteous of your fellow boaters and property owners to ensure a safe boating experience.

8.1.10 Noise Control

PWCs, like most watercraft, can be noisy! There is no need to draw attention to yourself when operating your PWC in heavy traffic, close to the shoreline or at the dock. Be aware of your surroundings and be considerate of those who are sharing the waterway.

8.1.11 Hours of Operation

PWC may be operated from sunrise to sunset.

8.1.12 Age Restrictions in California

Personal Watercraft (PWC) operators in California must be at least sixteen years old in order to operate a PWC. All PWC operators must be at least 16 years of age in order to operate without adult supervision.

8.2 Water Skiing/Wakeboarding/Tubing in California

- All passengers must be wearing PFDs while water skiing, riding a tube or being towed behind a watercraft in any manner.
- Watercrafts must display the red or orange skier-down flag whenever the individual being towed or the equipment is in the water.
- Skiing while under the influence of alcohol or drugs, including prescription narcotics and illegal drugs is forbidden.
- When towing an individual there must also be an observer on the watercraft besides the operator. Note: the observer must be at least 12 years of age.
- Water skiing (or towing of people on other devices) is only allowed between sunrise and sunset. It is prohibited between sunset and sunrise.
- The operator of the boat may not manipulate or control the boat so as to cause the person(s) being towed to collide with any object or person.



8.2.1 Other Considerations

There are some other considerations for safeguarding the person being towed:

- Do NOT run parallel to the shore in shallow water to drop off the towed person - rather, keep your distance and let the towed person swing into shore
- Check the prop and towline before each outing for wear
- The towing vessel should never be remotely controlled
- Turn OFF your engine before approaching closely to a person who has fallen during a towing activity and approach the fallen person from the driver side so you don't lose sight of them
- Establish communication signals between the operator and the towed person (ie: holding up a ski after falling)

8.2.3 Hand Signals



Skier Ok



Skier Down



Return to Dock



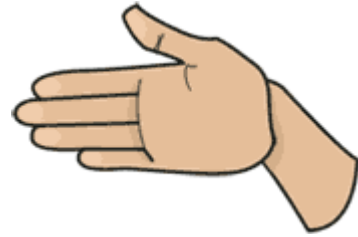
Speed Up



Stop



Speak Ok



Turn Right



Slow Down



Turn Left

8.3 Diving and Snorkeling

Particular care must be taken when boating in waters where there are divers. A vessel engaged in diving should display a blue and white flag. A red and white flag carried on a buoy is used to mark areas where diving is in progress, although divers may stray from the boundaries of the marked areas.



Tip



Divers can be on any body of water so be vigilant for 'diver down' flags.

Be sure you know what the 'diver down' flags look like. If you see either flag, keep well clear of the vessel and diving site, and move at a slow speed (fishermen included) as there may be a diver in close proximity to your watercraft.



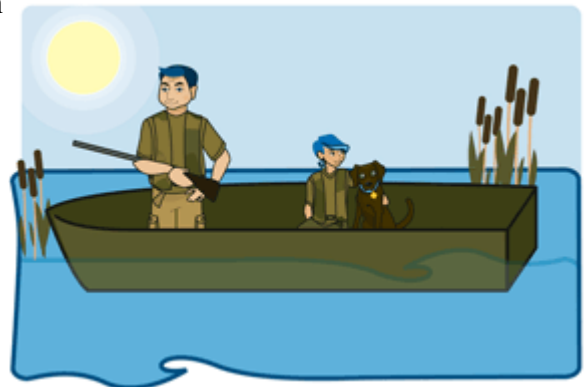
Snorkelers and scuba divers alike are asked not to dive in areas where there are already numerous boats occupying the space. Further, diving should not take place in narrow water ways, as such would restrict watercraft from passing.

8.4 Hunting & Fishing

Anglers and hunters need to be aware of safe boating practices and follow the same guidelines as other recreational operators. Similarly, recreational boaters need to give anglers/hunters a wide berth and **respect** the space needed to successfully fish and hunt.

