

# *Learning to Sail*

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*Small Boat Sailing at the  
UCLA Marina Aquatic Center*

*By Vladislav J. Mikulich*





# Learning to Sail

## Small Boat Sailing at the UCLA

## Marina Aquatic Center 5<sup>th</sup> revised edition



The Friday Night Races at the MAC (c. 2011).

Original Text by Carla Thorson and Steve Orosz

Original Drawings by Rob Tokar

Subsequent revisions with new graphics by Steve Orosz

**Current revisions, additions, photographs, and graphics by Vladislav J. Mikulich**

Special Contributors: Lynn Dixon, Eric Ohki, John Nelson, Kathy Luciano, Sean Silver, Gene St. Laurent, Chris Howard, Kevin Richards, Sung Byun, and Riccardo Boscolo.

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COVER: Lynn Dixon sailing a Laser Radial (c. 2011)

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Steve Orosz, UCLA Head Sailing Instructor 1995-2005, mid-roll tack during a Tuesday Night race (c.2002).

# Sailing at UCLA

*There is nothing—absolutely nothing—Half so much worth doing as simply messing about in boats.*

— *Water Rat, The Wind in the Willows*  
by Kenneth Grahame

## Our Mission

The sailing program at the UCLA Marina Aquatic Center was created to provide a safe and fun environment for UCLA students, staff, and community affiliates to learn the fundamentals of sailing. The classes we provide offer a doorway into a larger world of sailing and what will be for many a lifelong pursuit of excellence in the sport.

## Using This Manual

Sailing is an athletic endeavor, and as such, all the fundamental skills will be learned on the water. This manual is offered as a resource to complement material covered in class and on the water. *It is not meant to be a substitute. To learn to sail, you must get out on the water and practice!*

## Class Structure

All classes at UCLA begin by introducing students to basic nautical knowledge, such as learning the parts of a boat or recognizing how a sail interacts with wind. This is followed by the practical knowledge of rigging a sailboat. Last and most important, every student learns how to maneuver their vessel in a seamanlike manner.

## Sailing Jargon

Sailing is a unique sport that is steeped in a tradition that dates back over five thousand years when the first curragh was built in Mesopotamia. The language handed down from the days when sailing was a commercial pursuit permeate modern sailing. Understanding the difference between port and starboard or windward and leeward are essential in developing a knowledge base to aid you on your journey into the world of sailing. All first time uses of a sailing term will be in **bold** followed by a short definition in parenthesis. A glossary of “Common Nautical Terms” is included at the end of this book for more detailed information.

## Preparation

**Sailing is a water sport, so be prepared to get wet, especially in small boats!** The wind and the Pacific Ocean are moderating coastal influences, and as such the weather conditions range from very warm to quite cool throughout the year. Check your local weather forecast for the coast, and dress appropriately for the conditions you will encounter. The UCLA Marina Aquatic Center provides live “Weather Up-



(Left to right): Nick Roberts and Gene St. Laurent in a V-15 on Santa Monica Bay (c. 2003).  
dates” and a Webcam at <http://www.marinaaquaticcenter.org>.

## What to Bring

1. Shoes with non-marking and non-slip soles
2. Sunscreen
3. Sunglasses (with Croakies® or a cord to retain them)
4. Clothing appropriate for water activity: dress in layers!
5. Change of clothes and shoes
6. Towel and bathing supplies
7. A lock for our day-use lockers

## What Not to Bring

1. Valuables (*flotation is inversely proportional to value*)
2. Cell phones, pagers, cameras, or anything that might be subject to water damage
3. Car keys
4. Wallets
5. Anything that sinks, but you would like to keep!

## Provided

1. Personal Flotation Device (PFD): life jacket
2. Wetsuit
3. Rack for keys available in the issue room
4. Day-use lockers (bring your own lock)

## Recommended

1. Sailing gloves
2. Dinghy sailing boots or wet suit booties
3. Waterproof windbreaker
4. Hat
5. Water or sports drink to keep hydrated

## Optional items for Upper Level Classes and Ocean Sailing

1. Hiking pants
2. Rashguard for wetsuits
3. Sailing safety knife
4. Signal light or whistle
5. Short piece of line for emergency repair
6. Waterproof watch
7. Lucky charm (as long as it floats)



# Safety and Preparation

Throughout the entire process of learning to sail, safety is paramount! Always place the safety of yourself and the crew first. Never attempt anything dangerous or beyond your experience level. Go out there and have fun, but make sure you do it in a responsible manner. Although dinghy sailing is not a particularly dangerous sport, it does, like all water sports, have inherent risks. By following a few sensible guidelines you will minimize any such risks, and ensure a safe and fun day of sailing.

## Swimming

To be a safe sailor there is one skill that you are required to master prior to the first time that you step into a boat: **SWIMMING!** You **MUST** be able to swim at least 100 yards unassisted, and tread water while fully clothed for at least five minutes without a **Personal Floatation Device (PFD)**. If you cannot perform either of these two tasks, it is essential that you learn them before beginning any sailing course.



Vlad Mikulich towing a Capri 14.2 (c. 2005).

## Personal Floatation Device (PFD)

Having the proper equipment aboard your vessel and using that equipment is essential to safe sailing. The most crucial piece of equipment you will have while on the water is your Personal Floatation Device (PFD). A properly fitted PFD should fit snugly around your chest without greatly restricting your movement or impairing your breathing. You **MUST** wear your PFD at all times while on the water.

The UCLA MAC uses Type III Coast Guard approved PFDs. All PFDs are kept in the wetsuit cage on the western side of the boathouse. The PFD rack has three levels where various sizes are kept. Top level: Large, X-Large and XX-Large PFDs; Middle level: Medium PFDs; Lower Level: Small and X-Small PFDs.



1. After selecting a PFD from the rack, you should read the inside label to verify that you have chosen the correct size. The PFD will indicate minimum weight and a chest size for a proper fit.



2. Loosen all the side straps on the PFD (2-4).



3. Put on the PFD as you would a jacket, and zip up the front.



4. Tighten all the side straps until the PFD is snug. It is best to tighten the lower straps before the upper ones.



5. To test for a proper fit you should have your crew gently pull up on the top of your PFD. It is best to raise your arms over your head for this test.



6. Your PFD should not move upwards more than 3 inches. If the PFD rises high enough to touch the bottom of your chin, then your PFD is either too large, or you have not tightened the side straps properly. Adjust the side straps, and repeat step 5. If the PFD is still too loose, choose a smaller size. Experience has shown that novice sailors often choose PFDs one size too large. A properly fitting PFD may save your life!



## Avoiding the Sun

Sunglasses are an essential piece of equipment during any outdoor activity. It is advisable to get a pair that filters 100% of the UV spectrum. Polarized models will also help reduce glare from the water, and even improve your ability to detect wind shifts. It is advisable to wear a Croakie® or cord to keep your sunglasses from falling into the water.



Sunscreen is a MUST, while sailing, even on a cloudy day. You should use a minimum of SPF 25, and reapply frequently throughout the day. Along with sunscreen a wide brimmed hat that encircles both the front and back of your head is a good investment to ensure your skin's health.



## Sailing Knife

A good sailing knife made of stainless steel or titanium with retractable blade has saved many a life while on the sea. If you will be investing long hours on the water it is advisable to obtain a sailing knife that can be attached to your PFD.



*He who lets the sea lull him into a sense of security is in very grave danger.*

*—Hammond Innes*



# Sailing Area

There are defined boundaries of where you may or may not sail, depending on your qualifications. These restrictions were made to provide for your safety. Do **NOT** sail in any area that your instructor has not specifically stated you may enter.

**Marina del Rey:** The primary sailing area is the Marina del Rey Entrance Channel. The Entrance Channel is divided into three lanes by a series of white and orange “No Sail” buoys. Sailboats under sail, must stay within the center lane between the two lines of buoys.

The outer lanes are for inbound and outbound vessels under power. UCLA sailboats should not cross into the power channels, except when leaving or returning to the UCLA dock. When crossing the power channel, UCLA sailboats must give way to any power boat in the designated power channel.

Sailing in the Main Channel is restricted to sailors who have completed Sailing III. Sailing in the boat basins is forbidden.

Sailing outside the marina on Santa Monica Bay is restricted to more advanced sailors who have completed ALL of the “Ocean Sailing Qualifications” and thus demonstrated their proficiency at handling their vessel in a variety of challenging conditions. Please do **NOT** sail on the bay without proper training and experience—wind and wave conditions can be very challenging for the novice sailor, and the Dockmaster will be unable to provide any assistance as he/she will not have visual contact with your vessel.

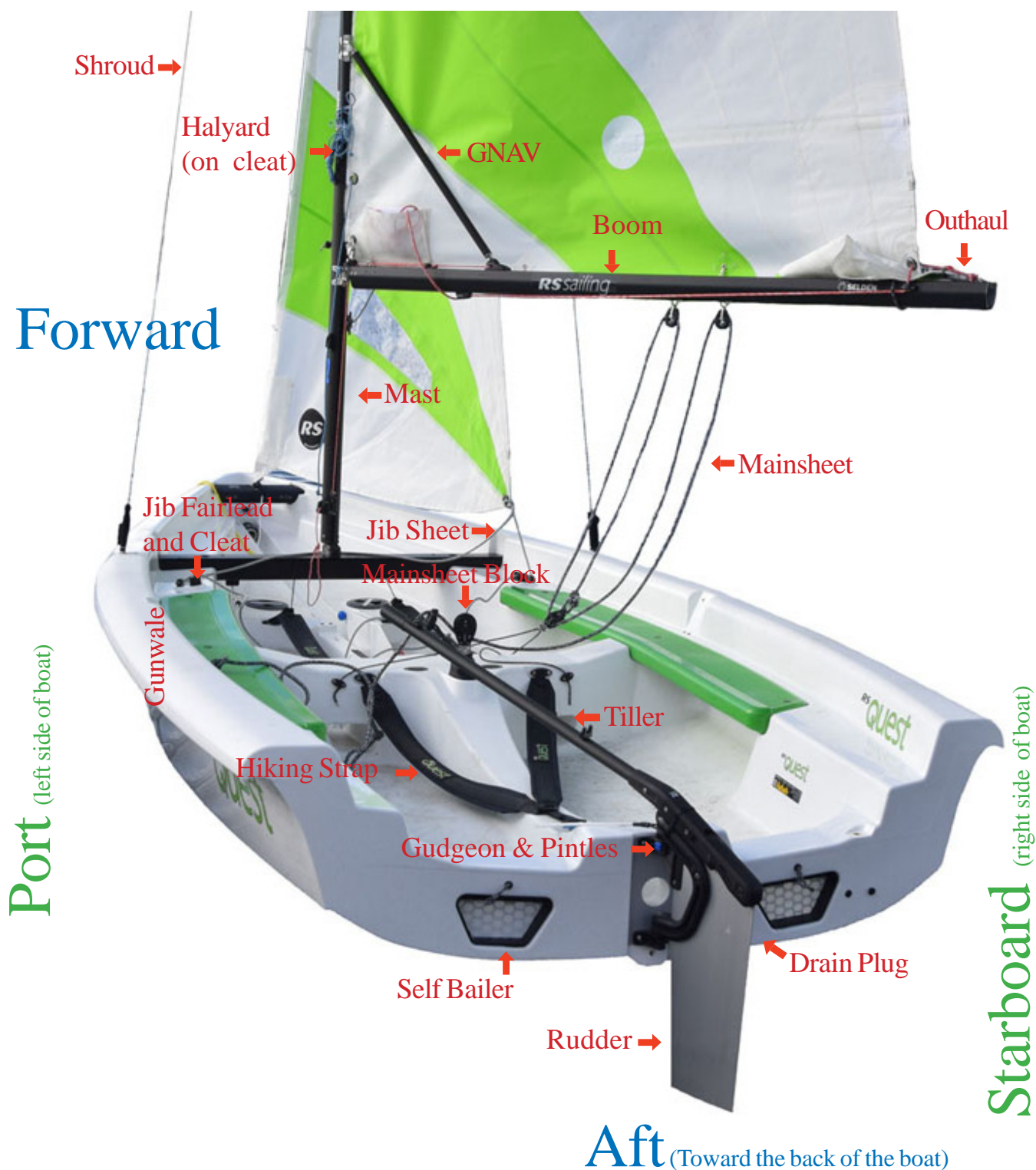


\*Image courtesy of the USGS.

*The ocean is an object of no small terror.*  
—Edmund Burke

# Parts of a Boat: RS Quest

Beginning sailors at UCLA start out in a 14-foot **dinghy** (a small, light sailboat without a fixed keel) called a RS Quest. The Quest is a modern dinghy designed for the UK Sea Cadets to train new sailors. It is composed of rotomolded plastic, and has the ability to slab reef the main as well as roller furl the jib. It is a **sloop rig** boat (single mast with one head sail), that weighs approximately 264 lbs. Although designed to be sailed by two people, it can hold up to four adults comfortably for a day-sail. To learn more about Quest please visit: <http://www.crssailing.com/project/rs-quest/>.





