

# Royal Canadian Sea Cadet Corps Centurion Sailing Manual



# SAILING

Long before yachting evolved into the pleasure sport it is known as today, sailing was the only method of transport across the seas. During the 1600's, being a sailor was akin to being thrown in jail, as conditions for the crews were far from enjoyable. Bad weather, rough seas and the very real threat of pirates made the life of a sailor quite miserable and far from the exhilarating experience we enjoy today.

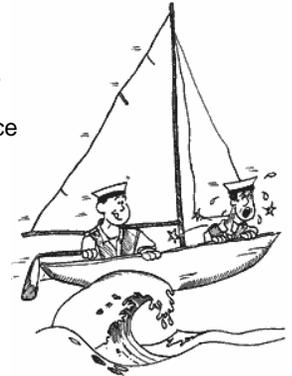
As a Sea Cadet, you will have many different sailing opportunities and experiences. Eventually, you will need your White Sail Level II to be promoted to Petty Officer First Class, so start now! You may participate in sail weekends at the provincial sail centre, learn to sail at your corps, skipper a boat at summer camp, or race other sailors at regattas. Sailing is an exciting sport and this chapter is designed to give you the theoretical background you require. However, the only way to truly appreciate sailing is to get out on the water and do it!

## Sailing Clothing

As with all sports, there is required clothing and personal equipment that must be worn when sailing. Certain items are worn all the time and some are dependent upon the weather conditions.

The most important piece of personal safety equipment to be worn is the Personal Flotation Device (PFD). When choosing a PFD check for the following:

- Suitable for the weight and size of the wearer by reading the tag on the PFD
- In good repair
- Fits snugly so that it will not slip off in the water
- Department of Transport (DOT) approved (check the tag on the PFD)



In Sea Cadets, you are issued with a PFD that meets DOT standards. It is to be worn every time you are in or around water, as well as in the sailboat. You may have the opportunity to sail outside of cadets as well, at your family cottage or Local Yacht Club, so know what to look for in a PFD.

In addition to a PFD you are required to wear proper footwear in the sailboat at all times. This means a soft-soled shoe, like a running shoe or deck shoe. Hard-soled shoes like your cadet boots definitely don't qualify! Sandals are also not allowed as they can slip off easily or get caught up in the rigging. Proper footwear protects your feet from being cut or injured in the boat.

When you are first learning to sail you will be issued a helmet (also affectionately known as a brain bucket) to wear in the sailboat. It protects your head from injury in the event of accidental gybing. Did you ever wonder why they call the boom a boom? That's the noise it makes as it hits your head - BOOM!

Helmets, soft-soled shoes, and PFD's are standard requirements for sailing. The type of clothing you wear depends upon the type of weather. There are three main types of weather and appropriate clothing:

Hot Sunny Day	Cold Day (Cold weather or water)	Rainy Day (wet sailing)
Sunscreen	Warm hat or wool toque	Layered clothing
Hat	Sweater	waterproof jacket and pants
Light clothing	Warm pants	Cadet PFD
Cadet PFD	wetsuit/drysuit (is a possibility but not a necessity)	Shoes or boots
Shoes	Cadet PFD	Helmet
Helmet	Shoes	
	Helmet	

This is just a guideline for sailing. You don't need expensive wet or drysuits to enjoy the sport of sailing, just use common sense when dressing for the weather.

## How a yacht sails

The wind, the sun, the wide open skies and a sailboat can be a recipe for a beautiful day of sailing, but before you head out on the water for the first time you must be able to identify wind direction. This can be done through various visual clues, including:

- Waves and ripples moving downwind on water's surface
- The way sails are oriented when allowed to flap freely
- The orientation of wind indicators and weather vanes
- Motion of low clouds (High clouds can fool you!)
- Smoke from chimneys or ship's funnels
- Flags
- Positions of boats tied to moorings or docks (Careful you may be misled if there's a strong current.)

In addition to visual clues the wind can also be felt on your face, hands and the back of your neck. Try closing your eyes, and through sensation only, determine where the wind is coming from.

When the wind blows over water it causes waves to build up. The strength of the wind can be estimated by the size of these waves. Remember, the longer the wind lasts and the wider the expanse of water, the larger the waves tend to be. Be careful also to not assume the wind and waves are coming from the same direction as the wind is constantly changing.

Did you know that the word "yacht" comes from the Dutch word "yaghen" meaning to hunt, chase or pursue?

