

# BOAT OREGON

## Classroom Course Manual



Revised 2026

A vibrant photograph of four people (three children and one adult) jumping from the back of a boat into a lake. They are all wearing life jackets and have their arms raised in excitement. In the background, there is a dense forest of evergreen trees and a large, snow-capped mountain under a clear blue sky. The boat is a white and black speedboat.

# Study Guide



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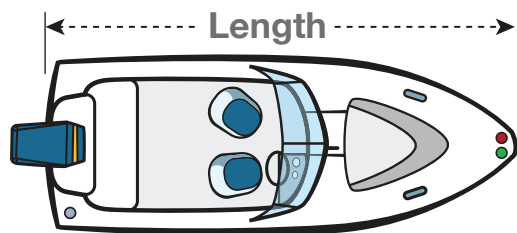
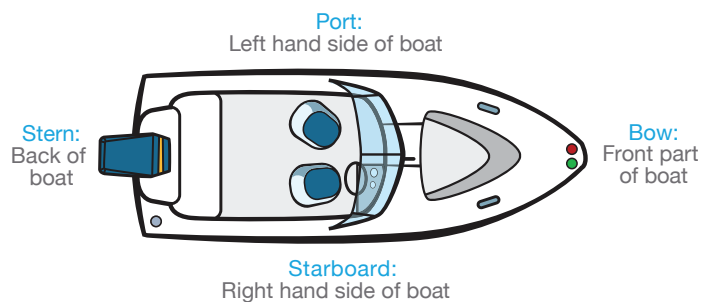
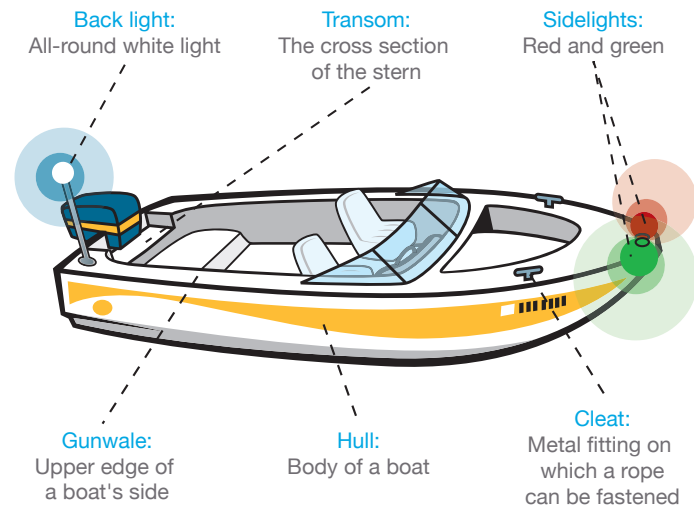
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## 1.1 BOAT TERMINOLOGY

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



### 1.1.1 Additional Terminology

Here are some additional terms that boaters should be familiar with before operating a boat:

**Aft** - Near or at the stern of the boat.

**Beam** - The width of a boat, also the direction at right angles to the centerline of a boat.

**Bilge** - The lowest point of a boat's interior hull.

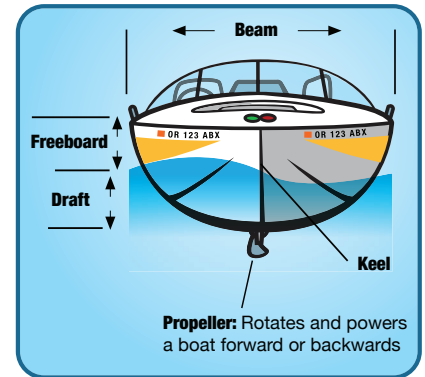
**Draft** - The vertical distance from the waterline to the lowest point of the keel; the minimum depth of water in which a boat will float.

**Forward** - Aboard a boat, the direction to the front, to the bow.

**Freeboard** - The vertical distance from the waterline to the gunwale.

**Keel** - The main structural member of a boat; its backbone; the lateral area beneath the hull that helps to provide stability and reduce the sideways drift of a boat.

**Waterline** - The intersection of a boat's hull and the water's surface.



## 1.2 BOAT LENGTHS

Boats are identified by length. Federal and state laws require certain equipment on board boats, depending on the length of the boat. 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 or wakeboard towers or outboard engines.



Less than 16 ft.



16 ft. to less than 26 ft.



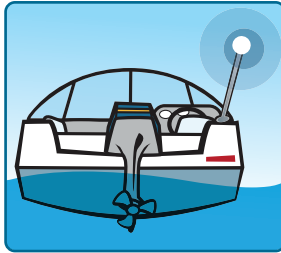
26 ft. to less than 40 ft.



40 ft. to less than 65 ft.

### 1.3 BOAT HULL DESIGNS AND USES

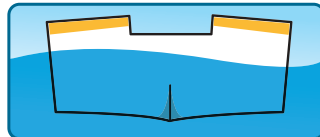
Boat bottoms or “hulls” come in a variety of shapes and sizes. Each hull type is designed to either displace or plane through the water. Sailboats and large cruise ships use displacement hulls because the combination of their size (weight) and power will not allow them to plane. On the other hand, smaller 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

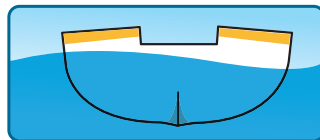
Flat bottom boats are great for fishing. They are generally designed for slow speeds and calm water.



Flat Bottom

##### Round Bottom

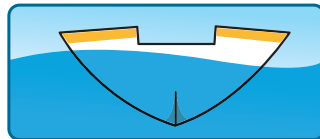
Round bottom boats, such as canoes, move smoothly through the water with little effort. Boaters must be cautious when loading, entering and exiting a round bottom boat. Due to the hull design, these boats roll very easily.



Round Bottom

##### Deep-V Hull

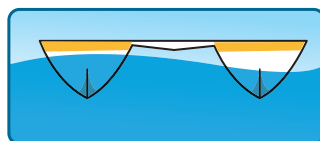
The deep-V hull is the most common hull type for powerboats. These boats move through rough water at higher speeds and give a smoother ride than flat bottom or round bottom boats. They also require larger engines than flat bottom or round bottom boats.



Deep-V Hull

##### 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.



Multi-Hull

#### 1.3.2 Engine Types

##### Outboard

Outboard engines are mounted on the transom of the boat. The steering of outboards can be controlled by a hand tiller or a steering wheel, which moves the entire engine when steering is adjusted.



In the past, outboard motors were originally four-stroke motors. As time passed, two-stroke motors became the mainstream; lots of power, compacted. However, four-stroke motors with technology became more marine environment friendly. Currently on the market, it is more difficult, due to modern technology, to make a selection between four-stroke and two-stroke motors.

##### 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 driveshaft, through the boat bottom, which is connected to a propeller. Steering is controlled by a rudder, positioned either directly behind or to the side of the propeller.



##### Stern Drive

Stern drives are sometimes 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 through the transom, and power the drive train, which is connected to the propeller. Similar to outboards, the stern drive moves when the steering wheel is adjusted.



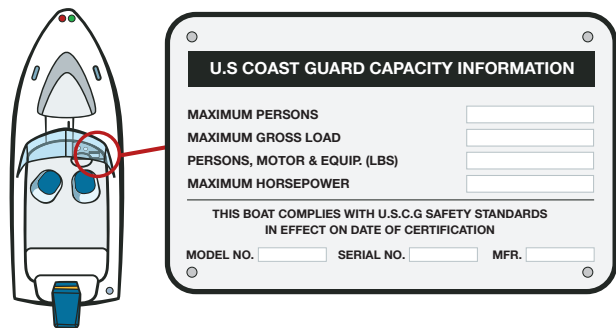
**NOTE:** Smaller powerboats are typically built with planing hulls whereas sailboats and large cruise ships generally have displacement hulls.



1.4 BOAT CAPACITIES

Be aware of the small-boat regulations pertaining to engine power and load capacity. Federal law mandates that all powerboats 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 the recommended gross load capacity that can be safely carried in the hull:

- It includes the total weight of persons, equipment, fuel and motor.
- It is indicated with the “equivalent number of adult persons.”
- It is indicated on a capacity plate, which, when fitted, is permanently attached to the boat.



**TIP:** On outboard boats, the capacity plate also indicates the “recommended maximum horsepower rating.” *YOUR BOAT MOTOR SHOULD NEVER EXCEED THIS RATING.*

1.4.1 Overloading or Overpowering

An overloaded boat or overpowered boat can be extremely dangerous. An overpowered boat may cause the stern to sit lower in the water, making the boat 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 boat prone to swamping. Additionally, it is important to spread the load evenly throughout the boat. Too much weight on either side will make the boat less stable and more apt to capsize. Take extreme caution in loading your boat properly.

**NOTE: BEWARE OF BAD WEATHER!**  
*Take much lighter loads in poor weather conditions to ensure boat stability.*

1.4.2 Maximum Horsepower

To determine the maximum horsepower (hp) capacity for small, flat-bottomed boats, multiply the boat length (feet) by the transom width (feet) and compare the resulting value to the following chart:

EXAMPLE	
Boat length = 12 ft.	
Boat width = 4 ft.	
12 ft. x 4 ft. = 48 ft.	
Max HP of 15	

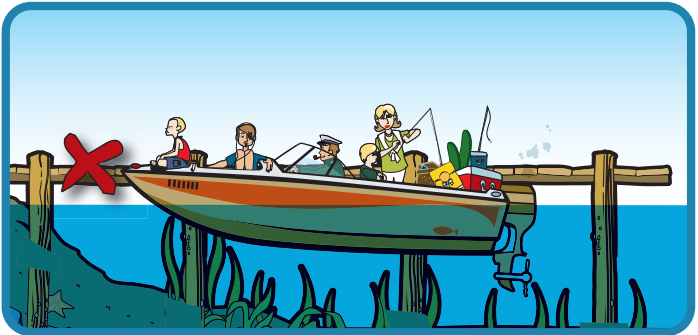
LENGTH X WIDTH =	MAX HP
35 ft. or less	3
36 - 39 ft.	5.5
40 - 42 ft.	7.5
43 - 45 ft.	10
46 - 52 ft.	15

\*These are just guidelines.



1.4.3 Maximum 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 150 lbs., you should adjust the maximum person capacity accordingly.

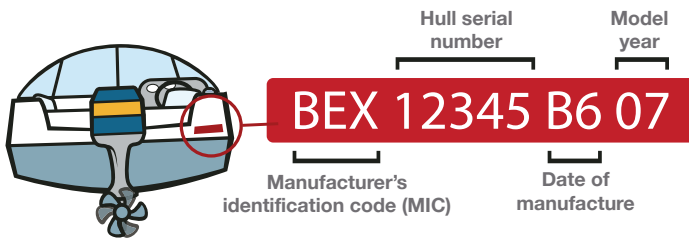


## 1.5 HULL IDENTIFICATION NUMBER (HIN)

All boats manufactured since 1972 are permanently marked with a hull identification number (HIN), which is the 12-character serial number of your boat. To identify your boat, 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's:

- Manufacturer.
- Serial number.
- Month and year of production.



## 1.6 BOAT REGISTRATION REQUIREMENTS

### 1.6.1 Boat Registration and Numbering

#### Federally Documented Boats

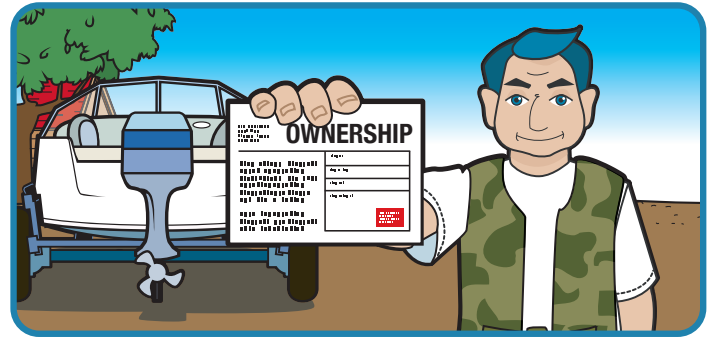
Large recreational boats can be federally registered with the U.S. Coast Guard.

#### Reciprocity Regulations

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



### 1.6.2 Oregon: Title & Registration



**NOTE:** On the reverse side of the Certificate of Title, there is an application for the transfer of ownership.

The Oregon State Marine Board (OSMB) is responsible for regulating the state boating laws in Oregon.

All boats propelled by machinery, including gasoline, diesel and electric motors and sailboats 12 feet and longer, that are principally operated on Oregon waters must be titled and registered by the OSMB. U.S. Coast Guard-documented boats must also be registered with the Marine Board if classified as a recreational boat.

Exemptions to the boat registration requirements include:

- ✓ Sailboats that are under 12 feet long;
- ✓ U.S. Coast Guard-documented boats that are principally used in another state;
- ✓ Boats that are properly registered in another state and that are operating on Oregon waters for no more than 60 consecutive days.

Boat owners must keep their Certificate of Title in a safe place.

Proper application for titling and registration results in a Certificate of Title and a Certificate of Number (registration card) as well as decals.

Boat numbers must:

- ✓ Be affixed on both sides of the bow; and
- ✓ Be block letters, three inches high and contrasting with the color of your boat; and
- ✓ Letters must be separated from the numbers by a space or a hyphen.

This is a federal and state requirement. The validation decal which is provided to you by the OSMB should be displayed on both sides of the boat.

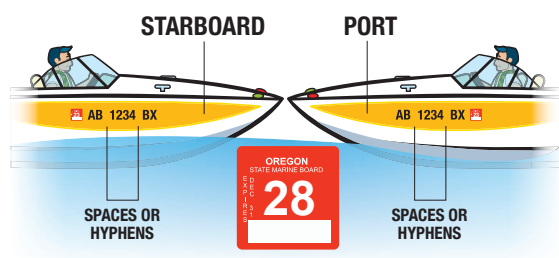


Lack of the correct documentation may result in delays and fines. If a numbered boat is destroyed, stolen, or abandoned, the owner should notify the Marine Board within 30 days.

If stolen, notify your local sheriff's office so that a case number can be issued before reporting the theft to the Marine Board. If destroyed, return the original title to the Marine Board.

If you change your address, you must notify the Marine Board within 30 days of the change either by logging in to your account at <https://apps3.oregon.gov/>, sending an email or by mail.

Transfer of Title - Oregon boat title transfers must be made within 30 days of purchase to avoid a late penalty.



## 1.6.3 Oregon: Registration Fees

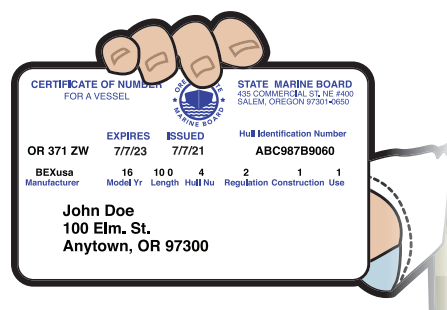
REGISTRATION ITEM	FEE
Title	\$75
Late Oregon Title Transfer	\$25
Lost/Replacement Title (no owner or lender change)	\$25
Lost/Replacement Title (with owner or lender change)	\$75
Boat Registration	\$5 plus \$5.95 per foot. Registration is issued on a 2-year calendar basis.
Replacement Certificate of Number	\$15
Replacement Certificate of Number AND Registration Decals	\$15
Floating Home or Boathouse Title	\$100
Floating Home or Boathouse License Plate	\$50

## 1.6.4 Oregon: Certificate of Number

Boat owners must have at least a temporary permit before they can operate any motorized boat in Oregon waters. Upon receipt of the Certificate of Number please note the following:

- ✓ It must be carried on board when operating the boat.
- ✓ It is valid for two calendar years and expires on December 31st of the second year.
- ✓ The OSMB must be notified within 30 days if the boater changes residences.

The Certificate of Title, Certificate of Number, and validation decals are obtained by submitting the proper documents, application, and fee online, by direct mail or at the Marine Board in Salem or by applying at an authorized boat registration agent.



# SUMMARY

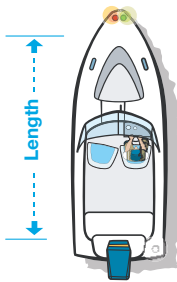
After reading Chapter 1, you should have knowledge of:

- Terms that are used to name/describe the parts of a boat.
- Various boat classes as identified by length.
- Types of boat hulls and their characteristics.
- Types of engines.
- Boat capacities.

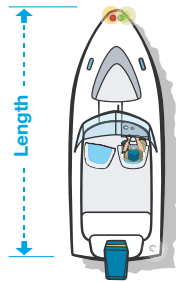


## QUIZ

1. The U.S. Coast Guard requires certain equipment be carried on board a boat based on the boat's length. How must an operator measure the length of their boat?



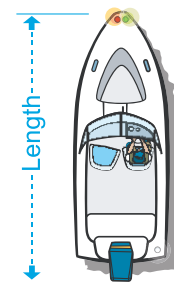
**A** From the inside of the bow to the inside of the stern



**B** From the outside of the bow to the outside of the stern

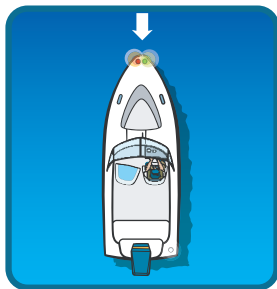


**C** From the starboard side to the port side of the boat

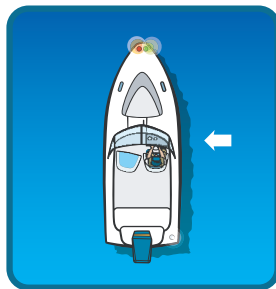


**D** From the outside attachment at the bow to the outside attachment at the stern

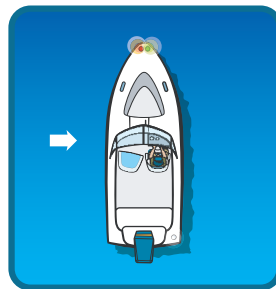
2. Which of the following indicates the STERN of this boat?



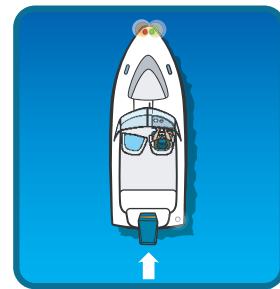
**A** The front of the boat



**B** The right side of the boat



**C** The left side of the boat



**D** The rear of the boat



## 2.1 PERSONAL FLotation DEVICE (PFD) TYPES AND CARRIAGE

Personal flotation devices (PFDs), or life jackets, can save lives. Therefore, the U.S. Coast Guard requires life jackets on board all boats. When choosing a life jacket, please ensure that it can support your size and weight and is approved by the U.S. Coast Guard.

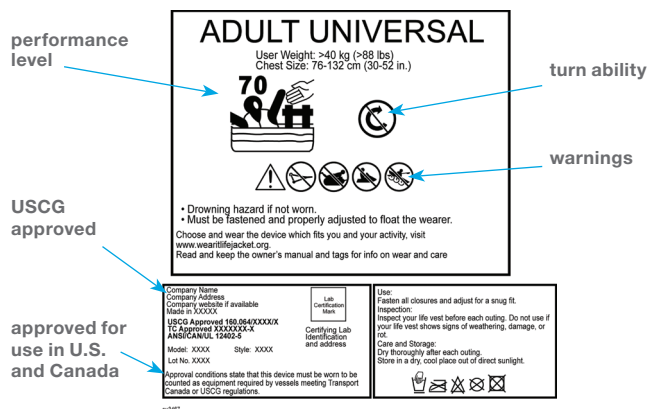
Every U.S. Coast Guard-approved life jacket has a label that contains important information. While boating, you may encounter old- or new-style labels.

The older legacy labels have a type number (Types I to V).

- The type number indicates the conditions and the intended use for which the life jacket is designed.
- Life jackets with these labels may still be used in the country where they are approved as long as they are in serviceable condition.

The new labels have a performance level icon that contains a number, typically ranging from 50 to 150.

- A lower number means the life jacket is intended for near-shore activities in calm waters. Life jackets designed for near-shore use offer greater mobility and comfort. However, they will not turn most unconscious persons face up.
- A higher number means the life jacket is intended for offshore activities. Life jackets designed for offshore use offer greater flotation, turning ability, and stability.
- Life jackets with these labels are approved for use in both the U.S. and Canada.