<http://www.macsailing.org/>

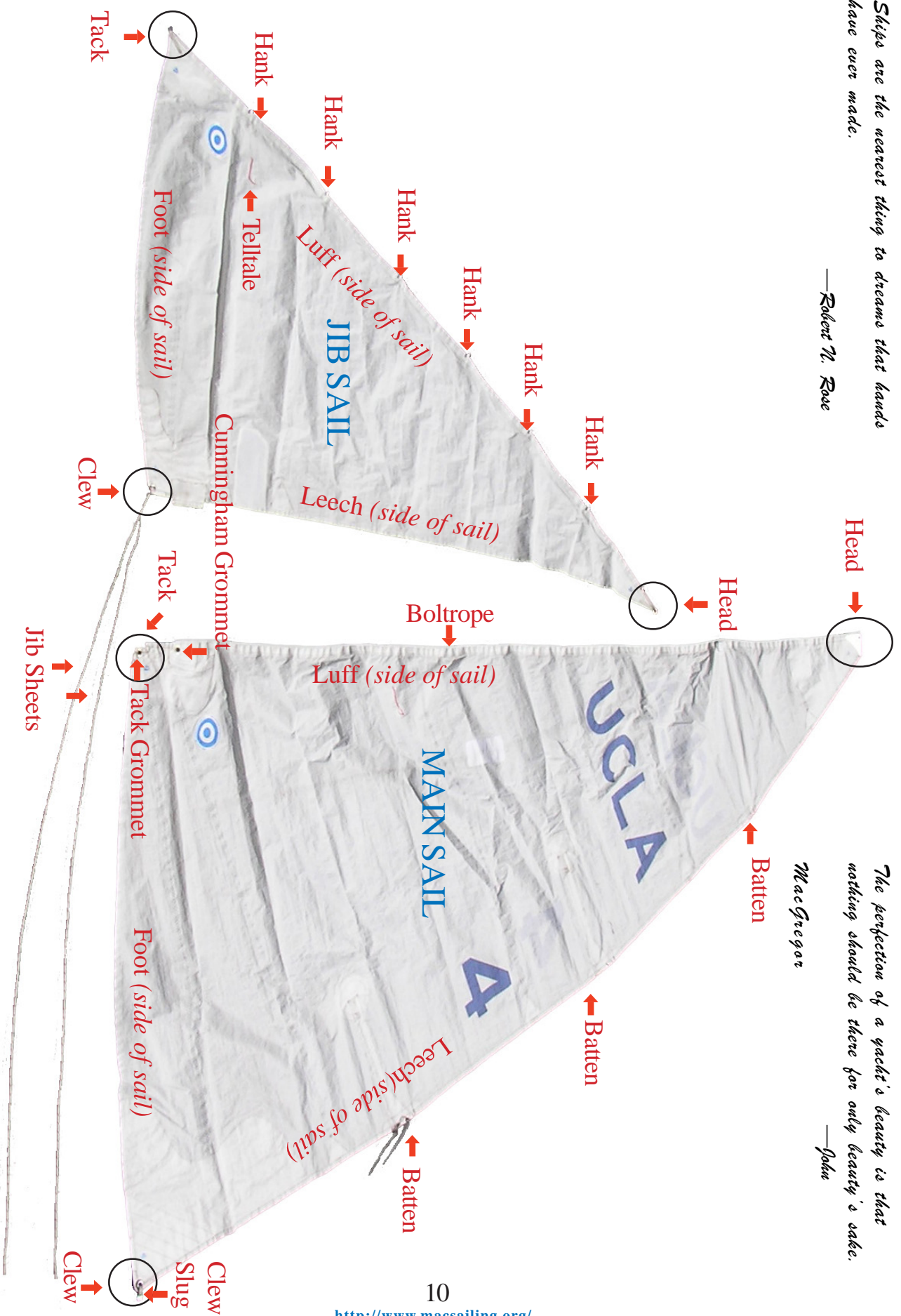
*Ships are the nearest thing to dreams that hands have ever made.*

—Robert N. Rose

*The perfection of a yacht's beauty is that nothing should be there for only beauty's sake.*

MacGregor

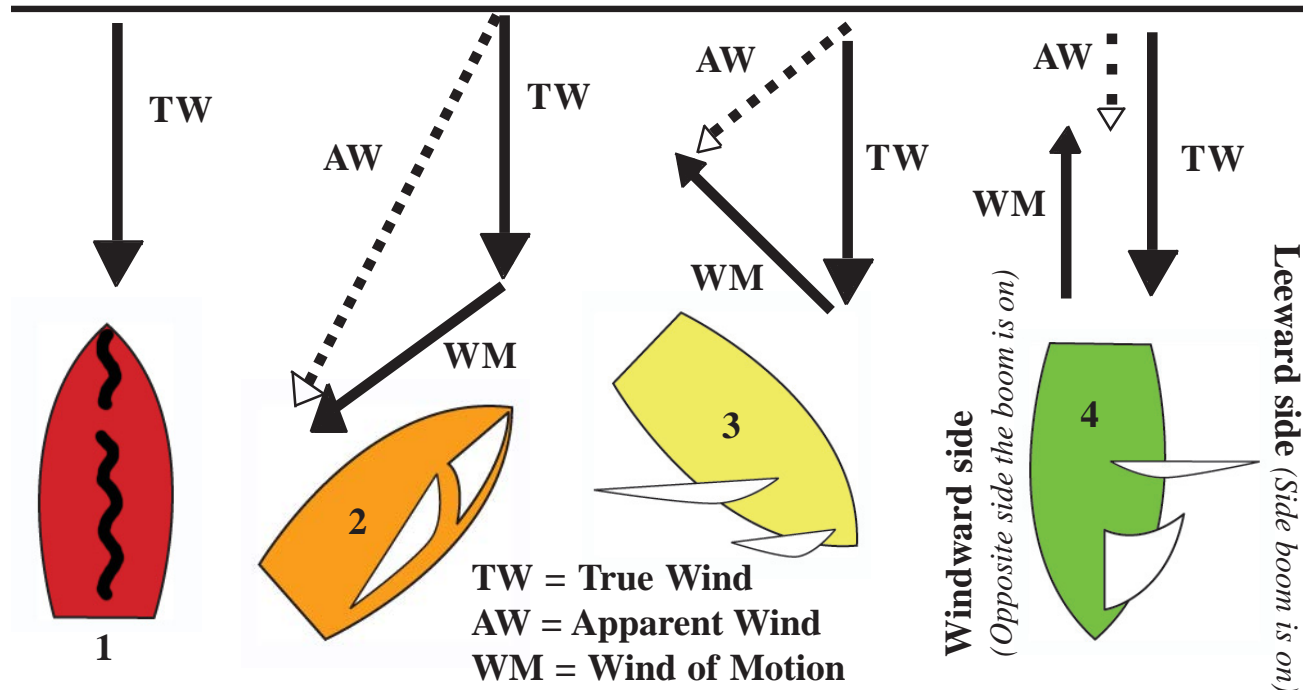
—John





# Wind Sensing

Sailors depend on the wind to power their boats. It is essential that you know where the wind is coming from at all times in order to use it effectively. Wind direction is usually defined by the direction **FROM** which it is coming. For example, a *southwest wind* blows **FROM** the southwest. (Exception: An *offshore breeze* comes from the shore and blows *toward* the water, an *onshore breeze* comes from the water and blows *toward* the shore).



## True Wind

The **true wind** is the wind experienced by a stationary observer. It shifts regularly, and should be monitored constantly while sailing. There are a number of ways to determine the direction of the true wind. Flags at the marina will fly away from the wind, as will loose sails on a non-moving boat (Boat #1). Smoke will blow away from the wind. Moored vessels will point toward the wind, and ripples on the surface of the water move with the wind.

## Wind of Motion

The **wind of motion** is the wind generated by a moving object. If a cyclist travels at 10 m.p.h. with no true wind present, then she will experience a 10 m.p.h. wind coming from the direction she travels towards.

## Apparent Wind

The **apparent wind** is the combination of the true wind and the wind of motion. The wind that drives a sailboat is the apparent wind! The apparent wind is lightest when a boat is travelling in exactly the same direction as the true wind (Boat 4); and becomes progressively stronger as a boat sails closer to the wind (Boat 2 vs 3). The apparent wind can be easily detected while you are sailing. To determine its direction, turn your head toward the wind until you feel the breeze on both ears. Once you feel even pressure on both sides of your face, you are looking

directly at the apparent wind. This technique should be used as often as you would check the rear view mirror while driving. Additionally, the boat may be equipped with shroud **telltails** (a piece of yarn or other light-weight material), which will flow away from the apparent wind direction.

## Wind Shifts

The wind never maintains a constant direction and will shift frequently. As a sailor you must keep track of where the wind is coming from to sail effectively and safely. Shifts in direction are often accompanied by changes in wind speed. Keep an eye on the surface of the water where you may see dark wrinkled patches, or "**cat's paws**," (indicating an increase in wind speed: a **gust** or **puff**) or light glassy areas (indicating a decrease in wind speed: a **lull**).

## Sides of a boat

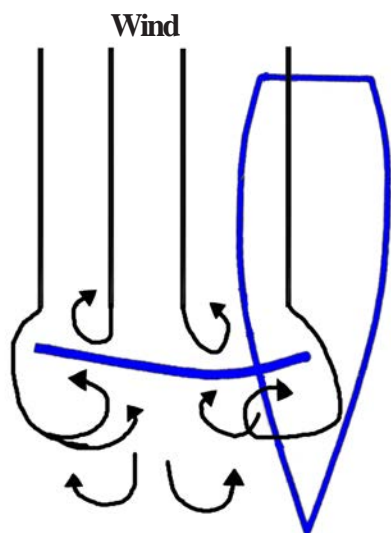
The direction of the wind is so central to sailing that sailors refer to the boat's two sides in terms of their relation to the wind. The side over which the wind passes first is called **windward** (toward the direction from which the wind blows), while that over which the wind passes last is called **leeward** (away from the direction from which the wind blows). The modern definition, which accounts for downwind sailing, uses the position of the boom to determine the leeward and windward sides of a boat. The side that the boom naturally lies on is always the leeward side—see Boat #4.

# How Sailboats Work: Beginner

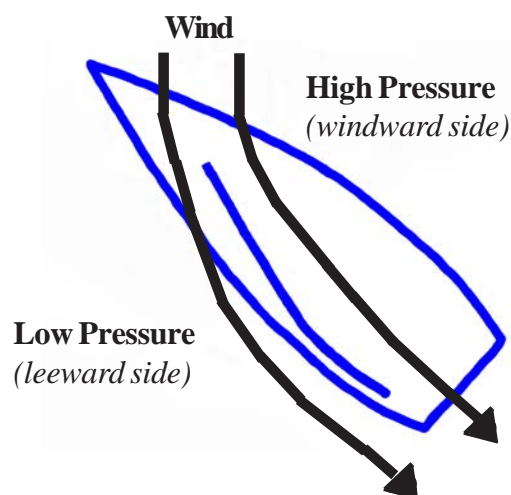
Before you begin sailing, it will help to have an understanding of how the hull, sails, and **blades** (centerboard and rudder) interact to produce forward drive.

## Driving Force

All sailboats derive their power from wind. A sailboat can operate in two different modes. The first mode is commonly referred to as the **Push Principle**. The picture below demonstrates how a sail acts like a large parachute, which catches air, and “pushes” a boat along the water.

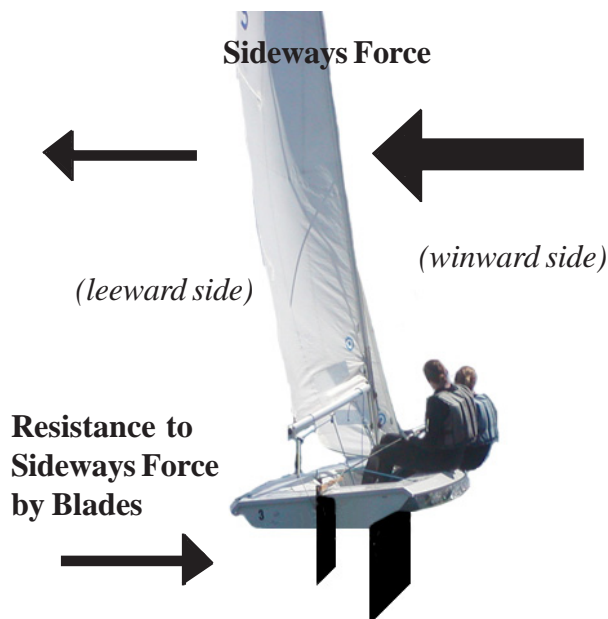


The push principle is perfectly adequate when your destination is **downwind** (away from the direction which the wind blows). But what if you need to make progress toward the wind (**upwind**)? In this case your sails must utilize the principle of **lift** (an aerodynamic force). A sail generates lift as air flows across the two sides of the curved surface of the sail. For the most part, this is very similar to the way an airplane wing produces lift. In short, the air on the windward side of the sail has greater amount of pressure than that on the leeward side, due to a difference in the overall speed of the air on each side of the sail (**Bernoulli's Principle**).

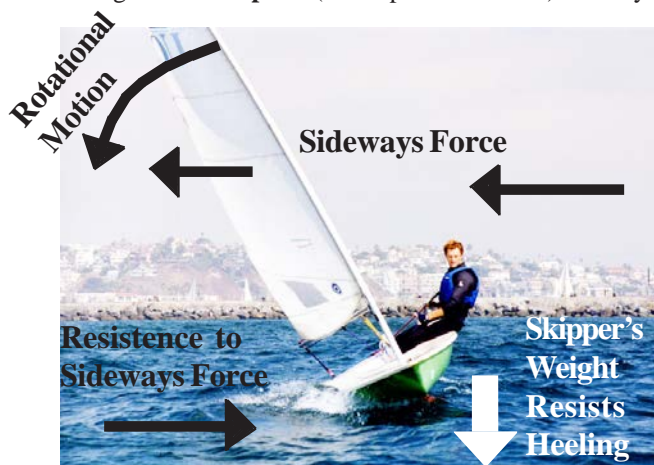


## Sideways/Heeling Force

There is a sideways force that is produced by a sail during lift. This sideways force is resisted by the **centerboard** (a retractable plate that projects below the bottom of a sailboat) as well as the hull and rudder to a lesser extent in a dinghy. Therefore your boat will slide to leeward if the centerboard is up while attempting to sail upwind.