You probably know that a sailboat moves on the water because of the wind, but do you know how? There are three elements that cause a sailboat to move forward:

- Your weight in the boat controls balance.
- The sails control propulsion.
- The rudder controls direction.

When you move around in a sailboat you change the balance, and balance affects how well your boat sails. Generally, you want your boat to be flat in the water. Your sailboat is sensitive to sudden movements, so move carefully.

Propulsion is the wind pushing on the sails. Without a centreboard or daggerboard, the wind will push your boat sideways. As soon as you put your board down in the water your boat will move forward. This is because it pushes the opposite way as the wind on the sails. Think about when you squeeze a tube of toothpaste and it comes out the end of the tube. The opposite pressures cause forward motion. This is the same thing that happens in your boat. You can sail in any direction as long as it is not directly into the wind.

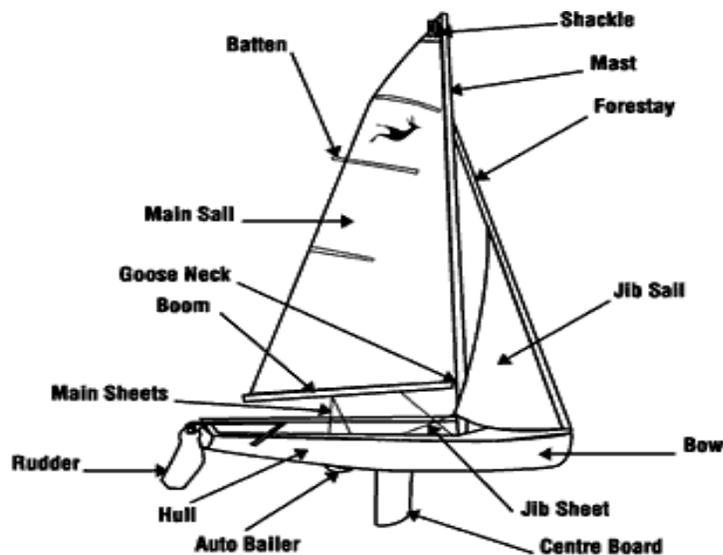
By moving the tiller, which controls the rudder, you can steer your boat. It has the same function as the steering wheel in a car, except when you push your tiller one way the boat goes in the opposite direction. It won't take long to perfect this skill.

With practice you will soon understand how these three forces work together.



## Parts of a Boat

The sailboat is a finely tuned instrument. Each of the parts on the boat has a specific use and function. With practice, it won't take you long to learn the names and uses of the different parts.



Speaking of poles, do you know which country owns the North Pole? No one! The earth's northernmost geographic point has never been claimed.

- Bow is the front end of a boat.
- Stern is the back of a boat.
- Mast is a vertical spar (pole) which supports the sails.
- Boom is a horizontal spar which holds the bottom of a sail.
- Mainsail is a large sail set behind the mast.
- Jib is a small sail set ahead of the mast.
- Gooseneck is a hinged fitting which links the boom to the mast.
- Daggerboard (not fixed in the boat) centreboard (fixed in the boat) prevents the boat side slipping while sailing.
- Halyards are control lines used to hoist a sail and hold it up.
- Rudder is a hinged blade mounted at the stern which steers the boat.
- Tiller is the handle attached to the top of the rudder which is used to steer the boat.
- Tiller extension is a stick attached to the end of the tiller which allows the skipper to sit further out to help stabilize the boat.
- Mainsheet is a line used to control the mainsail.
- Jibsheet is a line used to control the jib.

## Rigging a Sailboat

The best way to learn how to rig a sailboat is to rig a sailboat, so the information in this section is very basic. Use this checklist as a guide when rigging your boat. The first thing you do is check to ensure you have the following equipment:

- Sailboat with mast stepped
- Sails and sheets
- Rudder and tiller
- Daggerboard, if required
- One paddle or an anchor with not less than 15 m of rope
- One buoyant heaving line of not less than 15 m in length
- Bailer
- Sound signal
- Personal Flotation Device (PFD) for each crew member

Some equipment is needed to sail the boat, and some equipment is for safety. All sailboats are required by law to carry safety equipment, including paddles, bailer, sound signal, and PFDs. This meets the Canadian Coast Guard regulations regarding the type of boat that you sail. Because sail instructors conduct all Sea Cadet sail training, they will usually carry the paddles, bailer, and sound signal in their safety boat for you. For further information, look at the Canadian Coast Guard Safe Boating Guide