### Warnings

Some PFDs are **not** approved for certain activities:



Water-skiing



PWC or wake-boarding

Whitewater paddling

### Turn Ability



The PFD will turn an unconscious person face up. Test before use.



The PFD will not turn an unconscious person face up.

### 2.1.1 Federal Requirements

- The U.S. Coast Guard requires one wearable life jacket for each person on board, of appropriate size for the person intended.
- At least one throwable device must be kept on board any boat of 16 feet or longer.
- Flotation devices that are ripped or otherwise in poor condition are not considered approved.



**NOTE:** Make sure there is a properly fitting PFD on board for each passenger.



### 2.1.2 Oregon: Life Jacket Requirements

#### Personal Flotation Devices (Life Jackets)

- The Oregon State Marine Board (OSMB) requires at least one U.S. Coast Guard-approved throwable device (ring buoy OR cushion) on a boat 16 feet or more in length, in ADDITION to a properly fitting, wearable U.S. Coast Guard-approved life jacket required for each person on board all boats.
- Manually propelled canoes and kayaks 16 feet in length and over are exempted from carrying the additional throwable device.
- Someone being towed behind a boat is considered to be on board.
- PWC operator and passengers must be wearing their life jacket while underway.
- Inflatable life jackets are not approved to use during high-impact sports such as water skiing or operating a PWC.
- Inflatable life jackets are not authorized for use by children under the age of 16. However, some hybrid inflatables have been approved for children.



**Children:**

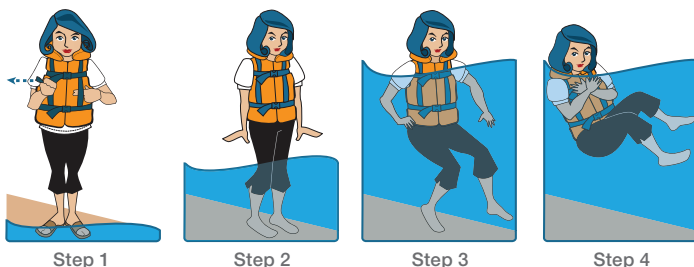
All children 12 years of age and younger on an open deck or open cockpit must be wearing their life jacket while the boat is underway or while being towed.

**Class III Rapids**

All persons operating a boat as well as all passengers in the boat, are required to wear an approved and properly secured U.S. Coast Guard-approved life jacket on all Class III rapids and higher.

**2.2 PFD SIZING AND AVAILABILITY**

To ensure that the life jacket fits properly, have the wearer put it on and adjust straps as necessary to make it fit snugly (Step 1). A properly fitted life jacket will not ride higher than one inch off the wearer's shoulders. If the straps reach your ear lobes, the life jacket is either too loose or too big. Resize or tighten your life jacket for the correct fit. You should also test life jackets in the shallow end of a pool to ensure they can hold your weight and that you can swim comfortably (Steps 2-4).



Life jackets should be worn whenever the boat is in operation. However, if not worn they must be readily accessible.\* It is particularly important to have throwable devices in immediately available areas, free of wrapping and packaging, for use in emergency situations.

\*Readily accessible means easily located and retrieved without searching, delay or hindrance.

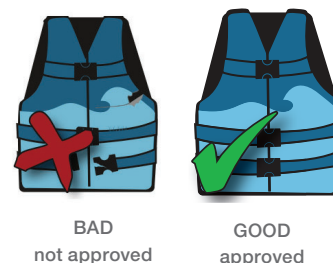
**2.3 WEARING PFDs**

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

**2.4 PROPER CARE OF YOUR PFD**

- Clean with a mild soap and running water.
- Never dry your PFD close to a direct heat source.
- Air-dry PFDs in a well-ventilated space out of sunlight.
- Never use your PFD as a cushion for kneeling or sitting on, or acting as a fender.
- Regularly check PFDs for buoyancy: with your PFD on, wade into the water to waist height, bend your knees, roll onto your back, and see how well you float.

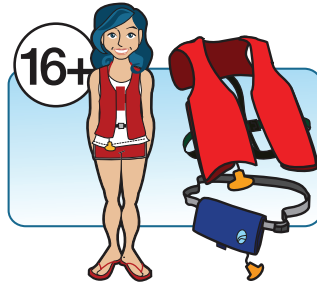
Make sure your PFDs are in good shape before you go boating. Regularly check for rips and tears. In particular, check straps and hardware before you leave the dock. PFDs with rips, tears, or other damage are not in compliance with state or U.S. Coast Guard regulations and will need to be replaced or you may be fined by Law Enforcement.





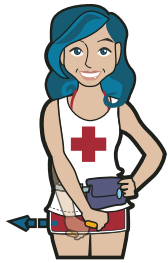
### 2.4.1 Inflatable Life Jackets

It is important to note that inflatable life jackets are not inherently buoyant and will not float without inflation. Read the label for compliance regulations. Though inflatable life jackets are comfortable, they are not authorized for children under the age of 16 or advised for individuals who cannot swim. Regularly check and replace spent cartridges. Inflatables life jackets are not meant for water skiing, riding personal watercraft or white water paddling. An inflatable life jacket requires regular maintenance; regularly check cartridge and replace if spent or service pressure gauge is red.

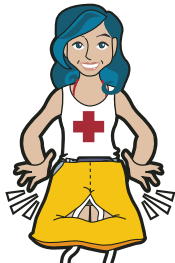


**TIP:** Inflatables are not designed for high-speed impact and must be inspected regularly for spent cartridges and excessive wear.

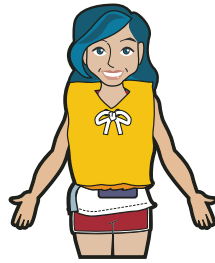
#### Inflatable Belt Pack



Pull on the cord



The vest will inflate



Adjust to fit

#### Inflatable Vest



Make sure the vest is properly fastened



Pull on the inflation cord



The vest will inflate

Replace CO<sub>2</sub> cartridges with new ones immediately after cartridge is spent. An inflatable life jacket 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 it overnight before a boating trip to check for small leaks and tears.

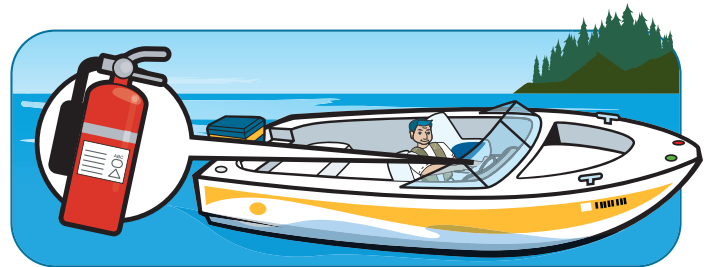
### 2.5 FIRE EXTINGUISHERS



**NOTE:** Effective April 20, 2022, any non-rechargeable (disposable) fire extinguisher that is older than 12 years should be removed from service. Refer to the date of manufacturing stamped on the bottle; for example, "05" means "2005."

Fire extinguishers are required on board a boat with an engine if any of the following conditions are present:

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



#### Marine Extinguisher Requirements

Though not all motorboats are required to carry a fire extinguisher, it is highly recommended that all motorboats have some form of fire extinguisher on board. Numerous types and sizes of fire extinguishers meet U.S. Coast Guard requirements. With any type of marine fire extinguisher, accessibility is of the utmost importance; ensure the fire extinguisher is mounted where it can be easily and quickly retrieved within arm's reach of the operator or passengers in the event of a fire emergency.








**NOTE:** The following information is effective April 20, 2022.

Boats that have a model year of 2018 and newer may carry only 5-B or 20-B rated fire extinguishers with date stamp.

Boats with a model year between 1953 and 2017 may carry either:

- Unexpired 5-B or 20-B rated fire extinguishers.
- Or B-I or B-II rated fire extinguishers that are in good and serviceable condition.

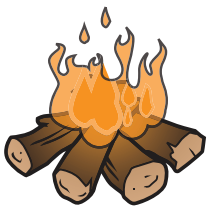
BOAT LENGTH	EXTINGUISHER REQUIREMENT
Less than 26 ft.	 5-B
26 ft. to less than 40 ft.	 OR  5-B 5-B 20-B
40 ft. to less than 65 ft.	 OR  5-B 5-B 5-B 20-B 5-B
Greater than 65 ft.	Must meet federal requirements
Inboard engines	*When the engine compartment is equipped with a fixed (built-in) extinguishing system, one less 5-B extinguisher is required on board.

One 20-B portable fire extinguisher may be substituted for two 5-B portable fire extinguishers. For boats with a model year between 1953 and 2017, one 20-B/B-II portable fire extinguisher may be substituted for two 5-B/B-I portable fire extinguishers.

## 2.5.1 Classifications Tip

The number before the **B**, for example a **5-B** or **20-B** extinguisher, indicates the square footage of the fire the extinguisher can put out.

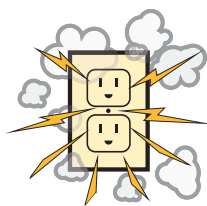
## Fire Types Are:



Class A: Combustible solids such as 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.

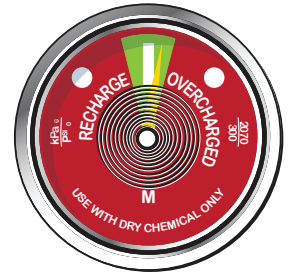


**NOTE:** For marine use, it is recommended that you carry an extinguisher that can put out Class A, B and C fires.

## 2.5.2 Maintenance

Fire extinguishers require regular inspections to ensure they are in proper working order. A proper inspection includes the following:

- Look at hoses; replace any cracked or broken hoses or simply replace the extinguisher.
- Check the gauge to make sure the extinguisher is fully charged.
- Inspect seals to ensure they have not been broken.



## MARINE FIRE EXTINGUISHER CLASSIFICATION

Classification	Foam (gal.)	Co <sub>2</sub> (lb.)	Dry chem (lb.)
5-B	1.25	4	2
20-B	2.5	15	10

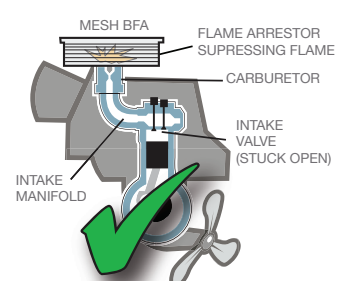
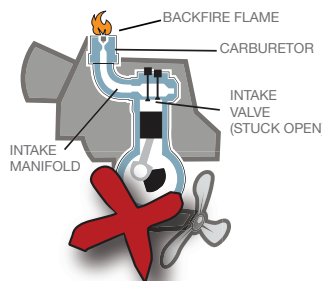
## 2.6 OREGON: MUFFLERS AND NOISE LEVELS

In Oregon, boats are required to have a mechanical means of reducing (muffling) the engine exhaust sound level.

No motorboat exhaust sound can exceed 90 dBA if boat was manufactured before Jan. 1, 1993 or 88 dBA if boat was manufactured after Jan. 1, 1993.

## 2.7 BACKFIRE FLAME CONTROL DEVICE

Gasoline engines installed in a boat after April 25, 1940, except outboard motors, must be equipped with an acceptable means of backfire flame control. The device must be suitably attached to the air intake with a flame-tight connection and is required to be U.S. Coast Guard-approved or comply with SAE-J-1928 or UL 1111 standards and marked accordingly. Arrestors are designed to prevent gasoline vapors from igniting if the engine backfires. 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.

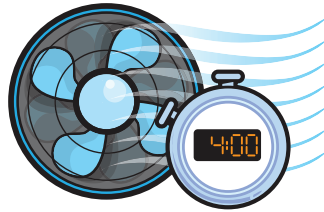




## 2.8 VENTILATION SYSTEMS

In motorized boats, flammable gases can gather. These have the potential to create a powerful and extremely dangerous explosion.

A proper ventilation system is required for boats (with a permanently installed gasoline engine) that use gasoline for propulsion, mechanical power or electrical generation.



### 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 boats built after July 31, 1980 with installed fuel tanks or an enclosed engine. Consists of one or more exhaust blowers.



**TIP:** Ensure intake ducts are located above the normal accumulation of bilge water. Turn on the powered ventilation system for **FOUR** minutes before you start the engine, to ensure all gasoline vapors have been removed before ignition.

## 2.9 NAVIGATION LIGHT EQUIPMENT

Boat operators are required to ensure their boat is equipped with the proper navigation lights when away from the dock between sunset and sunrise, and during periods of reduced visibility due to fog or rain. Navigation light requirements differ according to the type and size of boat. Below are navigation light configurations and requirements for recreational boats.

### 2.9.1 Power-Driven Boats

Power-driven boats must exhibit the following navigation light configurations:

#### Boats Less than 39' 4"

Motorboats or sailboats using power: The lights shown in figure 1, 2 or 3 may be used.

#### Boats Between 39' 4" to less than 65' 6"

Motorboats or sailboats using power: The lights shown in figure 1, 2 or 3 may be used.

## Navigation Light Requirements for Power-Driven Boats

FIG. 1

- Masthead light (forward) - 225 degrees visible from 2 miles.
- Sternlight (aft) - 135 degrees visible from 2 miles.
- Sidelights - 112.5 degrees visible from 1 mile.

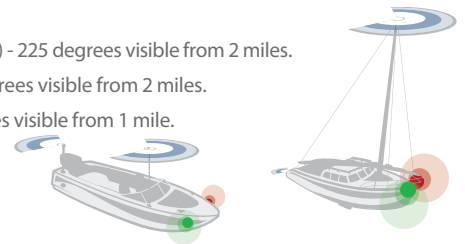


FIG. 2

- All-round light - 360 degrees visible from 2 miles.
- Sidelights - 112.5 degrees visible from 1 mile.

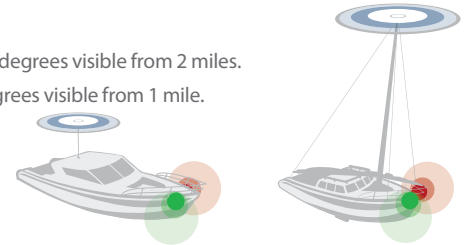
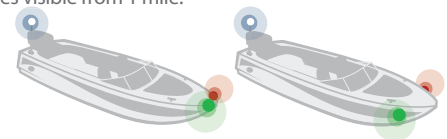


FIG. 3

- All-round light (may be off center) - 360 degrees visible from 2 miles.
- Sidelights - 112.5 degrees visible from 1 mile.



### Location of Lights

Lights should be located as shown in illustrations. The masthead light (forward white light in figure 1) must be at least 39 inches higher than the colored lights on a boat less than 40 feet long, and at least 8 feet above the gunwale on a boat between 40 and 65 feet long.

### 2.9.2 Sailing Boats 23' or More in Length

Boats under sail must exhibit the following navigation light configurations:

#### Boats Less than 23'

Sailboats using sails alone: The lights shown in figure 4, 5 or 6 may be used.

#### Boats Between 23' to less than 65' 6"

Sailboats using sails alone: The lights shown in figure 4, 5 or 6 may be used.

## Navigation Light Requirements for Sailing Boats

FIG. 4

- Sternlight (aft) - 135 degrees visible from 2 miles.
- Sidelights - 112.5 degrees visible from 1 mile.

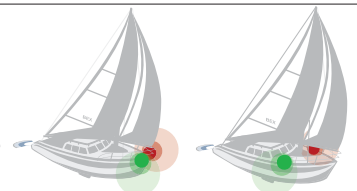


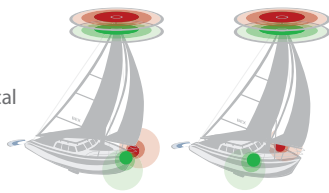
FIG. 5

- Mast light combined in one lantern (red, green, white)
- White - 135 degrees (stern).
- Green - 112.5 degrees (starboard).
- Red - 112.5 degrees (port).



FIG. 6.

- Exhibited at or near the top of the mast, two all-round lights in a vertical line, and upper being red and the lower green

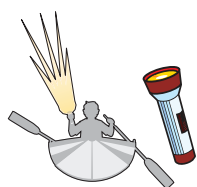


### 2.9.3 Boats Under Oars or Paddles

Boats under oars or paddles should exhibit the same navigation lights as sailing boats if practical. However, non-motorized boats under 23 feet are only required to have on hand one lantern or flashlight shining a white light that must be used between sunset and sunrise in all weather and during restricted visibility.

#### Navigation Light Requirements for Boats Under Oars or Paddles and Sailboats Under 23'

##### 2.9.3.1 Flashlights



Row boats/rafts

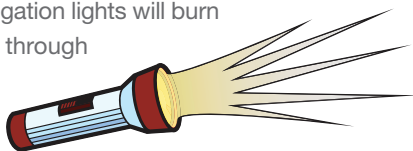


Sailboat



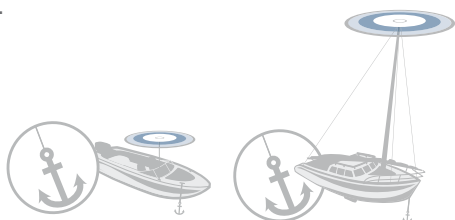
Canoes/kayaks

A flashlight should always be on board any boat 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.



### 2.9.4 Boats at Anchor

Boats less than 65'6" are required to display an all-round white anchor light when anchored in or near a channel, in an area not designated as an anchorage area, or where other boats normally navigate.

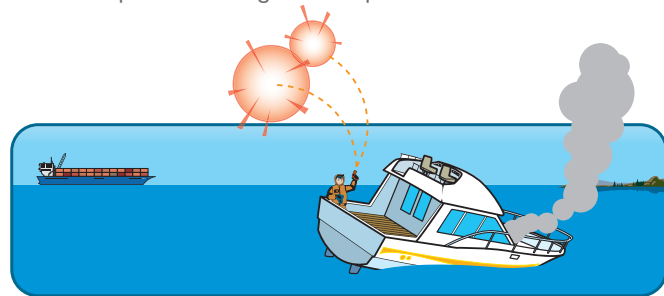


#### Navigation Light Requirements for Anchored Boats

### 2.10 VISUAL DISTRESS SIGNALS (VDSs)

A visual distress signal (VDS) is any device designed to show that your boat is in distress and help others locate you. A wide variety of signaling devices, both pyrotechnic and non-pyrotechnic, can be carried to meet the requirements of the regulation.

VDSs may only be used in emergency situations. Regulations require all recreational boats operating on U.S. coastal waters, including the Great Lakes, the territorial seas and those waters directly connected to the Great Lakes and the territorial seas, up to a point where the waters are less than two miles wide, and boats owned in the United States when operating on the high seas to be equipped with VDSs. The regulation states, "No person in a boat shall display a visual distress signal on water to which this subpart applies under any circumstances except a situation where assistance is needed because of immediate or potential danger to the persons on board."



#### 2.10.2.1 Standard Marine Distress Signals (Anytime)

##### Marine Radio

- DSC alert, channel 70 (only for DSC-type radios and where the service is offered).
- Channel 16, 158.6 MHz (VHF).
- 2182 KHz (MF) \*Can also call 911 at any time if a cell phone is available.



##### Sound Signals

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



##### Flares

- Parachute flare.
- Multi-star flare.
- Handheld flare.
- Orange smoke flare.



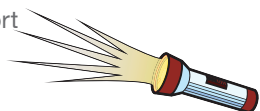
##### Emergency Position Indicating Radio Beacon (EPIRB)

- Use alarm signal.



##### Flashlight

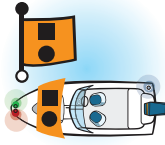
- Flash S.O.S. signal (short-short-short long-long-long short-short-short).



### 2.10.2.2 Standard Marine Distress Signals (Daytime)

#### Distress Flag

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



#### Dye Marker

- To attract attention, release dye marker (any color) into the water.



#### Code Flags

- Ball over or under square.
- November over Charlie.



#### Arm Signal

- Raise and lower outstretched arms repeatedly.



### 2.10.3 Pyrotechnic Distress Signals

Pyrotechnic VDSs must be U.S. Coast Guard approved, in serviceable condition, unexpired and readily accessible. Launchers, produced before January 1, 1981, intended for use with approved signals are not required to be U.S. Coast Guard approved. U.S. Coast Guard-approved pyrotechnic VDSs and associated devices include:



- Pyrotechnic red flares, hand-held or aerial.
- Pyrotechnic orange smoke, hand-held or floating.
- Launchers for aerial red meteors or parachute flares.

### 2.10.4 Non-Pyrotechnic Visual Distress Signals

Non-pyrotechnic VDSs must carry the manufacturer's certification that they meet U.S. Coast Guard requirements. They must be in serviceable condition and stowed to be readily accessible.

This group includes:

- Electric distress lights.
- Orange distress flag.

No single signaling device is ideal under all conditions and for all purposes. Consideration should be given to carrying several types. For example, an aerial flare can be seen over a long distance on a clear night, but for closer work, a handheld flare may be more useful.



### 2.10.5 Other Types of Visual Distress Signals



If pyrotechnic devices are selected, a minimum of three must be carried. Any combination can be carried as long as they add up to three signals for day use and three signals for night use. Three day/night signaling devices meet both requirements. The following is an illustration of the variety and combinations of devices which can be carried in order to meet the requirements:

- Three hand-held red flares (day and night).
- One electric distress light (night), and three hand-held orange smoke distress signals (day).
- One hand-held red flare and two parachute flares (day and night).
- One hand-held orange smoke signal, two floating orange smoke signals (day) and one electric distress light (night).

### 2.10.6 Oregon: Visual Distress Signals

In Oregon, boats operating in ocean or coastal waters are required to carry VDSs.

### 2.10.7 VDS Handling and Storage

Pyrotechnic devices should be stored in a cool, dry location and must be readily accessible in case of an emergency. Care should be taken to prevent puncturing or otherwise damaging their coverings. A watertight container, such as a surplus ammunition box, painted red or orange and prominently marked "DISTRESS SIGNALS" is recommended.

If young children are frequently on board your boat, careful selection and proper stowage of visual distress signals is important.

U.S. Coast Guard-approved pyrotechnic devices carry an expiration date. After this date, the device can no longer be counted toward the minimum requirements.





## 2.11 VHF RADIO

A VHF (very high frequency) radio is used to communicate with other boaters, the U.S. Coast Guard, commercial boats, draw bridge tenders, and lock operators. A VHF is not required to be U.S. Coast Guard approved and recreational boaters are not required to carry VHF radios.

CHANNEL NUMBER	CHANNEL PURPOSE/USE
6	Inter-ship safety communications only.
9	Commercial and non-commercial inter-ship, ship to coast and alternate calling channel.
13	Ocean-going boats, bridge tenders, tugs while towing, locks.
16	Distress safety and calling, call Coast Guard, establish general contact.
22A	Coast Guard Liaison and Maritime Safety Information Broadcast.
24-28, 84-88	Public telephone calls (to call the marine operator).
68, 69, 71 & 78	Non-commercial inter-ship and ship to coast (recreational boat working channels).
72	Non-commercial inter-ship only.

Recreational boats less than 20 meters (65'6") in length are NOT required to have a station license to operate a VHF radio unless they travel to foreign ports or transmit to foreign stations. Use of a VHF radio is enforced by the U.S. Coast Guard.

There are many channels on the VHF, but recreational boaters are given access only to a few.

Marine weather (WX-1, WX-2, WX-3) stations broadcast the latest available weather information from the National Weather Service continually. Forecasts are updated every six hours, or more often as conditions require.



## 2.12 OREGON: EQUIPMENT REQUIREMENTS

### 1. Sailboats (open) and Manually Propelled boats must carry the following equipment:

- One wearable life jacket of appropriate size for each person on board and suitable for the activity,
- One whistle per boat,
- A white light lantern or flashlight to be shown quickly to prevent an accident from sunset to sunrise or restricted visibility, and
- If boat is 10 feet or more, a Waterway Access Permit.

### 2. Motorized and Personal Watercraft (PWC) boats less than 16' must carry the following equipment:

- One wearable life jacket for everyone on board (PWCs: life jackets must be worn by everyone on board)
- One whistle or compressed air horn,
- One 5-B, U.S. Coast Guard-approved fire extinguisher, and
- Lights: red/green bow lights and all-round white light
  - Must be turned on when boat is underway or at anchor between sunset and sunrise and during times of restricted visibility.

### 3. Motorized boats 16' less than 26' must carry the following equipment:

- One wearable life jacket of appropriate size for everyone on board,
- One throwable device, immediately available,
- One whistle, compressed air horn or manufacturer-installed boat horn,
- One 5-B, marine, U.S. Coast Guard-approved fire extinguisher, and
- Lights: red/green bow lights and all around white light
  - Must be turned on when boat is underway or at anchor between sunset and sunrise and during times of restricted visibility.

## Paddleboarding

If using a stand-up paddleboard (SUP) or other device similarly used as a SUP on a river, lake or bay for transportation, and is being used beyond the limits of a designated swim, surfing or bathing area, a SUP is considered a boat. A U.S. Coast Guard-approved life jacket that is in good serviceable condition and properly fitted for each person is required to be on board, plus one whistle.

**Note:** If wearing an inflatable belt pack, the pack should be worn to the front and not in the back. Wearing the pack in the front will allow you to slip on the life jacket easily once inflated.



# SUMMARY

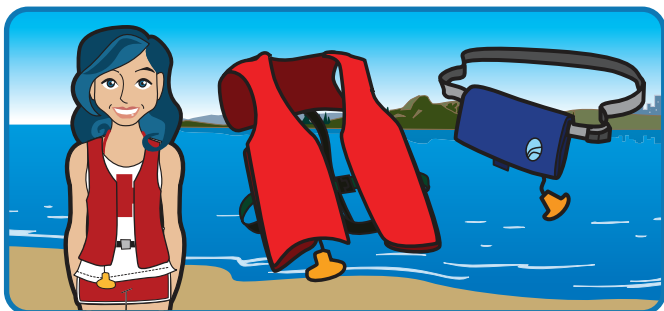
After reading Chapter 2, you should have knowledge of:

- The various types of Personal Flotation Devices (PFDs) and their characteristics.
- Proper sizing of a PFD.
- When a PFD should be worn.
- How to care for PFDs.
- The various types of fire extinguishers for boats, and how to maintain them.
- What a backfire flame control device is, and what it is for.
- Natural and powered ventilation systems.
- Navigation light requirements for different types and sizes of boats.



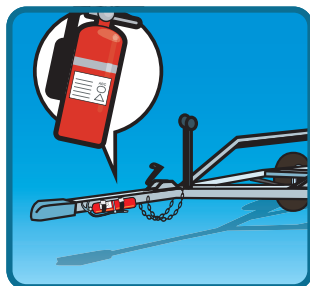
# QUIZ

1. Which of the following is an accurate statement with regards to inflatable personal flotation devices (life jackets)?



- A** They will not float without being inflated
- B** They can be used during high impact water sports
- C** The CO<sub>2</sub> cartridges never need to be replaced
- D** They are recommended for children of all ages

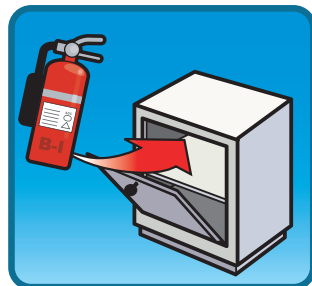
2. Which of the following is the most suitable place to store a marine fire extinguisher?



- A** Along with the trailer



- B** Under the operator or passenger seats



- C** In a closed compartment



- D** In an open area where it is easily accessible

### 3.1 CHECKING LOCAL

#### WEATHER/WATER CONDITIONS

##### 3.1.1 Check Forecast and Monitor it While 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. You should always take the weather forecast into consideration when preparing your trip plan. Avoid boating in heavy fog. Be particularly mindful of hurricane warnings — never venture out on the water during a hurricane warning.

National Oceanic and Atmospheric Administration (NOAA) Weather Radio broadcasts on the following frequencies:



CHANNEL 1	CHANNEL 2	CHANNEL 3
162.550 MHz	162.400 MHz	162.475 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:

<b>SMALL BOAT ADVISORY</b>	<b>GALE WARNING</b>
Observed or forecast winds of 18-33 knots (24 to 38 MPH)	Observed or forecast winds of 34-47 knots (39 to 54 MPH)

<b>STORM WARNING</b>	<b>HURRICANE WARNING</b>
Observed or forecast winds of 48 knots (55 MPH) or greater	Observed or forecast winds of 64 knots (74 MPH) or greater

OTHER WARNINGS TO BE WARY OF:	
<b>Tropical Storm Warning</b>	Observed or forecast winds of 34-64 knots
<b>Special Marine Warning</b>	Observed or forecast winds of 34 knots or higher, coupled with a storm to less than 2 hours

Weather forecasts, particularly on the water, can change quickly. Therefore, you need 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 (though 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 you are in unfamiliar waters.



##### 3.1.2 Coping with Foul Weather

###### Preparation for a Storm

- Ensure that all passengers are wearing 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 the boat high in the water.
- Head for the nearest safe shoreline.
- Check marine charts for the nearest shelter, and note hazards.

###### When the Storm Hits

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

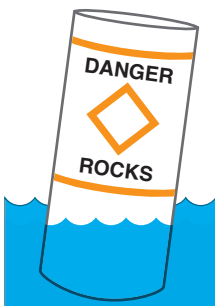


**TIP:** If stormy weather is approaching the boat operator's first responsibilities are to make sure that everyone on board is wearing their U.S. Coast Guard-approved PFD and to get off the water as quickly as possible.



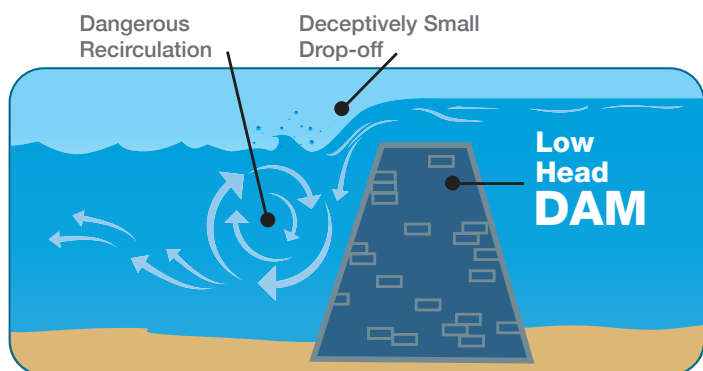
### 3.2 CHECKING LOCAL HAZARDS

Before boating in any new or unfamiliar waterways, obtain 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.



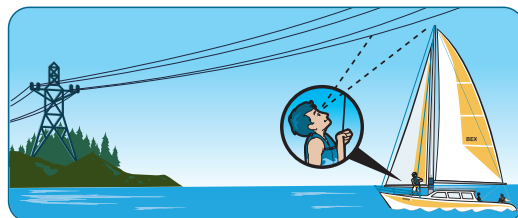
#### Local Hazards to Be Wary Of

- Whitewater areas can very easily drag a boat or person downstream, where rocks and debris as well as a very strong, rushing current are cause for concern.
- Shoaling areas (marked and unmarked), these areas become shallow gradually and are often difficult to spot without local charts.
- Hazardous inlets can produce abnormal currents or changes in water levels. Abnormal tides or currents may affect your ability to properly navigate or steer your boat.
- Low-head dams pose a hazard both below and above the dam. Their drop creates a hydraulic “hole” at the base of the dam that can trap objects, or people. Boaters should always be on the lookout for warning signs or buoys indicating lowhead dams. Always portage around a dam. If you do get trapped in a hydraulic, tuck your chin down and hold your knees tight to your chest with your arms.



- Locks should always be approached at idle speed. One long blast followed by one short blast indicates intention to enter the lock. Military and commercial vessels have priority, so recreational boaters must wait for their turn. Stay clear of boats entering/leaving the lock, and be mindful of barges and large boats that can create dangerous current, drawing smaller boats into their path. Once the lockmaster directs you into the lock, proceed with caution. Always wear your PFD and remain seated. Wait for the lockmaster’s signal before leaving the lock at idle speed.

- Powerlines are especially hazardous for sailboats, or boats with a mast. Always make sure your boat has enough clearance to safely go underneath the lines. If you are unsure, don’t chance it.

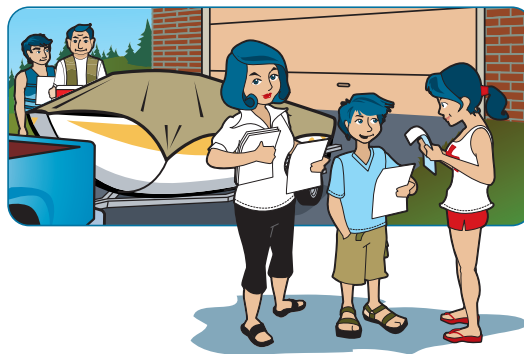


- Low seasonal waters—remember that local charts show an average in water level. Generally waters are higher in the spring, and lower through the summer.
- Obstructions such as bridges, channel openings, commercial fishing nets etc.



**TIP:** Low-head dams are difficult to detect downstream.

### 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 provided in the Appendix and leave it with a responsible family member, friend or local marina before leaving the dock. This 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.



**NOTE:** Contact a friend or family member and let them know what your plans are by filling out a float plan. Don’t forget to contact the person when you are back from your trip.

### 3.4 BOAT PREVENTIVE MAINTENANCE

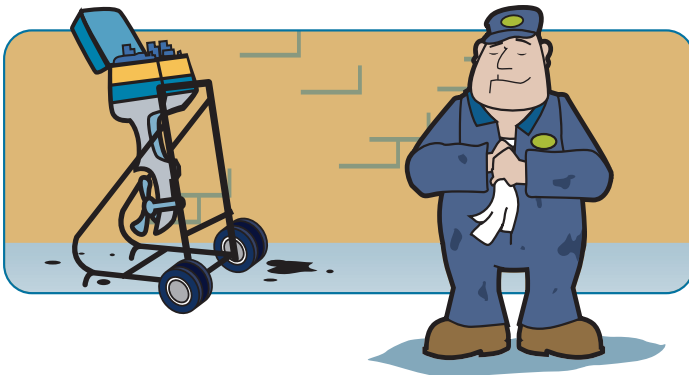
Proper maintenance of your boat can extend its useful life and also help ensure that you and your passengers have an enjoyable and safe boating experience.



#### Engine

- Change oil at least once every 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 the recommended schedule.

#### General Maintenance



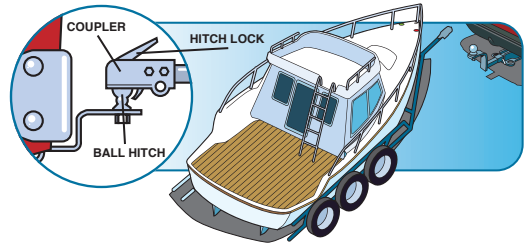
- Always use marine parts — never automotive parts!
- Store boats in a dry place out of the sun.
- Check any through-hull fittings, such as engine-cooling intakes. A leak or opening could sink your boat if not attended to properly.
- Keep the decks and hull cleaned and waxed for better fuel efficiency and longer life.
- Clean and grease electrical connections to prevent corrosion.



**NOTE:** Properly maintaining a boat can have many benefits and will allow for a safer boating experience. Make sure to only use marine-approved parts and change the engine oil at least once every boating season.

### 3.5 TRANSPORTING AND TRAILERING

#### 3.5.1 Safe Towing Preparation

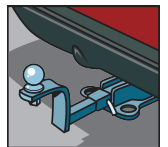


You must ensure that the towing vehicle can handle the towing load and has an appropriate trailer, hitch and safety chains. Trailers, like boats, have capacity plates attached. Make sure your trailer has the capacity to carry your boat AND motor, fuel and any additional gear on board before you begin a road trip. Pay particular attention to the tongue weight. Also don't forget to check the tire pressure and always be sure to have a spare in case of an emergency.

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

TRAILER CLASS	TOWING WEIGHT
Class 1	not to exceed 2,000 lbs.
Class 2	2,001 lbs. to 3,500 lbs.
Class 3	3,501 lbs. to 5,000 lbs.
Class 4	over 5,000 lbs. up to 12,000 lbs.

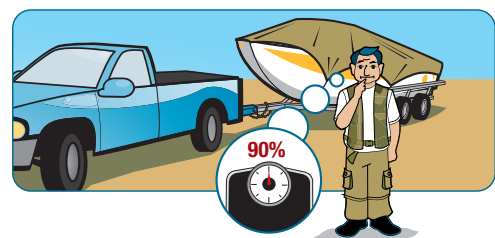


**TIP:** Make sure your trailer has the capacity to carry your boat and motor, fuel and additional gear on board.

#### 3.5.2 Gross Axle Weight Rating (GAWR) and Gross Vehicle Weight Rating (GVWR)

Both your towing vehicle and trailer will have GAWR and GVWR guidelines for towing and weight capacities. You can find these by looking in the owner's manual. Never exceed 90% of the recommended GAWR or GVWR.

To accurately meet your towing requirements consult with your dealer when buying any trailer or towing vehicle.

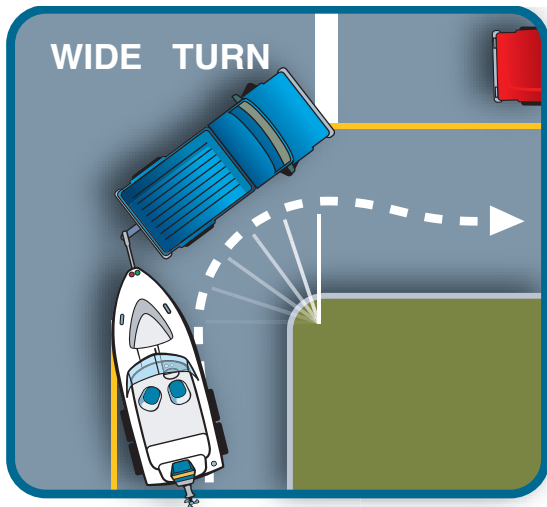


### 3.5.3 Final Preparation

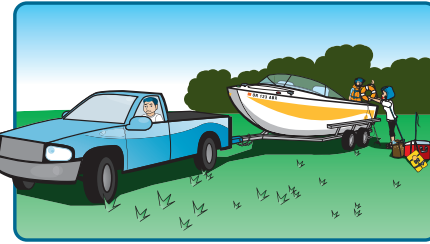
- Make sure the boat is centered on the trailer and fuel and gear is distributed evenly throughout the boat; an uneven load can cause instability and makes steering and maneuvering much more difficult.
- Tie down all loose items and equipment in the boat.
- Criss-cross chains under the frame when attaching the trailer to the towing vehicle.
- Make sure chains can support the weight of the entire load should the hitch break.
- Make sure the tail lights, trailer brake lights, and directional turn signal 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 the boat to the trailer frame with additional straps.

### 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, you are advised to reduce your speed and give vehicles in front more room.



 **NOTE:** Slow down and make safe wide turns.



**TIP:** Prepare your boat away from the ramp area to avoid creating unnecessary delays at the launch area.

This will give you more 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

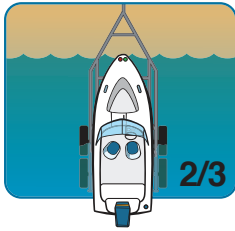
- Prepare for launch: Prepare the boat away from the launch so you will not block any boaters who are waiting to launch or retrieve their boat. Preparation may involve removing all tie-downs except the winch line, loading additional supplies and equipment into the boat, inserting the drain plug if not already done, disconnecting trailer brake lights so you don't burn out the bulbs, removing the motor travel supports if applicable, and putting the trim up to prevent hitting the prop when launching.
- Attach a bow line to steady the boat upon release. This may not be required if two persons are launching the boat, and one is in the boat.
- Release the winch line and slowly reverse the boat off the trailer.
- Secure the boat to the dock, and then promptly move the tow vehicle and trailer away from the launch to avoid keeping other boaters from waiting.
- If you anticipate problems with your boat engine, start the engine and let it warm up while the boat is still attached to the winch line. It is much easier to retrieve the boat when it is still on the trailer.
- Back into the water far enough that the lower unit cooling water intake holes are submerged. (**NOTE:** use the parking brake on the towing vehicle at this point, and do not allow the tow vehicle's wheels in the water unless necessary.)

### 3.5.6 Retrieving a Boat

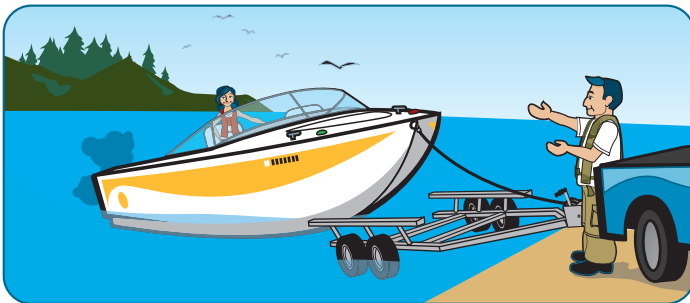
If the ramp is steep, ensure someone spots you as you drive up the ramp. Be aware of pedestrians and other boats.

- Proper etiquette: Unload fuel and equipment away from the ramp, if possible. Prepare vehicle and trailer for retrieval, and wait 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 out of the water, if possible.)



- Attach a bow line to steady the retrieval.
- Maneuver the boat close to, or drive it onto, the trailer and attach the winch line.
- Shut off the engine, and trim or raise the outboard or stern drive.
- Pull the boat completely onto the trailer by cranking the winch line. Stay out of the direct path of the winch line, in case it should break.
- 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.
- Be sure to rinse off any aquatic invasive species if present before you leave the waterway.



**NOTE:** Unload fuel and equipment away from the ramp whenever possible.

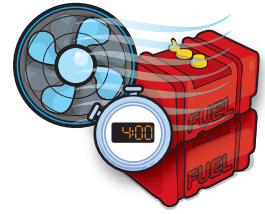
### 3.6 FUELING PROCEDURES

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.

- Close all doors, windows and hatches prior to fueling. However, open all doors, windows and hatches immediately after fueling to allow air circulation.



- Hold the nozzle firmly against fill pipe opening; this will ground any static buildup.
- Never fully fill a tank (not beyond 90%); always leave room for gas to expand and thus avoid overflow. Ensure air vents/valves to gas tank are open.
- Put the gas cap on tightly after fueling to avoid vapor escape. Immediately wipe away any spills or leakage with a rag.
- Before starting the engine again, you should 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:** Keep the bilge clean and free of trash to reduce the risk of fire.

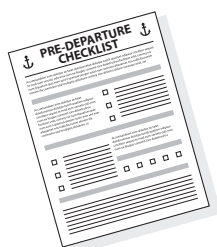
The following are tips to conserve fuel for better mileage and to reduce the environmental impact that gasoline can have on marine life.

- Distribute equipment, fuel and passengers evenly throughout the boat, and do not overload the boat.
- Make sure the engine is adequate for the size and weight of the boat. Keep the engine in good shape with regular maintenance, and replace spark plugs regularly.
- Use the correct propeller, and regularly check it for damage.
- When operating a boat always abide by the 1/3 Rule; use 1/3 of your fuel to operate, 1/3 of your fuel to get back to the dock, and the other 1/3 as a reserve in case of an emergency.
- Drain all water from the bilge during your pre-launch preparations, and keep the hull clean to reduce friction. Use a bailing can or a portable bilge pump on smaller boats.
- Shut the engine off when the boat is stopped or docked.
- Plane smoothly and evenly at take off, then throttle back to cruising speed.
- Read the engine owner's manual for more details.



## 3.7 PRE-DEPARTURE CHECKLIST AND PASSENGER COMMUNICATION

No two boating trips are the same; 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. You should use a pre-departure checklist before each trip, regardless of its length. The checklist is easy to review, and it will also ensure new passengers are informed and comfortable.



### Pre-Departure Checklist

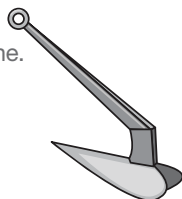
#### Personal Flotation Devices (PFD) (Life Jackets)

- At least one U.S. Coast Guard-approved PFD in good condition and appropriately sized per person on the boat.
- A throwable device for boats 16 feet in length or greater.
- Make sure each person's PFD is reachable in case of an emergency and make sure children on board are wearing their PFDs.



#### Docking and Anchoring

- At least one anchor attached to the anchor line.
- Two fenders for docking.
- Inspect dock and anchor lines for wear and tear; replace if frayed.
- Two or three extra dock lines.



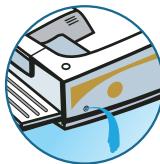
#### Fire Extinguishers

- U.S. Coast Guard-approved fire extinguisher stored in an accessible place.
- Ensure mounts are secure.
- Inform all passengers of fire extinguisher location(s) and how to use it.



#### Bilges

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



#### Tools and Spares

- Basic toolbox.
- Spares on board: fuel filter, light bulbs, etc.



#### Fuel and Oil

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



#### Lights

- All required navigation lights (test prior to leaving dock).
- Check instrument lights.
- Flashlight.



#### Sound Producing Devices

- Horn, whistle or bell present (at least two).
- If a portable air horn, have a spare can of compressed air.



#### Distress Signals

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



#### Documentation

- Keep registration, radio license, fishing permit, Boating Safety Education Card on board while operating.
- Keep local charts on hand for quick reference.



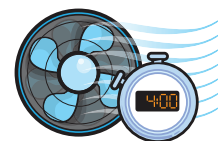
#### Emergency Boat Operation

- Inform all passengers of procedures for stormy weather or falls overboard.
- Know how to operate the radio.
- First-aid kit (on board and accessible).



#### Ventilation

- On powered boats, ensure interior spaces are well ventilated.
- If fumes are still present after running the blower for four minutes, look for a leak or spill.



#### Battery Care

- Make sure batteries are charged.
- Make sure all powered equipment is working.



#### Weather Forecast

- Did you check the weather forecast?
- Have a handheld radio to monitor weather.



#### Float Plan

- File a float plan with passengers and boat information with a friend or reliable party.



#### Drain Plug

- Don't forget to put in your drain plug before launching. Carry a spare one in your glove compartment.



# SUMMARY

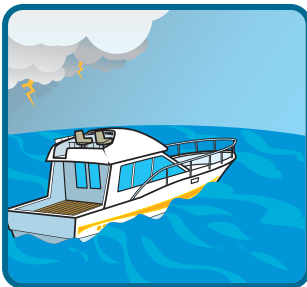
After reading Chapter 3, you should have knowledge of:

- Why you should check the weather forecast during trip preparation and monitor the weather while out on the water.
- Severe-weather terminology used by the National Oceanic and Atmospheric Administration.
- How to prepare for foul weather, and what to do when a storm hits.
- Local hazards to be informed of, and how to check for them.
- A float plan.
- Proper engine and general boat maintenance.
- Trailer classes, proper towing and trailering methods and regulations.
- How to launch and retrieve a boat.
- Fueling procedures.
- A pre-departure checklist.

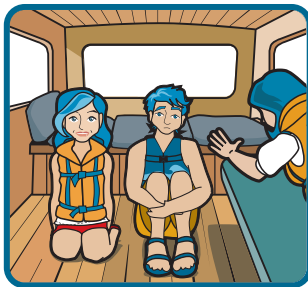


# QUIZ

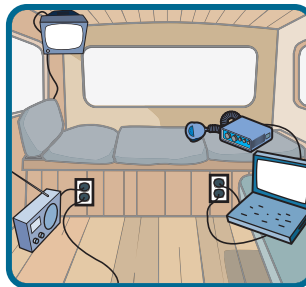
1. When a storm hits while a boat is underway, the operator should do which of the following?



**A** Takes waves from the port or starboard side, never head on



**B** Ensure that all those aboard are wearing a Personal Flotation Device

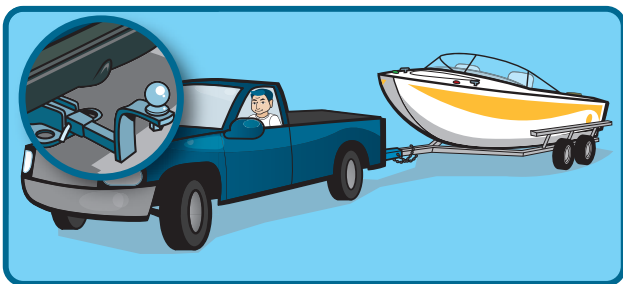


**C** Keep all electrical equipment plugged in—even if lightning is present



**D** Shift all passengers to the highest point on board the boat

2. In preparation to trailer a boat, it is recommended that you do which of the following?



**A** Distribute gear towards the back of the boat

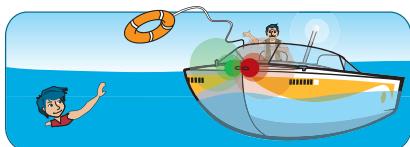
**B** Tie down all loose items and equipment

**C** Attach the chains vertically under the frame

**D** Ensure that all lug nuts are greased

### 4.1 RENDERING ASSISTANCE

If you see a distress signal, you should assist those in distress if you can do so without putting your boat or crew at risk. If you cannot assist, make sure you notify the nearest boaters or authorities who can assist.



### 4.2 CAPSIZING/FALLS OVERBOARD

The major cause of fatalities involving small open boats is drownings from falls overboard, which is why it is important for boaters to wear their personal flotation devices (PFDs). In certain weather conditions and on some boats, boaters are wise to wear a safety harness with a safety line secured to the boat. These falls overboard may have several causes; however often times they are the direct result of a boat capsizing.

**Capsizing** - The overturning of a boat on its side or turned over — is most common in small open boats. 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.

#### Preventing a Capsizing/Fall Overboard

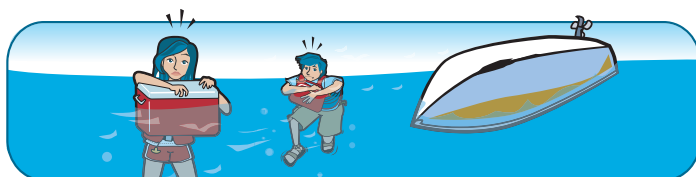
- Be sure to stay centered and low in the boat.
- Always maintain three points of contact when moving about the boat.
- Do not overload the boat, and ensure the load is distributed evenly.
- Take corners at a safe speed and angle.
- Watch for other boats' wakes and take them at a 45-degree angle off 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.



#### If Someone Does Fall Overboard:

- 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's 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 motor — if retrieving, 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.



#### Surviving a Capsizing/Fall Overboard

- 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.
- Improvise flotation: If the boat is not nearby — use floating items around you to help you stay out of the water and afloat (empty fuel tank, fender).
- When separated from your boat in a swift river current, you should float on your back with your feet downstream.

### 4.3 COLD WATER IMMERSION



Many drownings and boating related fatalities are a result of cold water immersion. When a person falls into cold water their body experiences a number of physiological responses which are affected by both the temperature of the water and the amount of time they are in the water. Cold water should be avoided whenever possible. However, if a person does end up in cold water, it is important that they find a way to get their body out of the water as soon as possible using whatever means available.

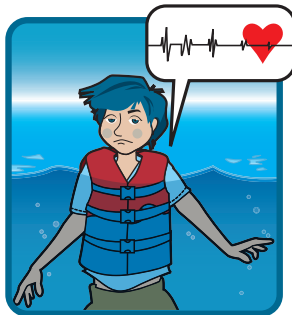
### 4.3.1 Prevention

Boat capsizing and falls overboard are the leading causes of cold water immersion. Capsizing is most often caused by overloading, poorly secured or shifting loads, improper boat handling and anchoring, loss of power or steerage. Falls overboard usually occur when a person slips or loses their balance while standing or moving around the boat. These events usually happen quickly, and often catch people off guard. In order to prevent cold water immersion, be sure not to overload boats and always take weather and water conditions into consideration when operating. Falls overboard can be avoided by remaining seated and limiting how much you move around a boat when it is underway.

### 4.3.2 Stages and Effects

#### Initial Immersion: Cold Water “Shock”

If a person falls into cold water — their body’s initial reaction is a “gasp reflex” which can include hyperventilation and muscle spasms. This initial reaction can result in water inhalation as well as significant changes in heart rate and blood pressure. These initial effects are present for the first two or three minutes of immersion.



#### Short-Term Immersion - Impaired Function

In cold water, you may begin to experience the loss of basic motor skills within 10 minutes after immersion. Between 10 and 30 minutes, a person’s hands quickly lose strength and sensation and subsequently their ability to swim (even strong swimmers). In cold water immersion cases, boaters often drown as a result of swimming failure before hypothermia ever has the chance to set in.



#### Longer Term Immersion - Immersion Hypothermia

Following 30 or more minutes of immersion, hypothermia (a drop in body temperature below the normal level) will begin to set in. The person’s overall body temperature will continue to drop until it reaches the same temperature of the water. Hypothermia symptoms range from mild to severe. As the body’s core temperature falls, a person will eventually lapse into unconsciousness.



### Post Rescue Collapse

A drop in blood pressure may lead a person to become unconscious or to stop breathing at the point of rescue or up to several hours afterward.



**NOTE:** A person suffering from hypothermia should receive medical attention as soon as possible.

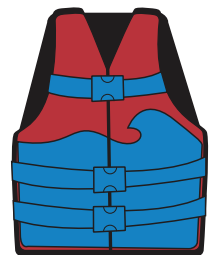
### 4.3.3 Surviving Cold Water

If rescue is not imminent — your number one priority is to get yourself out of the water as soon as possible. You can do this either by climbing onto your capsized boat or any other floating objects, or if it is within reach by swimming to shore. In cold water, persons may only retain the ability to swim for up to 30 minutes, but typically it is usually much less than that. The sooner you can get your body out of the water, the greater your chances of survival will be. If rescue is imminent — you should conserve energy and body heat.



You may extend your survival time by adhering to the following tips:

- Wear your PFD. You can expend valuable energy treading water without it.
- 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 chests close together, with arms around the back and legs intertwined.



Wear your PFD



H.E.L.P.



Huddle

When re-warming following immersion in cold water, be sure to do so slowly; be sure not to rub your body vigorously. Use your body heat, a portable heater (if available) or towels/blankets. Re-warming slowly and gradually will help to prevent shock.

As a boat owner it is never a bad idea to learn CPR and other first-aid techniques in order to be able to properly deal with emergencies.



**TIP:** Learn a recovery technique that works and practice it.



### Additional Cold Water Protection

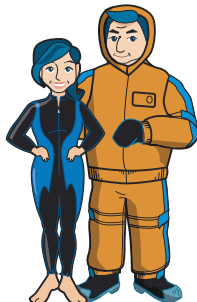
**Floater suit** - a full nose-to-toes PFD.

**An anti-exposure worksuit** - a PFD with a thermal protection rating.

**A drysuit** - to be used in conjunction with a flotation device and a thermal liner.

**A wetsuit** - traps and heats water against your body.

**Immersion suit** - to be used in extreme conditions upon abandoning boat (usually for off-shore use).



### 4.4 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 (such as 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 a fire starts:

- Stop the boat immediately — this should always be your **FIRST** action!
- Ensure everyone is wearing a PFD.
- Position the boat so that the fire is downwind (the wind will blow the fire away from the boat).
- Try to separate the fuel source from the fire.
- Use the extinguisher to try and put out the fire.



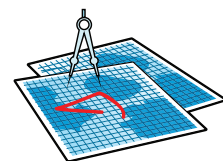
Using a fire extinguisher:

- 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.

### 4.5 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:

- Obtain a nautical chart for new or unfamiliar waterways, or seek advice and knowledge from local marinas and boaters before heading out.
- Keep a proper lookout; this includes keeping your eye out for shoals and sandbars.
- Maintain a safe speed — a speed at which you can take necessary action to avoid grounding.
- 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 out-drive, and try pushing off with paddles or oars.

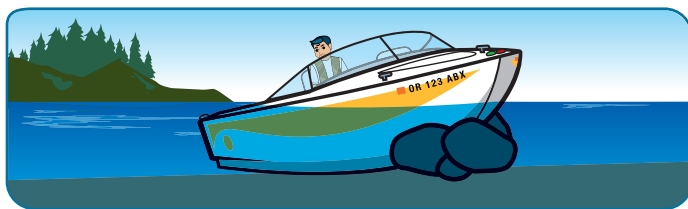


**TIP:** If you have a depth finder: set your finder to shallow-alarm alert. Continue to monitor the bottom visually and with the depth finder. Look for any marker buoys indicating shallow waters.

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.
- 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 the boat to deeper water.
- If there's no damage to the hull, flag down a fellow boater and secure a tow, if practical.
- Back off; if you are not grounded too deeply, you may be able to reverse the boat off the rocks, mud or sand. Shift weight away from the point of impact and push off.
- Always check your boat for damage prior to attempting to re-float it. Your boat may have been compromised (taking on water).
- If you have suffered serious damage to the hull, then you should **STAY** put rather than venturing to deeper water.

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



**TIP:** Keep a proper lookout for shoals and sandbars.

## 4.6 ACCIDENT REPORTS

If you are involved in a boating accident, you need to know what action 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).

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



## 4.7 OREGON: INCIDENT REPORTING REQUIREMENTS

In Oregon, operators must report any incident involving:

- \$2,000 or more in damages;
- Complete loss of a boat (any non-motorized or motorized);
- Injuries to any person requiring treatment greater than first aid; or
- The death or disappearance of any person.

When an incident occurs that requires a written report, the operator shall, without delay, by the quickest means available, notify the Oregon State Marine Board (OSMB) of the incident on a Marine Board incident form:

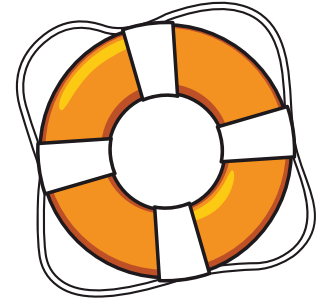
- Within 48 hours of an incident resulting in death or injury; or
- Within 10 days of an incident causing property/equipment damage only.

When the operator of a boat cannot give the notice required by the foregoing, a person, on board the boat shall notify the OSMB or a marine patrol officer, or determine that the notice has been given.

# SUMMARY

After reading Chapter 4, you should have knowledge of:

- Rendering assistance.
- What capsizing is, how to prevent it from happening, and how to survive if it happens.
- Falls overboard, and what to do.
- Hypothermia and hypothermia prevention.
- Running aground, measures to prevent it, and what to do if it should happen.
- How to report an accident.



# QUIZ

1. Which of the following is an early symptom of hypothermia?



**A** Shivering



**B** Depression

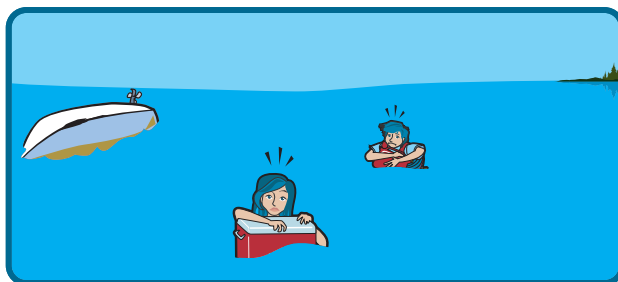


**C** Headache



**D** Extreme hunger

2. Of the following, which is the best possible method to prevent drowning from a fall overboard or a capsizing?



**A** Wear a properly fitted lifejacket at all times

**B** Boat only with strong swimmers

**C** Boat only in shallow water

**D** Remember to file a Float Plan

## 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 boats and other watercraft. It is the responsibility of the 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 *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.navcen.uscg.gov/?pageName=navRulesContent>

## 5.1 DEFINITIONS RELEVANT TO NAVIGATION RULES

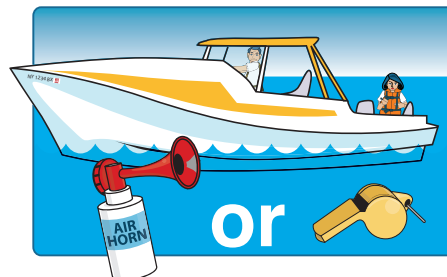
TERMS AND DEFINITIONS:	
<b>Vessel</b>	Any type of watercraft, including non-displacement boat and seaplanes used or capable of being used as a means of transportation on water.
<b>Power-Driven</b>	Propelled by machinery.
<b>Sailboats</b>	Under sail, provided that propelling machinery, even if present, is not being used.
<b>Vessel Engaged in Fishing</b>	Any vessel fishing with nets, lines, trawls or other fishing apparatus that restrict maneuverability (does not include a vessel fishing with trolling lines or other fishing apparatus that do not restrict maneuverability).
<b>Seaplane</b>	Any aircraft designed to maneuver on the water.
<b>Length and Breadth</b>	A vessel's length overall and greatest breadth.
<b>In sight of one another</b>	Vessel are deemed to be in sight of one another only when one can be observed visually from the other.
<b>Stand-on Vessel</b>	When encountering another vessel, the stand-on vessel must: <ol style="list-style-type: none"> <li>1. Maintain course and speed.</li> <li>2. Keep a proper lookout and return communication with the give-way vessel.</li> <li>3. Do all it can to avoid collision.</li> </ol>
<b>Give-way vessel</b>	The boat that must take EARLY and SUBSTANTIAL action to keep WELL clear of the stand-on vessel.
<b>Underway</b>	A boat that is not at anchor or made fast to the shore.
<b>Restricted Visibility</b>	Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms or any other similar causes.
<b>Inland Waters</b>	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.

## 5.2 SOUND SIGNALING EQUIPMENT

### 5.2.1 Legal Requirements

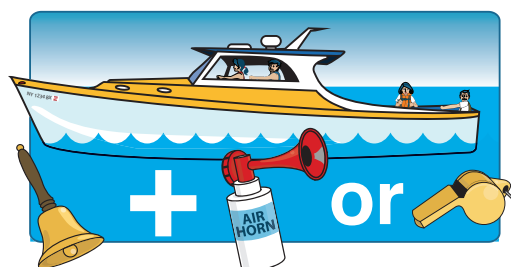
#### Boats Less than 12 Meters (39.4 Feet) Long

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



#### Boats Greater than 12 Meters (39.4 Feet) Long

In addition to an airhorn or whistle, a bell is required.



### 5.2.2 When and How to Sound Off

When two power-driven boats encounter each other within one half mile, sound signals must be used. The initiating boat indicates a maneuver, and the responding boat agrees or disagrees.

SOUND SIGNALS:	
<b>1 short blast (1 second)</b>	I intend to pass you on my port side. (Hint: PORT = 1 syllable = 1 short blast)
<b>2 short blasts</b>	I intend to pass you on my starboard side (Hint: STARBOARD = 2 syllables = 2 short blasts)
<b>3 short blasts</b>	Engine is in reverse.
<b>5 short blasts</b>	Danger, or do not understand approaching boat's intentions.
<b>1 prolonged blast (4-6 seconds)</b>	Warning: <ul style="list-style-type: none"> <li>• Entering or exiting a blind turn.</li> <li>• Nearing an obstructed area.</li> <li>• Leaving a dock or a berth.</li> </ul>
<b>1 prolonged blast every 2 minutes</b>	Power-driven boat operating in low or restricted visibility.
<b>1 prolonged blast + 2 short blasts every 2 minutes</b>	Sailboat operating in low or restricted visibility.



## 5.3 RULE OF RESPONSIBILITY

The boat operator is responsible for acting 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.



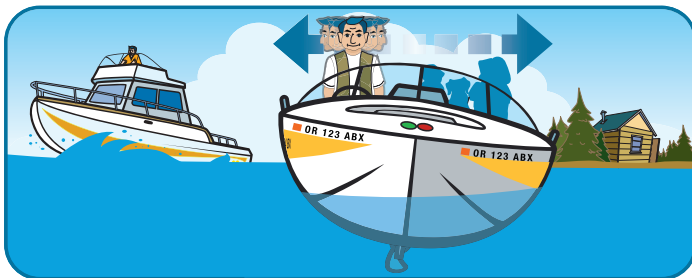
### In Summary:

Boat operators need to pay attention and operate their boats defensively.

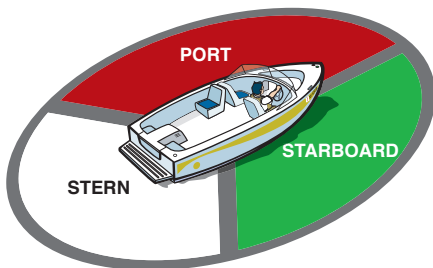
### 5.3.1 Proper Lookout

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. You should also assign another person on board to act as a lookout as well. Make sure no passengers or equipment can impede your line of sight. Scan the bow, starboard and port sides for boaters, swimmers, 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 boat. This is not only common sense, it is the law.

## 5.4 COLLISION AVOIDANCE RULES



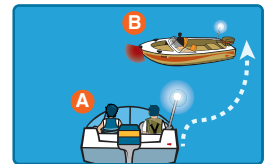
Avoiding collisions involves precautionary measures (proper lookout, use of radar if present, etc.), but more importantly, collision avoidance is made possible when boat operators know how to deal with situations appropriately. Boats in constant motion will meet quickly — take early and substantial action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



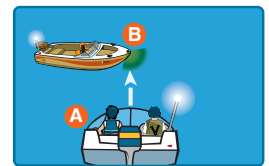
Take the following considerations into account when determining the risk of a collision:

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

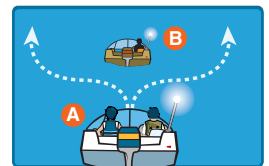
**Port** - If you are Boat **A** and you are approaching power-driven Boat **B**'s port side, you are the give-way vessel; slow down and alter your course to the right.



**Starboard** - If you are Boat **A** and you are approaching Boat **B**'s starboard side, maintain course and speed, since you are the stand-on vessel.



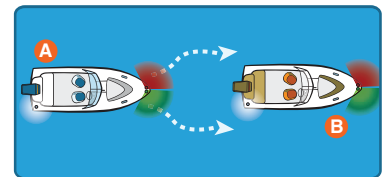
**Stern (Rear Side)** - If you are Boat **A** and you are approaching Boat **B**'s stern, you are the give-way vessel — alter your course to either port or starboard in order to overtake.



### 5.4.1 Overtaking (Power-Driven Boats)

The overtaking Boat **A** is the give-way vessel. The other Boat **B** is the stand-on vessel. As the give-way vessel, **A** must take EARLY and SUBSTANTIAL action to keep clear of the stand-on vessel **B**. If both boats are power-driven, sound signals are required.

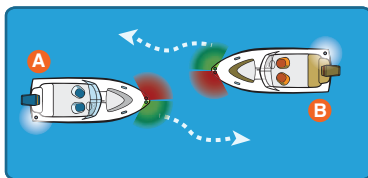
Boat **A** must blow one short blast and alter course to starboard, or blow two short blasts and alter course to port, and Boat **B** must return the same sound signal(s) to indicate understanding.



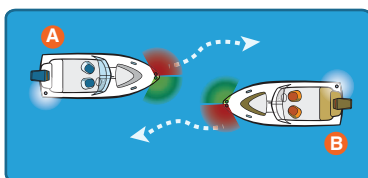
**NOTE:** Sailing boats stand on when being overtaken and give way when overtaking.

### 5.4.2 Meeting Head-On (Power-Driven Boats)

Neither Boat **A** nor Boat **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 boats is to signal an intention to pass port-to-port with one short blast. A short blast should be returned from the approaching boat, indicating a move to the starboard side. **A** must blow one short blast and alter course to starboard, Boat **B** must blow one short blast — to indicate understanding — and alter course to starboard.

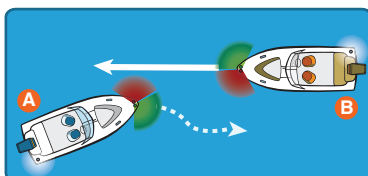


If it is not possible to pass port-to-port, due to an obstruction or shoreline, a starboard-to-starboard pass should be signaled with two short blasts. Two short blasts should be returned from the approaching boat, indicating its move to the port side. **A** must blow two short blasts and alter course to port. **B** must return two short blasts — to indicate understanding — and alter course to port.



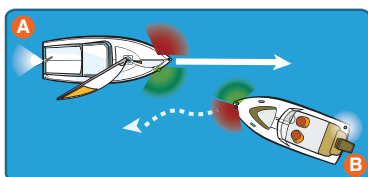
### 5.4.3 Crossing (Power-Driven Boats)

Boat **A** approaches the port side of Boat **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.



### 5.4.4 Sailboat and Power-Driven Boat Approaching

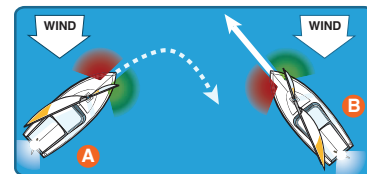
When Boat **B** encounters a Sailboat **A**, the sailboat is ALWAYS the stand-on vessel (unless a sailboat is overtaking). In the case above, Boat **B** must take EARLY and SUBSTANTIAL action to keep clear of a Sailboat **A**.



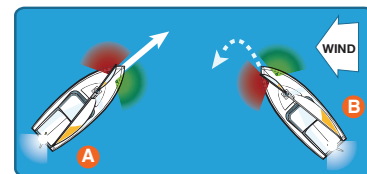
### 5.4.5 Two Sailboats Approaching Each Other

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

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



When both sailboats have the wind on the same side, the boat closer to the wind (upwind) is the give-way vessel and the boat further from the wind (downwind) is the stand-on vessel. In the illustration at right, **B** must take EARLY and SUBSTANTIAL action to keep clear of **A**. If a sailboat has the wind on its port side and the sailor cannot determine with certainty whether the other boat has the wind on its port or starboard side, the first boat is considered the give-way vessel and must take EARLY and SUBSTANTIAL action to keep clear of the second sailboat.

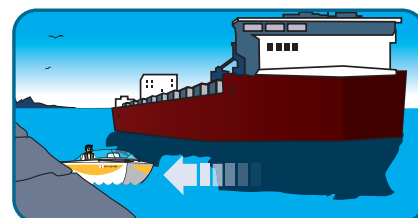


### 5.4.6 Heavy Traffic

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

### 5.4.7 Operation Within Narrow Channels

When approaching a narrow channel, stay to the starboard side and, using a prolonged blast, announce your approach to boats that may be around the bend. When operating within a narrow channel, boats must keep as near as is safe and practical to the outer limit of a narrow channel on their starboard side.



## 5.4.8 Oregon: Navigation in a Narrow Channel

When operating in a narrow channel, boat operators should remember the follow regulations:

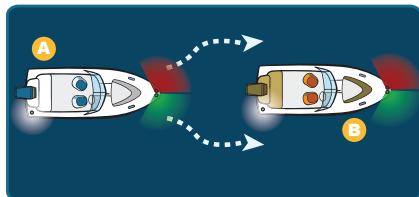
- Recreational boaters are required to give way to vessels that are restricted in their ability to maneuver.
- Commercial vessels, such as tug and tows, deep draft vessels and passenger cruise vessels, transiting the river can only safely navigate within a narrow channel. To maintain steerage on the rivers' powerful currents, these vessels must travel at a moderate speed. At these speeds it often can take more than a mile for these heavy vessels to stop.
- Crossing in front of a large vessel is also a violation if such a crossing impedes the travel of one of these vessels.
- Anchoring in a river or channel in a place that is in the way of other vessels passing through is also a violation.

Fines for violating these rules range from several hundred dollars to \$5,000 if found guilty.

## 5.5 OPERATION DURING DARKNESS

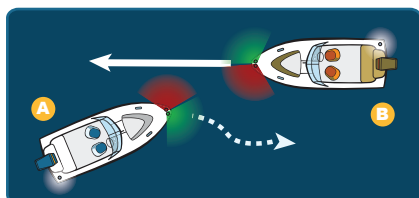
During hours of darkness, navigation lights MUST be displayed. Navigation lights help you determine whether an approaching boat is operating under power or sail, and its direction. Remember these quick rules for reference when encountering other boats in darkness:

**Boat (A):** When only a white light is visible, you may be overtaking another boat. Give way to either side (boat with white light could also be anchored).



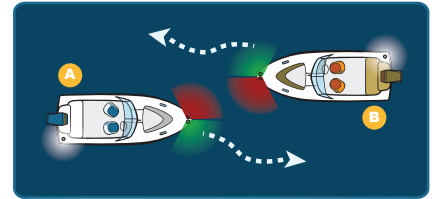
**Boat (B):** You **are** being overtaken. Stand on.

**Boat (A):** When only white and red lights are visible, you are approaching the port side of a boat. Give way to your starboard side.



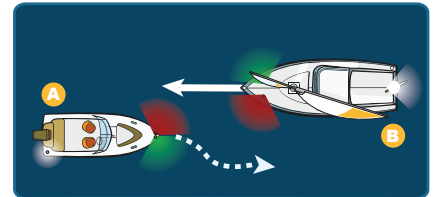
**Boat (B):** When only white and green lights are visible, you are approaching the starboard side of a boat. Stand on.

**Boat (A):** When white, red and green lights are visible, you are approaching a boat head-on. Give way to your starboard side.



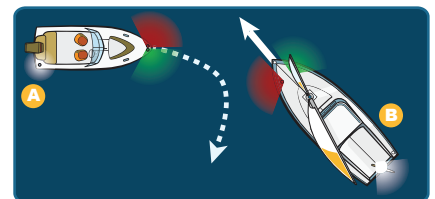
**Boat (B):** When white, red and green lights are visible, you are approaching a boat head-on. Give way to your starboard side.

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



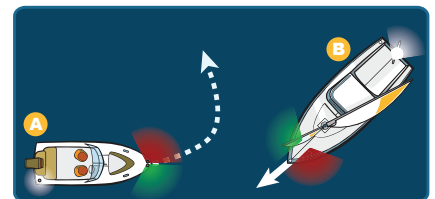
**Sailboat (B):** When white and green lights are visible, you are approaching the starboard side of a boat. Stand on.

**Boat (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 boat. Stand on.

**Boat (A):** When only a green light is visible, you are approaching the starboard side of sailboat. Give way to your port side.



**Sailboat (B):** When white and red lights are visible, you are approaching the port side of a boat. Stand on.

### 5.5.1 Operation in Restricted Visibility

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

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

BOAT TYPE	SITUATION	SOUND REQUIREMENT
<b>Powerboat</b>	Underway	Prolonged blast every 2 minutes
<b>Sailboat</b>	Underway	Prolonged blast + two short blasts every 2 minutes
<b>Powerboat</b>	Underway but not moving	Two prolonged blasts every 2 minutes
<b>Any Boat</b>	Anchored	5 seconds of rapid bell ringing every minute
<b>Any Boat</b>	Run aground	3 bell strokes + 5 seconds of rapid bell ringing + 3 bell strokes every minute

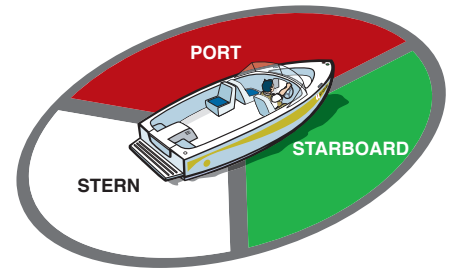
The sound signals listed above are used in or near an area of restricted visibility whether by day or night.



# SUMMARY

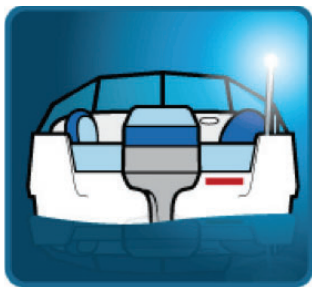
After reading Chapter 5, you should have knowledge of:

- Sound signaling equipment: legal requirements, as well as what different sound signals mean.
- Boater responsibilities while driving a boat.
- Collision-avoidance rules.
- Actions for operation in darkness, and restricted-visibility sound requirements.
- Aids to navigation, and what various markers mean.
- Guidelines for docking/mooring.



# QUIZ

1. When encountering another boat in darkness or reduced visibility, what is indicated by the presence of only a visible white light?



- A** You are approaching the stern of another boat and may be overtaking



- B** You are approaching a powerboat head-on

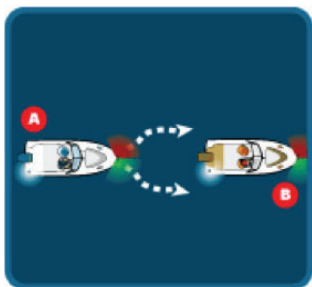


- C** You are approaching the starboard (right) side of another boat

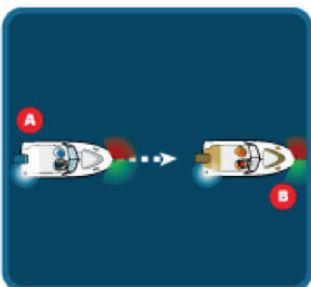


- D** You are approaching the port (left) side of another boat

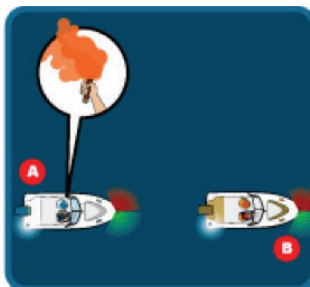
2. Which of the following actions is required of Boat A while overtaking Boat B in darkness or reduced visibility?



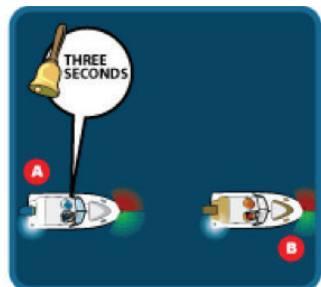
- A** Go around on either side



- B** Maintain course and speed



- C** Use a visual distress signal



- D** Three (3) seconds of rapid bell ringing

## 6.1 AIDS TO NAVIGATION

### 6.1.1 Lateral Aids

#### 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 and 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 in this illustration indicates the preferred channel is to the right.



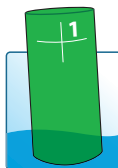
#### Nun Buoys

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.



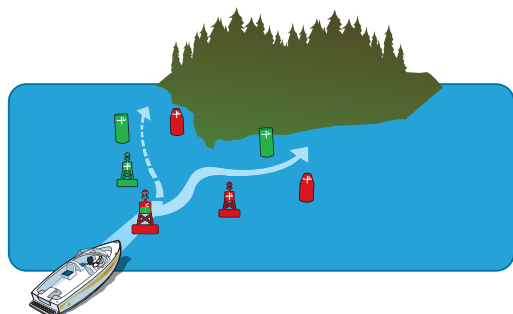
#### Day-Marks

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.



### 6.1.2 Information and Regulatory Markers

#### White Buoys/Orange Markings

##### ► Information (square)

Provides information such as food, fuel, etc.



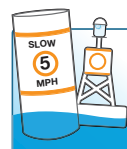
##### ► Hazard (diamond)

Warns of danger such as rocks, shoals, etc.



##### ► 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, such as swimming areas, dams and spillways.



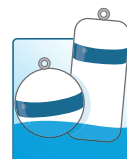
#### Obstruction Marker

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



#### Mooring Marker

Used for mooring or securing boats; be aware that a boat may be secured to such a marker.



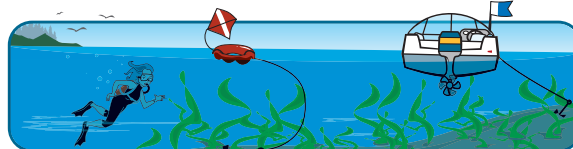
#### Safe-Water Marker

Indicates safe water. This marker is used to indicate land falls, channel entrances or channel centers. It may be passed on either side.



#### Diving Flags

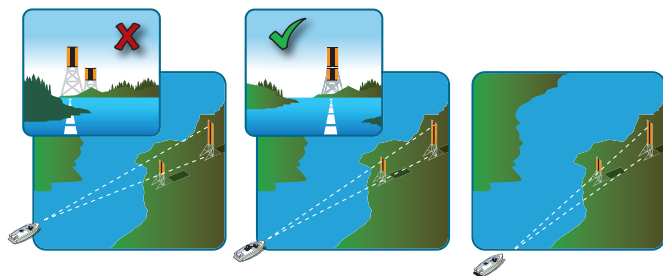
Indicates diving activity in the area. Particular care must be taken when boating in waters where there are divers. A boat engaged in diving must display a blue and white flag (see right). A red and white flag carried on a buoy is used to mark areas where diving is in progress, although divers may stray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



### 6.1.3 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 that indicate the distance in miles to the river mouth.

### 6.1.4 Range Markers

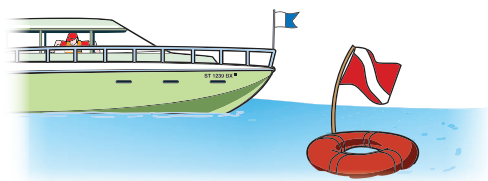


To help boaters navigate within channels, range markers have been erected in many rivers and bays. These consist of widely separated, brightly painted pairs of targets, or markers. Range markers' colors are chosen based on how well they stand out from the background scenery. They are mounted on skeleton towers or on pilings and may be in the water or on shore. Consult the appropriate navigation chart for locations of range markers. Steering a course that keeps the two range markers in line while operating in a channel marked by buoys will keep the boat within the navigable channel.

In Oregon, range markers are most commonly found on the Columbia River.

Source: U.S. Coast Guard  
<https://www.uscgboating.org/images/486.PDF>

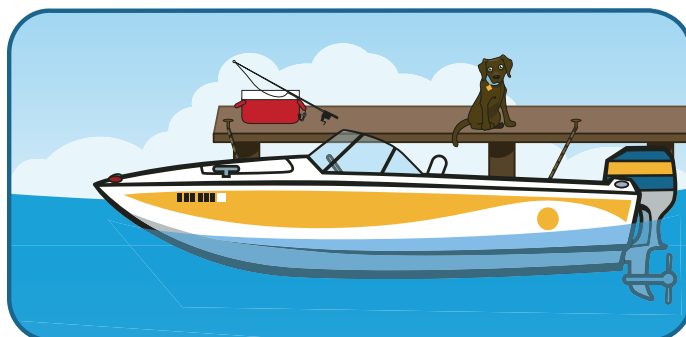
### 6.2 OREGON: DIVING AND SNORKELING



Be sure you know what the diver-down flags look like. If you see either flag, keep well clear of the boat and diving site, and move at slow speed. Do not drive your boat between a diver-down flag and a nearby shore.

Operators should stay at least 200 feet away from a diver-down flag.

Snorkelers and scuba divers alike should not dive in areas already occupied by numerous boats. Diving should not take place in narrow waterways, as such would restrict other boats from passing.



### 6.3 DOCKING AND MOORING

Docking or mooring your boat can be the most challenging of boating operations. Maneuvering your boat into a dock or a mooring marker in calm conditions is hard enough — add 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:

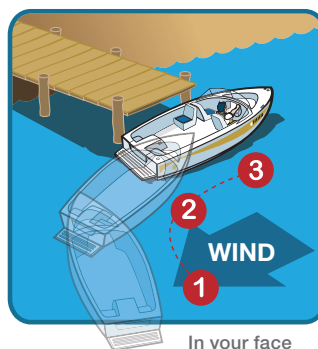
**Preparation** - When you approach the dock, slow your speed, secure fenders on the docking side, and ready the docking lines.

**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; approach only when you see an open station and have communicated your intention to other boats that are departing and waiting.

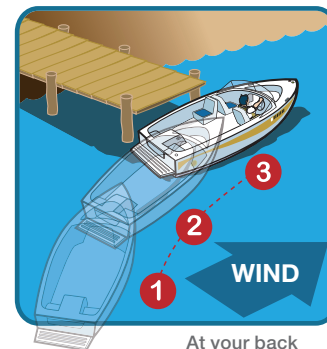
**Wind and current** - The direction of the wind and the flow of the water current have a huge impact on docking.

**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 then reverse until the stern swings in.

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



In your face



At your back



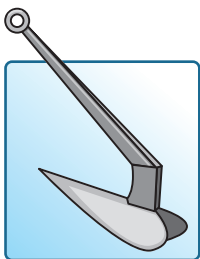
*TIP: If possible, approach the dock with the wind into your face: you have much more control when docking into the wind.*

## 6.4 ANCHORING

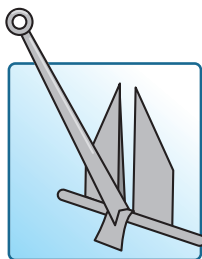
Though anchors are not required by federal law, many states have anchor requirements. It is advisable to carry an anchor for both recreational and emergency use.

Anchors should have a line and chain (combination called the “rode”). The anchor and the rode combination are called “ground tackle.” The chain helps you to set and retrieve the anchor. The amount of rode (line + chain) to have out depends on the water depth in which you plan to set anchor. As a general rule of thumb, your rode should be 7 to 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 in case of engine failure in rough waters or currents. As such, make sure the anchor is always accessible and the rode is free of entanglements.

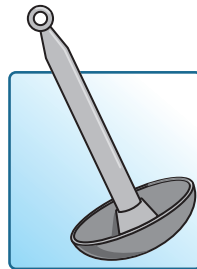
There are a number of anchor types. The most common recreational anchors are listed below. Choose the anchor type that meets your requirements.



Plow



Danforth



Mushroom

### Types of Anchors:

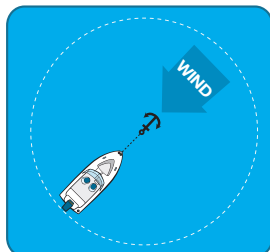
**Plow** - Lands sideways; buries when pulled. Best for rocky bottoms, weeds, and grass.

**Danforth** - Pivoting flukes bury the anchor. Best for soft mud and grass.

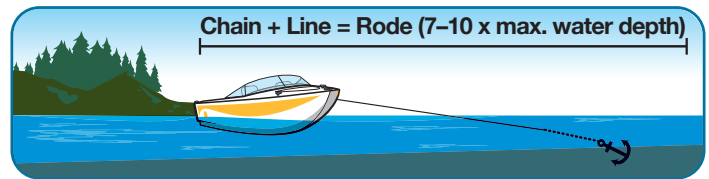
**Mushroom** - For canoes and inflatables. Best for flat bottoms.

### 6.4.1 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 = 7 to 10 times the water depth).
- Ready rode in a fashion that will allow the anchor to release smoothly to the bottom; ensure that no feet or equipment are entangled in the rope.
- 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.



## 6.5 LOCKS AND DAMS

The dams provide a navigable channel for river traffic. Locks are a means of passing boats through the dams.

At locks, the lockmaster is in control and will signal your boat to enter with a horn or a light system. There are priorities (of boats) set for safe and efficient passage:

- Military vessels.
- Mail boats.
- Commercial passenger vessels.
- Commercial tows.
- Commercial fishermen.
- Pleasure boats.

Before entering a lock, the boat should stop at least 100 yards from the lock entrance. The lockmaster can be signaled by the boater with a long and short blast of the horn, on the marine radio (channel 13) or with a signaling device on the lock wall. Once the lockmaster has been signaled, the boat must stay clear of the lock chamber until signaled to enter. Fenders and mooring lines (minimum of 75 feet) should be ready. Once inside the chamber, the lock lines are adjusted with the water levels. The boat must not be tied fast to the lock wall. Life jackets should always be worn.



### 6.6 OREGON: CROSSING THE BAR

The interplay of tidal flux, ocean breakers, offshore winds, and river current makes a bar — the entrance of a river into the ocean — a highly unstable environment.

Most boating accidents and fatalities on the coastal bars result from capsizing. A boat is much more apt to capsize when crossing the bar from the ocean because the seas are on the stern and the operator has less control of the steerage. When looking at the bar from seaward, you don't see the front of the seas or breakers; as a result the bar may appear much calmer than it really is.

The U.S. Coast Guard has established a standard rough bar advisory sign whose location may vary from port to port. The standard sign is a 6-foot by 6-foot, white, diamond-shaped daymark with a bright orange border, with the words “ROUGH BAR” in black letters.

Two alternate flashing amber lights are activated when observed seas on the bar exceed four feet in height and are considered dangerous.

If the lights are not flashing, this is no guarantee that sea conditions are favorable.

If you arrive at a harbor where a U.S. Coast Guard station is located, and after surveying the bar you notice that it is too rough to attempt crossing into port, contact the U.S. Coast Guard via VHF channel 16 for advice and assistance.



#### For the Safest Crossing:

- Observe the bar from a nearby perch before you go out. If it looks dangerous, it probably is.
- Even small breaking waves have a lot of power. If in doubt, don't go out.
- Know your own limitations. A rough bar is the wrong place to put your skills to the test.
- Be sure your boat is moderately loaded and that the load is stable. Preserving your boat's stability is most important — a sudden shift of the passengers' weight in a small boat could prove dangerous. In fact, stability will be vastly improved in a small boat if passengers lie down in the bottom of the boat as near the center line as possible.
- Make sure everyone aboard is wearing a personal flotation device before crossing.

- If you are caught unexpectedly on a rough bar when running in, it is imperative to keep the boat square before the seas. Keep the boat on the back of a swell. Ride the swell and keep clear of the following wave.
- Stay square before the seas. Keep the swells fore and aft to avoid broaching (veering broadside to the waves).
- Remember that experience is the key to safe bar crossings. Gain your experience in favorable conditions and good weather, learn from the experts, and do your homework.
- Stability is a vital factor for boats cruising in coastal waters, can be aided by proper loading. An improperly loaded or overloaded boat is susceptible to capsizing. Overloading increases the risk of seas breaking aboard the boat. It is extremely important that boats operating along the coast are sitting high enough in the water.

Also the coastal waters of Oregon always carry a large number of drifting logs and deadheads, especially after storms, spring freshets, and unusually high tides. Boaters should always be on the lookout for logs, deadheads, and other floating debris.

Source: Oregon State Marine Board

<https://www.oregon.gov/osmb/boater-info/Pages/Water-Level-and-Chart-Information.aspx>

#### 6.6.1 Regulated Navigation Area

The U.S. Coast Guard has established Regulated Navigation Areas on all the coastal river bars. If the yellow lights on any of the posted signs are flashing, a restriction from crossing the bar has been placed on recreational and uninspected passenger boats. In accordance with 33 CFR 165.1325, the U.S. Coast Guard has the authority to restrict all recreational and uninspected passenger boats from crossing the bar when hazardous conditions exist.

Failing to comply with posted bar restrictions may result in a maximum civil penalty of \$25,000.00.



### 6.6.2 Warning Sign Locations

There are two different styles of warning signs that indicate that bar restrictions are in place. A white diamond shape sign with orange border indicating “Rough Bar” with amber flashing lights are normally located in the vicinity of the U.S. Coast Guard station or near the harbor or boat ramp. An additional warning sign is located at the boat ramps. This sign is blue in color, has amber flashing lights, and says, “Warning, When Flashing, bar restrictions in effect, tune to 1610 AM.” When the amber lights are flashing on any of the warning signs, hazardous conditions are present and a bar restriction is in place, and mariners should tune in to listen to the restriction information.



All boaters are reminded that safe navigation is the responsibility of the operator of each boat. It is the boat operator's responsibility to ascertain if hazardous conditions exist and if bar restrictions are in place prior to getting underway. The U.S. Coast Guard and NOAA provide information to assist mariners in navigation safety. The information provided will be updated every four hours or when local bar conditions and or restrictions change. The information provided reflects conditions at the time the bar was observed and may not reflect current conditions. Bar conditions are subject to change without notice. This report should NOT be used as the sole source of information when making a decision to cross the bar. Mariners are advised to use all means available to safely re-evaluate bar conditions and risk before crossing the bar.

### 6.6.3 Bar Condition and Observation Reports

Observed weather and bar conditions are updated every four hours or more frequently if there is a significant change in the conditions. Marine Information Broadcasts on Channel 16 VHF FM are conducted by the U.S. Coast Guard when hazardous bar conditions and restrictions are put into place or are lifted. Mariners are strongly encouraged to monitor channel 16 VHF/FM for all notices and weather updates.

The AM radio broadcast is audible within a four-mile radius from the U.S. Coast Guard station. It provides a continual broadcast on radio station 1610 AM containing bar conditions, bar restrictions, and local weather.

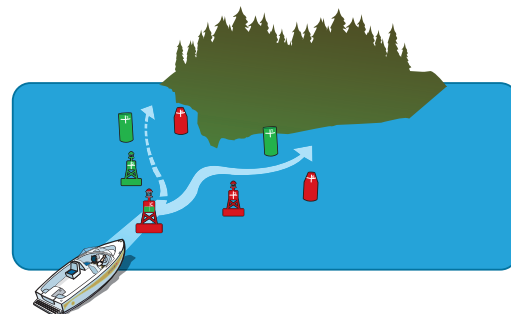
You can also access current bar conditions and restrictions on your smart phone or handheld device by going to:

<https://www.weather.gov/pqr/AllBars>

# SUMMARY

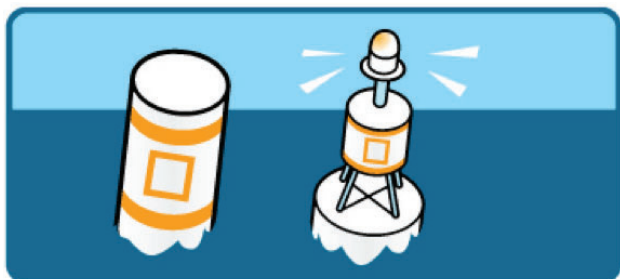
After reading Chapter 6, you should have knowledge of:

- Aids to navigation and what the various lateral and non-lateral markers mean.
- The general guidelines for safe docking and mooring.
- Common types of recreational anchors and the steps for properly anchoring your boat.
- How to safely navigate through a lock.
- The common types of recreational anchors and their purposes, and how to anchor a boat properly.



# QUIZ

1. What does this orange square non-lateral marker indicate?



- A** Information - displays information such as locality, marina, campsite, etc.
- B** Hazard - marks random hazards such as shoals and rocks
- C** Control - indicates information such as speed limits, wash restrictions, etc.
- D** Remember to file a Float Plan

2. Why is it important to lower the anchor from the bow of a boat instead of the stern?



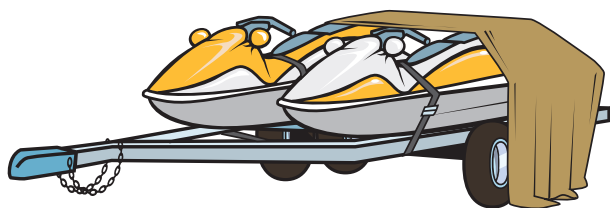
- A** Reduces the chances of the operator falling overboard
- B** Avoids causing wear and tear on the transom
- C** Avoids taking on water, capsizing or swamping the boat
- D** Reduces the chances of losing the anchor line overboard

## 7.1 PERSONAL WATERCRAFT AND OTHER JET-PROPELLED WATERCRAFT

### 7.1.1 Operational Characteristics of PWCs

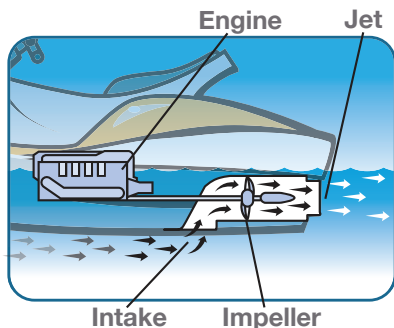
A personal watercraft (PWC) is propelled by an inboard engine powering a water jet pump. The PWC generates its power by drawing water in through the bottom of the boat with an internal propeller (impeller) and accelerates the water through a nozzle at the back of the boat. Many PWCs are designed for two, three or even four people.

### 7.1.2 Off-Throttle Steering



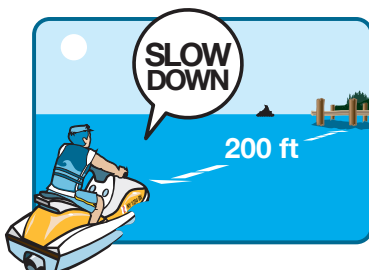
PWCs generate their power by pulling water in through the impeller and pushing it out through the nozzle. The stream of accelerated water that moves through the nozzle also provides the steering ability for the boat. A PWC will continue on the same course — even if the steering wheel is turned — once the throttle is off. Unlike operating a power-driven boat — where slowing down or turning off the engine and steering through obstacles is advised — a PWC can maintain its steering ability only 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 boat.

Newer PWCs are equipped with off-throttle steering capabilities.



### 7.1.3 Stopping Ability

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



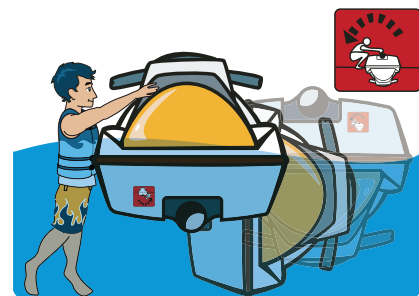
### 7.1.4 PWC Load Capacities

Load capacities will vary for PWCs. There are a number of different sizes of PWCs: from single-person to four-person boats. Consult your user's manual to find out your PWC's load capacity. Never exceed the manufacturer's recommendations, including anyone towed behind a PWC in the capacity limit.



### 7.1.5 Righting a PWC

It is relatively easy to right your PWC if it overturns. Most have a decal attached to the back of the boat that indicates the proper direction to turn the PWC to the upright position. Consult your user's manual if the decal is not present. Contrary to popular belief, there is a proper direction to turn it over, and you can do damage if you turn the PWC the wrong way.



#### 7.1.5.1 Re-Boarding a PWC

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 or in rough waters.

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



- Always approach from the direction marked on the hull.
- Pull yourself up high enough to kneel on the running board.
- Then slowly move to the seat keeping yourself centered and safely sit down.

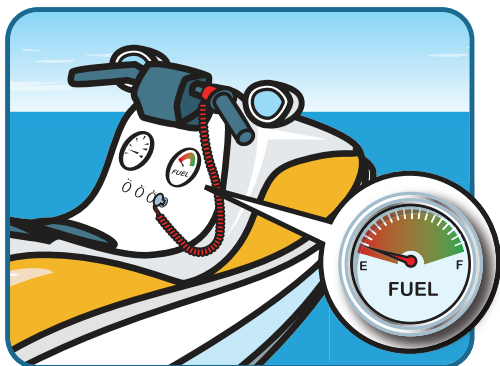
### 7.1.6 The Purpose and Use of a Lanyard

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 off their boat and in the water. If you fall off the PWC, the lanyard will be pulled off the start/stop switch and the engine will stop immediately. The lanyard ensures that 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.



### 7.1.7 The Purpose and Use of a Fuel Reserve Tank

Riding a PWC can be a ton of fun, so 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 have to switch to the reserve fuel tank.



#### The 1/3 Rule:

When operating a PWC always abide by the 1/3 Rule; this means use 1/3 of your fuel to operate, keep 1/3 of your fuel to get back to shore, and keep the other 1/3 as a reserve in case of emergency.

### 7.1.8 Accident Prevention

Many of the aforementioned regulations simply entail common sense and use of respect on the waterways. PWCs ride low in the water. As a result, they are difficult to spot and are often shielded from view by other boats.



- Keep your distance from other boats to avoid blind spots and to respect boaters’ space.
- Keep a safe distance from other PWCs. Because the boats 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.
- 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 distract, annoy or even harm other operators.
- Be careful that your spray does not affect other boaters, swimmers or cause injury to passengers who have fallen off a PWC during a quick acceleration.

### 7.1.9 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.





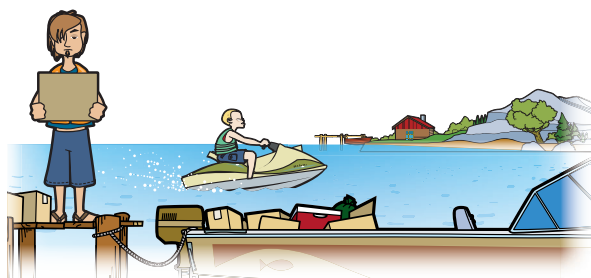
## 7.2 OREGON: PWC LAWS AND REGULATIONS



Do not underestimate PWCs — 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 title and registration with the state and a 5-B class fire extinguisher aboard. Plus PWCs have some additional requirements:

- The operator as well as all passengers on a PWC must wear a PFD with foam, appropriately sized and U.S. Coast Guard approved.
- When towing someone on a tube or on water skis, there must be capacity on the PWC to accommodate the operator, the observer as well as the tuber/skier(s).
- PWCs must stay at a distance of 200 feet from other water skiers or others being towed behind a boat.
- PWCs must operate at slow 'no-wake' speed, when:
  - Within 200 feet of a swimmer, surfer, diving flag, bank or wading angler, dock, swim float, boat launch, ramp, pier, marina, floating home, moorage area, or boathouse;
  - Within 100 feet of any boat that is anchored or unpowered; or
  - Within 200 feet of shoreline on all lakes, reservoirs, and bays.
- PWCs must not operate in excess of 10 mph when approaching within 100 feet of a motorized or sailing boat that is underway.

### 7.2.1 PWC Hours of Operation



PWCs may be operated at all hours of the day, but must be fitted with the required lights in order to operate legally between sunset and sunrise.



**NOTE:** *Slow No-Wake* means operating a boat at the slowest speed necessary to maintain steerage and that reduces or eliminates waves that appear as white water behind the boat

### 7.2.2 PWC Age Restrictions



PWC operators in Oregon must be 16 years old and older. Operators must have proof of successful completion of an approved Boating Safety Course. A card-holding adult (18 and older) must be in direct supervision on the PWC when anyone 12-15 years of age is operating. PWC cannot be rented to anyone under 18 years of age.

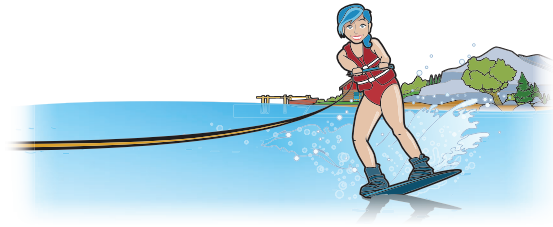
## 7.3 TOWED WATER SPORT CONSIDERATIONS

Here are some considerations for safeguarding the person being towed:

- Do NOT run parallel to the shore in shallow water to drop off the towed person. Keep your distance, and let the towed person swing into shore.
- Check the prop and towline for wear before each outing.
- The towing boat should never be remotely controlled.
- Turn OFF your engine before approaching closely to a person who has fallen during a towing activity. Approach the fallen person with the operator's side of the boat so you do not lose sight of the towed person.
- Before going out on the water, establish communication signals between the operator, observer and the towed person (for example, the towed person may hold up a ski after falling). When towing a skier(s) there should be a seat left on board for each person being towed.



## 7.3.1 Oregon: Towed Watersports



- Children ages 12 and under must be wearing a U.S. Coast Guard-approved life jacket while water skiing, riding a tube or being towed behind a boat in any manner.
- Boats must display the red or orange skier-down flag when the individual(s) they're towing are in the water.
- Skiing while under the influence of alcohol or drugs, including prescription narcotics is illegal.
- When towing an individual there must also be an observer on the boat besides the operator.
- Water skiing (or towing of people on other devices) is only allowed between sunrise and sunset.
- 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.

## 7.4 HAND SIGNALS



Return to dock



Skier ok



Skier down



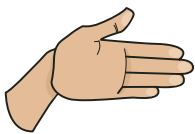
Speed up



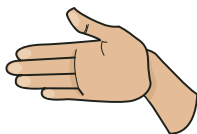
Stop



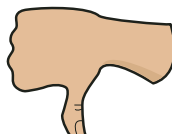
Speed ok



Turn left



Turn right



Slow down

## 7.5 HUNTING AND FISHING

Wear a life jacket. Too many hunters and anglers are lost every year when they fall overboard. Whether retrieving a trophy fish or shooting game, you must realize how easily you can fall overboard. Wearing a life jacket can save your life.

New styles of life jackets that don't restrict movement are now available in camouflage colors.



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

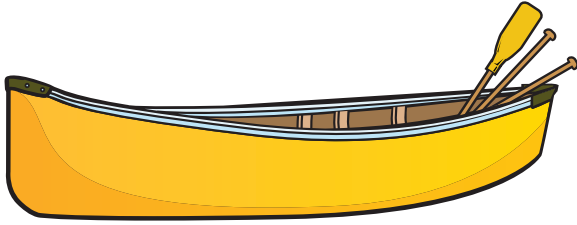
Casting and retrieving fish and firing a gun require a steady boat and proper precautions:

- 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 or 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 backup flashlight.
- When fishing or hunting during the day, keep an eye out for other boaters, and respect their space.
- Many anglers and hunters tend to focus exclusively on their fishing or 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 gun: all these actions can result in falls — overboard emergencies.
- Slow down around other boaters, and show respect by limiting noise, which travels clearly over water.



Give anglers and hunters a wide berth. Anglers are casting all around their boat, and hunters are firing guns — stay clear! A boat's wake could swamp an angler's boat. Additionally, anglers who are trolling may have their fishing line out a fair distance behind them — if you approach too closely, your boat could sever their fishing line.

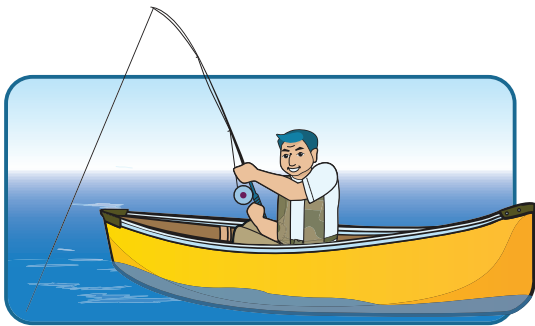
## 7.6 PADDLESPORTS




Canoes, kayaks, SUPs, and rafts are all considered a boat and the operator of such a boat needs to follow safe boating practices and boating laws and rules. Most fatalities occur in these types of boats due to capsizing, operating in an area beyond the operator's skills, and not wearing a PFD in hazardous waters.

If operating a non-motorized boat, you must have on board:

- One U.S. Coast Guard-approved, properly fitted PFD for each person,
- One whistle per boat, and
- A Waterway Access Permit if your boat is 10 feet or more in length.

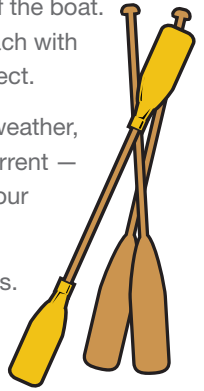


 **NOTE:** An important rule of paddling safety is always maintain three points of contact while moving around in a canoe or other paddle craft.

### 7.6.1 General Paddling Safety Guidelines

- Wear a properly fitted life jacket and avoid alcohol. Be prepared to enter the water, and know how to swim.
- Standing up or moving about in a canoe or kayak greatly increases the chance of capsizing.
- 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 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.

- Keep your shoulders between the gunwales of the boat. When retrieving something from the water, reach with your paddle or guide the boat close to the object.
- Avoid extreme conditions, which can involve weather, distance from shore, water conditions, and current — including flood water or fast current beyond your skill level.
- Never paddle alone. There is safety in numbers.
- 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.



### 7.6.2 Stand-Up Paddleboards (SUP)

If using a surfboard or a stand-up paddleboard (SUP) on a river, lake or bay for transportation, and it is being used beyond the limits of a designated swim, surfing or bathing area, a SUP is considered a boat. A properly fitted life jacket for each person is required to be on board, plus one whistle.



### 7.6.3 Oregon: Waterway Access Permit Requirements

- Oregon residents and out-of-state operators of non-motorized boats: canoes, kayaks, SUPs, rafts, drift boats and other manually powered boats, no matter the length, must purchase either a one-week, one-year or a two-year permit.

- The permit must be carried on the boat when paddling on Oregon waters.
- One permit is required per boat; the permit is transferable from boat to boat or person to person and is not required for youths 13 and under.

### 7.7 ENVIRONMENTAL LAWS AND REGULATIONS

#### 7.7.1 Oregon: Aquatic Invasive Species (AIS)

Non-native aquatic species (plants, fish and animals) are found within Oregon's 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. Zebra and Quagga Mussels are nuisance species that can be accidentally transported by recreational boaters when attached to propellers, intake systems and hulls.

- Once on shore, away from water, Clean, Drain, Dry your boat:
  - Inspect and clean your boat to remove aquatic plants...
  - Drain all water from your boat...
  - Allow your boat to dry as much as possible before its next use...
  - Report sightings of non-native species to 1-866-INVADER, 24 hours 7 days a week.



**TIP:** You can help prevent the introduction and spread of non-native species from one body of water to another. Clean, Drain, Dry Your Boat!

#### 7.7.2 AIS Prevention Permit

##### Motor and Sail Boaters:

There is a \$5 surcharge added to the registration fee for Oregon motorized boats, the current decals on the boat act as proof of payment into the program. Registration decals are valid for two calendar years.

Out-of-state operators of motorboats and sailboats must purchase an annual \$20 AIS prevention permit, available at [boat.oregon.gov](http://boat.oregon.gov) or go to Oregon Department of Fish and Wildlife licensed agents to purchase your permit.

##### Boat Inspection Stations:

All boats both motorized and non-motorized being transported into Oregon are required by state law to stop at an inspection station when they are open. Four highway signs are placed out to notify boaters when the stations are open. If you are entering Oregon when the stations are closed, you are not required to have your boat inspected.

##### Clean Launch Law

- This law prohibits anyone from launching a boat into Oregon waters if the boat has any visible aquatic species (plants and animals) on its exterior hull, motor, anchor, trailer, or any other exterior device.

##### “Pull the Plug” Law

- Boaters are required to “pull the plug” when leaving a waterbody and during transport to allow any water-holding compartments to drain. This reduces the risk of AIS being spread from one waterbody to another.
- If your non-motorized boat has a plug to drain water out of the hull, it must be pulled and the water drained before leaving the launch area.

#### 7.7.3 Submersed Aquatic Vegetation (SAV)

Submersed aquatic vegetation (SAV) consists of underwater plants often found in shallow areas (usually less than six feet deep). 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 boats if they run aground. When operating your boat in shallow areas, be careful to avoid damaging SAV. Do not operate a personal watercraft in such areas.

Be cautious and use spill prevention pads when refueling your boat in or near the water. Gas or oil spills can have significant negative effects on the environment. Respect the wildlife and never use your boat 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.



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	Sewage, plastic, dunnage, lining, and packing materials that float, and any garbage except dishwasher/gray water/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

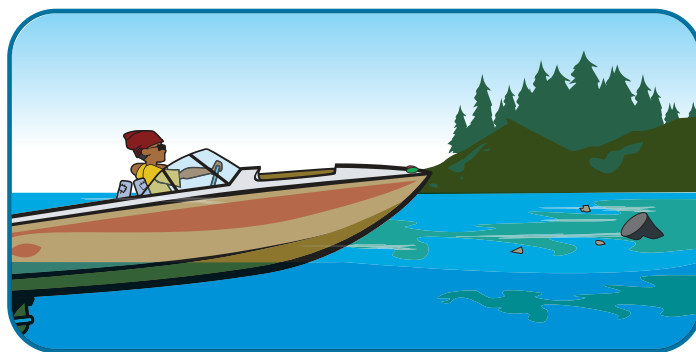
**Note:** Dunnage refers to packing materials such as foam or pellets.

Additionally, boats greater than 26 feet in length and operating in federal waters must display a 4x8-inch SOS (Save our Seas) placard in a conspicuous place that outlines waste disposal regulations. Placards can be purchased from most boat dealers and marinas.



**NOTE:** Untreated human waste may never be dumped in inland waters. Help keep our water clean and beautiful.

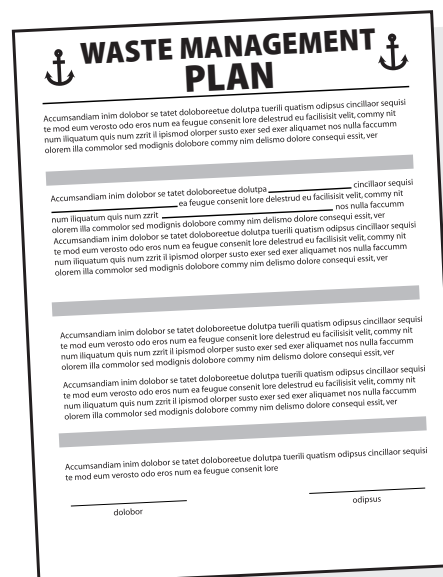
Littering in Oregon waters is strictly prohibited. Offenders can face stiff penalties for littering, including suspension of the Certificate of Number (Registration) and fines.



You may dump raw sewage **ONLY** when you are more than three nautical miles from shore on the ocean. Some states, and Canada, also have regulations for the dumping of gray water (dishwater, shower water, laundry water) and treated waste. Consult your local authorities to find out the local laws.

Any boat longer than 40 feet, with a berth and a galley, and certified to operate beyond three 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.
- Oily discharges and gasoline spills.
- Plastics, glass and aluminum.





## 7.8 HUMAN WASTE DISPOSAL

### 7.8.1 Marine Sanitation Device (MSD)

Boats operating inland 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, and/or a holding tank. Be sure to check your MSD for U.S. Coast Guard certification.

MSD TYPE	LEGAL FOR	FUNCTIONALITY
<b>Type I</b>	Under 65 ft.	Treat waste and discharge overboard
<b>Type II</b>	Any boat	More powerful treatment of waste discharge
<b>Type III</b>	Any boat	Collect waste in holding tank for removal at pump-out stations (most common)
<b>Portable Toilet</b>	All boats on the water	Collect waste in holding tank — does 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 or check out our interactive map, which has a pump-out station layer.

<https://www.oregon.gov/OSMB/Pages/Pumpout-and-Dump-Stations.aspx>

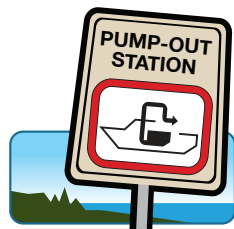
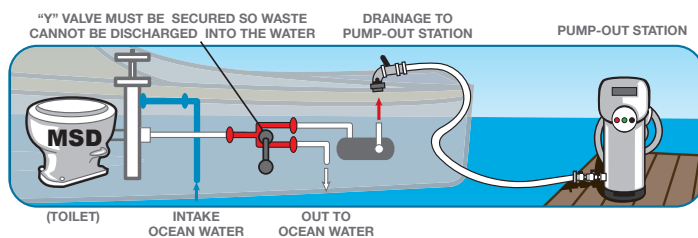


Figure 1

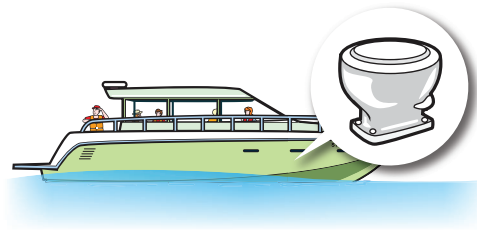


### 7.8.2 No Discharge Zones

Type I and II MSDs 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 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: Alabama, California, Florida, Massachusetts, Michigan, Minnesota, Missouri, Mississippi, New Hampshire, New Jersey, New Mexico, New York, Rhode Island, Texas, and Vermont.

Please consult your local boating authority before discharging waste to obtain the local regulations.

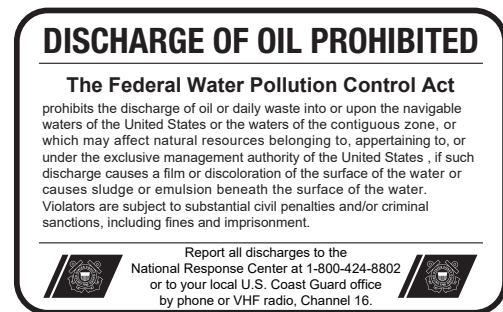
### 7.8.3 Oregon: MSD Regulations



The discharge of any sewage (treated or untreated) from marine toilets is prohibited on Oregon's freshwater lakes, impoundments, and reservoirs that are not accessible by boat from the ocean. Type I and II MSDs can only be discharged in federal navigable waterways.

## 7.9 DISPOSAL OF TOXIC SUBSTANCES

The Refuse Act of 1899 prohibits throwing, discharging or depositing of any refuse matter of any kind into United States waters. Refuse includes garbage, trash, oil and other liquid pollutants. Boats greater than 26 feet and operating in federal waters must display a 5x8-inch placard in a clearly visible place that states the following:



Therefore, boat operators are not allowed to dump oil into the bilge of their boat without means for proper disposal. Oil must be kept on board in a receptacle until it can be properly disposed of. If oil is discharged accidentally, call 1-800-424-8802 to report the accident to the U.S. Coast Guard.

# SUMMARY

After reading Chapter 7, you should have knowledge of:

- What a personal watercraft (PWC) is, what its characteristics are, and what laws/regulations apply to it.
- Water skiing, wakeboarding and tubing regulations and recommendations.
- Diving and snorkeling guidelines.
- Hunting and fishing guidelines.
- Paddlesports safety guidelines.
- Various environmental laws and regulations.
- Marine sanitation devices (MSDs).
- How to properly dispose of toxic substances.



## QUIZ

1. Which of the following is an accurate statement regarding general paddling safety?



- A** Maintain three points of contact while moving around in the boat



- B** Standing in the kayak or canoe decreases the chance of capsizing



- C** The farther an equipment load is from the boat's centerline, the more stable it will be



- D** Keep shoulders outside the gunwales when retrieving something from the water

2. What does the following sign indicate?

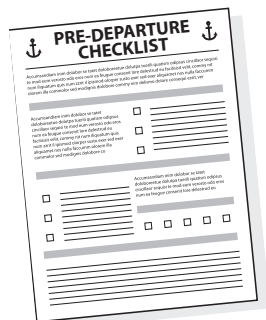


- A** No powerboats ahead
- B** Pump-out station ahead
- C** No personal watercraft ahead
- D** Blind turn ahead

## 8.1 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 boat is cared for, is in good working order, and is seaworthy.
- Ensure all passengers are properly seated and comfortable with the safety equipment and procedures in case of emergency.
- File a float plan, particularly for lengthy trips or those in unfamiliar waters.
- Check local hazards.
- Check local weather forecast and conditions.
- Ensure all passengers are wearing properly fitted life jackets.



### 8.1.1 Boat Handling

All boats handle differently and inexperienced operators need hands-on practice with a capable teacher to become proficient in handling their boat. A motorboat is most easily maneuvered going against the current or wind. When moving with the current, the boat must be going faster than the speed of the current in order to maintain control and maneuverability. Boats do not have brakes, so to quickly reduce speed, the motor should be put in reverse and power applied. Stopping in this manner requires practice. Consult the owner's manual for the boat and motor for proper procedures.

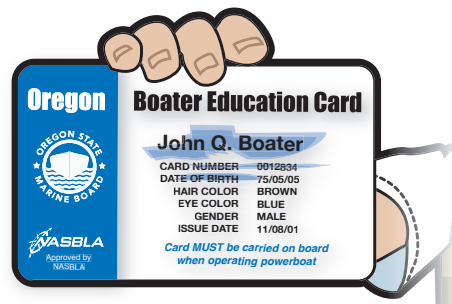
### 8.1.2 Courtesy

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 of it properly once you get to shore.

### 8.1.3 Negligence

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

## 8.2 OREGON: AGE RESTRICTIONS



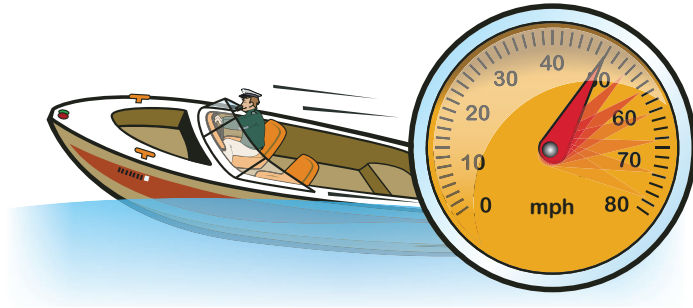
Boaters in Oregon are required to successfully complete a Boating Safety Course and/or Exam approved by the Oregon State Marine Board (OSMB) in order to obtain the Oregon Boating Safety Education Card. The operator must carry their Boating Safety Education Card while operating the boat.

In Oregon, no one may operate a motorboat if they are under the age of 12.

- Operators of powerboats greater than 10 horsepower (hp), and youth 12-15 operating any size powerboat, are required to take a course on basic boating skills and/or pass a test to demonstrate basic boating knowledge. Upon successful completion of the test, the Oregon Boating Safety Education Card can be obtained and must be carried on board while operating.
- Youth 12-15 years of age need to carry the Oregon Boating Safety Education Card when operating boats 1-10 hp alone. When youth 12-15 years of age operate a powerboat over 10 hp, they must carry the Oregon Boating Safety Education Card on board AND a card-holding adult (16 or older, 18 for personal watercraft) must be on board in direct supervision.

Out-of-state boaters are required to carry their state's Boating Education Card while operating a motorboat over 10 hp. If the state doesn't require or offer boating safety education, they will need to take the Oregon's Mandatory Boating Safety Education course and purchase and carry the Oregon card before operating on Oregon waters.

### 8.3 OREGON: SAFE SPEED REGULATIONS



All boats 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.

Certain areas 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.

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 boats in the area and their proximity;
- Boat 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);
- And the proximity of any navigational hazards.



**TIP:** Your wake can cause damage to property and other boats. Always take into account the effects your wake might have when adjusting your speed.

#### 8.3.1 Oregon: Engine Cut-Off Switch

Operators in Oregon are required to use the engine cut-off switch when operating a motorboat at a planing speed, unless the boat is not equipped with an engine cut-off switch, or the helm of the boat is within an enclosed cabin.

### 8.4 OREGON: SLOW NO-WAKE SPEED



Operators in Oregon must reduce speed to a Slow No-Wake speed (means operating a boat at the slowest speed necessary to maintain steerage and that reduces or eliminates waves that appear as white water behind the boat) when the boat is within 200 feet of the following:

- A boat ramp, marina or moorage with a capacity for six or more boats
- A floating home moorage with six or more structures
- People working at water level

Operators may be liable for damage caused by wake.

An example of violating the Reckless Operation — Speed law would be the following:

- If your boat runs into an object because you were traveling too fast and were unable to stop in time.

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

### 8.5 OREGON: UNSAFE PRACTICES

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

- Unsafe and reckless operation. It is illegal to operate a boat in a manner that endangers or would likely endanger a person or property and in willful disregard of others. The following are a few examples:
- Endangering others or their property, by allowing the wake of your boat to potentially harm another or their property.
- Jumping a boat's wake unnecessarily close to another boat.
- 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 boat at a safe speed as discussed earlier in this chapter as well as adhering to any indicated speed limitations.

- Riding on bows, decks, gunwales or transoms of a motorboat. Riding on bow, transom or gunwale railings while underway is prohibited. No person operating a motorboat shall allow any person to ride or sit on the deck over the bow, on the starboard or port gunwales, or on the transom of the boat while underway unless the motorboat is provided with adequate guards or railing. Standing on decking over the bow is allowed for mooring or casting off. This also applies to a boat rigged and equipped as a sailboat when operating under sail power.
- Exceeding maximum capacity. The recommended capacity indicated on the boat's capacity plate should not be exceeded.
- Not maintaining a proper lookout. All operators are required to keep a proper lookout for other boats and/or people in the water.
- Especially hazardous condition. Boaters must make sure that the boat 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 boat with more power than recommended, or operating the boat with a fuel leak.

### 8.6 OREGON: LAW ENFORCEMENT

Law Enforcement officers are authorized to “signal a boat operator to bring the boat to a stop” to conduct a safety inspection:

- With the owner or operator's consent; or
- If a sheriff or other police officer confirms that a safety violation has occurred (probable cause), the sheriff or officer shall conduct a complete safety inspection to determine compliance with all other applicable safety laws.



When you are being approached by a law enforcement boat using its blue flashing light and/or siren, you must slow to the slowest speed at which you can safely steer your motorboat. You may proceed, unless otherwise directed by the law enforcement officer.

When approaching a stationary law enforcement boat displaying their blue lights, consider them the same as a boat ramp (200 feet no-wake zone around the law enforcement boat). You should immediately slow to a speed sufficient to maintain steerage only, alter your course as not to interfere with or inhibit with the operation of the law enforcement boat. You may proceed, unless otherwise directed by the law enforcement officer. Only when out of the vicinity may you increase your speed.

### 8.7 INFLUENCE OF DRUGS AND ALCOHOL ON BOAT OPERATION

#### 8.7.1 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! This means if you are drinking at all, then you should not be operating a boat or PWC. Do not jeopardize your safety or the safety of other boaters or the passengers in your care. Your balance, vision, coordination and judgment are all affected adversely by 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 by avoiding alcohol consumption.

#### 8.7.2 Oregon: Boating Under Influence of Intoxicants and Drugs



A boater who shows signs of impairment from alcohol or drugs — even some prescription drugs — can be arrested for Boating Under the Influence of Intoxicants (BUII). Using recreational marijuana (smoking or using any marijuana products) is illegal in boats on public waterways.

A boater with a blood alcohol content (BAC) of .08% or more is considered to be under the influence. A boater who shows signs of impairment but doesn't meet the .08% blood alcohol content may be required to provide a blood sample to test for other impairing substances. BUII is a class A misdemeanor punishable by up to one year in prison and a fine of up to \$6,250 or more.



## WATER AND ALCOHOL: MYTHS AND REALITIES

### ***“A few beers won’t hurt.”***

**Reality:** 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.”***

**Reality:** More than 60% of drowning accidents occur after the victim accidentally falls off a dock, shoreline or boat 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 offense.”***

**Reality:** Operating a boat while intoxicated is just as dangerous as operating a car in that condition. The marine authorities are equipped with breathalyzers. If the results are positive, the police may file charges.

### ***“There’s no harm in drinking alcohol on the beach before swimming.”***

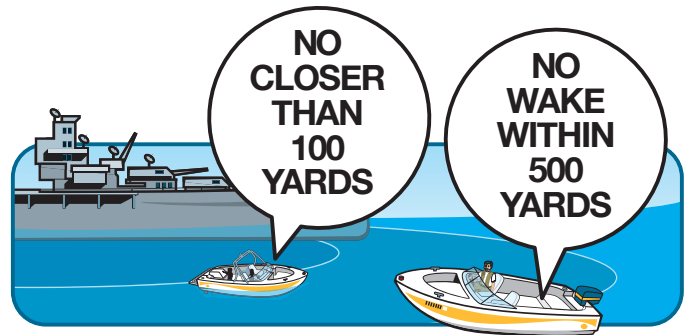
**Reality:** Alcohol affects judgment. The person drinking can easily overestimate their abilities or misjudge a risk they would not take under normal circumstances. Furthermore, it is illegal to drink in some public places, such as a beach or a dock.

**Source:** “Water and alcohol-myths and realities.” Red Cross Society

If the boater is found guilty of BUII, they will be required to complete a safe boating class, are not allowed to operate a boat for one year, may have their Boating Safety Education Card suspended for one to three years, and may have their boat registration suspended for three years. Oregon law provides that any person operating a boat on any Oregon waters has given consent to submit to breath and field sobriety tests if the officer has probable cause to believe that he or she is impaired.

## 8.8 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 severe 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 any U.S. Naval vessels, cruise ships and commercial vessels.
- Slow to “no wake” speed within 500 yards of any large U.S. Naval vessels.
- Observe and avoid all security zones.
- Avoid areas with critical infrastructure; for example nuclear power plants and petroleum facilities that are near the water.

**FOR INFORMATION** in port areas, you can call 1-800-682-1796, or check with local authorities.

- Observe other restricted areas near dams, power plants, etc.
- Do not stop or anchor beneath bridges or in channels.
- 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, and never confront the suspicious party.
- Ensure your boat is always locked and secured when unattended, and always take the boat keys with you.

## 8.9 CARBON MONOXIDE: PROTECT YOURSELF FROM THIS SILENT KILLER

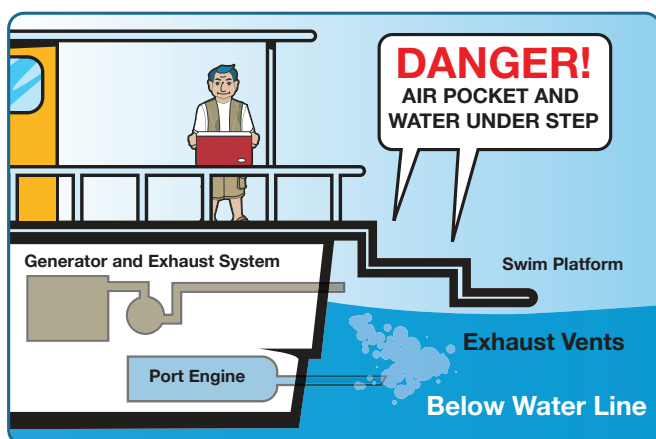
Carbon monoxide can collect within, alongside or behind a boat in minutes and in a variety of ways.



### 8.9.1 Avoid These Death Zones!

Do not swim 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.

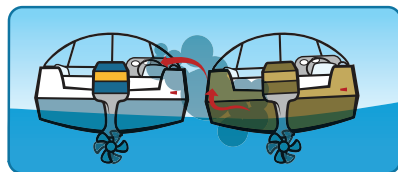
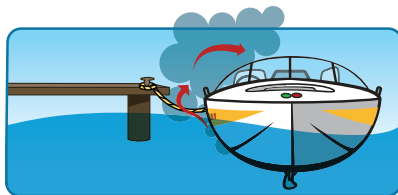
On calm days, wait at least 15 minutes after the motor or generator has been shut off before entering these areas. **NEVER** enter an enclosed area under a swim platform where exhaust is vented, not even for a second. It only takes one or two breaths of the air in this “death chamber” for it to be fatal.



### EXHAUST FUME DANGERS

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.

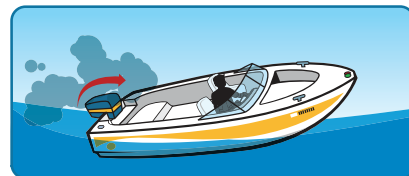
Exhaust from another boat that is docked, beached, or anchored alongside your boat can emit poisonous carbon monoxide gas into the cabin and cockpit of your boat. Even with properly vented exhaust, your boat should be a minimum of 20 feet from the nearest boat that is running a generator or engine.



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 the boat is operating at a high bow angle, with improper or heavy loading, or if there is an opening that 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.



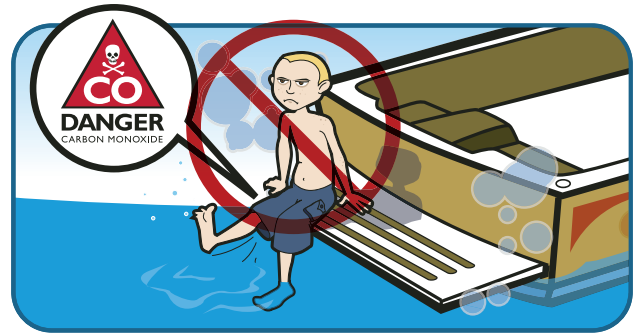
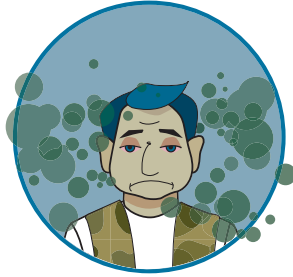
### 8.9.2 Oregon: Carbon Monoxide Regulations

Teak surfing (a.k.a. platform dragging) is illegal in Oregon. Teak surfing is when a passenger hangs onto the rear of the boat to be pulled through the water until the boat's wake builds enough to allow body surfing.

People who operate a motorboat with someone holding onto or occupying the portion of boat aft of the transom could receive a citation.

### 8.9.3 What to Do

- The best precaution against carbon monoxide poisoning is to keep air flowing through the boat.
- Educate your passengers about carbon monoxide so they are aware of what the early poisoning signs are.
- If your boat has a 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 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 headache, nausea, fatigue 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!

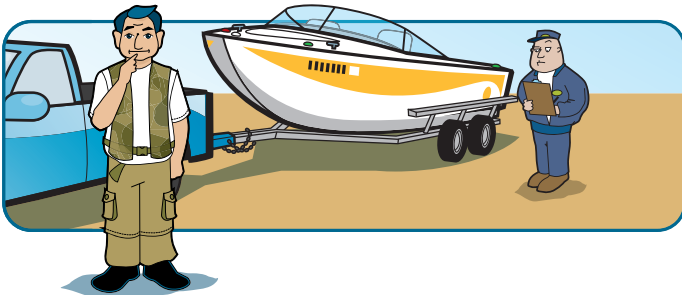


### 8.9.4 Facts About Carbon Monoxide

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 it 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 — headache, nausea, fatigue 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.



### 8.9.5 Prevention Checklist

#### 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 engine 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 you are replacing it with a new battery.
- ✓ Move seated passengers around the boat periodically to prevent anyone from continuously being near any fumes.

#### Checklist: At Least Annually

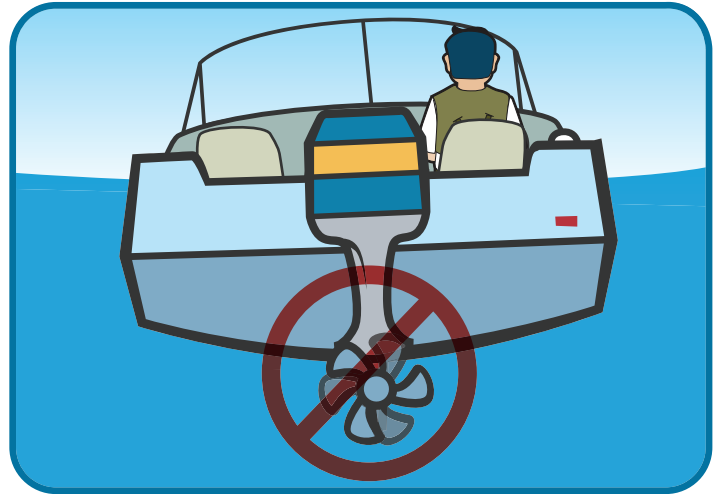
- ✓ Replace exhaust hoses if you see any evidence of cracking, charring or deterioration.
- ✓ Inspect each water pump impeller and the water pump housing, and replace them if they are worn. Make sure cooling systems are in proper working condition to prevent overheating and possible burning of the exhaust 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 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).



**NOTE:** The annual checklist test must be performed by a qualified marine technician.

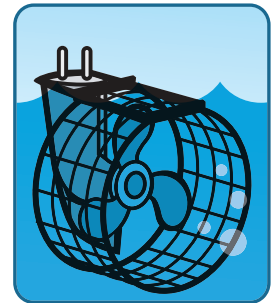
### 8.10 PROPELLER INTERVENTION AND AWARENESS

Rotating at great speeds and with a lot of power, the potential danger posed by boat engine propellers should not be overlooked. Each year hundreds of Americans accidentally come into contact with moving propeller blades. The U.S Coast Guard reports an average of 47 persons struck by the propeller a year.



Since the propeller is located below the waterline and may be difficult to see, it is important that people are at all times aware of the propeller. This is most important when in the water near the rear of a boat or on the swim platform.

As a precaution, operators should shut off the engine whenever a person is in the water within close proximity to their boat. Safety equipment is available and when used properly, can significantly decrease the probability of a propeller strike. Common examples of equipment are:



- Propeller guards.
- Ladder interlock kill switches.
- Man overboard cut-off switches.
- Lanyard engine kill/stop switches.

# SUMMARY

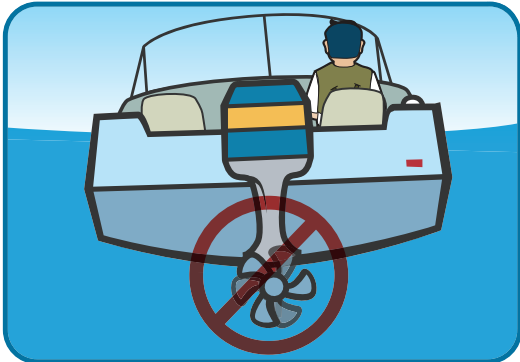
After reading Chapter 8, you should have knowledge of:

- Your responsibilities as a boat operator.
- Tips for safe boat handling.
- How to be a courteous boater.
- Homeland security measures.
- Facts about drinking and boating.
- How to prevent carbon monoxide poisoning.
- Ways to prevent injuries from propellers.



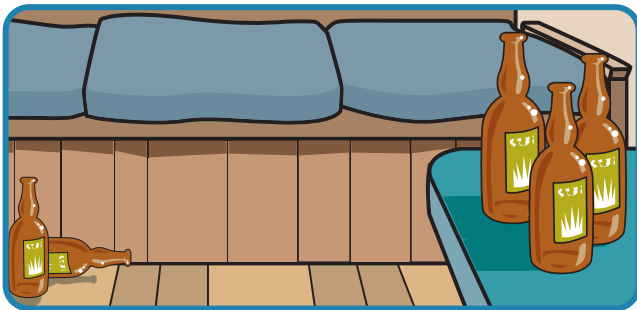
## QUIZ

1. What is the best way to protect people in the water against propeller strikes?



- A** Turn off the engine when people in the water are within close proximity to the boat
- B** Insist that all persons in the water remain at the front of the boat at all times
- C** Assign one swimmer to keep a lookout around the propeller
- D** Only allow strong swimmers to swim around the boat

2. What are the effects of drinking a small amount of alcohol while operating a boat?



- A** It has little or no effect
- B** It makes the operator feel more relaxed
- C** It provides the operator with more confidence
- D** It impairs judgement and coordination











# FLOAT PLAN

Fill out this float plan and share with friends and family so they can call for help if you're overdue! The life you save may be your own.

## Boat Operator

Operator Name \_\_\_\_\_

Address \_\_\_\_\_ Phone \_\_\_\_\_ Cell \_\_\_\_\_

## Description of Boat

Make \_\_\_\_\_ Reg # \_\_\_\_\_ # Sails \_\_\_\_\_ # Engines \_\_\_\_\_ Type \_\_\_\_\_ Fuel Cap \_\_\_\_\_

Length \_\_\_\_\_ Color \_\_\_\_\_ Color Trim \_\_\_\_\_ Color of Canvas Top \_\_\_\_\_

## Survival Equipment

(Search & Rescue will want to know if you are wearing the PFDs)

PFDs Type \_\_\_\_\_ # \_\_\_\_\_ Marine Radio \_\_\_\_\_ EPIRB \_\_\_\_\_ Type \_\_\_\_\_ # Flares \_\_\_\_\_ VDS \_\_\_\_\_

Type \_\_\_\_\_ # \_\_\_\_\_ Anchors \_\_\_\_\_ Length of Anchor Line \_\_\_\_\_

Type \_\_\_\_\_ # \_\_\_\_\_ Raft or Dinghy \_\_\_\_\_ Length \_\_\_\_\_ Name \_\_\_\_\_

## Trip Length

Departure Location \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Return \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Intermediate Location \_\_\_\_\_ Lat \_\_\_\_\_ Long \_\_\_\_\_

## Other People on Board

Name	Age	Phone	Known Medical Condition
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

## Land Vehicles

License Plate \_\_\_\_\_ State \_\_\_\_\_ Make & Model \_\_\_\_\_ Color \_\_\_\_\_

Trailer \_\_\_\_\_ State \_\_\_\_\_ Where Parked? \_\_\_\_\_

## Notification

If Not Returned by \_\_\_\_\_ (Date, Time), **CALL THE COAST GUARD OR LOCAL SEARCH AND RESCUE**

Notify Emergency Contact Name \_\_\_\_\_ Phone \_\_\_\_\_

*When you've returned from your trip, please notify the person or party that you left your float plan with!*

## Mandatory Boating Education Requirements

All boaters who operate a motorboat over 10 horsepower and youths 12-15 operating a motorboat of any size are required to take an approved boating safety course, apply for and carry a Boating Safety Education Card.

### There are 3 convenient options for certification:

#### 1 | Classroom

Visit our website, [Boat.Oregon.gov](http://Boat.Oregon.gov) for classroom dates, times and locations. Typically, classroom courses are 8 hours in length.

#### 2 | Internet

Online courses give you the flexibility to learn on your own time.

Visit [Boat.Oregon.gov](http://Boat.Oregon.gov) and select the online course for you. You can study the course, take the final exam and apply for your permanent Boating Safety Education Card.

#### 3 | Equivalency Exam

Experienced boaters can challenge the classroom course and take a proctored exam.

## Visit [Boat.Oregon.gov](http://Boat.Oregon.gov)!

#### Get answers about:

Boating Regulations  
Mandatory Boating Education

#### Log-in and purchase:

Registration Renewals  
AIS Permits  
Boating Safety Education Cards

#### Find out the latest marine news:

News Releases  
Boards Actions & Rules Proposals  
Public Meetings

And check out our interactive map for boating facilities, local regulations, life jacket kiosk locations, pump-out stations, obstructions and hazards, all available on your smart phone or computer.