This sideways force and resistance of the centerboard will manifest itself as a **rotational motion** (a force that causes the sideways tilt on a boat that is at a right angle to the line from the bow to stern) that can be counterbalanced by the skipper's and crew's weight. Proper position by both the skipper and crew is essential for a sailboat. If one or both members are on the leeward side of a boat in a moderate to strong breeze a **capsize** (boat tips onto its side) is likely.



Riccardo Boscolo in a Laser during a Sailing IV class (c. 2002).



# Sailing Directions: Points of Sail

The direction of a boat, relative to the angle of the wind, is often referred to its **Point of Sail**. The points of sail can be divided into three main categories: the no-sail zone, sailing upwind, sailing offwind.

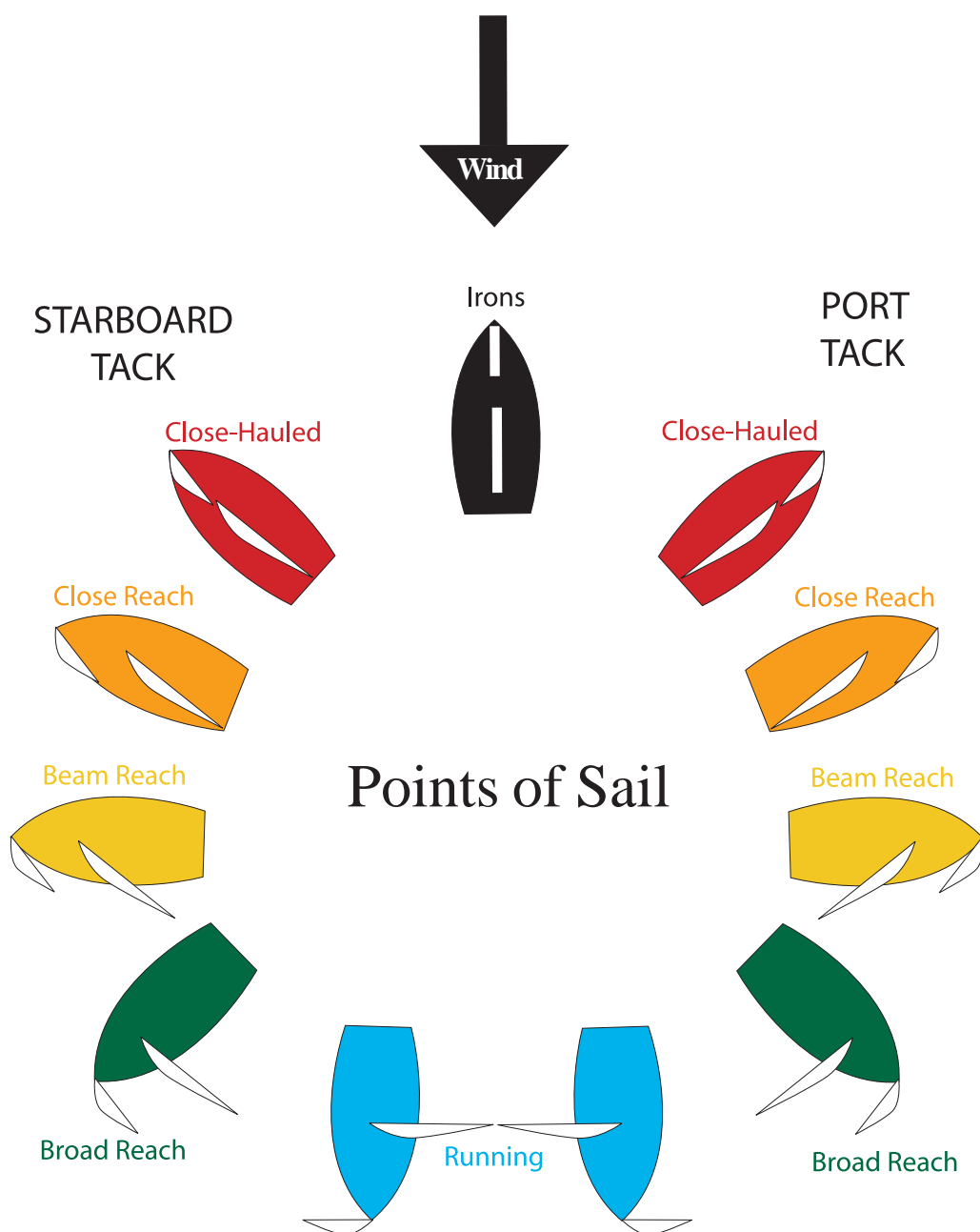
## No-Sail Zone

Sailboats can only move through the water when the sails catch the wind. To sail towards the wind a sailboat must utilize the lift principle. For most boats, lift is first achieved at an angle roughly  $45^\circ$  on either side of the true wind. Therefore sailboats cannot sail straight into the wind, because they cannot generate lift.

If the bow is too close to the true wind direction, the sails will begin to **luff** (flap or flutter in the wind), and the boat will

slow down, eventually starting to drift backwards. This predicament is traditionally referred to as being **In Irons**. A boat in irons has entered the **No-Sail Zone** or **No-Go Zone**. You cannot sail in that direction no matter where you are on the ocean, nor what you do with your sails. Your boat can sail in every other direction, approximately  $270^\circ$ .

Progress toward the wind is made by sailing a zigzag course (**beating**). To see a full explanation of beating please refer to page 20.



## Sailing Upwind

There are two points of sail used to reach an upwind destination: **close-hauled** (beating) and **close reach** (fetching).

**Close-hauled** (*approximately 30° to 50° off the wind; depending on your vessel and the strength of the breeze. For any boat and given condition, there is only one close-hauled angle.*)

A close-hauled course is defined as sailing as close as possible to the wind without the sails luffing. To achieve a close-hauled course, the sails **MUST** be **sheeted-in** (to draw the sail in towards the centerline of the boat by pulling on the free end of the line) fully, the centerboard should be completely down, and the skipper shall steer the vessel to the edge of the no-sail zone. It is unique, in that unlike all other points of sail, the boat is driven to the sail trim rather than constantly adjusting the sails for the angle of the boat.

**Close Reach** (*between close-hauled to <90° off the wind*)

A close reach course is achieved when sailing upwind with the bow pointed above 90° off the true wind, yet below a close-hauled course. The sails are eased out slightly compared to a close-hauled course, and the centerboard can be anywhere from completely down to one-quarter up depending on your angle to the wind. The closer you are to the wind the more you must sheet it, and the further down the centerboard should be.



Jeroen Molemaker on a close reach during a Tuesday Night Race (2003)

**Hiking out:** When sailing upwind in 8 or more knots of breeze on either a close-hauled or close reach course you will need to **hike out** (adjust your weight to windward) to stop the boat from heeling excessively (>10°). The more that you sheet-in, the more the boat will heel to leeward. This is normal, and you should compensate by hiking out further.

To hike out, sit on the **gunwale** (the edge of the boat where the hull connects to the deck), secure your feet under the **hiking strap** (a band of cloth attached to the cockpit used to restrain a sailor's feet while hiking), and lean out over the water. If the boat heels too far, it will slow down as the hull drags through the water, and slides sideways due to the

ineffectiveness of centerboard when at an angle (see page 12). Too much **heel** (the sideways tilt on a boat that is at a right angle to the line from the bow to stern) will also cause the boat to turn. Maintaining a sharp leeward heel will induce **weather helm** (the tendency of the boat to turn to windward due to the heel of the boat). The heel will force you to constantly pull on the tiller to track a straight course. If your boat heels significantly, hike out or sheet-out in order to flatten the boat. Conversely you should not hike out so far that you cause the boat to heel to windward. Windward heel will induce **lee helm** (the tendency for the boat to turn away from the wind). Attempt to achieve a neutral helm by sailing the boat completely flat.

## Offwind Sailing

There are three points of sail in regards to offwind sailing: beam reach, broad reach, running.

**Beam Reach** (*90° off the wind*)

Beam reaching is sometimes referred to as sailing across the wind. It is achieved when the true wind blows directly over the windward side of the boat at a 90° angle from the bow. The sails are eased out roughly halfway, and the centerboard is partially up (one quarter to a half depending on the boat and wind conditions). It is the fastest point of sail for most boats! In a moderate to strong breeze a lightweight dinghy will begin **planing** (rise up on top of the water and accelerate enough to break free from its bow wave).

**Broad Reach** (*91°-170° off the wind*)

On a broad reach the wind will be coming over the rear quarter of the boat. The sails are trimmed in anywhere from halfway to almost fully out while the centerboard is half to three quarters up. NB: The closer the angle of the wind the more you must sheet-in and the further down the centerboard should be.



Steve Orosz on a broad reach in 20+ knots of breeze (c. 2004).

**Run** (*171° to 180° off the wind*)

On a run the wind is coming directly over your **stern** (back end of the boat). The mainsail is eased out all the way and your centerboard may be brought up completely. This will make the boat less stable, and should not be attempted by



beginning sailors in moderate to strong breezes. You will feel a decrease in wind speed because you are moving with the wind. The shroud telltales should stream toward the bow, but in light winds they may hang limply. The best indication of a true run can be found in the behavior of your sails. When both sails are on one side the jib will flutter limply. This is an indication that the mainsail is cutting off wind flow to the jib since the boat is operating on the push principle.

When sailing downwind, the boat should have a slight windward heel to achieve a neutral helm. Usually the crew and the skipper sit on opposite sides of the boat for balance. The skipper should sit further forward, so that the stern does not drag through the water.



On a run the sails can be trimmed either to port or to starboard. You may choose to trim the mainsail on one side and the jib on the other (**Wing and Wing**).

This is more efficient, because it allows the wind to fill both sails unimpeded. By trimming your sails Wing and Wing you can detect wind shifts easily. If the jib collapses, then the wind has shifted to windward, which means you will need to pull the tiller toward you to fill both sails. If the boom rises slightly, the wind has shifted towards leeward. Once the wind reverses direction, and begins to blow over the leeward side first you are sailing **by the lee**. Be careful! Sailing by the lee risks an **accidental gybe** (the boom flies uncontrolled across the boat). If the mainsail luffs or the boom rises slightly push the tiller toward the mainsail to avoid an accidental gybe.

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*"It's scary to have a 30 foot wave chasing you. If you are steering, you don't look back. The crew looks back for you, and you watch their faces. When they look straight up, then get ready!"*

*-Magnus Olsson*

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## Tack: Starboard vs Port

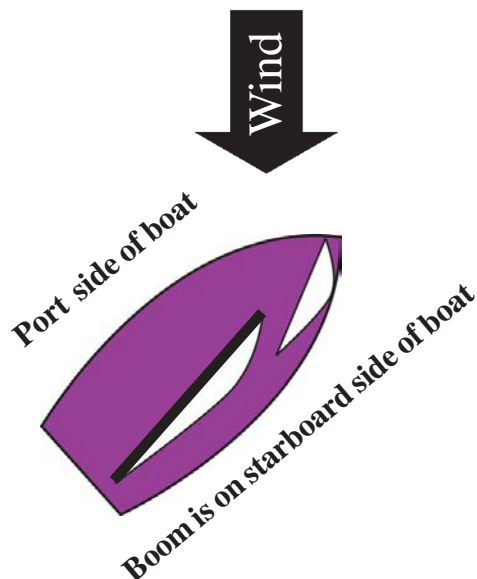
The boom's position is used to describe which tack you are on. If it is over the port side then you are on a **starboard tack**.

### Starboard Tack Boat



If it is over the starboard side of the vessel you are on a **port tack**.

### Port Tack Boat



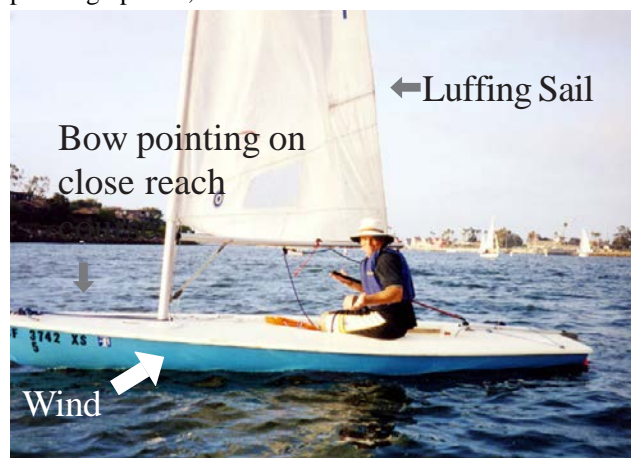
To summarize: the closer your vessel is to the wind the closer the sails must be to the centerline of the boat, and the further down your centerboard must be. Attempt to sail your boat with a neutral helm by being flat or as close to flat as possible by adjusting your weight laterally in the boat so that you feel no pressure from the tiller.

# Starting the Boat

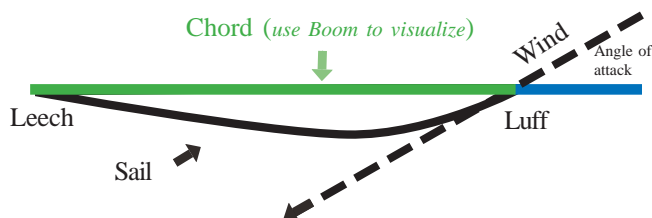
Starting your boat to move is relatively easy. The key is knowing where the wind is coming from. If your boat is pointing downwind, it will naturally begin to move via the push principle. If your boat is pointing upwind you will need to properly **trim** (pull in) your sails to achieve lift and thus move the boat.

## Starting Upwind

Make sure that your centerboard is down, and that your tiller is centered. Your sails will be luffing, and the boat will be stopped (drifting downwind slowly), while the bow is pointing upwind, but not in the no-sail zone.



Begin trimming your sheets until the sails begin to fill. As the mainsail and jib move towards the center of the boat the **angle of attack** (the angle between the sail and the apparent wind) will change.



If your tiller is straight the boat will begin to track smoothly through the water. If your tiller is not straight it will deflect water as the boat begins to move, and will consequently act as a break making it difficult to start.

For every point of sail, there is a perfect angle of attack. Sails can be perfectly trimmed, over trimmed (**stalled**), or under trimmed (**luffing**). It is easy to tell when your sails are under trimmed as a luffing sail will flap or flutter, but it may be difficult to tell if your sails are stalled.

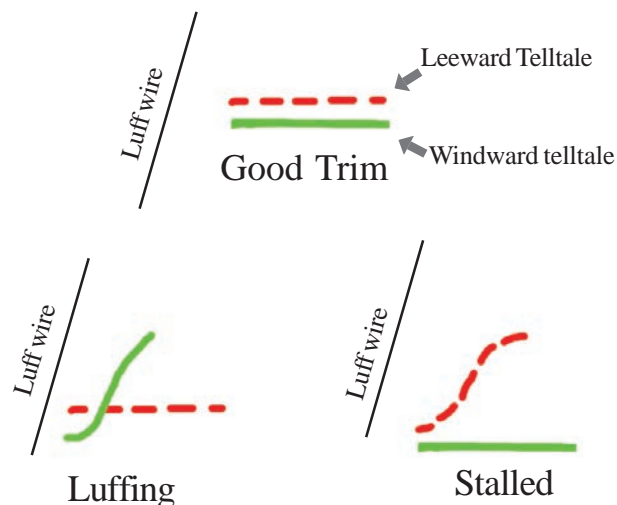
**Rule of thumb:** *When in doubt, let it out!*

**Telltails** (a piece of lightweight yarn or nylon used to determine wind direction or sail trim) are often used to monitor the wind flow over the sails. You should have two telltales

placed on the forward one-third of the jib (one each side of the sail).



The telltales show if the air flow is smooth or turbulent. Novices sailors should attempt to keep the telltales flowing directly aft when first learning to sail. Maximum power is obtained when the air flows smoothly across both the leeward and windward sides of the sail, which depends on a good angle of attack.



Do not get too caught up with the telltales. Remember to keep your head out of the boat. Many a new sailor has run aground while paying total and complete attention to the telltales!

*The pessimist complains about the wind; the optimist expects it to change; the realist adjusts the sails.*

*William Arthur Ward*

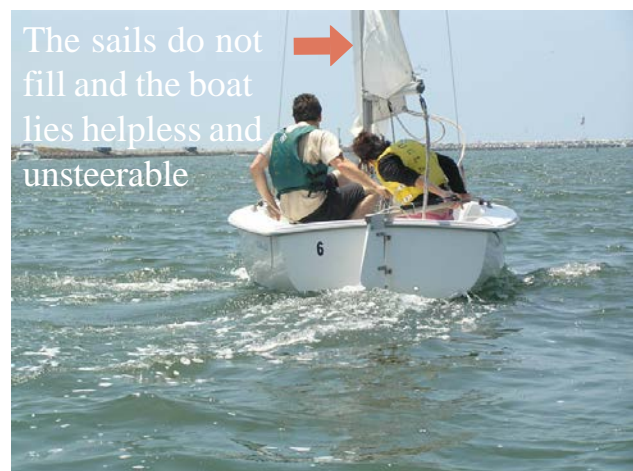


# Stopping and Slowing the Boat

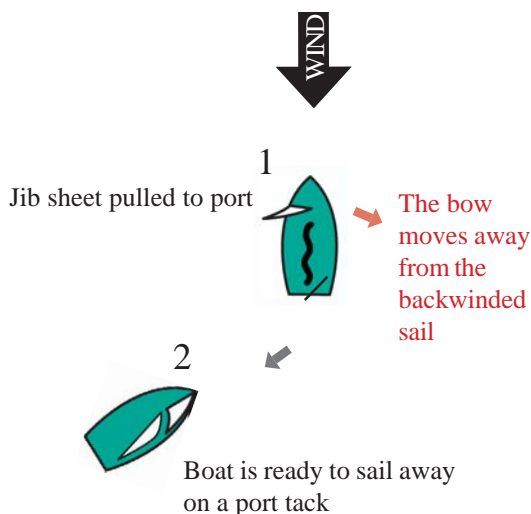
Controlling a sailboat means not only knowing how to use the wind to move the boat, but also how to stop the boat. Once you can find the wind, it is relatively easy to get the boat moving. To stop the boat, however, the wind cannot simply be shut off. You must somehow keep the wind from catching the sails in order to stop.

There are two easy ways to stop a boat: adjust the angle of the boat relative to the wind or adjust the angle of attack. Both methods require that the boat be heading upwind for the vessel to stop.

**In Irons:** To enter irons one must turn the bow into the no-sail zone. If the bow of your boat is in the no-sail zone, the boat will slow, and eventually stop. Going into irons can be useful if you need to stop to adjust the rigging on the boat, or if you are docking. When stopped, the tiller will not function; it needs water to flow across the surface in order to work.



Therefore getting out of irons can be difficult. To get out of irons, pull the jib sheet taut on one side or better yet **backwind** (push the sail out against the wind) the sail. The jib will begin to fill and push the bow away from the wind. The boat will also drift downwind. This is called **Backing Out of Irons**. You will end up on a port tack if you back your jib to port. Once out of irons, center the tiller, trim in the sails, and be on your way.

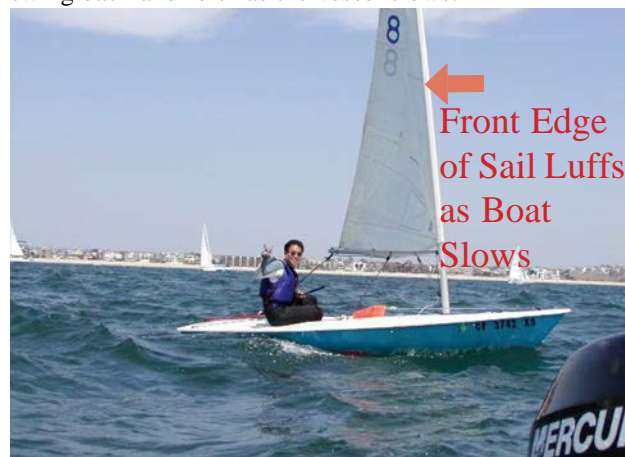


**Safety Position:** Being in irons has the disadvantage of limiting your ability to maneuver. You should be able to stop the boat briefly, and start moving again quickly in order to accomplish a simple task, such as switching skippers or adjusting a sail control. By sheeting out the sails and spilling all the wind so that they luff completely, the boat will slow and even stop. This is called the **Safety Position**. The safety position will only work on a close reach or beam reach. On a broad reach or a run, the wind coming from astern will continue to fill the sails no matter how far you sheet out. On some boats the safety position will not work on a beam reach if the shrouds are placed far enough aft to prevent the sails from luffing.



Getting out of the safety position is much easier than getting out of irons. You simply sheet-in until the sails fill with wind, and you're on your way again.

**Slowing:** Sometimes you will want to slow the boat rather than stop. If your boat is pointing upwind sheet out slowly. The front part of your sail will luff, but your boom will not swing back and forth as the vessel slows.



# Steering the Boat: Use of the Tiller

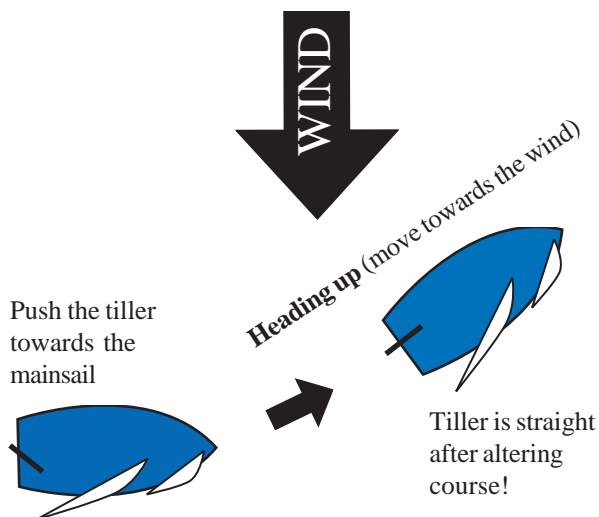
A sailboat can be steered by using the **helm** (a wheel or tiller), the sails, the angle of heel, or any combination of these. The novice skipper should focus on properly using the helm when first learning to sail.

Once aboard the vessel the **helmsperson** (the skipper) should always sit on the windward side (opposite the boom) of the boat. In this position he/she will face the sail, and take hold of the **tiller** (the stick which is attached to the rudder used to control the direction of the vessel) with the **aft** (toward or near the back end of the boat) hand. In the **fore** (toward or near the bow of the boat) hand the skipper will hold the **mainsheet** (the line attached to the boom used to control the angle of the attack).

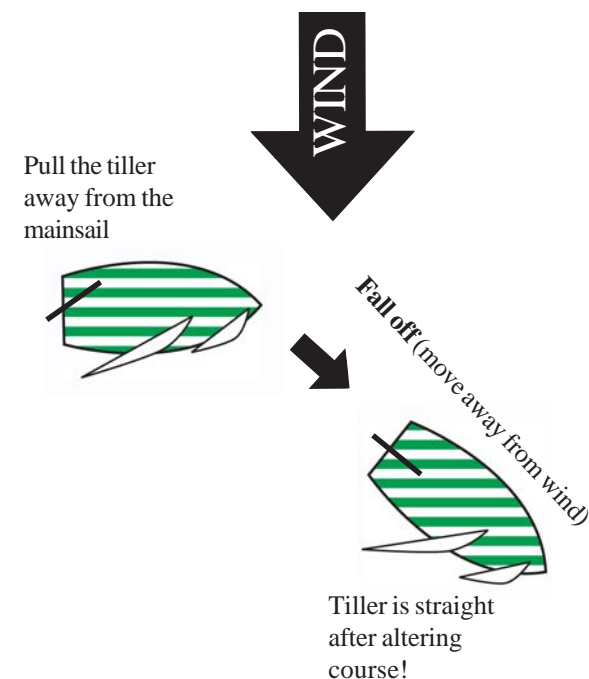


To steer the vessel, the helmsperson must move the tiller in the opposite direction from which he/she wants to turn. The tiller works by diverting water that flows around the rudder; therefore the boat must be moving to turn efficiently. The tiller should be handled in a firm smooth manner. Sudden jerky movements disrupt the laminar flow of water across the surface of the rudder, and thus causes the tiller to act as a brake.

Boat movements are described in terms of the boat's relation to the wind. You can turn the boat toward the wind (**head up**) by pushing the tiller toward the mainsail.



Or you can turn away from the wind (**fall off**) by pulling the tiller away from the mainsail.



Therefore the boat will turn in the opposite direction that you move the tiller. In order to go straight, remember to keep the tiller centered in the boat!