Casting and retrieving fish and firing a gun require a steady boat and proper precautions:

- Use the buddy system. Fishing or hunting alone is very risky. At the very least, let a responsible friend or family member know where you plan to fish/hunt and when you expect to return.
- Peak fishing hours tend to be during quiet boating times (early morning and early evening). During these times, vision is limited - be sure to have proper navigation lights in working order and a back-up flashlight.
- When fishing/hunting during the day, keep an eye out for other boaters and respect their space. Many anglers/hunters tend to focus exclusively on fishing/hunting and neglect to keep a proper lookout for fellow boaters and other anglers.
- Avoid quick movements. Use caution when retrieving a fish, collecting decoys or firing your rifle - all these actions can result in falls overboard emergencies.
- Slow down around other boaters and show respect by limiting noise that amplifies and travels over water.
- Wear a PFD! Too many hunters/anglers are lost every year when they fall overboard. Whether retrieving a trophy fish or shooting game, anglers/hunters must realize how easily they can fall overboard in their respective sports - a worn PFD could save a life!



Recreational boat operators need to respect and recognize anglers/hunters. Give anglers/hunters a wide berth. Anglers are casting all around their vessel and

hunters are firing guns - stay clear! A boat's wake could swamp an angler's boat. Additionally, anglers that are trolling may have their fishing line out a fair distance behind them - approaching too closely could sever the fishing line.

8.5 Paddlesports

Canoeists and kayakers are boaters too - and need to follow safe boating practices. A significant portion of fatal capsizes result from occupant movement. A study of paddlesport accident statistics from 1995-2000 identify priority problem areas and targets that offer the greatest opportunity to significantly reduce canoe and kayak fatalities, namely



- 75% of all fatalities examined were associated with canoeing (versus) kayaking.
- 83% of all canoeing related fatality victims were not wearing a PFD at the time of the accident.
- Occupant movement and weight shift within a canoe played a major role in roughly 50% of all canoeing accidents.
- Approximately 50% of canoe and kayak related fatalities were fishing at the time of the accident.
- At least 25% of victims in fatal canoeing accidents are believed to have consumed alcohol immediately prior to the accident.

(Source: Critical Judgement: Understanding and Preventing Canoe and Kayak Fatalities; American Canoe Association 2003)



8.5.1 General Paddling Safety Guidelines

- Wear a properly fitted lifejacket and avoid alcohol. Be prepared to enter the water, know how to swim.
- Standing up or moving about in a canoe or kayak greatly increases the chance of capsize.
- Maintain three points of contact while moving around. (As you move a foot to step forward, you should be holding onto the boat with BOTH hands, then with both feet down, move one hand at a time.)
- Load the boat properly (keep the weight centered both from side to side and bow to stern. The lower and the closer the load in the boat is to the boat's centerline, generally the more stable the boat will be, assuming there is adequate freeboard. Stay within the limits of the boat's capacity rating on the capacity plate if one is present.)



- Keep your shoulders inside the gunwales of the boat. When retrieving something from the water, reach with your paddle or guide the boat close to the object.
- Never paddle alone. There is safety in numbers.
- Avoid extreme conditions: including weather, distance from shore, water conditions, current - including flood water or fast current beyond skill level.
- Take hands-on training. Paddling instruction will teach you balance, use of stabilizing strokes, safe exit and entry on the water, and rescue and recovery skills.

Chapter 9: Boating Education Practices

9.1 Continuing Education

Boating laws and standards are ever changing. Boats are finally being treated like automobiles in many States. In recent years, States like Alabama, New Jersey and Connecticut have required ALL boaters to be **certified** in order to operate a vessel in State waters. Some other States have mandated Boating Certification through the successful completion of a Boating Safety Exam; for example: New Hampshire, Ohio and Oregon are phasing in Boating Safety Course requirements with different age-groups each year. In New Hampshire: ALL boaters must pass a Boating Safety Course by 2008 to operate a vessel on State waters. The point is simple: Boating Education is a continuous process. Be sure to check with the California Department of Boating & Waterways before each boating season to note any changes in boating laws and standards.

The State of California will continue to emphasize to the public the importance them volunteering to attend boating safety education classes/seminars or reading up on the issue.

9.2 Court-Ordered Boating Education Requirement

A list of courses meeting this requirement can be found at:

[California boating safety classroom courses](#)