- ALWAYS look up and watch for overhead power lines when stepping a mast or moving a sailboat with the mast stepped
- ALWAYS wear a PFD
- ENSURE your boat is equipped with safety equipment
- WEAR a helmet to protect your head
- STAY with the boat if you capsize

There is a logical order to follow when rigging a boat and it is important to do these steps in sequence:

1. Gather equipment ensuring numbers all match.
2. Position boat bow into the wind.
3. If boat is on shore, avoid standing in the cockpit.
4. Fit sail battens.
5. Bend on sails.
6. Attach halyards.
7. Hoist jib sail first.
8. Ensure boat is head to wind, then hoist the mainsail.
9. Secure halyards and coil excess line.
10. Attach sheets.
11. Fit rudder and tiller.
12. Ensure centreboard is secured in the upright position (if on shore).

After you have finished sailing, you will probably be asked to derig your boat. Follow these steps:

1. Lower and remove sails.
2. Remove and stow rudder and tiller.
3. Secure the boom and centreboard (where applicable)

Once you have derigged your boat, you will have a pile of sails to put away. Don't just stuff them in the sailbag, as there is actually a specific method for folding and bagging sails:

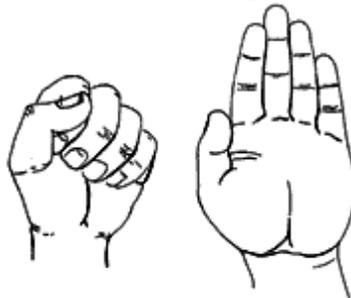
- Remove battens (if removable) and place in sail bag.
- Lay the sail flat, so as free of wrinkles.
- Ensure sail is clean and dry.
- Start at foot and fold up to square off foot.
- Fold remaining sail down in a zigzag fashion so that each fold stacks on top of the last.
- Roll or fold the stack loosely beginning at the luff.
- Place in bag with sheets or leave sheets outside bag if wet.

Finally, before you head out on the water, it is important to properly secure your gear. If you are carrying your own safety equipment, tie your paddles and bailer to the boat and attach your sound signal (whistle) to your PFD. Coil all lines neatly to avoid tangling in the event of a capsize. Did we say capsize? Don't worry, capsizes are a normal part of sailing and nothing to fear. With knowledge and practice, you will find capsizing a "breeze" (some breezes are stronger than others!). One of the first sailing lessons you will learn is how to self-rescue in the event of capsize, so prepare to get wet!

## Capsize Procedures

Unless you're doing it for practice, capsize usually comes as a surprise. One minute you're sailing along and the next minute you're in the "drink". Having been caught off guard, it's important to stay calm.

The first thing to do is check yourself. Make sure that you are not injured or caught up in the rigging. Next, check your crew for the same. It is important that you both stay with the boat. Never leave your boat and attempt to swim to shore, or for help. You are the most visible to rescuers if you stay with your boat. Should you require assistance, an open hand indicates that you need help. A closed fist means you are okay.



By following these steps you will have your boat righted in no time at all:

1. Check yourself, check your crew.
2. If any sheets are cleated, release them.
3. Skipper swims to centreboard and pulls it all the way out, crew swims to bow and brings the boat head to wind.
4. Skipper climbs onto the end of the board and leans back to right the boat, crew holds the bow head to wind.
5. Skipper climbs into boat over transom and helps crew in.

At this point your boat is probably full of water. Using the bailer you tied into your boat, and the automatic bailer, sail off to drain the water. A sailboat is designed to withstand the rigors of capsize and before long you'll be back sailing.

Sometimes a capsize will result in your boat **turtling**. Normally, in a capsize the boat lies on its side with the mast and sails just under the water, but when we turtle, the mast points straight down and the boat bottom is up. Occasionally, you may even find that you end up under the turtled boat, but don't panic, there is a pocket of air for you to breathe.

If you end up under the hull, make sure you are not caught on anything, take a deep breath and bob under the hull to come up outside the boat. Remember that your PFD will pop you back to the surface.

A turtled boat is a bit more difficult to right. Begin by tossing a jib sheet over the bottom of the hull, behind the daggerboard/centreboard. Next, climb on the hull and pull back against the jib sheet to bring the mast back to a horizontal or capsized position. Often, the assistance of a safety boat is required.

## Your First Sail

So, you've learned the parts of the boat, how to rig and derig, and what to do in the event of a capsize. You are now ready for your first sail. This section is designed only to give you some pointers as the best way to learn is by actually sailing.

There will probably be two people in your sailboat. One is known as the skipper and one is the crew. In cadets you might hear the skipper referred to as the coxswain. Each crew member has a specific job to do. The skipper steers the boat, controls the mainsheet and is ultimately responsible for making sure that the boat is handled safely. The crew balances the boat from side-to-side, keeps a lookout for other boats, and handles the jib (on sloops).

The skipper should sit on the windward side of the boat (opposite the boom) about even with the end of the tiller. If you always steer from this position, it's easier to see the sails, to sense changes in the wind, and to avoid becoming disoriented during maneuvers. The crew sits just ahead of the skipper, about even with the centreboard.

When you are first learning to sail, you will probably be assigned as crew in the sailboat. As you gain experience and confidence, you will be given opportunity to act as skipper.

We have already learned about wind direction and the forces that make a boat sail. We know that a boat cannot sail directly into the wind, but how does it sail with the wind? There are specific points of sail that are used to determine where your sails and centreboard are set in your boat. It all depends on where the wind is coming over your boat.

The first time you sail you will probably zoom around all over the place, getting a feel for the boat. Eventually, you will need to refine your skills to sail a specific course or direction. Depending on where the wind is, you will use different points of sail to reach your destination. It's all a matter of how you steer, trim your sails, and handle your boat:

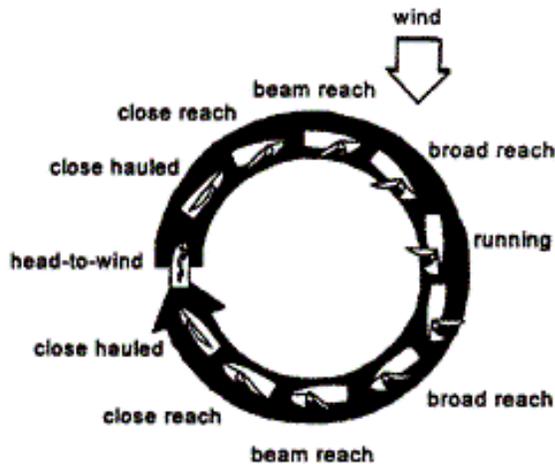
- Running is sailing directly away from the wind. Sails are all the way out; centreboard is all the way up.
- Broad reach is sailing with the wind coming over one corner of the stern. Centreboard is 3/4 up, sails are 3/4 out.
- Beam reach is sailing with the wind coming over the side of the boat. Centreboard is 1/2 up, sails are 1/2 out.
- Close reach is sailing with the wind forward of the beam. Centreboard is 1/4 up, sails are 1/4 out.
- Close hauled is sailing as close to the wind as you can. Centreboard is all the way down, sails are all the way in.

Depending on which side of the boat your boom is on determines which tack you are on. If the boom is on the starboard side, you are on a port tack. If the boom is on the port side, you are on a starboard tack. Except, when you are running, the tack is also determined by which side the wind is coming over. If the wind is coming over the starboard side, port tack, and if the port side, starboard tack.

What happens if you want to change the tack you are on? For example, if you want to sail directly upwind, but you know you can't sail directly into the wind, how do you do it? This is done through a series of maneuvers called coming about or tacking. The act of turning the boat into the wind until the sails refill on the other side. The skipper will push the tiller towards the sail and as the boat passes through the eye of the wind, the skipper and crew will duck under the mainsail and switch sides. By completing a number of tacks, you can reach an upwind destination.

A similar maneuver called a gybe is used to change tacks when sailing downwind. The skipper will pull the tiller away from the sail, and as the stern passes through the wind, the skipper and crew will duck under the mainsail and switch sides. Be very careful with the boom as it can quickly swing from one side to the other and crack unsuspecting crew members in the head.

When you go from one point of sail to the other you will either head up or bear off. Heading up is turning your boat towards the wind, and bearing off is turning your boat away from the wind. As a crew member it is your responsibility to ensure that the sail and centreboard are set correctly each time you head up or bear off to a new point of sail.



Quiz- Fill in the blanks for **capsize procedures**:

1. Check \_\_\_\_\_, check your \_\_\_\_\_.
2. If any sheets are \_\_\_\_\_, release them.
3. Skipper swims to \_\_\_\_\_ and pulls all the way out, crew swims to \_\_\_\_\_ and brings the boat head to wind. \_\_\_\_\_ climbs onto the end of the centreboard and leans back to right the boat, \_\_\_\_\_ holds the bow head to wind.
4. Skipper climbs into boat over \_\_\_\_\_ and helps crew in.