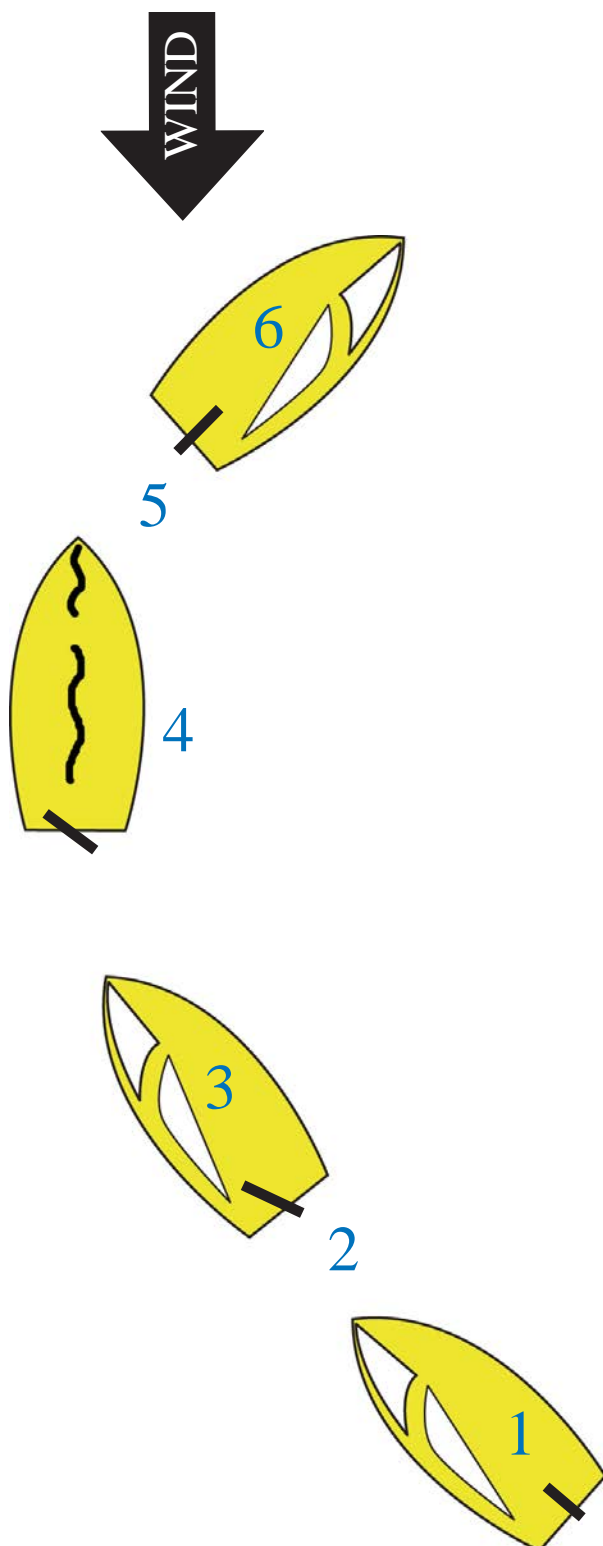
As mentioned above the helmsperson **ALWAYS** sits opposite the mainsail with his or her feet under the hiking straps. The crew on the other hand is responsible for balancing the boat, and maintaining stability by resisting the various forces that cause **pitching** (up and down movement of the boat) and **rolling** (side to side movement of the boat). When first learning to sail a dinghy it is best to attempt to sail the boat perfectly flat. The crew should use his or her body weight to accomplish this feat. Under most conditions the crew will sit directly forward of the helmsperson, and the two will move as a unit to balance the boat.





# Tacking

To **tack** is to turn a sailboat through the wind, whereby the bow of the boat passes through the eye of the wind first. Your boat will enter the no-sail zone from one side and exit the other.



## 1. Before the Tack

- The helmsperson and crew make sure that it is safe to tack by checking for obstructions, such as traffic.
- Your boat should be on a close-hauled/close reach course, and MOVING through the water. Your rudder will not work unless your boat is moving!
- The helmsperson should uncleat the main sheet, but not release it. Keep tension on the sheet.

## 2. Communicate

- The helmsperson announces, "Ready to tack!" while selecting a land reference to steer for at the completion of the tack (approximately 90° from current course if close-hauled)
- The crew uncleats the leeward jib sheet, but holds tension in his/her hands, and then responds, "Ready." If the crew spots an obstruction or possible problem he or she should emphatically reply, "No!"

## 3. Begin Tack

- The helmsperson calls out, "tacking!" or "hard a-lee" as he or she pushes the tiller toward the mainsail (to leeward).

## 4. While Tacking

- The bow will turn toward the wind. As the boat turns into the no-sail zone, the sails will luff.
- When the boat is directly into the wind, the boom will be centered in the boat.

## 5. While Tacking Part II

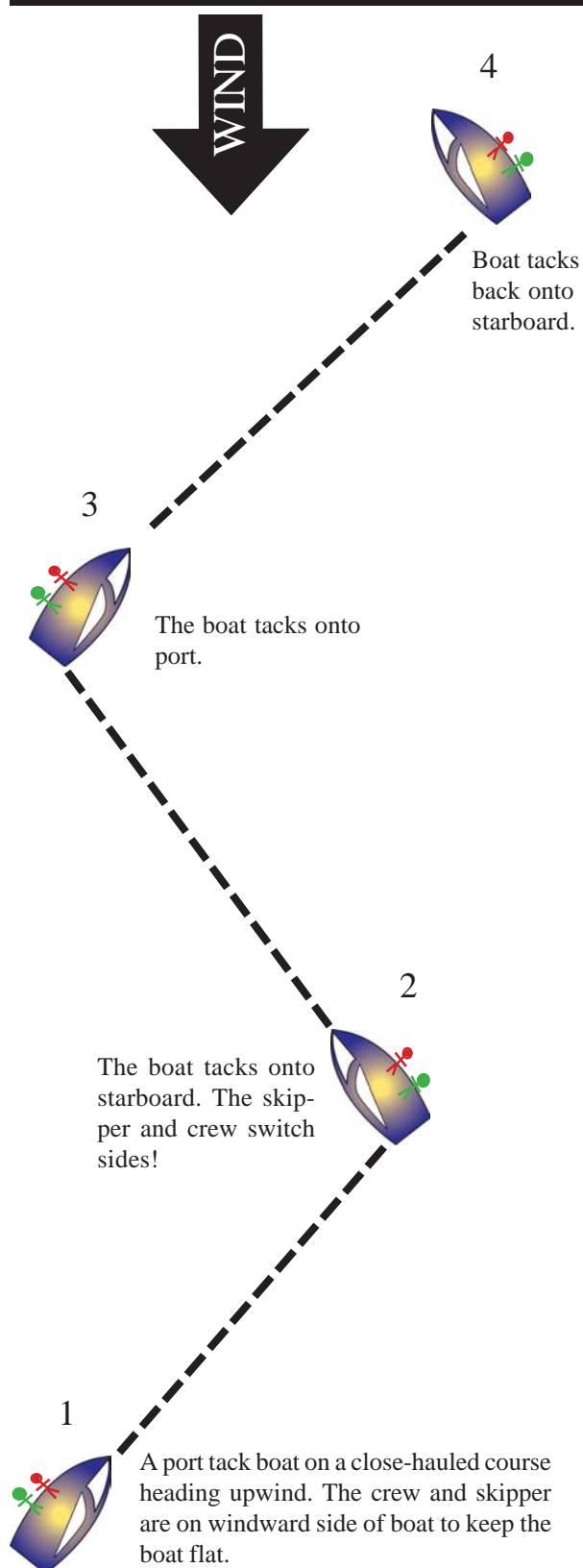
- The crew releases the old **working jib sheet** (the jib sheet used to control the angle of attack for the jib), ducks under the boom, switches sides on the boat, and sheets in the new working jib sheet. Do not release the jib early, allowing it to luff wildly, or haul in on the **lazy sheet** (the jib sheet that is not used to control the angle of attack of the jib) on the new side before the boat has fully turned to the new tack. Let the wind push the jib across the boat.
- The helmsperson keeps the tiller hard to leeward, and continues the turn until the wind is clearly pushing the boom and mainsail onto the new side of the boat. Once the wind has filled the sails, center the tiller, set your new course, and trim your sails. The helmsperson must also switch sides on the boat during the turn. The easiest time to cross under the boom is while the bow is in the no-sail zone. It is best to face forward, exchanging the tiller and main sheet behind your back.

## 6. Completed Tack

- You should be on the opposite tack close-hauled.

# Sailing Upwind: Beating

A sailboat cannot head straight for a given point directly upwind, thus sailors must zigzag back and forth across the wind (**beat**) to get to an upwind destination.



To properly sail to windward, one must be on a closed-hauled course. This point of sail is referred to as beating, because the boat will often be bashing into the waves rather than running along them easily.

Sailing upwind requires proper body position by both the helmsperson and crew. Ideally the helmsperson and crew should be sitting on the windward side of the boat—unless the wind is light. Depending on the strength of the wind one or both will begin to hike out.

To hike out, sit on the **gunwale** (the edge of the boat where the hull connects to the deck) secure your feet under the hiking straps, and lean out over the water. Do not allow the boat to heel excessively in either direction! If the boat heels too far, it will slow down as the hull drags through the water and slides sideways because the centerboard cannot fully resist the sideways force (see page 12).



The most common problems while tacking upwind are:

1. The boat stops turning while in the no-sail zone. To avoid this problem make sure that you firmly push the tiller all the way across the boat during the turn, and do not allow it to center or reverse until after your sail has passed through the no-sail zone and your boat is on the new course. Also it is paramount that your boat be moving with speed before you attempt a tack.
2. The crew does not uncleat the old jib sheet, and the sail ends up being backwinded. The crew should uncleat the jib sheet, and hold tension on it when the helmsperson announces the tack. As the crew crosses to the new windward side of the boat he/she should release the old sheet, and begin to haul in on the new working one.
3. The boat turns too far through the wind, and the boat begins to sail on a deep close reach. Although this problem is much better than getting stuck in irons, it is still an issue for many beginning sailors. Make sure that you establish a new heading based on land references, and watch the position of your boom during the turn.



# Gybing

To **gybe** (alternative spelling, “jibe”) is to turn a sailboat through the wind whereby the stern of the boat passes through the eye of the wind first. Your boat will turn away from the wind until your boom can swing to the opposite side. Although tacking is easier and safer than gybing, especially in strong winds, gybing is an important maneuver to use when *running* or reaching to a downwind destination. To tack you must turn at least 90°, whereas to gybe you need only turn a few degrees. However, gybing is inherently more dangerous, because of the great force with which the wind can carry the boom across the cockpit if you do not control the turn. The boom must travel from all the way out on one side to all the way out on the other. Controlling the boom is the most important factor to gybing safely.

## 1. Before the Gybe

- The helmsperson and crew make sure that it is safe to gybe by checking for an obstruction such as traffic.
- When first learning to gybe it is best to gybe from a reach to a reach instead of a run to a run.

## 2. Communicate

- Helmsperson announces, “Prepare to gybe!” while selecting a land reference to steer for at the completion of the gybe.
- With jib sheets uncleated and held in each hand, the crew responds, “Ready.” If the crew spots an obstruction or possible problem he or she should emphatically reply, “No!”

## 3. Begin Gybe

- The helmsperson moves the tiller gradually towards the windward side of the boat (away from the boom).

## 4. While Gybing

- The crew lets the jib luff while the helmsperson begins slowly pulling in the main sheet.

## 5. While Gybing Part II

- As the stern crosses the eye of the wind the helmsperson grabs the main sheet, and begins pulling until the boom is to centerline and then calls out, “gybe-ho!” There should be very little pressure on the sail if the boat is truly dead downwind and moving quickly. If you have problems pulling the sail across you are attempting the maneuver too early (while reaching).

## 6. While Gybing Part III

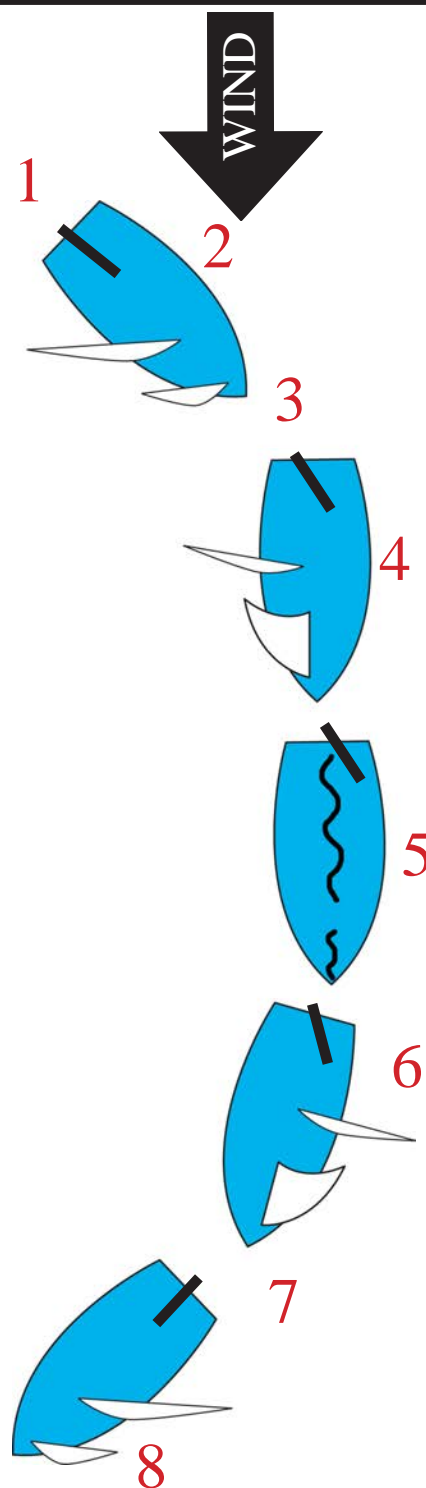
- The helmsperson lets the boom cross to the new leeward side while easing the main sheet.
- The crew crosses to the new windward side and begins to sheet in the jib.

## 7. While Gybing Part IV

- The helmsperson crosses to the new windward side, and centers the tiller without switching hands. Once situated on the new side and on the new course, the helmsperson will exchange the tiller and sheet hands.

## 8. Completed Gybe

- You should be on the opposite tack.



# Navigational Rules of the Road

There are basic navigation rules on the water which all boaters must obey. The skipper of a vessel is ultimately responsible for knowing and following the appropriate navigational rules. Although international water rules do overlap on almost all instances, the text below refers specifically to U.S. Inland Waterway Rules, which are applicable inside the demarcation lines separating inland and international waters.

The navigational rules were written to avoid collisions, therefore you must avoid a collision if possible, even if you believe that you have the “right of way” in a crossing situation. The navigational rules will not exonerate a skipper of actions that are considered to be outside the ordinary practice of a seaman (ie avoiding a collision when possible is always an ordinary practice of seamanship)[Rule 2(a)(b)].

If you are ever in danger of an imminent collision, DO NOT PANIC, follow this simple rule—**TILLER TOWARD TROUBLE**. The boat moves in the opposite direction from the tiller, so aim it at whatever you want to avoid, and the boat should turn away (unless, of course, the danger is straight ahead and the tiller is pointing at the danger).

The rules are based on maneuverability, and all of the regulations specify what actions should be taken when two or more boats meet. The more maneuverable vessel generally gives way to the less maneuverable vessel.

## Terminology:

The **Give-Way Vessel** is obligated to keep out of the way of another vessel (as directed by the Navigational Rules) and shall, so far as possible, take early and substantial action to keep well clear of the stand-on vessel.

The **Stand-On Vessel** is obligated to maintain her course and speed (so that the give-way vessel may keep well clear). However, the General Rule of Responsibility [Rule 2(a)(b)] dictates that a the stand-on vessel must avoid a collision if the give-way vessel takes no action.

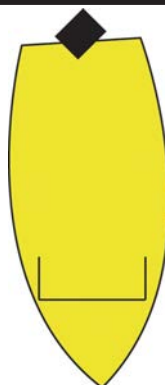
## When Two Boats Meet

**Powerboats generally must give way to a sailboat** [Rule 18(a)(iv)] except for in the following seven specific situations noted below.

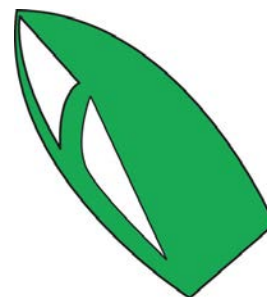
**1. Designated Powerboat Area:** In Marina del Rey, sailboats have a marked sailing area in the center of the Entrance Channel and powerboats should use the two motoring lanes on either side (see page 7 for a diagram of the sailing area). As a sailor, avoid the power channels! Sailboats must keep clear of power boats when crossing a specified motoring lane. Time your launch or approach accordingly so that you avoid cutting in front of motoring vessels when crossing the power channel.

## Powerboat vs Sailboat

**Powerboat: Give-way vessel**



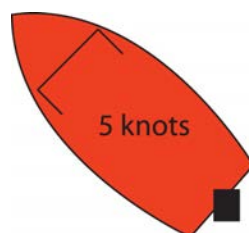
**Sailboat: Stand-On Vessel**



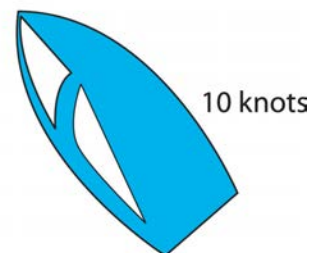
**2. Overtaken/Overtaking:** No matter what type of vessel, a boat overtaking another must give way to the boat being overtaken [Rule 13(b).] A vessel shall be deemed to be overtaking when coming up on another vessel from a direction more than 22.5° **abaft** (toward the stern) of her **beam** (at the boats greatest width). In other words, if you are approaching another vessel from behind you are obligated to keep well clear of them (even if you are a sailboat and the other vessel is a powerboat).

## Overtaking Vessel

**Sailboat: Give-Way Vessel**



**Powerboat: Stand-On Vessel**





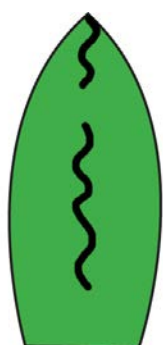
**3. A vessel restricted in her ability to maneuver:** This rule applies to LARGE vessels in narrow channels. Marina del Rey is a restricted waterway. Very large power vessels have difficulty maneuvering at slow speeds in narrow waterways. These large vessels therefore are the stand-on vessel, and smaller vessels must keep clear. [Rule 18(b)(ii)]

On the open ocean, the “Law of Gross Tonnage” is a tongue in cheek reference to large tankers and container ships that move at high speeds and require lots of room to maneuver. Simple physics dictates that they are the stand-on vessel and smaller boats must keep clear. A little common sense goes a long way on the water — small sailboats can be quite maneuverable so it’s often a good idea for you to give larger boats a wide berth early on and avoid close-quarters situations.

**4. Towing Vessels:** Any boat that has taken another vessel in tow is generally restricted in its ability to maneuver, and is the stand-on vessel [Rule 18(b)(ii)] In Marina del Rey, the Sheriff, Lifeguards, commercial tow vessels or private boats may be seen towing another vessel. All other vessels must keep clear.

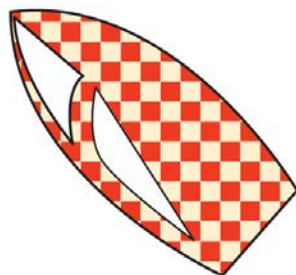
**5. Vessel Not Under Command:** Any boat that appears not to have **steerage way** (ability to maneuver) should be considered the stand-on vessel [Rule 18(b)(i)]. A boat not under control includes, but is not limited to: a power boat with no skipper at the controls or a disabled engine, a sailboat in irons, capsized, or with no rudder or helm control. Vessels who are in control should therefore keep clear.

### Vessel Not Under Control



**Not Under Control:  
Stand-On Vessel**

**Under Control: Give-Way  
Vessel**

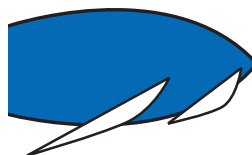


**6. Military (coast guard and navy), sheriff, county lifeguard vessels:** The boats listed above have right of way on all other vessels at any time due to the nature of their function.

### When Two Sailboats Meet:

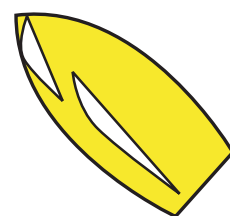
**Opposite Tacks:** When two sailboats are on opposite tacks, the sailboat on starboard tack (boom on the port side) is the stand-on vessel, and the sailboat on port tack (boom on the starboard side) is the give-way vessel.

#### Starboard vs Port



**Port Tack: Give-Way  
Vessel**

**Starboard Tack:  
Stand-On Vessel**



**Same Tack:** When two sailboats are on the same tack, the **leeward boat** (furthest away from the direction from which the wind is coming) is the stand-on vessel, and the **windward boat** (boat closer to the wind) is the give-way vessel.

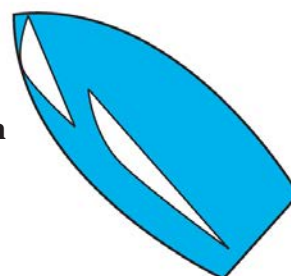
#### Windward vs Leeward



**Windward: Give-way  
Vessel**

**Both Vessels are on  
a Starboard Tack**

**Leeward: Stand-On  
Vessel**



**Etiquette on the Water:** In close quarters situations, communication between vessels is important.

If you are the stand-on vessel and are within range, you may **politely hail** the applicable rule: “**Starboard!**” or “**Leeward!**”



If the give-way vessel was unaware of your presence, this hail should be sufficient to get their attention. If the hail is ineffective, and a collision is imminent, you should alter course [Rule 2(a)(b)].



If you are the give-way vessel, and are hailed by a stand-on vessel, the proper acknowledgment is “**Hold your course.**” To avoid the stand-on vessel you should alter course immediately to pass their stern, or if the boat is very close, then tack away.

Be courteous on the water. You need not always hail in crossing situations. Eye contact, a nod, or a friendly gesture is often sufficient to convey your intentions. If a give-way vessel has just altered course to avoid you, acknowledge it with a wave or a “thanks.”

**In the event of a collision:** A prudent sailor does everything in their power to avoid a collision, but occasionally, in spite of their best efforts accidents do happen. If a collision happens to you, treat it just as you would an automobile

accident. Make sure everyone is all right. Do not admit fault, and collect all the necessary information.

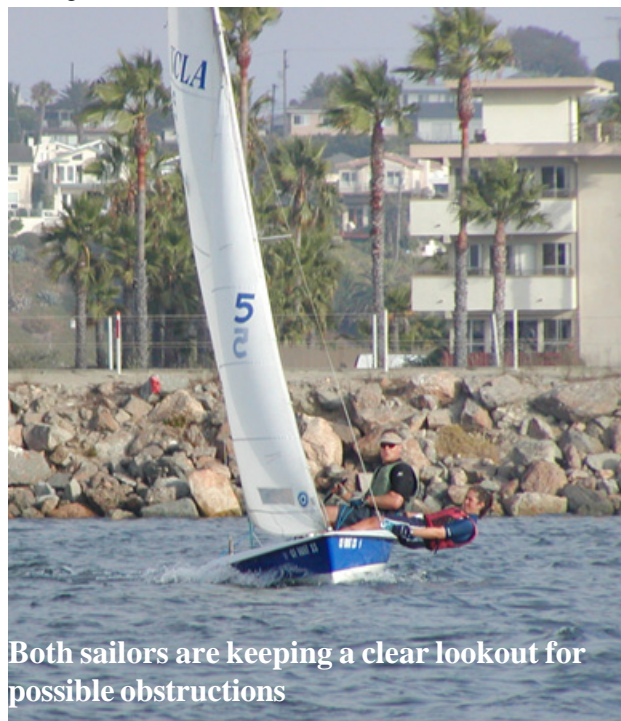
If you collide with a non-UCLA boat, determine its name and **CF number** (bow registration) as well as the name, telephone number, and address of the skipper.

Even if the other skipper tells you that there is no damage or problem, please get their name and contact information and report it to us so we can follow-up appropriately.

If the other vessel does not stop, get as much identifying information as you can (such as boat name, type, CF number on the bow etc.).

Return immediately to the UCLA dock, and report the accident to the dockmaster. Fill out a Boating Accident Report, giving a full description of the incident, relevant rules of the road violated, the extent of any damage to the UCLA boat and to the other vessel, and any other information that will help us resolve the situation.

If you collide with another UCLA boat, determine the type and sail number of the boat. Return immediately to the UCLA dock and report the accident to the dockmaster. Fill out an accident report, giving a full description of the incident, relevant rules of the road violated, and the extent of any damage to both boats.



John Nelson and Melanie Salter going upwind on a Tuesday Night Race (c.2004).

*Keep your head out of the boat.*

— *Sailing Mantra*



# Capsize Recovery

When the boat tips over so that the mast lies in the water, the boat has **capsized**. Sometimes, the boat will continue to tip over until it inverts: the mast is straight down in the water and the upturned hull is all that is above water (**turtled**). Capsizes are not unusual when sailing small boats, even for the most experienced sailors. Therefore it is essential that you learn how to properly right your boat in a safe and effective manner.

## Causes

Capsizes occur for a number of reasons including: a sudden gust of wind, a sudden change in the direction of the wind, a poorly executed gybe, or gear failure (e.g. hiking strap breaks).

There are many ways to avoid a capsize, but the most important thing is to keep the mainsail uncleated so that the skipper may quickly react to a gust of wind by sheeting out.

## Safety

If you capsize you should always “STAY WITH THE BOAT!” The shore is always further than it looks, and rescuers are more likely to see you if you are with your boat.



## Scoop Recovery

The preferred recovery method is called a **scoop recovery**, because the crew is “scooped” into the boat as the skipper brings the boat upright. The crew’s weight in the boat will help prevent a second capsize, and will put him or her into a position to help the skipper into the boat after the boat is brought upright.

1. Upon entering the water it is important to make sure that both you and your crew are unhurt and not tangled in the rigging. Communication is a vital part of a capsize recovery, and thus you and your crew should be constantly talking in order to monitor each other’s condition. Relax, and let the PFD support you in the water.

2. Once the boat has capsized do not hang onto any part of the boat as that will encourage it to turtle. The helmsperson should swim around the stern to the centerboard as quickly as possible.



3. Once at the centerboard the skipper should grab it and put some weight on to it before the boat turtles.



4. The skipper must now right the vessel. Depending on the boat type, sea state, and weight of the individual all that might be required is simply pulling down on the centerboard.



For most capsizes the skipper will have to climb onto the centerboard. Righting the boat does not require great physical strength, but rather leverage. You must get your weight out of the water in order to gain enough leverage to right the boat. There are many possible ways to get up there! Find one that works for you and use it.

5. Some are able to hoist themselves up with their arms. If you can do this it is probably the quickest way. It is best to pull oneself up on the forward side of the centerboard as the aft part is sharper and thus will dig into your chest if you attempt to pull yourself up from that side. To get onto the centerboard you should reach over the top of it with both arms and grab the aft side. Kick your legs behind you while pulling up with a quick stroke.



6. If you are unable to pull yourself onto the centerboard, your crew can grab the main halyard (without uncleeing it) and toss the line over the hull to you. Once you have it you may tie a figure eight loop on a bight (see page 28). Your fixed loop should be just at the waterline. This will provide a loop-rung to use to “step up” onto the centerboard. The RS Quests have righting handles that can assist the sailor getting onto the centerboard.



7. Once on the centerboard, the skipper should get their weight out as far as possible. Do not bend forward at the waist — keep your knees and hips straight and LEAN back. Hold the jib sheet or halyard while you lean back over the water to optimize your leverage.

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*Stay with the boat until the boat leaves you: sinks.*

*—NCLA safety motto*

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8. While the skipper rights the boat, the crew grabs hold of the hiking strap and is scooped into the boat. One person is then in the boat when it is upright and should immediately make sure the sails are uncleeed and luffing (cleeed sails may make the boat sail away), center the tiller, and keep the boat either in irons or in the safety position.



9. The skipper climbs back into the boat, either over the windward side or over the stern. Since the crew is already in the boat, they may grab the top straps of the skipper's PFD to help hoist him or her into the boat. Be careful not to pull the PFD off the person in the process.



10. Before resuming your sail, do a check. Are all the lines running free? Are the halyards still neatly coiled and out of the way? Is the centerboard down? Are the tiller and rudder still attached? Are the outhaul and downhaul still tightened? Are either of you too wet, too cold or too tired to the point where it is a good idea to head back to the dock?



# Person Overboard: Figure 8

It is rare that someone actually falls out of a dinghy. It is more likely that you will be retrieving a hat and not a person, but it is essential that you become proficient at maneuvering your boat so that you can stop at a particular place on the water when you need to.

*When in danger or in doubt,*

*Run in circles, scream and shout.*

—Robert Heinlein

During a person overboard recovery your objective is safe, efficient, and reliable recovery of someone who has fallen overboard. There are numerous methods used to retrieve lost crew. Novice sailors should learn the Figure 8 due to its simplicity and effectiveness in small boats.

**Figure 8**

1. As soon as someone falls overboard you must shout “CREW OVERBOARD!” It is vital that you announce the fact that someone has fallen off the vessel to not only alert others in your boat of this very dangerous situation, but also to convey this fact to other boats on the water which may injure your crew if they do not know of his or her pres-

ence.

2. NEVER lose sight of the sailor in the water!

3. If you are the skipper you must move forward without letting go of the tiller and release the jib. If you are the crew you should release the jib and immediately move back to take the tiller.

4. Fall off or head up to a beam reach.

5. Beam reach approximately 5 boat lengths

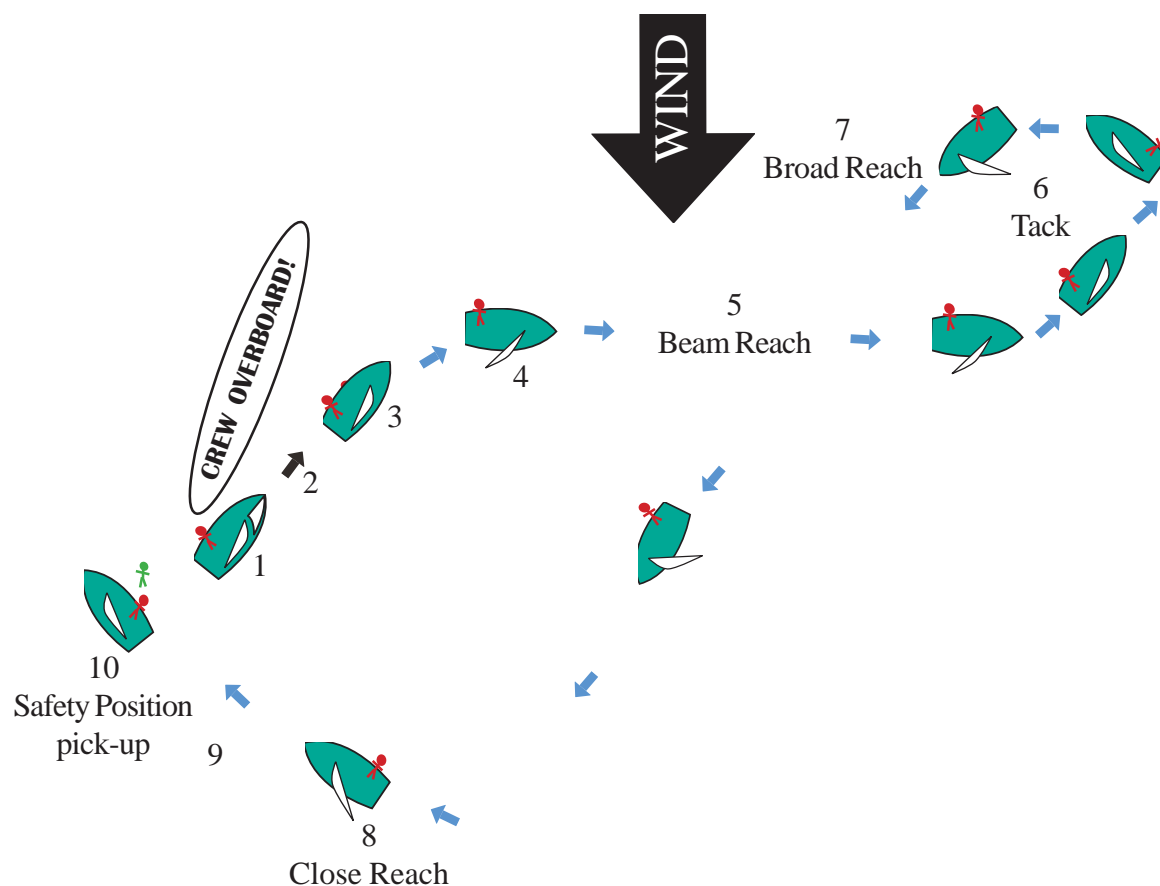
6. Tack

7. Bear off onto a broad reach and travel at least 3 boat lengths to leeward of the sailor in the water.

8. Head up to a close reach

9. Begin to slow your boat by entering the safety position. You can always sheet back in if you undershoot the lost sailor.

10. Pick up the sailor on the windward side by going into the safety position. A leeward pick up in moderate to strong winds will likely cause a capsize.

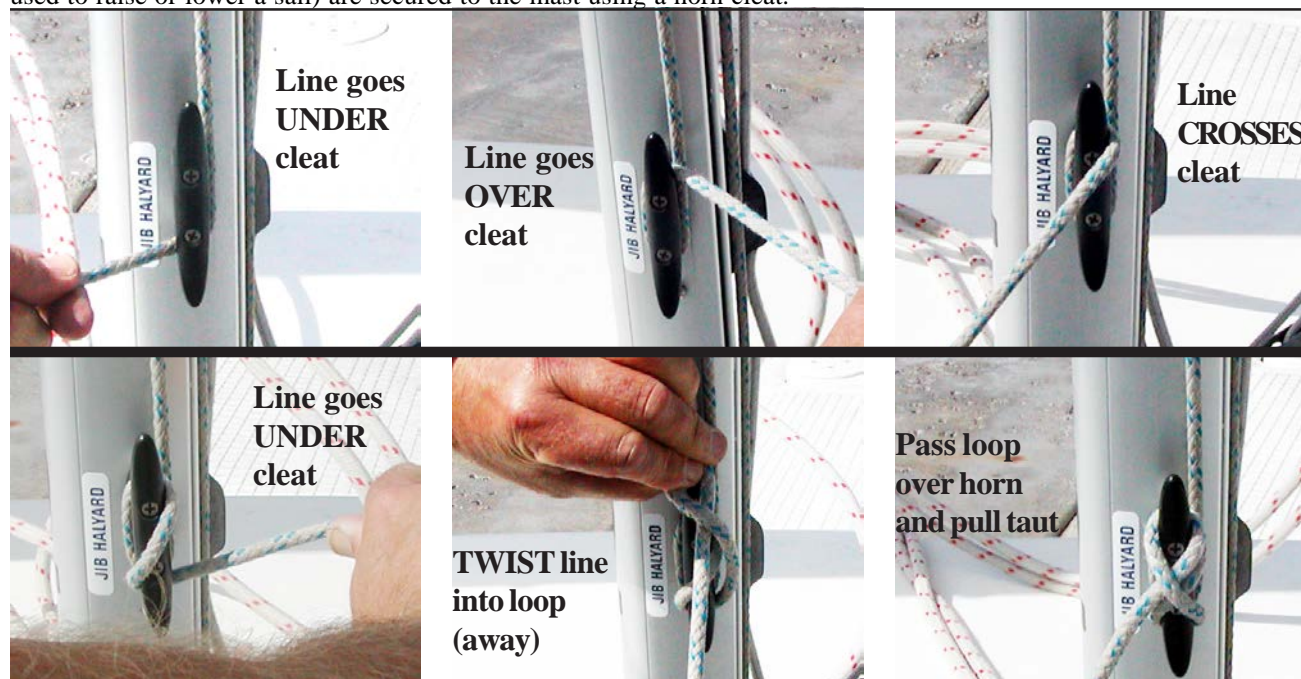


# Knots: Beginner

**Lines** (any rope on a vessel that has particular use) and the knots in them are an essential feature on all sailboats. As a sailor, you will need a few basic knots to sail safely and effectively. Below are the four essential knots you will need for Sailing I. Refer to the Knots: Intermediate section (page 54-55) for more knots such as the **bowline** or **slipped sheet bend**.

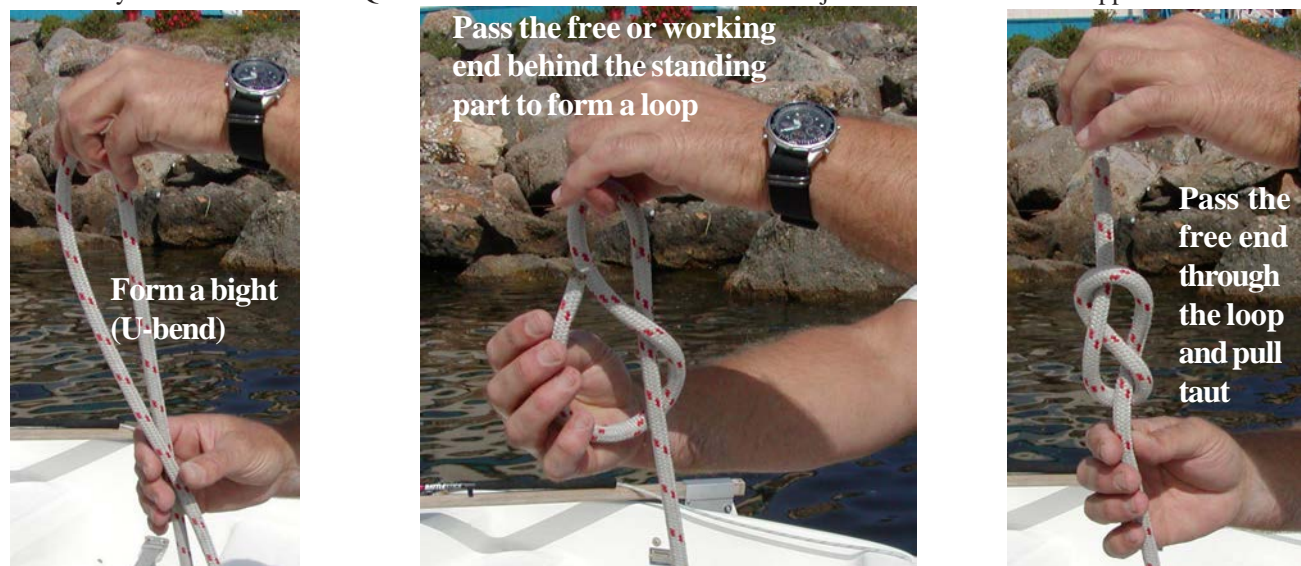
## Belaying

To **belay** a line is to secure it to a fixed object. The horn cleat, which is a two pronged metal or plastic fitting, is a common fixture in most nautical environments. A **cleat "hitch"** is used to secure halyards, sheets, and dock lines to a horn cleat by tying a series of figure eight turns over the two horns. On the RS Quest the main and jib **halyards** (a line used to raise or lower a sail) are secured to the mast using a horn cleat.



## Stopper Knots

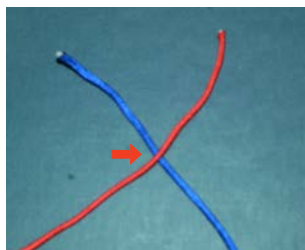
A **stopper knot** is tied at the end of a line to prevent a line from running through a block or fairlead. The **Figure Eight Knot**, also known as a Flemish Knot, is a good stopper knot because it is simple to tie, holds fast, does not jam and is easy to untie. On the RS Quest the ends of both the main sheet and jib sheets must have a stopper knot.



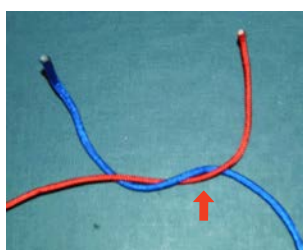


## Binding Knots

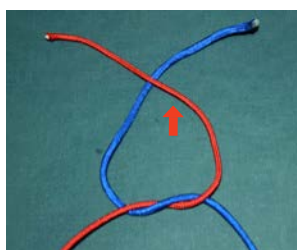
A **binding knot** is used for two purposes: 1. to confine or constrict a single object or 2. to hold together two or more objects. The first binding knot most sailors learn is the **reef knot**, also known as the **square knot**. It is one of the oldest knots in history and can be traced back to the Egyptian. It will be used on our RS Quests and Visions to reduce the sail area of the mainsail by tying up the foot of the rolled mainsail (**to reef**). Reef knots are not bends, and should not be used as such, because it will not be secure if the ends of the two lines are unequal in size or stiffness. Whipping and seizing have a similar purpose to binding knots, but are considered lashings, because of the number of turns. The reef knot is used for making a temporary joint in identical sized lines which will not be subject to strain.



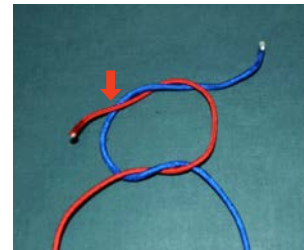
Take the line in your left hand and pass it over the line in your right hand



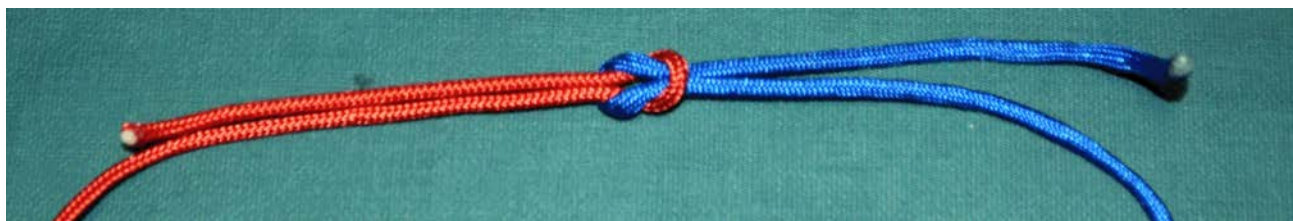
Cross the old left end under the right end



Take the new right end and pass it over the new left end



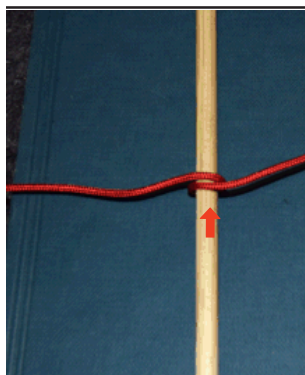
Finally cross the current right end under the current left end through the circle



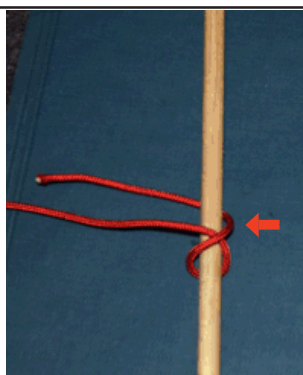
Reef knot pulled taut: Notice how the ends of each of the line pass through the loop formed by the other line in a parallel fashion.

## Hitches

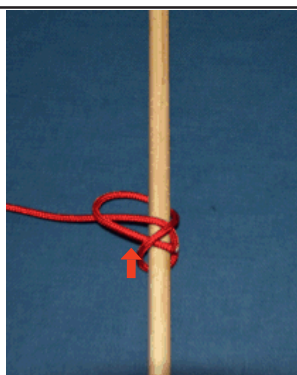
A **hitch** is a knot used to secure a line to another object that plays no part in the actual tying. Lines are not hitched, but instead **made fast** as only the knot itself is called a hitch. The **clove hitch** is a binding knot often used for a temporary mooring. For the RS Quest the painter is secured in the boat using a clove hitch.



Pass the free end of the line around the object completely



Pass the free end a second time around the object making sure to be above the first turn without tightening



Tuck the bitter end through the second turn which should cross over the first.



Pull taut

## Ball Stopper Knots

**Parrel beads** are small balls with a line threaded through the center. These beads allow a static item (ie the mast) to be secured to a moveable item (ie a gaff rig). The ends of a strand of parrel beads often have a **stopper ball**. Over the centuries the stopper ball has been used to secure the bitter end of a line to a pole or through a grommet. Below are two methods of securing a line to an object using a stopper ball. For the MAC sailboats stopper balls are used to attach halyards to the head of the mainsail as well as to secure the clew of the mainsail to the outhaul.

The ball stopper knot can be tied through the head grommet of a sail. This is a “ball on a bight knot.” It is easy to untie and allows the halyard to reach the top of the mast. To untie push the knot through the grommet to the side the ball is on.



**Form a bight (a bend in the line that forms a loop)**



**Pass the bight through the grommet**



**Put the ball through the bight (loop). Then pull the line taut from the working end.**

The ball stopper knot can also be tied to a ring using a simple **overhand knot** when the line will not be under a lot of strain. In the case of the spinnaker halyard, it can be tied to the spin pole mast ring using an overhand knot. The ball passes through the ring and then back up around the line leading up the mast. Then the ball passes through the loop that was created to form an overhand knot with a ball at the **bitter end**.





# RIGGING: RS Quest

**RIGGING:** Personal Flotation Devices (PFDs) must be worn at all times while on the dock. Rigging is best done with two people, and should take between 10 and 15 minutes. Learn the “function, not a sequence of steps” since the basics you take away from here will apply to every other type of boat you will sail. The sequence that is laid out in this manual will ensure that the boat and sails are properly cared for. While rigging, make sure that the boat and its equipment are in safe working order. The rigging sequence encouraged at the UCLA MAC is to start at the stern of the boat and rig forwards. Alternately we derig from the bow of the boat and move aft.

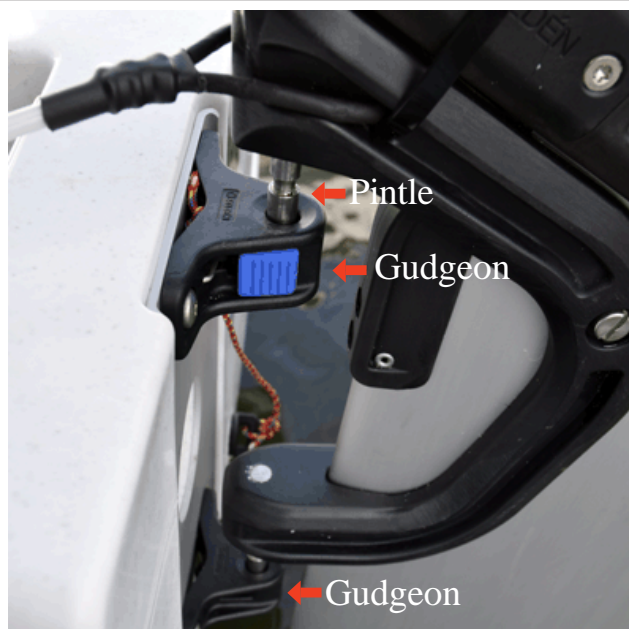
1. **Take the mainsail out of the bag** and place it directly onto the boat. Hang the sail bag on the railing at the North-eastern end of the dock. Never place sails on the dock as the rough surface will damage them.



2. Step into the boat carefully and move aft. **Reach over the stern and turn the drain plug in a clockwise fashion.** NB: If you do not secure the drain plug, the hull of your boat will fill with a copious amount of water. A hull full of water will not only be difficult to maneuver, but almost impossible to remove from the water without damaging the boat.



3. Take the rudder and **place the pintles into the gudgeon.** Once in place the rudder lock pin should secure the helm. Give it a slight tug upwards to ensure it is locked in place. Do not put the rudder on if it is low tide as it could be damaged when taking the boat around the dock.



4. **Uncleat the mainsheet.** It is extremely important that all sheets run free through the blocks before raising a sail. In moderately strong wind conditions a mainsail that is cleated will cause the boat to fall to leeward on the dock.

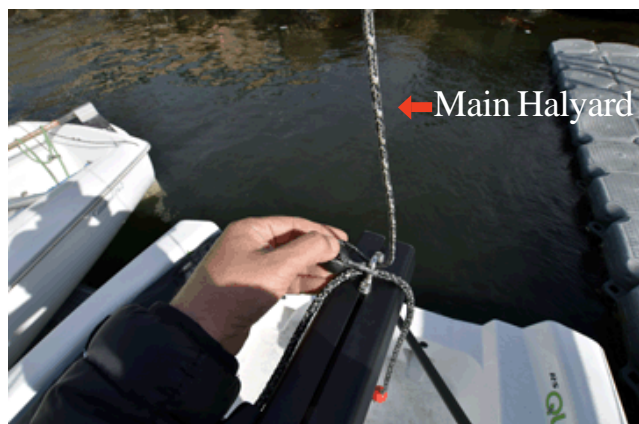


*There isn't no call to go talking of pushing and pulling.  
Boats are quite tricky enough for those that sit still without  
looking further for the cause of trouble.*

—Sam Gamgee,  
*The Lord of the Rings*  
by J. R. R. Tolkien.



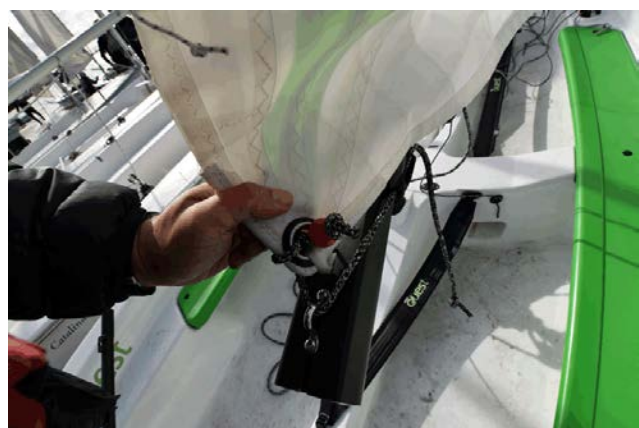
5. Have your crew uncleat the main halyard from the starboard side of the mast (NB: it has both a jam cleat and a horn cleat). **Detach the main halyard from the fairlead at the end of the boom, and pass the main halyard to your crew.** Never leave any of the halyards free flying or you may end up needing to re-rig them.



6. **Attach the clew of the mainsail** by sliding the clew slug down the foot-track on the boom.



7. **Attach the outhaul to the clew of the sail using a ball stopper knot.** Be sure to keep the outhaul uncleated.



*Start first, and increase your lead.*

— Buddy Melges on how to  
win a sailboat race

8. **Attach the halyard to the head of the mainsail using a ball stopper knot.** (NB: Pass the bight through the port side of the sail; then feed the ball over the head through the loop. The stopper ball should be on the starboard side every time so that when hoisting it does not catch on the GNAV.



9. **Insert the head slug and bolt rope** into the groove of the mast.



10. **Raise the mainsail** using the main halyard which is on the starboard side of the mast. If it seems difficult to raise, check to see if something is caught. **NEVER** force anything on the boat. Make sure the GNAV is released. The sail should go roughly 85% up the mast before you stop and cleat off to the jam cleat only.



11. Go to the stern of the boat and **feed the reefing line through the reefing grommet** (above the clew grommet)



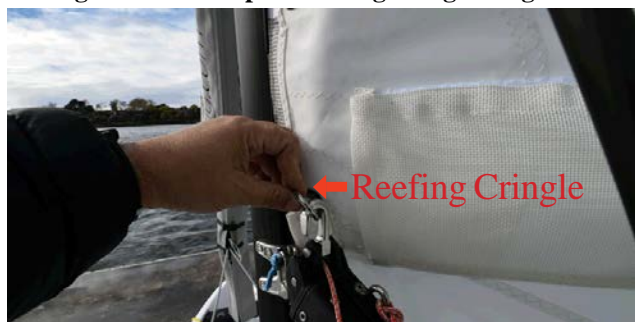
on the port side of the sail.



12. Fasten the end of the reefing line to the boom fairlead using a figure 8 knot.



13. Uncleat the main halyard and lower it until the reefing tack slug exits the mast groove. Put the reefing tack slug into the bottom segment of the mast groove. **Attach the reefing hook to the port reefing cringle ring.**



14. Raise the mainsail using the halyard until there is sufficient tension on the luff of the sail. Cleat off the halyard to the jam cleat and then **use a cleat hitch to secure the main halyard to the horn.** Please see the knots section of the manual for instructions on how to tie a proper cleat hitch (page 28). Place the halyard into the sail pouch.



19. Firmly **pull the reefing line** until the reefing grommet nearly touches the boom.



20. **Fold the tack of the mainsail** back into the foot of the mainsail.





21. Then **roll the foot of the mainsail** up towards the boom.



22. **Tie the foot of the mainsail** using a reef knot (aka square knot).



23. **Tighten the outhaul**, by pulling the line along the starboard side of the boom, and secure it in the clam cleat.



24. **Pass the Cunningham** from the starboard side of the sail through the **Cunningham** grommet. Secure the **Cunningham** in the clam cleat on the port side of the mast. Make sure to put some tension on the Cunningham.

*Sailing became a compulsion: there lay the boat, swinging to her mooring, there blew the wind; I had no choice but to go.*

—E.B. White



25. **Unzip the lower portion of the jib sail cover** and unbuckle the two plastic buckles.



26. Then **lower the jib sail cover** using the “repurposed” spinnaker halyard on the starboard side of the mast just above the main halyard. The crew should firmly pull on the cover while unzipping.



26. **Remove the ball on a bight stopper knot** from the top of the jib sail cover and tie the cover to the railing where you put your sail bag.





27. Tie the ball end of the spinnaker halyard to the spin pole mast ring using an overhand knot with a ball.



28. Uncleat the jib furling line and then firmly pull on the port jib sheet to unfurl your jib sail.



25. Grab the painter in one hand, and with your crew gently lift the bow and slide the boat into the water. Lift with your legs and not your back. Be sure all sheets are free before this step. Do not strike the rudder on the rocks.



26. Walk the boat to the windward side of the dock. Have your crew hold the boat by the shroud. Make sure to keep the hull of the boat from banging against the dock.



27. Gently step into the boat and take hold of the the centerboard stoppers and pull them aft. This should lower the centerboard.



28. Secure the centerboard by using the tie down line and bungee. The line must be in front of the stoppers.



29. Check everything. Make sure everything on your boat is shipshape and ready for you to sail!



# Launching

To launch a sailboat the important principle to remember is that you must keep the bow pointed into the wind and have your sails eased out and **luffing** (fluttering loosely) until you are ready to sail away. The RS Quests and Visions are berthed on the Northeastern side of the dock.

1. