BoaterExam.com®

EDUCATING CANADA'S BOATERS

Safe Boating Course

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Preface

In 1997, power boating surpassed swimming as the specific recreational activity accounting for the most water-related deaths. Deaths from pleasure power boating rebounded to 73 fatalities, up from 59 in the previous year. These statistics do not reflect the number of life altering injuries and the high dollar loss values incurred as a result of powerboat accidents. Young males between 18 and 24 years continue to have the highest preventable water-related death rate of all age groups. In the majority of all powerboat accident related drownings, the lack of use of personal floatation devices (P.F.D's), was cited as a causal factor.

Statistics from 1996, which are based on an estimated total of approximately 50,000 personal watercraft, reflects an alarming rate of 15 deaths per 100,000 watercraft. Risk-taking behaviour was cited as the most common singular factor in PWC fatalities.
The increase in use and popularity of PWC's indicated an imminent need for strengthened boat operator training and regulations.
Your enrollment in this Safe Boating Course shows that you want to be part of the solution. This course will provide you with an easy to follow "common sense" approach to power boating.. Plus all preparatory tools to enjoy power boating safely!

Do You Know how to Boat Smartly?
Know the safe boating "Rules of the Road"

- No children under 12 years of age can operate a powerboat with more than a 10 hp motor.
- Youths 12 to 15 years of age may only operate a boat with a motor over 40 hp if accompanied and directly supervised by someone 16 years of age or older.
- Minimum age for operating a personal watercraft (sea-doo, jetski) is 16 years of age.
- New small vessel safety equipment and safety precaution requirements for boaters include a new "careless operation of a vessel" of fence which requires boaters to travel safely and avoid putting themselves and others at risk.
- Operators of powerboats must have proof of operator competency.
    * As of September 1999, this applies to any person born after April1, 1983.
    * As of September 2002, this applies to any person operating a powerboat less than 4 meters, including personal watercraft (PWC).
    * As of September 2009, this applies to all operators of all powerboats and PWC's

Get trained on Boating Safety
Get your Pleasure Craft Operator Card! It's the Law!

Know before you go
Avoid danger by taking a few minutes to check

- Weather forecast
- Local hazards
- maps and charts
- PFD's
- first aid kit, tool kit, tools and spare parts
- sufficient fuel
- safety equipment in working order
- does someone know where you are going and when to expect you back

Wear your life jacket! - Less than 5% of all drowning victims were wearing a life jacket or PFD (personal floatation device). Less than half of the people who wear a PFD, wear it properly.

Wear the right gear - Good sunglasses, appropriate clothing, and the necessary paddles, whistles and flares are the right gear too.

Boat Sober! - Don't drink and drive in your boat. Alcohol is involved in 36% of all preventable water-related fatalities and over half of all power boating accidents.

Drive your powerboat or PWC responsibly - Look before you act, stay low, drive at moderate speed and be aware of changing weather conditions and time of day.

Learn to swim
Never dive into shallow water
Don't go in the water alone — always swim with a buddy.
Always supervise young children near water
Play and swim in supervised areas only

Chapter 1: Safe Boating Regulations, Acts, and Codes

The operation of a pleasure craft is subject to several sets of legislation which govern everything from life jackets to required markings and rules to avoid collisions. The specific acts and regulations which pleasure craft operators need to concern themselves are:

Canada Shipping Act and the Criminal Code of Canada

- Watch for signals that indicate distress and need of assistance
- Render assistance to every person who is found at sea and in danger of being lost .. without posing serious danger to their own craft and the persons on board
- Stop and offer assistance when the operator is involved in an accident
- Must not operate boat in a dangerous manner
- Must keep watch on person towed
- Cannot tow person after dark
- Cannot drive a craft that is un seaworthy
- Cannot drive craft under the influence (alcohol, drugs etc..)
- Cannot send false messages
- Cannot interfere with marine signals. It is illegal to: Alter, remove, conceal or anchor to nautical aids

Small Vessel Regulations

- The operator of a pleasure craft must carry specific safety equipment on board their vessel. The type and amount of equipment is determined by the size of the craft.
- The operator of a pleasure craft must ensure that all required equipment for their vessel is maintained in proper working order.
- The operator must ensure that the vessel is properly licensed. (All vessels with motors 10 HP and over must be licensed)
- The license numbers or letters must comply with the requirements specified in the Small Vessel Regulations, Licensing of Vessels and Marking of Vessels.
- Regulations pertaining to Engine Power and Load Capacity
- Regulations regarding PFD's and Life jackets
- Regulations regarding pyrotechnic distress signals. Pyrotechnic distress signals must be approved by "Department of Transport Canada". These distress signals are no longer considered to be approved, if more than 4 years has elapsed from the date of manufacture. This date is clearly marked on the distress signal.
- Regulations regarding required contents for emergency kits.

The Contraventions Act

The Contraventions Act, which received Royal Assent in October 1992, was not proclaimed in force until August 1, 1996, pending development of a cost-effective ticketing scheme for handling minor federal offences such as speeding on federal roads and boating without the proper safety equipment on board. Using existing provincial and territorial schemes, rather than creating a federal scheme for ticketing federal offences, will help to reduce costs associated with the administration of justice and eliminate overlap and duplication. This change is intended to reduce the load on the court system. As with any ticket, the offender will have the option of pleading guilty and making payment to the competent authorities or to plead not guilty and going to court.

Boating Restriction Regulations

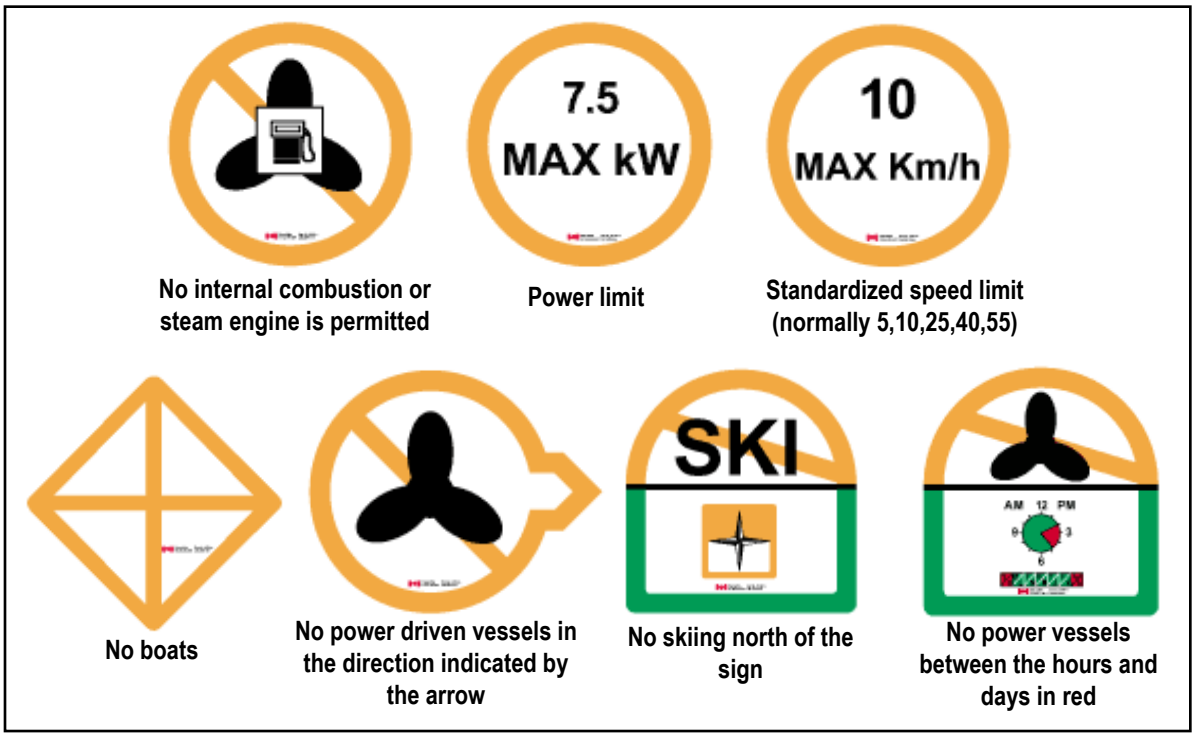
Boating Restriction Regulations are specific to certain waters and waterways in Canada. They specify:

- Prohibited vessel types on a given waterway
- Standardized speed limits on a given waterway
- Maximum engine horsepower on a given waterway
- Power vessel restriction (Lac Phillipe .. no motors allowed etc..)
- Water skiing restrictions .. and many others.

Boating Restriction Regulations can also be passed and enforced by local municipal governments, therefore, it important to pay close attention to all signs encountered while boating.

How do you read a restriction sign?

There are five types of shapes for the restriction signs. The frame colour is international orange. Signs with a section with a green border indicate that a special condition applies to the restriction (for example, the day/time an activity is allowed). The symbol on the sign indicates the type of restriction which applies. If the sign is arrow-shaped, the restriction applies in the direction pointed by the arrow.



No internal combustion or steam engine is permitted

Power limit

Standardized speed limit (normally 5,10,25,40,55)

No boats

No power driven vessels in the direction indicated by the arrow

No skiing north of the sign

No power vessels between the hours and days in red

Charts and Nautical Publications Regulations

The operator of a pleasure craft not propelled by oars shall have on board, in respect of each area in which the craft is to be navigated, as described in the Charts and Nautical Publications Regulations, the most recent editions of:

- The largest scale charts
- The required publications
- The required documents
- UNLESS ... the vessel is under 100 tonnes or the operator is familiar with the waterway

Collision Regulations

- These are International regulations to prevent collisions at sea and the Canadian modifications. They apply to the high seas and in all waters connected to the high seas that are considered to be navigable. They define common terms (i.e. Port, starboard, stern, bow, draft etc..)
- They state that .. “the operator of pleasure power driven craft shall take early and substantial action to keep well clear of a vessel engaged in fishing, or a sailing vessel.
- They state that .. “the operator of a pleasure sailing craft shall take early and substantial action to keep well clear of a vessel engaged in fishing.
- They set common rules for power driven vessels, sailing vessels, fishing vessels, etc.. The rules are designed so that all operators know what is required of them and to give them knowledge of what the approaching vessel is going to do.
- These regulations require that you keep a proper lookout by sight and hearing to prevent accidents
- They require that you use all available means to avoid accidents .. adjust speed, keep well clear, exhibit vigilance while operating craft etc..

- They state that the following factors must be taken into account when determining a safe speed:
  * the state of visibility
  * the traffic density including concentrations of fishing or other vessels
  * state of the wind
  * sea and current
  * proximity to navigational hazards
- They specify that boats less than 20 metres shall not impede the passage of a large craft in a narrow channel .. regardless of who has the defined right of way
- Collision regulations define who has the right of way when motor boat meets motor boat .. when motor boat meets sailboat .. when sailboat meets sailboat .. when sail or motor boat meets fishing boat etc..
- Collision Regulations require the boat with the right of way to maintain their course and speed
- They require the operator of the craft to adjust their speed according to visibility, traffic density, wind and state of the water and proximity to navigational hazards.
- They make boaters responsible for your own wake or wash. If your wake causes a canoe or rowboat to capsize .. you are responsible .. be aware of where you are .. watch for swimmers!
- Collision Regulations require that you stay clear of a boat showing Code of Signals "A" – which indicates that they have a "diver down". You are legally required to slow down and steer clear.
- They explain required sound and light signals. (I.e. sound one long sound immediately followed by one short when visibility is reduced)
- They define distress signals so all boaters recognize them
- They cover other required equipment which is pertinent to specific sizes of vessels (i.e. passive radar reflectors etc.)

As a pleasure craft operator, you must be aware of the differing factors that can affect you and your passengers. Some of these factors are:

ACTION	EFFECT
Motion of the pleasure craft	dizziness and nausea
Sunlight	eyesight, dehydration, sunburn or sunstroke
Waves	balance, dizziness and nausea
Wind	dehydration, hypothermia, balance
Sound	engine noise and natural water noise reduce hearing acuity
Alcohol	dizziness, nausea, poor judgement

As a responsible pleasure craft operator, it is important to remember that we share the waterways with many different and varied activities. You must be aware of:

- swimmers and properties
- adjust the speed of your craft so that the draw-off and wave disturbance generated by the passage of your craft does not cause injury to persons, erosion of the shoreline or damage to others properties
- know and obey Collision Regulations
- use courtesy and common sense so as not to create a hazard, a threat, a stress or an irritant to themselves, to others, to the environment or to wildlife.

One of the most important thing that a boater should do before heading out in their pleasure craft is to check the weather forecast. This can be done quite accurately and effectively by using the following sources:

- personal observations .. (does it look like rain?)
- newspapers
- radio
- television weather channel
- radiotelephones
- Environment Canada

Weather forecasts in Canada are described using the following terms which describe anticipated wind conditions:

TERM	DESCRIPTION
Light winds	wind speeds less than 12 knots
Moderate winds	wind speeds in the range of 12 to 19 knots
Strong Winds	sustained wind speeds in the range of 20 to 33 knot
Small Craft Warning	sustained wind speeds in the range of 20 to 33 knots
Gale Warning	sustained wind speeds in the range of 34 to 47 knots
Storm Warning	sustained wind speeds in the range of 48 to 63 knots
Hurricane Warning	sustained wind speeds in the range of 64 knots or more

It is extremely important for all operators to check the weather forecast prior to departure to avoid putting the craft and persons on board at risk. There are also numerous potential local hazards that should be considered before departure as well. Some of these could include:

- low-head dams
- rapids
- sudden winds
- tides
- currents
- white water
- overhead cables
- underwater cables
- bridges
- rapid build up of high wave conditions

Ensure that you are equipped with the most recent Nautical Chart for the areas in which you will be operating your craft.

Trip Plans

Another useful safety measure is filing a trip plan. Before heading out, the operator of a pleasure craft should complete a thorough trip plan and file it with a responsible person who is familiar with the instructions to follow in case of emergency. During the trip, the plan should be updated to avoid an unnecessary call for help should you decide to deviate from your original plan. Filing a trip plan will assist rescuers when it is necessary to initiate a call for search and rescue in case of emergency.

The trip plan should contain the following information:

- name and registration number of craft
- type of craft .. sailing or power driven
- name, address and phone # of owner
- number of persons on board
- size, type and colour of craft
- engine type (inboard, outboard)
- distinguishing features of craft
- type of radiotelephone and channel monitored
- safety equipment on board
- emergency instructions
- trip description: departure time, return time, and proposed route

Pre-departure Checklist

Another helpful tip is to make and fill-out a checklist of all required equipment and supplies prior to leaving the dock. This will help to avoid situations which could lead to unnecessary emergencies, (such as running out of fuel, dehydration, hypothermia etc).

Emergency Kit

An emergency kit is an item that is often overlooked when equipping a pleasure craft. These items could be kept in a plastic bag or a sealable watertight plastic container of sufficient size. This kit should include:

- a flashlight
- a whistle
- a knife
- a first aid kit
- emergency rations
- drinking water
- dry clothing.

Chapter 2: Operating a Motor Boat

Motor Operation

The outboard motor is a spark ignition engine. Fuel from the fuel tank enters the carburetor where it mixes with air in a given proportion. From the carburetor, the gas mixture enters the cylinder. In the cylinder, a spark plug emits a spark that ignites the mixture, triggering an explosion that drives the piston. This sets in motion a crankshaft (or drive shaft) linked to the piston by a connecting rod. Successive explosions in the cylinder cause the crankshaft to turn and a gear assembly activates the propeller.

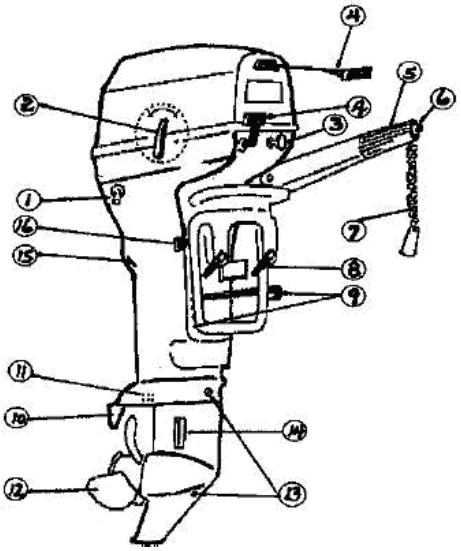
The internal temperature of a spark ignition engine is over 3200 Celsius (4000 F). Therefore, the motor must be cooled. Outboard motors are cooled by water.

While the motor is running, water is drawn in through openings located at the base of the motor (see Figure 2.1, no. 14) under the anti-cavitation plate. Water flows around the cylinders before being flushed out into the surrounding body of water through a cooling system control jet. It exits through an orifice located near the cylinder head (see Figure 2.1, no. 1).

Most outboard motors are two-stroke engines; four-stroke engines also exist.

Two- and four-stroke engines differ in the way that lubricating oil enters the cylinders. In a two- stroke engine, oil is added to fuel in the tank itself (manufacturers specify how much oil to add to the fuel). However, some two-stroke outboard engines have two tanks: one for gas and another for oil. The oil and gas mix automatically before reaching the cylinders. In a four- stroke engine, oil is added through a separate opening located near the drive shaft. Too little oil can cause the metal to overheat and damage the motor.

TYPICAL OUTBOARD MOTOR



Key

1. Water pump indicator
2. Drive selector or gear selector
3. Choke
4. Starter cord
5. Throttle
6. Emergency stop/tension control
7. Emergency stop cord
8. Fastening clamp
9. Motor tilt control
10. Drift corrector/anti-corrosion anode
11. Water outlet
12. Propeller
13. Oil indicator (emptying and filling)
14. Water intake device
15. Fuel exhaust
16. Lift lever

Trouble-Shooting and Maintenance

The engine's operating instructions usually provide information and advice on trouble-shooting, minor repairs and maintenance.

To prevent breakdowns, boaters should make a habit of staying alert to signs of motor wear and tear. Similarly, it is advisable to keep spare parts in the tool box and learn to perform basic repairs.

Follow these safety rules when performing repairs:

- Tie back long hair.
- Use the proper tools.
- Remember that even a small motor can give off a major electrical discharge.
- Disconnect the fuel line and spark plug cables.
- Avoid operating the motor in an enclosed area.
- Read the operating instructions before starting the motor.

Repair Kit

The repair kit should be air-tight and contain:

- One funnel with filter
- One knife
- Pliers (long-nose and standard)
- Flat and star (Phillips) screwdrivers
- One feeler gauge for spark plugs
- One spark-plug key
- One container of penetrating oil
- Cotter pins and one shear pin
- Spare fuses 3 Disposable cloths
- Monkey wrench (for motor bolts)
- A roll of electrical adhesive tape
- Spare spark plugs
- One starter rope

IT IS EXTREMELY IMPORTANT TO MAINTAIN YOUR VESSEL IN GOOD WORKING ORDER TO AVOID MECHANICAL BREAKDOWNS.

OPERATING PROBLEM	POSSIBLE CAUSES
Motor won't start	Fuel tank is empty Supply line is disconnected Throttle not in Start position Loose spark plug Selector not in Neutral
Motor starts but not easily	Gas level too low Air inlet of tank is closed Fuel line is bent Primer bulb not pressed enough (should be firm) Choke valve not operating properly Fuel contaminated by water or impurities Loose spark plug wire Spark plug dirty or improper spark gap Engine requires a tune up

Motor running in fits and starts	Water or impurities in fuel Idle mixture adjusting needle of carburetor requires adjustment Spark plugs are defective (see above problem)
Propeller not turning	Debris caught in propeller Selector not in drive Shear pin broken
Motor vibrates	Fastening clamps are not properly tightened. The propeller is unbalanced.
Motor suddenly stops	Fuel tank is empty No oil in fuel (two-stroke engine) Loose spark plug Cooling water intakes obstructed or the water pump defective

	PRE-SEASON	IN SEASON	POST-WINTER
Fuel tank	• Do not use tainted oil • Keep clean and dry	• Mix proper proportion of oil and fuel. • Ensure that fuel is free of humidity	• Drain completely
Fuel line	• Check condition of hose (cracks, poor connections)	• Check for leaks	• Empty
Gas filter	• Check and clean	• Check and clean	• Check and clean
Motor			• Store upright
Starter cord	• Change if worn		
Wires	• Check condition of wires (cracks, slack, corrosion)		
Spark plugs	• Clean and correct spark plug gap; change as required	• Look for signs of spark plug fouling and humidity • Maintain motor in good condition • Clean spark plugs and correct spark plug gap as required.	• Dismantle
Cylinders	• Check pressure		• Protect interior of cylinders with rust-proofing • Blow out cylinders
Moving parts	• Lubricate all moving parts	• Lubricate every 60 days	• Lubricate
Motor base	• Empty oil pan and refill with new gear oil	• Repeat after every 100 hours of operation or at least once per season	• Empty oil pan and refill with new gear oil
Cooling system	• Clean conduits	• Ensure that openings are free of plant material • Desalt certain models in fresh water after salt water use	• Desalt in fresh water • Drain water completely by activating starter cord after disconnecting spark plugs
Propeller	• Sand or file cracked surfaces	• Check condition regularly	• Check whether repairs are required
Exterior	• Clean and touch-up paint as required • If motor is used in saltwater, repaint with rust-resistant, anti-mildew paint. • Treat with zinc pain	• Keep clean	• Clean and touch-up paint as required

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

As a boat owner or operator you should know that the "recommended gross load capacity" that can be safely carried in the hull concerned:

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

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

Motor Boat Operations

Fueling Procedures

When mixed with air, gasoline evaporates quickly. Therefore, use caution when fueling a boat. Because gasoline fumes are heavier than air, they can accumulate in the hold, i.e., in the bottom of the boat. The following procedure is used for fueling:

1. Moor the craft.
2. Do not smoke in fueling area.
3. Shut down all engines.
4. Ensure that all persons not involved in fueling the craft are ashore.
5. Disconnect the fuel line and move portable fuel tank ashore.
6. Place fire extinguisher within easy reach.
7. While fueling, ground nozzle against filler pipe to prevent the build up of static electricity.
8. Avoid over filling the tank or splashing fuel.
9. Close the fuel tank and clean up spillage.
10. Mix the oil and fuel in the tank, adding one and then the other (according to the manufacturer's recommended ratio)
11. Replace the tank in the vessel and reconnect the fuel line; the tank should be securely fastened in the vessel, as far from the motor as possible.
12. Press the primer bulb to begin mixing air with the fuel.
13. Operate the engine compartment blower for at least 4 minutes immediately before starting up the gasoline engine.

The fuel tank should be kept away from sparks and heat and stowed in a well-ventilated location. Always store fuel in a clearly marked fuel container. Fuel tanks are red or orange for safety reasons. Other colours must not be used.

Motor Installation and Adjustments

Motor Installation

Before installing the motor, ensure that the fastening clamps (see figure 2.1, no. 8) are open to maximum and that the motor is attached to a safety rope or chain. If the boat is in shallow water, tilt the motor to prevent the propeller from scraping the bottom. At the dock, ensure that the boat is properly moored; however, mooring lines must provide enough slack to allow for the effects of added weight. Place the motor on the dock with the top section toward the boat. Check again that the clamps are open. Using the handles, lift the motor and set it in place on the stern plate; tighten the clamps and fasten the rope or chain to the boat.

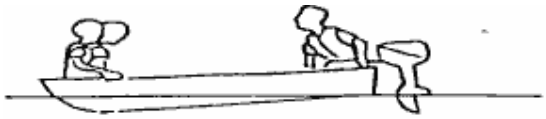
Loading the Boat

Load displacement and water movement in the hold are two factors that affect the boat's stability. Therefore, the load must be secured (tied down) near the hold with ropes, and the hold kept dry. After securing the load, also check the trim of the boat.

Adjusting the Trim

An outboard motor boat is operated and maneuvered as if the hull were moving parallel to the water. Passengers and materials must be placed to evenly distribute the load along the length and width of the boat.

Poor: too much weight in front



Poor: too much weight in back

Correct: load is evenly distributed and ensures optimal performance

One common mistake is to overload an outboard boat. The recommended load capacity is shown on the Capacity Plate issued by the Department of Transport. Never exceed the specified load.

Steering System Tension

The tension of the steering system is adjusted at its pivot point by a screw or bolt called a copilot. It must be tightened just enough to prevent the boat from changing direction when the operator takes his/her hand off the throttle bar. The tilt of the motor (see Figure 2.1, no. 9) must be adjusted so that the drive shaft is at a right angle to the surface of the water when the motor is running at full speed. If the motor leans too far out, the stern of the boat will sink and the bow will tend to tap the water. On the other hand, the bow will tend to plough the water if the motor is tilted too far in. Trials on the water will show the best tilt in relation to the load.

Motor too close to waterline; vessel will nose dive

Motor too far from waterline; vessel will tend to tap surface

Motor is at a right angle to the water surface; operation should be smooth if the vessel was properly loaded

Lift Lever

This important device is found on most outboard motors and serves to hold the motor upright against the stern plate. Since the clamp keeps the motor in the water when the boat is in reverse, it should normally be engaged. As a general rule, the clamp automatically disengages if the motor strikes an underwater object.

Motor Controls

Starting the motor

1. Connect the fuel tank to the motor (if the tank cap has an air intake, make sure it is open) and press primer bulb until you feel resistance;
2. Take care to remove any debris from the propeller (see figure 2.1, no. 12) and the cooling water intake (see figure 2.1, no. 14);
3. Lock the motor tilt lever (see figure 2.1, no. 9) in the “RUN” position, and the lift lever (see figure 2.1, no. 16) in the “LOCK” position;
4. Ensure that the drive selector (figure 2.1, no. 2) (also called a gear selector) is in Neutral;
5. Set the throttle to “START” (see figure 2.1, no. 5) and use the choke as required (see figure 2.1, no. 3);
6. In a sitting or crouched position, tug the starter cord (see Figure 2.1, no. 4) until you feel resistance, then pull firmly in a single stroke. Remain seated to start the motor;
7. Check that the control jet (figure 2.1, no. 1) from the cooling system is flowing properly;
8. Once the motor is running well, adjust the choke.

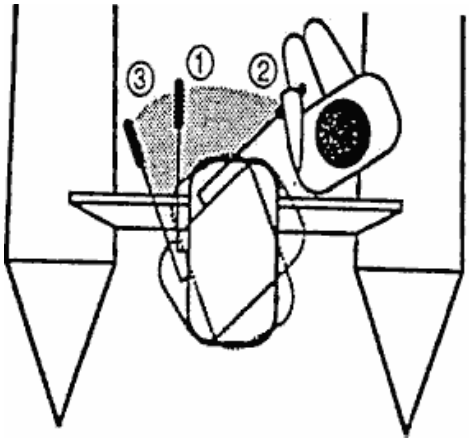
Heading Out

1. Cast off moorings.
2. Shove off in the desired direction.
3. Set the throttle to the “Shift” position;
4. Set the drive selector to Forward and adjust the choke and increase the throttle setting.

Stopping

1. With the drive selector at Forward ... slow the throttle back to the ‘Shift’ position.
2. Set the drive selector to Neutral.
3. Push the stop button (see figure 2.1, no. 6) (if there is no stop button, pull on the choke).
4. On reaching the shore, tilt the motor out of the water to avoid damaging the propeller

The operator must sit to the right of outboard motors that have a steering bar connected directly to the motor.



Steering

To change the direction of an outboard boat you must change the position of the motor’s propeller.
If the bar is pulled to the right, the bow of the boat will turn left, and if the bar is pulled to the left, the bow of the boat will turn right.
With practice, boat operators will soon learn to act quickly and correctly.

When maneuvering in reverse, the lift lock mechanism must be engaged to prevent the motor from tipping. Obstacles must be avoided with great care since the motor is no longer protected from collision.
Reversing is much more complicated than forward maneuvering, and therefore requires extra alertness.

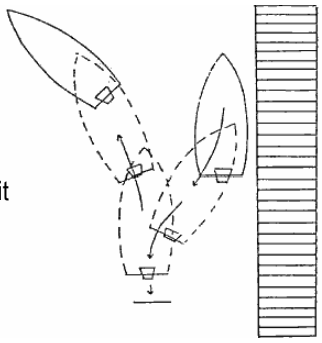
Basic Maneuvers

Leaving the Dock

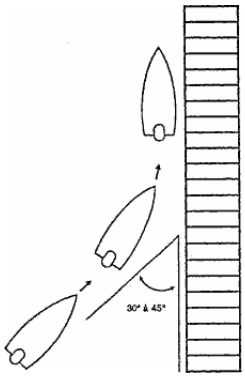
Occupants must enter the boat when the front and rear mooring lines are still fastened to the dock. One person steadies the vessel while the others board by stepping into the bottom of the boat and keeping their bodies as low as possible.

Follow the reverse procedure to get out of a boat.

To leave a dock in a motor boat demands some forethought. If other boats are nearby, the throttle bar (gas control handle) can be moved in the direction of the dock and the boat backed out in reverse. If the wind is blowing from the dock, greater force is required to clear the dock and avoid colliding with other boats.



The boat pulls away from the dock in reverse (throttle bar turned toward the dock). Once the boat is fully clear, it can head out in Forward provided the way is unobstructed.

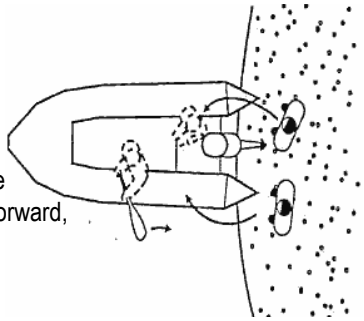


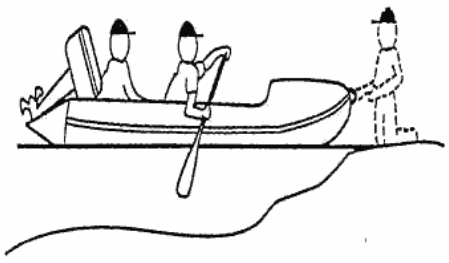
Docking

To land a boat, approach the dock at a 30-45 degree angle. Once near the dock, move the throttle bar toward the dock to clear the bow of the boat and take up a parallel position. Nearer the dock, move the bar to the other side, slow the throttle and for a instant the boat will back up, bringing the stern close to the dock. Once alongside the dock, moor the boat. If the wind is blowing toward the dock, it is best to approach from a wider angle. If the wind is blowing from the dock, approach at a narrower angle.

Launching from Shore

In fair weather, launching a boat from shore is relatively easy. With the motor raised, the boat is lifted and pushed into the water, front first. Once the boat is afloat, with the stern barely touching the shore, hold it at a 90-degree angle to the shore in order to board, first in the centre, and then at the bow. Lastly, the driver shoves the boat out into the water, walking alongside water, and boards at the stern. When launching, the person in the centre nudges the boat out into the water with an oar until the water is deep enough to start the motor. This person can also guide the boat in the desired direction. Then, after starting the motor, shift to Forward, gaining speed as the boat moves farther from shore.





Landing on Shore

To land on shore in fair weather, stop the motor where the water is still fairly deep and tilt it out of the water to prevent damaging the propeller. It is important for the driver to instinctively know the location of the stop mechanism and the tilting lever. To lighten the front end, any passengers in the bow of the boat will move to the centre and row to shore. On reaching the shore, one person sets foot on the ground and holds the boat steady while the other passengers step out. Once the boat is empty, it can be lifted and carried to the shore for mooring. Avoid pushing the boat ashore.

In poor weather, it is best to approach the shore backwards. This will prevent water from accumulating in the boat. With the motor running, turn the boat so that the stern is toward shore. The centre passenger holds this course with the oar. Then, stop the motor and tilt it out of the water. The waves will carry the boat to shore. To prevent the stern from dipping into the trough of the waves as they strike the bow, the rower pulls gently on the oars.

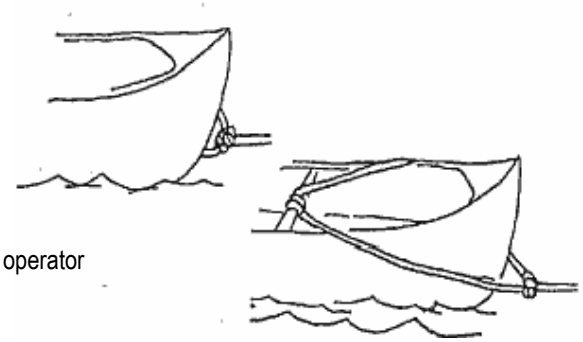
Accelerating and Planning

Acceleration tends to make a boat leave the water and hydroplane on the surface; this movement is triggered by the wash of the motor. It lifts the boat by several degrees. This seriously diminishes the operator's visibility in front of the boat and makes it more difficult to effectively use the motor's propulsion force. To correct this situation, simply accelerate slightly to pass over the wave and regain a relatively horizontal trim.

Operating in Waves

In poor weather, to reduce the risk of capsizing or taking on water, waves must be crossed bow first. With a motor, the boat's speed can be quickly adjusted to synchronize its forward motion with the movement of the waves. In this way, the bow crosses the waves more easily.

Towing



Certain rules of thumb can improve towing efficiency:

1. Towing is faster if the other boat is pulled rather than coupled alongside the towing boat. However, coupling is better when the boat being towed lacks maneuverability, since the towing boat can steer it to some extent. This technique is also used when the boat being towed is unstable.
2. To tow a boat and its passengers, it must be stable and the towing boat operator must be warned of any problems immediately
3. The two boats must be aligned in the same direction.
4. The towing boat operator must constantly monitor the situation.
5. A canoe can be towed using a rope secured around the tip of the bow. Other types of vessels are equipped with rings used to secure a hitch (towing rope) to a towing boat.

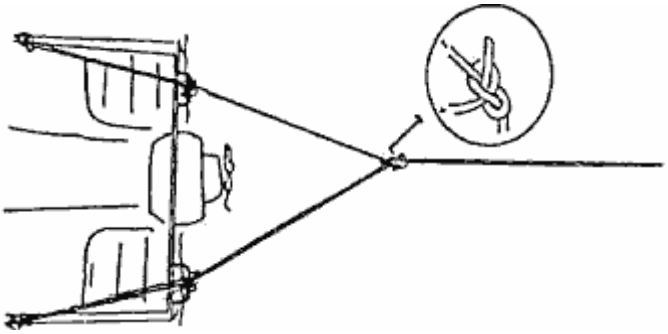
Note: Sometimes, towing is the worst option. The first role of the rescuer is to save lives and reduce human suffering. When boating conditions prevent towing, specialized towing companies can be called in for assistance. The same applies when the boat will not stand up to towing (see manufacturer's recommended limits) or was not designed for towing (such as inflatable crafts).

To make the towed boat easier to maneuver, fasten the hitch fairly close to the waterline at the centre of the bow. Some boats have lugs or hooks for fastening a hitch.

In poor weather, the length of the tow line depends on the waves. To avoid collision, synchronize the speed of the two boats and their movement over the crest or trough of the waves.

It is extremely important that both vessels are cresting the waves at the same time. The length of towing rope should be adjusted to ensure that the vessels are properly spaced.

Towing is more effective if the traction point is located in the rear centre of the towing boat. This is done simply if a ring or lug is installed at the centre of the stern. Otherwise, a V-shaped rope assembly can prevent sideways traction on the towing boat. A hitch attached to a V-assembly can slide from side to side.



The towing speed depends on the boat type, weight and means of propulsion. It must be adjusted to keep the towed boat steady. Where a motor boat is used, avoid placing excessive strain on the motor.

If possible, the hitch should be easy to cast off. The knots used in a hitch must be able to withstand considerable and variable strain. The bowline knot is the most commonly used. round turn knot and two half hitches can be used for towing light loads. However, never use a square knot or a clove hitch for towing.

Responding to Breakdowns

Know the following actions to take in response to breakdowns on board a boat:

- Alter the speed of the craft as appropriate to the circumstances
- Anchor the craft as appropriate to the circumstances
- Investigate the problem
- Correct the problem if possible
- Use or exhibit signals to indicate distress and need of assistance if necessary.

Positive Attitudes

Operating a boat safely demands that operators develop alertness, judgment, caution and foresight.

Alertness

1. Carefully monitor the surroundings;
2. Observe and assess navigation conditions, weather changes and passengers' behaviour.

Judgment

1. Assess whether the boat is adequate to meet the navigation conditions;
2. Choose the best route.
3. Operate the boat to suit weather conditions (e.g., it is important to slow down in bad weather to avoid losing control of the pleasure craft, which could increase the risk of injuries or loss of life aboard).

Caution and foresight

1. Assess the risks involved in each maneuver;
2. Plan what route to take;
3. Accept your own limits as a boat operator.
4. Be thoroughly familiar with your boat and its maneuvering capacities (e.g., know that a pleasure craft traveling at high speeds requires more distance to stop in case of an emergency, and that its operator must be even more alert since he/she has less time to react to new conditions).

Provisions of the Collision Regulations pertaining to lights and shapes

1. A "masthead light" means a white light placed over the fore and aft centerline of a pleasure craft showing an unbroken light over an arc of the horizon of 225 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on either side of a pleasure craft as described in the collision Regulations, Rule 21
2. "Sidelights" means a green light on the starboard side and a red light on the port side each showing an unbroken light over an arc of the horizon of 112.5 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on its respective side as described in the Collision Regulations, Rule 21
3. A "stern light" means a white light placed as nearly as practical at the stern showing an unbroken light over an arc of the horizon of 135 degrees and so fixed as to show the light 67.5 degrees from right aft on each side of a pleasure craft as described in the Collision Regulations, Rule 21.
4. An "all-round light" means a light showing an unbroken light over an arc of the horizon of 360 degrees as described in the Collision Regulations, Rule 21.
5. The operator of a pleasure power driven craft underway shall, from sunset to sunrise, exhibit a masthead light forward, sidelights, and a stern light as described in the Collision Regulations, Rules 20 and 23.
6. The operator of a pleasure power driven craft of less than 12 metres in length underway, may exhibit, from sunset to sunrise, in lieu of a masthead light forward, sidelights, and a stern light, an all-round white light and sidelights as described in the Collision Regulations, Rules 20 and 23.

7. The operator of a pleasure sailing craft underway shall, from sunset to sunrise, exhibit sidelights and a stern light as described in the Collision Regulations, Rules 20 and 25.
8. The operator of a pleasure sailing craft of less than 20 metres in length underway may exhibit, from sunset to sunrise, in lieu of sidelights and a stern light, a combined sidelights and stern light in one lantern carried at or near the top of the mast as described in the Collision Regulations, Rules 20 and 25.
9. The operator of a pleasure sailing craft of less than 7 metres in length underway shall, from sunset to sunrise, exhibit, if practical, side lights and a stern light, but if the operator cannot, he/she shall have ready at hand an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision as described in the Collision Regulations, Rules 20 and 25.
10. The operator of a pleasure craft under oars may exhibit, from sunset to sunrise, sidelights and a stern light, but if the operator does not, he/she shall have ready at hand an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision as described in the Collision Regulations, Rules 20 and 25.
11. The operator of a pleasure craft of less than 50 metres in length at anchor shall exhibit, from sunset to sunrise, in the fore part an all-round white light as described in the Collision Regulations, Rules 20 and 30.

Collision Regulations pertaining to sound and light signals

1. The operator of a pleasure craft of less than 12 metres shall carry sound signaling appliances or some other means of making an efficient sound signal as described in the collision Regulations, Rule 33.
2. The operator of a pleasure craft in or near an area of restricted visibility, whether by day or night, may sound a combination of pro longed and short blasts using the whistle or sound signaling appliances of the pleasure craft to indicate presence as described in the Collision Regulations, Rule 35.
3. The operator of a pleasure craft shall recognize, use or exhibit the following signals to indicate distress and need of assistance as described in Collision Regulations, Rule 37 and Annex IV:

    1. A gun or other explosive signal fired at intervals of about a minute;
    2. A continuous sounding with any fog-signaling apparatus;
    3. Rockets or shells, throwing red stars fired one at a time at short intervals;
    4. A signal made by any signaling method consisting of the group ...---... (S.O.S.) in the Morse Code;
    5. A signal sent by radiotelephony consisting of the spoken word “MAYDAY”;
    6. The International Code Signal of distress indicated by the flags “N” and “C”;
    7. A signal consisting of a square flag having above or below it a ball or anything resembling a ball;
    8. Flames on the vessel;
    9. A rocket parachute flare or hand flare showing a red light;
    10. A smoke signal giving off orange coloured smoke;
    11. Slowly and repeatedly raising and lowering arms outstretched to each side;
    12. Signals transmitted by emergency position indicating radio beacons (EPIRB);
    13. A piece of orange canvas with either a black square and circle or other symbol appropriate for identification from the air;
    14. Dye marker;
    15. A square shape or anything resembling a square shape; or
    16. A high intensity white light flashing at regular intervals of 50 to 70 times per minute.

Collision Regulations pertaining to additional provisions

1. The operator of a pleasure craft that is less than 20 metres in length or a pleasure sailing craft shall not impede the safe passage of a power driven vessel following a traffic lane as described in the Collision Regulations, Rule 10.
2. The operator of a pleasure power driven craft shall take early and substantial action to keep well clear of a vessel engaged in fishing, or a sailing vessel as described in the Collision regulations, Rules 16 and 18 (a).
3. The operator of a pleasure sailing craft shall take early and substantial action to keep well clear of a vessel engaged in fishing as described in the Collision regulations, Rules 16 and 18(b).

Standard Marine Distress Signals

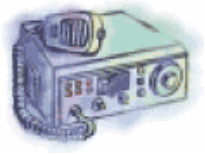
If you see a distress signal, you are required by law to determine whether you can assist those in distress without endangering your own life or safety of your vessel. Where possible, you must also contact the nearest Rescue Coordination Center to inform them of the type and location of the distress signal you have seen.

Knowing the following distress signals will help you call for help in an emergency and recognize those in trouble.

Not only is it against the law to make a false distress signal, but false alarms commit search and rescue personnel making them potentially unavailable or further away from real emergencies.

Marine Radio

Distress Call



Use 2182 kHz (MF) or channel 16, 156.8 MHz (VHF) DSC alert, channel 70 (only for DSC type radios and where the service is offered.)

Calling Procedures

Mayday, Mayday, Mayday — Immediate danger for persons OR ship
Pan-Pan, Pan-Pan, Pan-Pan — Urgent message concerning safety of a person or ship

- Give vessel name and call sign
- State position of vessel
- Describe nature of emergency

Distress Cloth

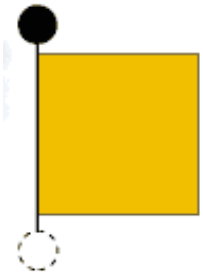
To attract attention, spread on cabin or deck top, or fly from mast.

Arm Signal

Raise and lower outstretched arms repeatedly.

Sound Signals

Continuous sounding with any fog-signaling apparatus. Gun or other explosive signal fired at intervals of about a minute.

Code Flag	Dye Marker	Radio Beacon (EPIRB)	Flares	Flashlight
				

Chapter 3: Water Rescue Equipment

Minimum Equipment Required on Board Vessels

The Canadian Small Vessels Regulations and the International Regulations for preventing collisions (amended for Canada) require all boats to carry a minimum of safety equipment. The size of the pleasure craft determines the equipment required.

Sailboards

Personal Protective Equipment:

- One Canadian-approved personal flotation device or life jacket of appropriate size for each person on board
- one buoyant heaving line of not less than 15m in length. (This equipment is not mandatory if all people on the sailboard are wearing a Canadian- approved flotation device of appropriate size or engaged in an official competition).

Boat Safety Equipment:

- one manual propelling device. (This equipment is not mandatory if all people on the sailboard are wearing a Canadian- approved flotation device of appropriate size or engaged in an official competition).

Distress Equipment:

- a watertight flashlight or 3 Canadian approved flares of Type A,B or C. (This equipment is not mandatory if all people on the sailboard are wearing a Canadian- approved flotation device of appropriate size or engaged in an official competition).

Navigation Equipment:

- a sound signaling device or a sound signaling appliance

Paddle boats and Water cycles

Personal Protective Equipment:

- One Canadian-approved personal flotation device or life jacket of appropriate size for each person on board
- one buoyant heaving line of not less than 15m in length. (This equipment is not mandatory if all people on board are wearing a Canadian-approved flotation device of appropriate size).

Distress Equipment:

- a watertight flashlight or 3 Canadian approved flares of Type A,B or C. (This equipment is not mandatory if all people on board are wearing a Canadian-approved flotation device of appropriate size).

Navigation Equipment:

- a sound signaling device or a sound signaling appliance
- navigation lights that meet the applicable standards set out in the Collision Regulations if the pleasure craft is operated after sunset and before sunrise or in periods of restricted visibility.

Canoes, Kayaks, Rowboats and Rowing shells

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length

Boat Safety Equipment:

- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination
- One bailer or manual water pump fitted with or accompanied by sufficient hose to enable a person using the pump to pump water from the bilge of the vessel over the side of the vessel

Navigation Equipment:

- A sound signaling device or a sound signaling appliance audible at distances of one-half a marine mile (0.93 km)
- Navigation lights that meet the applicable standards set out in the Collision Regulations if the pleasure craft is operated after sunset and before sunrise or in periods of restricted visibility.

Unpowered Pleasure Craft not over 6m in length

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length

Boat Safety Equipment:

- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination
- One Class 5BC fire extinguisher .. (IF .. the craft is equipped with a fuel burning cooking, heating or refrigerating appliance).
- One bailer or manual water pump fitted with or accompanied by sufficient hose to enable a person using the pump to pump water from the bilge of the vessel over the side of the vessel. (This equipment is not required for any self-bailing sealed hull sailing vessel fitted with a recess-type cockpit that cannot contain a sufficient quantity of water to make the vessel capsize or a multi-hull vessel that has subdivided multiple-sealed hull construction).

Navigation Equipment:

- A sound signaling device or a sound signaling appliance audible at distances of one-half a marine mile (0.93 km)
- Navigation lights that meet the applicable standards set out in the Collision Regulations if the pleasure craft is operated after sunset and before sunrise or in periods of restricted visibility.

Personal Watercraft (P.W.C.)

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length

Boat Safety Equipment:

- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination. (This equipment is not mandatory if all people on the Personal Watercraft are wearing a Canadian-approved flotation device of appropriate size).
- One bailer or manual water pump fitted with or accompanied by sufficient hose to enable a person using the pump to pump water from the bilge of the vessel over the side of the vessel. (This equipment is not mandatory if all people on the Personal Watercraft are wearing a Canadian-approved flotation device of appropriate size).
- One Class 5BC fire extinguisher. (This equipment is not mandatory if all people on the Personal Watercraft are wearing a Canadian-approved flotation device of appropriate size).

Distress Equipment:

- A watertight flashlight or 3 Canadian approved flares of type A,B or C

Navigation Equipment:

- A sound signaling device or a sound signaling appliance audible at distances of one-half a marine mile (0.93 km)

The Canadian Coast Guard and P.W.C. manufacturers strongly advise against operating this type of craft at night.

Not over 6m Powered

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length

Boat Safety Equipment:

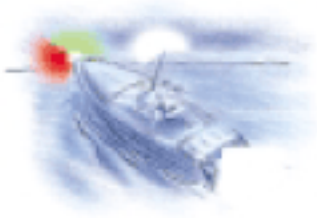
- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination
- One Class 5BC fire extinguisher (if the craft is equipped with an inboard engine, a fixed fuel tank of any size, or a fuel burning cooking, heating or refrigerating appliance).
- One bailer or one manual water pump fitted with sufficient hose to enable one person using the pump to pump water from the bilge of the vessel over the side of the vessel. (A bailer or manual water pump is not required for any multi-hull vessel that has subdivided multiple-sealed hull construction.)

Distress Equipment:

- A watertight flashlight or 3 Canadian approved flares of type A,B or C

Navigation Equipment:

- A sound signaling device or a sound signaling appliance audible at distances of one-half a marine mile (0.93 km)
- Navigation lights that meet the applicable standards set out in the Collision Regulations if the pleasure craft is operated after sunset and before sunrise or in periods of restricted visibility.



Vessels over 6m but not over 8m

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length or one approved life buoys with an outside diameter of 610 mm or 762 mm that is attached to a buoyant line of not less than 15m in length
- a re-boarding device if the freeboard of the vessel is greater than 0.5 m

Boat Safety Equipment:

- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination
- One bailer or manual water pump fitted with or accompanied by sufficient hose to enable a person using the pump to pump water from the bilge of the vessel over the side of the vessel
- One Class 5BC fire extinguisher, if the pleasure craft is a power driven vessel, plus another class 5BC fire extinguisher if the pleasure craft is equipped with a fuel burning cooking, heating or refrigerating appliance

Distress Equipment:

- a watertight flashlight
- 6 Canadian approved flares of Type A,B or C

You are exempt from carrying pyrotechnic distress signals if:

- operating in a river, canal or lake in which it can at no time be more than one mile from shore OR
- engaged in an official competition or in final preparation for an official competition and has no sleeping arrangements.

Navigation Equipment:

- a sound signaling device or a sound signaling appliance
- navigation lights that meet the applicable standards set out in the Collision Regulations if the pleasure craft is operated after sunset and before sunrise or in periods of restricted visibility

Vessels over 8m but not over 12m

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length
- One approved life buoys with an outside diameter of 610 mm or 762 mm that is attached to a buoyant line of not less than 15m in length
- a re-boarding device if the freeboard of the vessel is greater than 0.5

Boat Safety Equipment:

- An anchor with not less than 15m of cable, rope or chain in any combination
- One bailer
- One manual water pump fitted with or accompanied by sufficient hose to enable a person using the pump to pump water from the bilge of the vessel over the side of the vessel

- One Class 10BC fire extinguisher, if the pleasure craft is a power driven vessel, plus another class 10BC fire extinguisher if the pleasure craft is equipped with a fuel burning cooking, heating or refrigerating appliance

Distress Equipment:

- a watertight flashlight
- 12 Canadian approved flares of Type A, B, C, or D (not more than 6 can be Class D)

You are exempt from carrying pyrotechnic distress signals if:

- operating in a river, canal or lake in which it can at no time be more than one mile from shore OR
- engaged in an official competition or in final preparation for an official competition and has no sleeping arrangements.

Navigation Equipment:

- a sound signaling device or a sound signaling appliance
- navigation lights that meet the applicable standards set out in the Collision Regulations

Vessels over 12m but not over 20m

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length
- One approved life buoys with an outside diameter of 610 mm or 762 mm that is equipped with a self-igniting light and is attached to a buoyant line of not less than 15m in length
- a re-boarding device

Boat Safety Equipment:

- An anchor with not less than 50m of cable, rope or chain in any combination
- bilge pumping arrangements
- One Class 10BC fire extinguisher at each of the following locations:
    1. at each access to any space where a fuel burning cooking, heating or refrigerating appliance is fitted
    2. at the entrance to any accommodation space
    3. at the entrance to the engine room space
- one axe
- Two buckets, each with a capacity of 10 litres or more.

Distress Equipment:

- a watertight flashlight
- 12 Canadian approved flares of Type A,BC, or D (not more than 6 can be Class D)

Navigation Equipment:

- Two sound signaling appliances (bell and whistle)
- Navigation lights that meet the applicable standards set out in the Collision Regulations

Vessels over over 20m

Personal Protective Equipment:

- one personal flotation device or life jacket of appropriate size for each person on board
- one buoyant heaving line of not less than 30 metres in length
- two life buoys, each of which has an outside diameter of 762 mm. and is attached to a buoyant heaving line of not less than 30 metres in length, and one of which is equipped with a self-igniting light
- a lifting harness with appropriate rigging
- a re-boarding device

Boat Safety Equipment:

- an anchor with not less than 50 metres of cable, rope or chain in any combination
- bilge-pumping arrangements
- one power-driven fire pump located outside the machinery space, with one fire hose and nozzle whereby a jet of water can be directed into any part of the pleasure craft
- one Class 10BC fire extinguisher at each of the following locations:
    1. at each access to any space where a fuel-burning cooking, heating or refrigerating appliance is fitted
    2. at the entrance to any accommodation space
    3. at the entrance to the engine room space
- two axes
- four buckets, each with a capacity of 10 litres or more

Distress Equipment:

- a watertight flashlight
- 12 Canadian approved flares of Type A,BC, or D (not more than 6 can be Class D)

Navigation Equipment:

- Two sound signaling appliances, as specified in the Collision Regulations
- Navigation lights that meet the applicable standards set out in the Collision Regulations

Additional Recommended Equipment

For all boats, the above equipment is obviously the minimum required. To effectively respond to a boating incident, the following additional items of equipment should be carried on board:

Emergency Kit:

- Pyrotechnic distress signals; There are four types of distress signals:
    1. rocket parachute flares,
    2. star rockets or shells which throw stars one or two at a time,
    3. hand flares (limited visibility because they are at water level)
    4. smoke flares (flares giving off orange smoke .. only effective during daylight).
- First aid kit;
- Repair kit (see section 2.1);
- One life buoy with 15m buoyant heaving line
- Two blankets
- One flutter board

Make sure that you have a method or equipment to get a person who is in the water, back onto your boat. Consideration should be given as to how this will work if the person has sustained injuries

As required, other equipment could be added to this basic material, including a pole, a communications system, etc. (or a magnetic compass to assist the operator in determining direction, although the operator must be aware of any nearby metallic or electrical devices which are likely to distort the readings).

Equipment Maintenance and Storage

A properly equipped boat will be of little use if the materials on board are unusable because of breakage or early wear and tear. Maintaining and storing equipment not only makes sense aesthetically and economically, but the safety of boaters and the safety of their passengers depends on it.

Flotation Devices

There are two main types of flotation devices: life jackets and personal flotation devices (PFD). PFD's are increasingly popular because they are designed for comfort and thermal protection. As a rule, the more body surface covered by the PFD, the better its thermal protection. PFD's exist in vest and suit form. Although more expensive than life jackets, PFD's offer better protection, more comfort and more elegance.

PFD's and/or life jackets approved status will become void if they have been repaired or altered. Do not dry PFD's in sunlight.
Note: Never use your PFD or life jacket as a fender or a cushion; damaging them voids their approved status.

PFD'S and/or life jackets must fit snugly while allowing free movement of legs and arms.

Approval:

In Canada, PFD's and life jackets are approved by the Canadian Department of Transport. Devices approved by the US government or the US Coast Guard are not Government of Canada-approved. (If it is a foreign vessel then the rules applied are the rules of their home country)

Colour:

Only red, yellow or orange life jackets meet Government of Canada standards. PFD's however, come in a wide variety of styles and colours.

	LIFE JACKET	PERSONAL FLOTATION
Behavior in water	• Once a person is immersed, it keeps face out of the water and tilts the body slightly backward	• allows persons to float comfortably with their face out of the water
Appropriate for which boats?	• All pleasure craft and some commercial vessels	• All pleasure craft
Sizes	• up to 18 kg. (40 lb) • 18 to 40 kg. (40 - 90) • Over 40 kg. (90 lb)	• Various sizes, depending on chest measurement and weight
Models	• Jacket	• Over 120 approved models available in Canada
Advantages	• Reversible • High buoyancy • Affordable • Ensures face-up position in cases of unconsciousness	• Adjustable • Versatile and elegant • Freedom of movement • Protection against effects of cold water • Accessories: pockets, hood, harnesses
Disadvantages	• More uncomfortable (which is why people often don't wear them) • Poor protection from effects of cold water • Require careful maintenance • Less effective if wrong size or improperly fastened	• More expensive than a life jacket • less effective in rolling over unconscious victim • less buoyant than a life jacket

Materials

Kapok:

Kapok, often used to manufacture life jackets and cushions, is contained in vinyl coverings which are easily punctured. Kapok deteriorates quickly and loses its buoyancy. Kapok can support 25 times its weight.

Single-cell foam:

Polyethylene and airex are two very common types of foam. Foam is a very long-lasting buoyant material.

Maintenance

Regularly check that life jackets or PFD's are still properly buoyant. The foam should not be too rigid. Kapok sacks must be light, soft to the touch and puncture-free.

Life jackets and PFD's should be worn on board. They should not be used for kneeling, sitting or as a fender.

When wet, rinse flotation gear in fresh water and hang to dry in the open air or a well-ventilated location. Do not expose them to direct heat.

Store life jackets and PFD's in a cool, well-ventilated area.

Clean with mild soap and water. Strong detergents, dry cleaning and petroleum products can damage flotation gear.

Positive Attitudes

Caution and foresight in regard to equipment means:

Caution and foresight

1. Wear a personal flotation device at all times;
2. Handle your equipment with care;
3. Obey safety rules concerning fuel and oil tanks;
4. Properly maintain and store your boat and its cargo.

Be aware of effects: waves, sounds, coordination and reflexes.

Use of Safety Equipment and Requirement to Inform persons on board

1. Wear a personal flotation device. The technique for putting on personal flotation devices in the water should include the following steps:
    1. Spread the device open with the inside facing up out of the water,
    2. Rotate the device so as to look at the neck opening,
    3. Extend both arms through arm openings;
    4. Lift arms over the head;
    5. Fasten the device to fit snugly.
2. As a safety measure, the operator of a pleasure craft should read the manufacturer's instructions before using pyrotechnic distress signals, and check the expiry date.
   It is important to note that the "pyrotechnic distress signals" to be carried on board a pleasure craft must be approved by the Department of Transport Canada, in accordance with the Small Vessels Regulations, Material Standards - Pyrotechnic Distress Signals.
3. As well, the operator should locate the required safety equipment in readily accessible places on board the craft.
4. The operator of a pleasure craft should inform the persons on board about the following safety points:
    * The location of personal flotation devices and/or life jackets;
    * The techniques for putting on personal flotation devices and/or life jackets;
    * The techniques for putting on personal flotation devices and/or life jackets when in the water;
    * The importance of wearing personal flotation devices and/or life jackets at all times;
    * The location of the emergency kit;
    * The importance of keeping oneself low, on the centre line, and holding on to a rigid part of the pleasure craft while moving around on board;
    * The importance of keeping one's hands, arms and legs inside the pleasure craft when approaching or leaving a dock;
    * The effects of the motion of the pleasure craft, sunlight, waves, wind, sound and alcohol on them; and
    * Their roles in the event of emergencies.

Responding to hull leaks or flooding.

The following actions should be taken in response to a hull leak or flooding such as when water is seen to be rising in the pleasure craft or accumulating at the bottom of the craft:

1. Locate the source of the hull leak or the flooding.
2. Stop the leakage or the source of flooding if possible;
3. Remove accumulations of water in the hold or other compartments of the pleasure craft by incorporating either hand-held bailer's, manual pumps or bilge pumping systems as appropriate to the circumstances and to the craft; and
4. Use or exhibit signals to indicate distress and need of assistance if necessary.

The operator of a pleasure craft should carry on board at all times tools and materials to temporarily stop hull leaks or flooding.

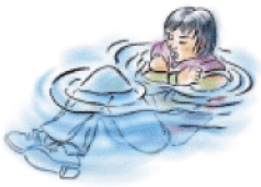
Responding to capsizing, swamping, sinking and grounding.

The following actions should be taken in response to a pleasure craft that capsizes, that swamps, that sinks or that runs aground:

1. Don personal flotation devices or life jackets
2. Stay with the craft when appropriate;
3. Account for persons previously on board; and
4. Use or exhibit signals to indicate distress and need of assistance if necessary.

Responding to cold water immersion or wind chill

1. "Hypothermia" is a drop in body temperature below the normal level that most frequently develops from exposure to abnormally low temperatures such as:
    * Immersion in cold water
    * Exposure to cool air in water-soaked clothing, or
    * Prolonged exposure to low environmental temperatures
2. The following signs and symptoms represent the impact on the mental and muscle functions of the persons exposed to hypothermia as it progresses:
    * Shivering and slurred speech, conscious but withdrawn at the early stage;
    * Slow and weak pulse, slow respiration, lacks coordination, irrational, confused and sleepy at intermediate stage;
    * Weak, irregular or absent pulse or respiration, loss of consciousness at final stage.
3. The following actions should be taken in the presence of a person found to be suffering from hypothermia:
    * Remove the person from the source of cold exposure;
    * Provide dry shelter;
    * If possible, prevent further decrease in body temperature and warm the person's body gradually by:
        - Replacing wet clothing with dry clothing,
        - Wrapping the person in blankets,
        - Placing dry coverings over the person,
        - Covering the person's head and neck,
        - Covering the person with an insulating device and vapour barrier;
        - Applying warm dry objects (40 to 45C).
    * If asked for, offer warm liquids but do not give alcohol or hot stimulants to the person;
    * Do not rub or massage the surface of the person's body or extremities;
    * and Use or exhibit signals to indicate distress and need of assistance if necessary.
4. While wearing personal flotation devices or life jackets, some positions can help persons to survive longer when immersed in cold water:
    * If alone, adopt a "fetal position" by crossing arms tightly against the chest and by drawing the knees up close to the chest (heat escape lessening position);
    * If alone, climb onto a nearby floating object to get as much of the body out of/or above the water
    * If in a group, "huddle" with other persons by getting the sides of everyone's chest close together with arms around mid to lower back and legs intertwined.



5. The following may provide additional protection to a person's body from hypothermia:
    * dry suit
    * wet suit
    * immersion suit
    * survival suit
    * exposure coverall
    * multiple light layers of dry clothing,
    * water or wind proof outer layer

Know the following technique to test personal flotation devices and/or life jackets

- while wearing the personal flotation device and/or life jacket,
- in chest-deep water,
- the person shall bend the knees,
- then float on the back, and
- shall make sure that the personal flotation device and/or life jacket keeps the chin above water so that it is easy to breathe.

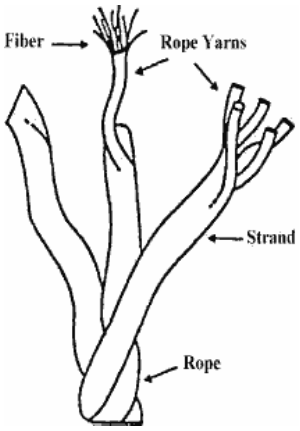
Chapter 4: Basic Seamanship Techniques

Different types of Rope

The seaman's life is not always as exciting as novels and adventure films would have us believe. And yet, the seaman's tasks are vitally important to navigation. For water rescue purposes, "seamanship" means the knowledge involved in handling and storing ropes, tying knots and performing practical tasks such as mooring and anchoring.

On a boat, we rarely use the word "rope" but rather "lines" to describe all of the ropes and cords used in navigation. Moreover, each line has a specific name, such as the painter, halyard or fender line. Lines can be stranded or braided. A stranded cord consists of fibers twisted in one direction to form a rope yarn which, when twisted again in the opposite direction, creates the strand. Three strands are then twisted again in the same direction as the fibers to create the final rope. This alternating torsion causes the line to tighten on itself and thus prevents it from unraveling. A braided line comprises a core of braided or stranded threads covered with a sheath. The center or core of the line gives it strength, and the sheath performs more of a protective and aesthetic function.

STRANDED ROPE



BRAIDED ROPE

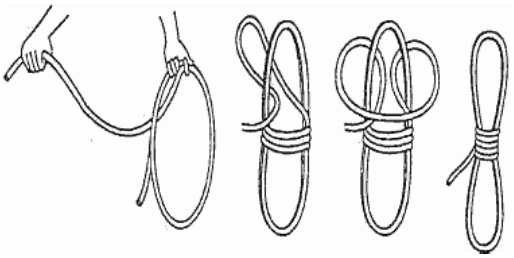
STANDARD ROPE	BRAIDED ROPE
Stiff	Flexible and smooth (slips through pulley easily)
Less resistant if worn	Less resistant if core is damaged
Becomes rigid and shrinks if submerged for long	Remains flexible
Defects are readily apparent	Difficult to detect defects
Knots hold firmly	Some knots easily come untied

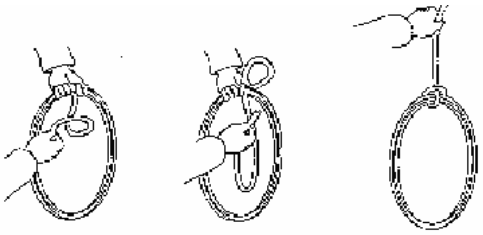
Four materials are commonly used to manufacture rope: nylon, manilla, polypropylene and polyester. Each of these materials has its advantages and disadvantages, and therefore suits a specific use.

	POLYPROPYLENE	NYLON	POLYESTER	MANILLA
Cost	Low	Med. to High	High	Low
Strength	Satisfactory	Excellent	Good	Poor
Elasticity	Good	Excellent	None	None
Buoyancy	Good	None	None	None
Weight	Heavy	Average	Light	Average
Abrasion resistance	Poor	Good	Excellent	Satisfactory
Rot resistance	Excellent	Excellent	Excellent	Poor
Sun resistance	Satisfactory	Good	Good	Satisfactory
Shock resistance	Satisfactory	Excellent	Good	Poor
Standard uses	Painter lines Floating lines Fender lines	Towing Mooring Anchor lines	Painter lines Halyard	Painter lines Fender line
Main features	Buoyancy Strength	Elasticity	Strength	(Strength reduced on contact with water)

Rope Storage

The effects of water, salt, sand and sun on rope fibers cause wear and tear, thereby reducing their strength. All ropes and lines must be protected from wear and tear and checked on a regular basis. Ropes that are not used regularly should be uncoiled from time to time to prevent them from losing their flexibility. When storing ropes and cords, hang them in a dry place after proper coiling.





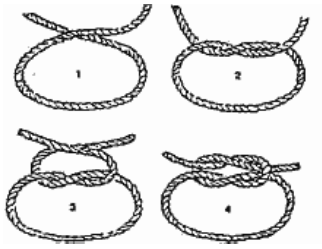
Another method is to form a loop, after coiling the line, and pass one end of the line through the loop, after wrapping it around the coil.

Basic Knots for Boaters

Knots come in a wide variety and entire books have been written about them. Boaters need to know a few key knots suited to different tasks: to secure the boat to a hitch, to moor, to tow, etc. The important thing is to know the proper and easy-to-use knots for the job at hand. Several other knots are useful to boaters and depending on your type of vessel you may need to know even more about knots.

Square Knot

The square knot (or sailor's knot) is used to temporarily connect two ropes of the same diameter. It is used when the line is under constant but not extreme tension.



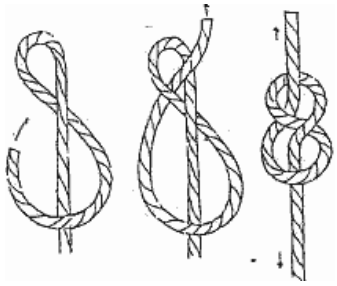
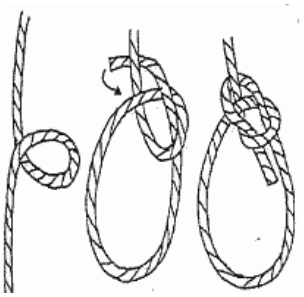


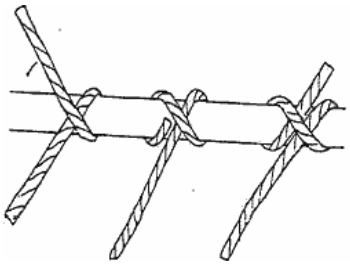
Figure Eight Knot

The figure of eight knot is useful as a stop knot to prevent a line from slipping through a pulley, for example. It is preferred to a half-hitch when a larger stop knot is needed. It is also easier to untie and tightens less.



Bowline Knot

The bowline knot is used to tie a temporary loop in the end of a rope that will not tighten. It can be easily untied even if placed under extreme tension.



Clove Hitch

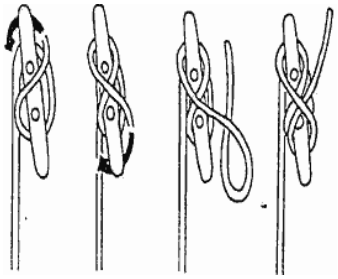
The clove hitch is used to temporarily attach a rope to a pole, a pier or any other object.

Mooring

Mooring involves holding the boat at the dock without necessarily immobilizing it. Since water, waves and tides cause boats to move, the vessel must have some freedom of movement while remaining secured to the dock.

Mooring can be done by fastening lines to a bitt (small vertical bar) or a ring. The bowline knot or clove hitch can be used to moor to a ring, and the bowline knot, to moor to a bitt. The boat, even an inflatable boat, must be equipped with fenders to cushion its landing at the dock.

Mooring with Lugs



Properly used, the lug can be an effective substitute for a knot. The advantage of this type of fastener is its resistance to the rubbing that occurs between the cord and the lug. The technique is simple but must be used carefully to prevent the cord from becoming stuck. Turn the free end of the cord clockwise around the base of the lug; then, make figure eights, over and under each flange. End with a half-hitch on one of the flanges. If properly done, the line can be untied by pushing the loose end through the half-hitch.

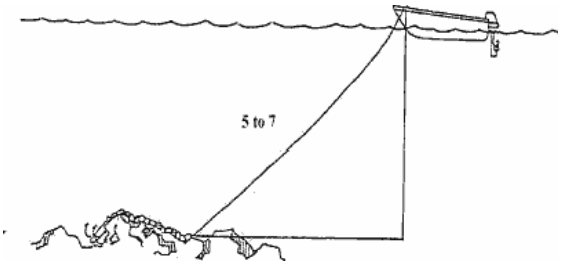
Anchorage

Choosing an anchorage means choosing where to cast anchor. Several considerations affect the choice of an anchorage.

- Is the anchorage clear of water-going traffic?
- Is the anchorage sheltered from the weather (wind, strong currents, etc.) and will it remain that way?
- What is the weather forecast?
- What is the bottom like?
- Is it suitable for properly securing the type of anchor aboard the vessel?
- Is the tide rising or falling? The length of the line must be determined by estimating water level variations.

To drop anchor, proceed as follows:

1. Ready the anchor, chain and rope on the deck of the vessel. Ensure that the line is not tangled and that the free end is properly se cured to the boat.
2. Maneuver the vessel directly above the location chosen for dropping anchor.
3. Cast the anchor overboard and allow the line to sink until the anchor touches bottom. Drop anchor at the bow of the boat to counterbalance most of the weight, which is in the stern.
4. Allow the boat to drift with the tide or current until the length of the line is five to seven times the depth of the water, depending on sea conditions.
5. Fasten the line to the lug on the deck of the vessel, and ensure that the line will not wear by rubbing against the boat. The line should be protected from excessive wear and tear.
6. Locate at least two fixed markers to check the vessel's position from time to time to ensure that the vessel is not drifting.



To lift anchor, proceed as follows:

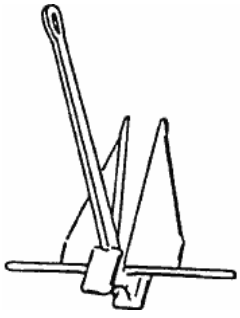
- Prepare to get underway (engage motor, secure equipment)
- Lift the anchor line, pulling the vessel directly above the anchor.
- Clear the anchor and hoist.
- Properly secure the anchor, chain and line.

You may consider dropping anchor as a safety precaution for your pleasure craft:

- In poor weather (with a risk of very bad weather ahead);
- If your vessel breaks down (or control is lost).

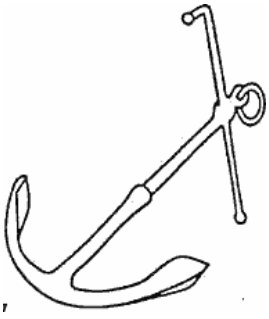
Danforth, Brydon or stocked anchors are used most often. The stocked anchor works for all types of bottoms, but is rather cumbersome. For that reason, vessels usually carry Danforth or Brydon anchors. They are also effective for all types of bottoms, but better for sandy, shell- covered or pebbly bottoms.

DANFORTH ANCHOR



BRYDON ANCHOR

STOCKED ANCHOR



To anchor effectively and safely, always remember to fasten a chain between the line and the anchor. With the movement of waves, the boat will tend to rise and fall. When the chain is used, it absorbs the effects of the waves. However, if the anchor is fastened directly to the boat by a rope, the motion of the waves will move the anchor. As a result, the boat will tend to travel because the anchor is traveling. A simple chain between the line and the anchor will avoid this problem.

Chapter 5: The Maritime Communications System

The Public Network

Today, there are many modern means of communication: radio, telephone, cellular telephone, radiotelephone, etc. On a vessel, radios operate through a maritime radio station or VHF Marine.

Radio airwaves are governed by Industry Canada. All radio operators must obtain a license from this Department.

Radiotelephone operators must have a Restricted Operator's Certificate. To obtain such a certificate, candidates apply to Industry Canada to take the Restricted Operator's Certificate examination. To pass the examination, candidates must satisfy the examiner that they:

- are capable of operating modern VHF radiotelephone equipment;
- possess a general knowledge of radiotelephone operating procedures, international regulations applicable to radiotelephone communi cations between stations, as well as those specific regulations relating to safety of life;
- possess practical knowledge of the operation of Global Maritime Distress and Safety System equipment for vessels engaged on voy ages within the range of VHF coast stations.

Private vessel operators have everything to gain by taking the radiotelephone training and obtaining their radiotelephone certificate.

Public Network Regulations

Use of a radiotelephone system is governed by a series of standards and simple instructions that radio operators must obey. The phonetic alphabet of the International Telecommunication Union (ITU) is used whenever letters or groups of letters are pronounced separately, or when communication is difficult.

LETTER	WORD	PRONOUNCED AS
A	Alfa	AL FAH
B	Bravo	BRAHVOH
C	Charlie	CHAR LEE or SHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HOH TELL
I	India	IN DEE AH
J	Juliet	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAH
M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO

U	Uniform	YOU NEE FORM or OO NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO

For example: If the vessel Seawolf VY1234 were asked to spell its name and call sign when communication is difficult, it would do so as follows: SIERRA, ECHO ALPHA, WHISKEY, OSCAR, LIMA, FOXTROT; VICTOR, YANKEE, one, two, three, four.

A series of procedural words and expressions must also be used in radiotelephone communications. The following are a few examples:

WORD or PHRASE	MEANING
KNOWLEDGE	Let me know that you have received and understood this message
AFFIRMATIVE	Yes, or permission granted.
BREAK	To indicate the separation between portions of the messages. (To be used where there is no clear distinction between the text and other portions of the message).
CHANNEL	Change to channel ..... before proceeding.
CONFIRM	My version is _____. Is that correct?
CORRECTION	An error has been made in this transmission (message indicated). The correct version is _____.
GO AHEAD	Proceed with your message.
HOW DO YOU READ?	How well do you receive me?
I SAY AGAIN	Self-explanatory (use instead of “I repeat”).
MAYDAY	The spoken word for the distress signal.
MAYDAY RELAY	Is the spoken word for the distress relay signal.
NEGATIVE	No, or that is not correct, or I do not agree.
OVER	My transmission is ended and I expect a response from you.
OUT	Conversation is ended and no response is expected.
PAN PAN	The spoken word for the urgency signal.
PRUDONCE	During long distress situations, communications can resume on a restricted basis. Communication is to be restricted to ship’s business or messages of a higher priority.
READBACK	Repeat all of this message back to me exactly as received after I have given OVER. (Do not use the word “repeat”.)
ROGER	I have received all of your last transmission.
ROGER NUMBER	I have received your message number ...
STANDBY	I must pause for a few seconds or minutes, please wait.

SAY AGAIN	Self-explanatory. (Do not use the word “repeat”.)
SÉCURITÉ	Is the spoken word for the safety signal.
SEELONCE	Indicates that silence has been imposed on the frequency due to a distress situation.
SEELONCE DISTRESS	Is the international expression to advise that a distress situation is in progress. This command comes from a vessel or coast station other than the station in distress.
SEELONCE FEENEE	Is the international expression for a distress cancellation.
SEELONCE MAYDAY	Is the international expression to advise that a distress situation is in progress. The command comes from the ship in distress.
THAT IS CORRECT	Self-explanatory.
VERIFY	Check coding, check text with originator and send correct version.
WORDS TWICE	1. As a request: Communication is difficult, please send each word twice. 2. As information: Since communication is difficult, I will send each word twice

Expressions such as “Breaker, breaker,” “OK,” “Repeat” should be avoided. The appendix contains more information on the security procedures for transmitting distress calls.

Available Services

Many services are available for boaters equipped with a radiotelephone system. Channel 16 (or 156,800 MHZ) is reserved for distress and safety calls; the Canadian Coast Guard operates a 24- hour service on this channel. Other channels are reserved for weather information and safety warnings. Moreover, prompt medical consultations are available free of charge through the Coast Guard. Within seconds, communication can be established with a doctor who can advise boaters on what first-aid action to take. Lastly, boaters can obtain information on maritime traffic in their region also by contacting the Canadian Coast Guard.

Private Network

Licenses are also issued to private networks operated by various organizations who require a communication system, including: police and fire departments, ambulance services, etc. These networks are regulated by the Department of Communications Canada. For more information on private and government communication networks, contact Industry Canada.

Positive Attitudes

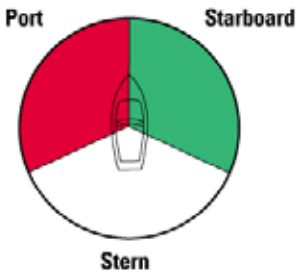
In all communications, respect is an essential component of genuine dialogue. Using a radiotelephone system for boating purposes also demands courtesy and compliance with standards.

Other behaviour should also be used:

Respect

- Comply with the standards governing this type of communication;
- Use the proper frequencies;
- Use the standard expressions;
- Comply with priorities.

Chapter 6: Nautical Rules of the Road



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

Starboard: If any vessel approaches within this sector, keep out of its way.
(Note: This rule may not always apply if one or both vessels are sailboats.)

Stern: If any vessel approaches this sector, maintain with caution, your course and speed.

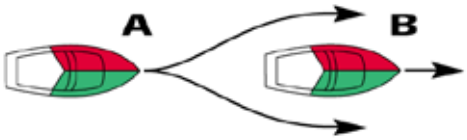
Operating Rules

Boat operation is subject to a series of rules similar to those governing road traffic. The Collision Regulations and the Criminal Code of Canada are two valuable sources of information for anyone interested in more details on the regulations governing the operation of a vessel. The following are a few of the many rules they set down.

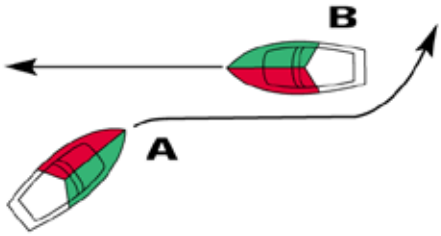
Rules of the Road

The rules of the road in navigation are often similar to the rules on land. The Collision Regulations contain many rules pertaining to navigation; however, four rules are basic to navigation.

A boat that is overtaking another must steer clear of the overtaken vessel's path.

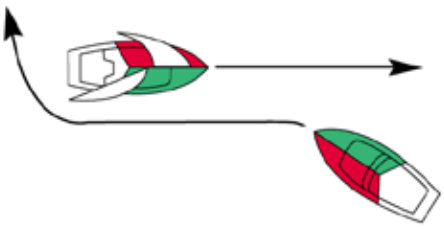


A vessel approaching from the port side must give way. (A) keeps clear of and must avoid crossing ahead of (B).



When two vessels are heading toward each other, each must reroute and pass to the right of the other. (A) blows one blast and alters course to starboard, (B) blows one blast and alters course to starboard.

As a general rule, rowboats, sailing vessels and canoes have the right-of-way over power- driven boats. However, if one vessel is unable to maneuver as it normally would, the most maneuverable vessel gives way.



Responsibility for avoiding collisions is shared by everyone using the waterway. Common sense must be used along with alertness and caution.

The concept of taking early and substantial action must be applied in all cases.

Alertness

The Collision Regulations requires that anyone operating a vessel be constantly on the alert, both in sight and sound.

Operating a vessel requires the operator's sustained attention; operators must be constantly alert and watchful to everything around them. Not only must they take account of what is happening in front, behind and on both sides of them, like a road vehicle driver, but they must also pay attention to what is under them. A single glance at the sky is enough to see the early signs of bad weather, or perceive impending dangers (electrical wires or others).

The water surface can also conceal dangers: tree trunks, water plants, rocks near the surface, etc. For that reason, they required deep concentration when operating a boat. This alertness allows the operator to adjust speed to boating conditions, and thereby enhance the safety of the operator and of others.

The Effect of Waves

One of the rules governing the operation of a vessel is that "every vessel is responsible for the effects of its wake." Boat operators must therefore ensure that the wake of their vessel does not endanger nearby pleasure boaters or cause property damage to their vessels.

Boaters coming to help must not compound the circumstances of an accident or, for that matter, cause another one. The effect of the boat's wake is extremely important when approaching the victim. Steps must be taken to ensure the wake is not so high that it washes over the victim.

Lastly, pleasure craft operators must know that they cannot interfere with marine signals, as stipulated in section 439 of the Criminal Code of Canada, by:

1. mooring the vessel to a signal, buoy or other sea-mark used for navigation; or
2. willfully altering, removing or concealing a signal, buoy or other sea-mark.

Provisions of the Collision Regulations pertaining to the conduct of pleasure craft in sight of other vessels.

Know that the operator of a pleasure sailing craft, that has the wind on the port side, shall take early and substantial action to keep well clear of other sailing vessels as described in the Collision regulations, Rules 12 and 16.

Know that the operator of a pleasure sailing craft, that has the wind on the same side and is to windward of other sailing vessels, shall take early and substantial action to keep well clear of sailing vessels which are to leeward as described in the Collision Regulations, Rules 12 and 16.

Know that the operator of a pleasure sailing craft, that has the wind on the port side and cannot determine with certainty whether other sailing vessels to windward have the wind on the port or on the starboard side, shall take early and substantial action to keep well clear of the sailing vessels as described in the collision Regulations, Rules 12 and 16.

Know that the operator of a pleasure craft shall take early and substantial action to keep well clear of vessels being overtaken as described in the Collision Regulations, Rules 13 and 16.

Know that the operator of a pleasure craft, which has other power driven vessels on his/her own starboard side and cross them so as to involve risk of collision, shall take early and substantial action to keep well clear and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessels as described in the Collision Regulations, Rules 15 and 16.

Boating and Alcohol

Drinking alcohol in a boat is no less dangerous than in a car. The effects of the sun and wind, combined with the use of alcohol, seriously distorts judgment and dulls the reflexes. Unfortunately, alcohol is a factor in a high percentage of fatal boating accidents. In December 1985, major amendments to the Criminal Code of Canada took force in regard to vessels. These amendments led to more severe police action, especially for offences committed under the influence of alcohol.

Dangerous Driving

Section 249(1)b of the Criminal Code of Canada provides:

"Everyone commits an offence who operates a vessel or any water skis, surf-board, water sled or other towed object on or over any of the internal waters of Canada or the territorial sea of Canada, in a manner that is dangerous to the public, having regard to all the circumstances, including the nature and condition of those waters or sea and the use that at the time is or might reasonably be expected to be made of those waters or sea;"

Everyone one who commits an offence under this section may be sentenced to imprisonment for a term not exceeding five years.

If the offence caused bodily harm to another person, the length of imprisonment may be up to ten years.

If the offence caused the death of another person, the person who committed the offence is liable to imprisonment for a term of up to fourteen years.

Section 250(1) of the Criminal Code of Canada also provides:

Another responsible person must be on board a vessel to keep watch on any person being towed.

Impairment

The most radical change to the Criminal Code of Canada, 1985, in regard to boating concerns the operation of boats by impaired persons.

Section 253 of the Criminal Code of Canada provides:

"Every one commits an offence who operates a motor vehicle or vessel or operates or assists in the operation of an aircraft or of railway equipment or has the care or control of a motor vehicle, vessel, aircraft or railway equipment, whether it is in motion or not,

1. while the person's ability to operate the vehicle, vessel, aircraft or railway equipment is impaired by alcohol or a drug; or
2. having consumed alcohol in such a quantity that the concentration in the person's blood exceeds eighty milligrams of alcohol in one hundred millilitres of blood."

The Criminal Code amendments allow officers of the peace who have reasonable grounds to suspect that a boat operator has used alcohol to request that such operator take a breathalyser test, just as they would for a car driver.

Now, there is no distinction between driving a car and driving a boat if the operator is impaired; the offence is the same. Refusal by a car driver or boat operator to take a breathalyser test is also an offence.

The sentences involved in committing the offence of driving while impaired are the same for boats or cars. For a first offence, the minimum sentence is $600. For a second offence, the minimum sentence is 14 days of imprisonment. For each subsequent offence, the offender may be imprisoned for at least 90 days.

These above convictions reflect minimum sentences. Whenever bodily harm is involved, the Court is free to impose a sentence of imprisonment of up to 10 years. If the offence results in the death of another person, the sentence of imprisonment can be as long as imprisonment for life.

In addition to the above sentences, the Courts can prohibit the convicted person from operating a boat for at least three months. Anyone found operating a boat while under such a suspension is liable to two years of imprisonment.

Although the Courts cannot suspend the operating license of a person found guilty of a boat operation offence, they may and must prohibit such persons from operating a boat for at least three months.

For an offence set out in the Criminal Code providing a minimum sentence of 14 days of imprisonment for a second offence, the two offences need not have been committed in the same circumstances. In other words, if a person was guilty of driving a boat while impaired and later a vehicle, or vice versa, the second time would be considered a second offence, and the offender would spend at least fourteen days in prison. Obviously, the same reasoning applies to any subsequent offence.

The offence of "Careless Operation of a Vessel", has been added to the Small Vessel Regulations. An operator who is doing any of the following could be charged:

- traveling in a way that could adversely affect the safety of people or property considering the weather, boat traffic, hazards or potential hazards, or the number of people around the boat
- operating a vessel in a careless manner, without consideration for other people or for the factors listed immediately above.

Others have been added to the Criminal Code of Canada:

- operating a vessel dangerously
- operating a vessel when impaired
- towing water skiers improperly
- failing to stop at the scene of an accident
- operating an unseaworthy vessel

Here are a few myths and realities about boating and alcohol (based on the brochure "Water and Alcohol - Myths and Realities" published by the Canadian Red Cross Society).

MYTHS	REALITY
A few beers can't hurt	Even in small amounts, alcohol affects coordination and judgment A bottle of beer, a glass of wine or a drink of liquor all produce the same effect.
Most drownings result from swimming	More than 60% of drownings occur after the victim accidentally falls off a dock, shoreline or vessel into the water. Autopsies show that more than one-third of the victims of such falls (mostly men) were impaired by alcohol at the time of the accident.
Drinking alcohol while operating a boat is not a serious offence	Operating a boat while intoxicated is just as dangerous as operating a car. The maritime police are equipped with breathalyser. If the results are positive, the police may lay charges.
There's no harm in drinking alcohol on the beach before swimming	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 public places, such as a beach or a dock.
People who stand up in a boat rarely fall overboard	More than one-half of boating accidents occur when occupants are standing. Given that alcohol affects balance, anyone who stands up in a boat after drinking alcohol is more likely to fall overboard. Drinking alcohol also increases urination.

Blood-Alcohol Levels

The following chart allows a calculation of when it becomes dangerous to drive after drinking alcohol. The chart was developed by the Toronto Police Department for car drivers, but it also applies to persons operating vessels.

The Criminal Code of Canada reports the legal limit for alcohol as 80 milligrams of ethyl alcohol per 100 millilitres of blood (80 mg%). This is also often expressed as 0.08 grams of ethyl alcohol per 100 millilitres of blood.

Instructions:

- Find the column that corresponds to the number of drinks consumed
- Locate the number matching the weight of the person
- The number entered in the box where 1 and 2 meet shows the blood-alcohol concentrations (BAC) in grams of alcohol per 100 millilitres of blood

Weight	1 Drink	2 Drinks	3 Drinks	4 Drinks	5 Drinks	6 Drinks
100	0.043	0.087	0.130	0.174	0.217	0.267
125	0.034	0.069	0.103	0.139	0.173	0.209
150	0.029	0.058	0.087	0.116	0.145	0.174
175	0.025	0.050	0.075	0.100	0.125	0.150
200	0.022	0.043	0.065	0.087	0.108	0.130
225	0.019	0.039	0.058	0.078	0.097	0.117

Note: One drink = 1.5 oz of liquor (40% alcohol) = 5 oz. of table wine (10-14% alcohol) = 12 oz of regular beer (5% alcohol).

Attention: The time elapsed since drinking and other factors can affect the data in the chart. For women, blood/alcohol concentrations are higher than specified in the chart.

The Effects of Alcohol

Alcohol has the same effect on a boat operator as a car driver. However, boating involves certain specific factors. Here are a few examples:

Balance

Most people who die in a boating accident fall out of a vessel and not necessarily because it capsizes.

Balance is one of the first faculties impaired by the very first drink of alcohol or the first beer. It affects the body quickly, and obviously, a fishing boat roughly 3.5 meters in length is much less stable than solid ground.

Coordination

As the blood-alcohol level rises, people are less and less capable of coordinating their movements and reflexes. An intoxicated person will find it very difficult to swim or grab onto a lifebouy, regardless of their ability when sober. Moreover, alcohol also affects vision.

Judgment and Sense of Risk

Most people lose their normal reasoning ability after just a few drinks. Under the influence of alcohol, the people may be inclined to take risks.

Hypothermia

Contrary to popular belief, two or three “stiff drinks” do not warm up a cold person. On the contrary, alcohol causes the blood to rise to the surface of the skin, giving the impression of warmth, although body heat quickly dissipates into the air or water. Cold water is dangerous enough without alcohol reducing survival time even more.

Body Heat Regulation

The term “human body heat regulation” pertains to the mechanism that maintains an even body temperature. Physical activity, on land or in the water, increases the body’s glucose level (blood sugar). Glucose, which carries energy to the muscles, is needed to produce heat when we exercise. But alcohol interferes with the liver’s ability to produce glucose. Drinking alcohol and engaging in strenuous exercise at the same time can reduce glucose levels (hypoglycemia) and make a person confused and weak, and interferes with the body’s heat regulation. Shivering, a reflex by which the muscles produce heat, is impeded by alcohol. Alcohol causes the blood vessels in the skin to dilate (expand), thus increasing the amount of heat that leaves the blood and enters the air. Cold water is also more effective than cold air in removing body heat. For these reasons, high levels of alcohol in the blood diminish the body’s ability to produce heat as quickly as it is lost in cold water, and the body temperature can therefore fall.

A pleasure craft operator should always check weather forecast information before heading out to avoid putting the craft and persons on board at risk.

Chapter 7: The Buoyage System

In 1983, Canada adopted the buoyage system, or aids to navigation, used internationally. This system includes port hand buoys, starboard hand buoys, cardinal buoys and special buoys.

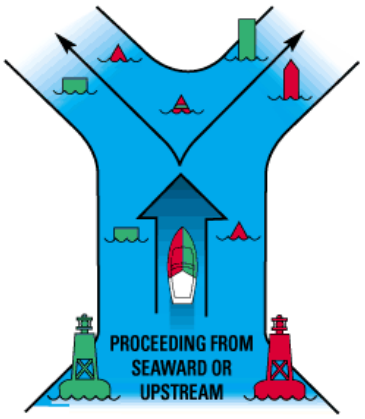
Aids to Navigation

Aids to navigation are devices (buoys) or systems (collision regulations), that are external to the pleasure craft. They are provided to help the operator of a pleasure craft determine position and course. They can additionally warn the operator of dangers or obstructions and advise the operator of the location of the best or preferred route.

Port Hand and Starboard Hand Buoys

Port hand buoys are green and starboard hand buoys are red. They show which side of a channel is safest to travel; accordingly, they mark channels or hazards. Generally, green buoys must be passed on the left side of a craft heading upstream, i.e., against the current. Red buoys must be kept on the right side of a craft when proceeding in the upstream direction. A simple rule is red to the right when returning, or the three "R's": red, right, return.

In many places, the direction of the current is determined by consensus or by the tide. It is important to be thoroughly familiar with the aids to navigation in your region.

Port Hand Buoys Green in colour. They can be shaped as: • cans • spars • pillars If they do not have a green light they will be flat on top.		***Starboard Hand Buoys*** Red in colour. They can be shaped as: • conical • spars • pillars If they do not have a red light they will be conical on top.

Green port hand buoys

- marks the port (left) side of a channel or the location of a danger and must be kept on the port (left) side of a pleasure craft when pro ceeding in the upstream direction;
- it is coloured green;
- displays identification letter(s) and odd number(s);
- if it carries a top mark, the top mark is a single green cylinder;
- if it carries a light, the light is green and is a flashing (Fl) 4 s or quick flashing (Q) 1 s;
- if the buoy does not carry a light, it has a flat top.

Red starboard hand buoys

- Marks the starboard (right) side of a channel or the location of a danger and must be kept on the starboard (right) side of a pleasure craft when proceeding in the upstream direction;

- is coloured red;
- displays identification letter(s) and even number(s);
- if it carries a top mark, the top mark is a single red cone, pointing upward;
- if it carries a light, the light is red and is a flashing (F1) 4 s or quick flashing (Q) 1 s;
- if the buoy does not carry a light, it has a pointed top.

Bifurcation buoys

- You may pass buoys with red and green bands on either side in the upstream direction.
- The main or preferred channel is shown by the colour of the top band.
- For example, if a red band is on top, you should keep the buoys on your starboard (right) side.

Know that a port hand day beacon is a beacon that

- marks the port (left) side of a channel or the location of a danger during daylight hours
- it must be kept on the port (left) side of a pleasure craft when proceeding upstream;
- it is square with a black or green coloured square centered on a white background with a green reflecting border .. it may display an odd number made of white reflecting material

Know that a starboard hand day beacon is a beacon that

- marks the starboard (right) side of a channel or the location of a danger during daylight hours and must be kept on the starboard (right) side of a pleasure craft when proceeding upstream;
- it is a red coloured triangle centered on a white background with a red reflecting border; and may display an even number made of white reflecting material

Cardinal Buoys

There are four types of cardinal buoys: north, south, west and east. Cardinal buoys are used to indicate the direction of the safest waters. A north cardinal buoy indicates that the deepest or safest water exists to the north of the buoy. The vessel must travel north past the north buoy; in this way, the buoy is between the hazard and the craft. The same principles apply to all of the cardinal buoys. For more details on the hazard indicated by the buoy, a nautical chart must be consulted; the buoyage system is therefore used in tandem with nautical charts.

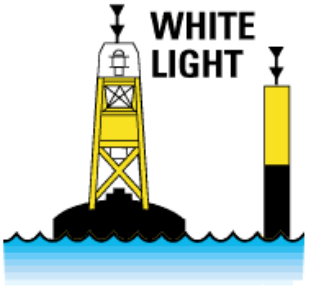
There are two ways to distinguish among cardinal buoys: by colour and by the shape of their conical top marks. The direction of the point indicates the type of cardinal buoy. Accordingly, the cones on a north cardinal buoy point north, and on a south cardinal buoy, point south.

North Cardinal Buoy

- A north cardinal buoy is located so that the safest water exists to the north of it
- It is coloured black and yellow
- The top half is painted black indicating that it is a north buoy .. the lower half is painted yellow
- If this buoy does not carry a light, it will be spar shaped
- If it carries a top mark .. they will both point upwards to indicate north

South Cardinal Buoy

- A south cardinal buoy indicates that the safest water exists to the south of it.
- It is coloured black and yellow
- The black is positioned on the bottom indicating that it is pointing south .. the upper portion is painted yellow
- If this buoy does not carry a light, it will be spar shaped
- If it carries a top mark .. they will both point downward to indicate south

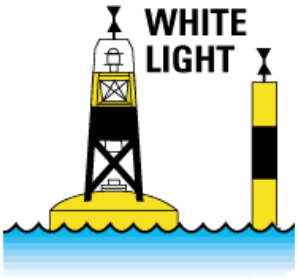


East Cardinal Buoy

- An east cardinal buoy is located to indicate that the safest water exists to the east of it
- It is coloured black and yellow
- the black is positioned on the top and the bottom with the yellow portion in the middle to indicate that it is an east buoy
- If this buoy does not carry a light, it shall be spar shaped
- If it carries a top mark .. they will point in opposite directions to indicate that it is an east buoy

West Cardinal Buoy

- A west cardinal buoy is located to indicate that the safest water exists to the west of it.
- It is coloured black and yellow
- The black is positioned in the center to indicate that it is a west buoy .. the yellow is positioned top and bottom.
- If this buoy does not carry a light, it shape be spar shaped
- If it carries a top mark .. they will point in towards each other to indicate that it is a west buoy



As with any buoy ... when encountered you should refer to your Nautical Charts for specific information.

Light Characteristics of Cardinal Buoys

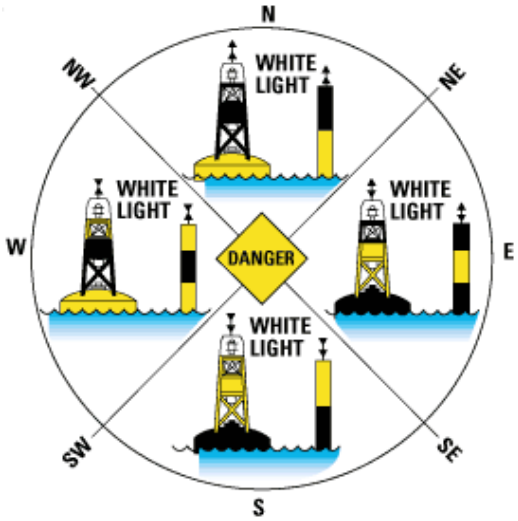
The lights on all cardinal buoys will be white in colour, (if the buoy is so equipped). In order to identify these buoys in darkness or reduced visibility, each one can be distinguished by different light flash characteristics.

The flash characteristics are based on the same numbering principle as an ordinary time clock.

The number of flashes coincides with the position of the face of the clock.

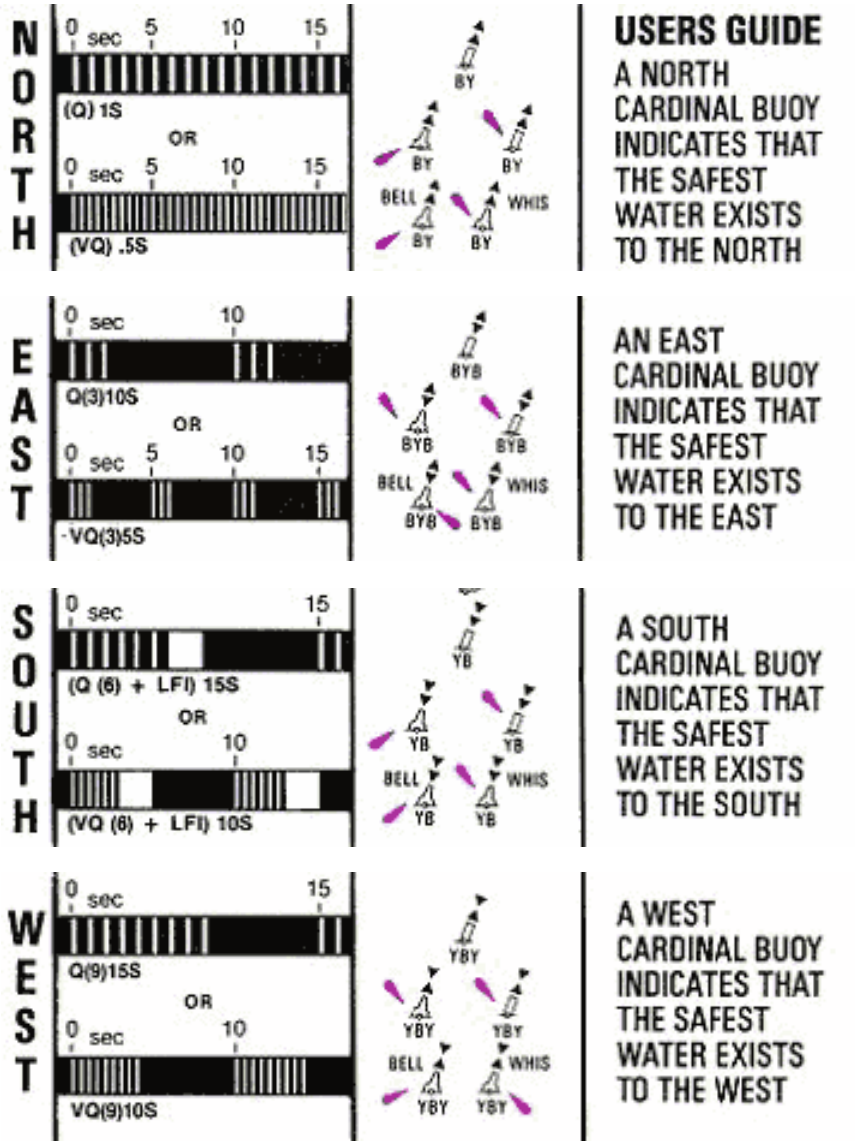
North buoys flash at the rate of 1 per second or 60 per minute. A very quick flash can also be used — 10 flashes every 5 seconds.

West buoys flash at the rate of 9 times in 15 seconds. A very quick flash can also be used — 9 flashes every 10 seconds.



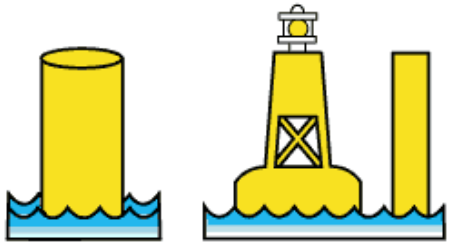
East buoys flash at the rate of 3 times every 10 seconds. A very quick flash can also be used — 3 flashes every 5 seconds

South buoys flash at the rate of 6 times in 15 seconds followed by a single long flash. A very quick flash can also be used — 6 flashes every 10 seconds plus 1 longer flash at the end of each group to mark the end of 1 flash cycle.



Special Buoys

Finally, special buoys serve a variety of purposes. They are not primarily aids to navigation, but rather provide the boat operator with a host of information. Some are cautionary buoys to mark firing range or seaplane bases, while others gather weather information, locate prohibited areas or mark designated mooring areas. The shape of the special buoys is not significant; they are identified by their symbols, drawings and colours.

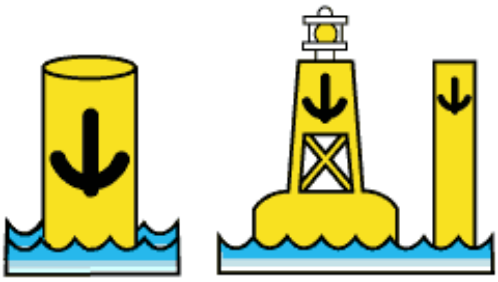


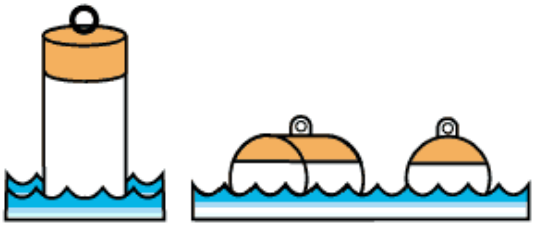
Cautionary Buoy

- they mark an area where mariners are to be warned of dangers such as firing ranges, racing courses, seaplane bases, underwater structures or areas where no safe through channel exists and of traffic separations.
- they are coloured yellow
- they display identification letters
- if it carries a top mark it shall be a single yellow 'X' shape
- if it carries a light, the light shall be yellow and flash once every 4 seconds

Anchorage Buoy

- it is used to indicate areas which are favourable
- for overnight anchoring • they are yellow in colour
- they usually have an anchor symbol clearly visible
- if it carries a light the light is yellow and it will flash once every 4 seconds.



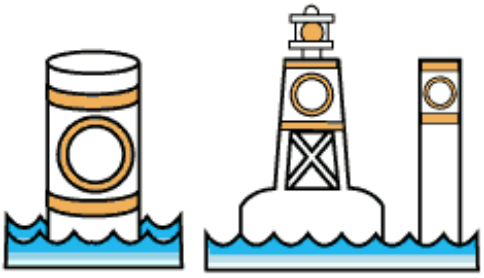


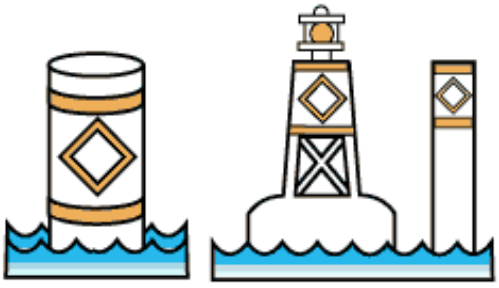
Mooring Buoy

- used to moor or secure vessels
- it is the ONLY buoy that you may legally tie your vessel to
- usually found in designated anchorage areas
- when in reduced visibility, be aware that other vessels may be present and tied up

Control Buoy

- it is used to mark an area where boating is restricted
- it is coloured white
- it has an orange, open-faced circle on two opposite sides and two orange horizontal bands, one above and one below the circle
- a black figure or symbol inside the orange circle indicates the nature of the restriction.
- if it carries a light is shall be yellow and flash once every 4 seconds



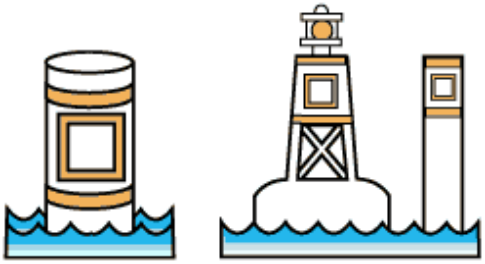


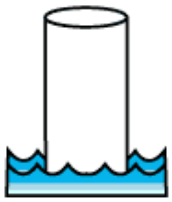
Hazard Buoy

- it is a buoy which marks random hazards such as rocks and shoals
- it is white in colour
- it has an orange diamond on two opposite sides and two orange horizontal bands, one above and one below the diamond symbols
- if it carries a light the light is yellow and flashes once every 4 seconds

Information Buoy

- it displays information of interest to boaters. The message can either be displayed using lettering or symbols.
- it is white in colour
- it can be distinguished by the orange open-faced square symbol on opposite sides and the two horizontal bands, one above and one below the square.
- if it carries a light it shall be yellow and it will flash once every 4 seconds



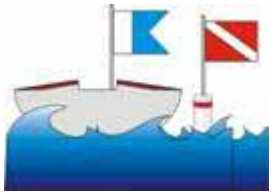


Swimming Buoy

- it is used to mark the perimeter of a swimming area
- it is white in colour
- if it carries a light, the light is yellow and it will flash once every 4 seconds.

Diving Buoy

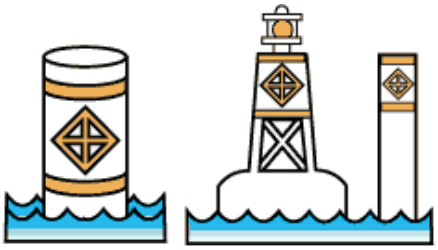
- it is used to mark an area where scuba or other such diving activity is in progress
- it is coloured white and it carries a red flag not less than 50 centimetres square with a white diagonal stripe extending from the tip of the hoist to the bottom of the fly
- if it carries a light the light shall be yellow and flash once every 4 seconds



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

Be sure you know what the 'diver down' flags look like. If you see either flag, keep well clear of the vessel and diving site, and move at slow speed.

Keep Out Buoy

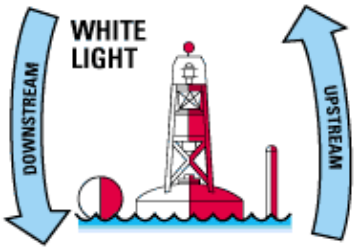


- A keep out buoy marks an area in which boats are prohibited
- it is white in colour
- it has an orange diamond containing an orange cross on two opposite sides and two orange horizontal bands .. one above and one below the diamond symbols
- if it carries a light the light is yellow .. flashing once every 4 seconds.

Scientific Buoys (O.D.A.S.)

- An ocean data acquisition system buoy collects meteorological and other scientific data

Fairway Buoy



- usually found at the entrances to channels or used to mark the center of a channel
- it may be passed on either side but should be kept on the port (left) side of your vessel when proceeding in either direction

Isolated Danger Buoy

- it is used to mark an isolated hazard in waters which are otherwise navigable.
- it is usually moored directly on or above the danger
- it is used to mark a large rock, shoal or sunken ship

In addition to the above mentioned special buoys, you could also encounter posted command signs or warning signs. These can be used to relay a host of information or provide warnings of impending danger. Some of these are:

- no wake zones
- no anchorage area signs
- speed limit zone signs
- low head dam hazard signs
- overhead or underwater power line hazard signs
- pipe line hazards signs

It cannot be stressed enough that every time you encounter a sign or buoy you should reference your nautical charts to ensure that you correctly interpret the information.

The Nautical Chart

The Different Types of Chart

A simple visit to a map store will quickly convince you of the vast range of products available. Outdoor enthusiasts can find topographical maps for mountain excursions, or guide maps to lakes and rivers to plan their canoe expeditions.

Naturally, travelers can plan their trips with a land, tourist or road map, and farmers can see the boundaries of their fields on a farm map. For boaters, the nautical chart is vital tool.

Main Features of a Nautical Chart

Nautical charts provide information on waterways. They give useful information to boaters, especially on water depth, the type of bottom, the type of shoreline, current direction, coastal altitude, easily identifiable landmarks and aids to navigation.

The Canadian Hydrographic Service publishes all nautical charts. For pleasure craft, large scale maps (i.e., covering a small portion of the region) are often the most useful because of all the detail they contain.

To know which regional chart is most appropriate for your activity, consult the Nautical Chart Catalogue. This catalogue is a large map showing the area covered by each available chart. For information on how to obtain charts, contact the Canadian Hydrographic Service.

Importance of the Nautical Chart to Boaters

Charts provide a host of information to boaters that only detailed knowledge and experience of the waterway could replace.

Using a nautical chart makes the boaters task in a rescue situation easier in many ways. It:

- identifies a launch site
- shows the best route in light of currents, rapids, obstacles, etc.
- shows the location of waterway
- allows for an assessment of distances
- shows location on the water.

On receiving a distress call, the time may not seem right to carefully study a nautical chart. However, if the chart is available, the knowledge gained could mean the difference between locating and successfully helping out at a water accident or a tragedy.
Topographical maps are maps of the land areas depicting natural and artificial features of the land, including elevation contours, shoreline, rocks, land features above water, and cultural features:

- They are intended primarily for the use of the general public on the land;
- They are published by Natural Resources Canada and some provincial authorities;
- 3 They are sometimes used when navigational maps (charts) are not available, but they usually do not depict: underwater hazards, marine aids to navigation, channels, anchorage areas etc.

Other Navigation Aids

A magnetic compass can be used to help the operator of a pleasure craft find directions. It must be remembered however that a magnetic compass is influenced by the proximity of metallic and/or electrical devices. In order to avoid false information, make certain that the compass is mounted in an area free of magnetic and electrical interference.

PLEASURE CRAFT TERMINOLOGY

Range Beacons	A set of at least two markers placed a distance apart at various intervals permanently installed to form a transit and used to indicate a recommended track through dangerous or narrow waters.
Small craft warning	Sustained wind speeds in the range of 20 to 33 knots inclusive as defined by Atmospheric Environment Service, Environment Canada.
Gale warning	Sustained wind speeds in the range of 34 to 47 knots inclusive as defined by Atmospheric Environment Service, Environment Canada
Storm warning	Sustained wind speeds in the range of 48 to 63 knots inclusive as defined by Atmospheric Environment Service, Environment Canada
Port	The left side of a pleasure craft looking forward.
Hull	The body of a pleasure craft exclusive of masts, sails, rigging, machinery and equipment.
Fenders	Various devices serving to cushion the shocks and protect the side of a pleasure craft.
Pleasure craft	A boat, a ship, a vessel, or any other description of water craft that is used exclusively for pleasure and does not carry passengers or goods for hire, reward, remuneration or any object of profit.
Ahead	Direction or position pointing forward of a pleasure craft
Bow	The forward part of a pleasure craft.
Underway	A pleasure craft that is not at anchor or made fast to the shore.
Beam	The width of a pleasure craft.
Power driven vessel	Any vessel propelled by machinery as described in the Collision Regulations, rule 3.
Sailing vessel	Any vessel under sail provided that propelling machinery, if fitted, is not being used.
Windward side	The side opposite to that on which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest fore-and-aft sail is carried.
Code of signals Flag A	The international diving flag (usually blue and white in colour) must be displayed by any vessel engaged in diving. 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. The Code of signals Flag A is regulated under the Private Buoy Regulations. When encountered the operator of a pleasure craft must keep well clear at slow speed.
Passive Radar Reflector	Pleasure craft that are under 20 metres in length or a craft which is constructed primarily of non-metallic materials (wood or fiberglass), must be equipped with a passive radar reflector. The radar reflector must be mounted or suspended at a height of not less than 4 metres above the water if practicable. Unless: You only operate in limited traffic conditions, daylight, favourable environmental conditions and where compliance is not essential for the safety of the craft. OR: Unless the small size of the craft or operation of the craft away from radar navigation make compliance impracticable.
Wake	The disturbed column of water around and behind a moving pleasure craft which is set into motion by the passage of a pleasure craft.
Wash	The loose or broken water left behind a pleasure craft as it moves along and includes the water thrown aft by the propeller.
Abaft	A direction toward the stern.
Astern	A direction or position pointing behind a pleasure craft.
Draft	The depth of water which a pleasure craft requires to float freely.
Light winds	Winds with speeds less than 12 knots as defined by Environment Canada.
Moderate winds	Wind speeds in the range of 12 to 19 knots as defined by Environment Canada.
Operator	The person in effective charge and control of a pleasure craft and who is responsible for the pleasure craft.

Starboard	The right side of a pleasure craft looking forward.
Stern	The after part of a pleasure craft.
Strong winds	Sustained wind speeds in the range of 20 to 33 knots as defined by Environment Canada.

Bibliography

To enhance your boating safety and enjoyment, we recommend that you acquire and read the following publications:

Safe Boating Guide	Published by the Canadian Coast Guard (Office of Boating Safety)
Canada Shipping Act, Small Vessel Regulations	Published by the Department of Fisheries and Oceans Canada
Canada Shipping Act, Collision Regulations	Published by the Department of Fisheries and Oceans Canada
Canada Shipping Act, Boating Restriction Regulations	Published by the Department of Fisheries and Oceans.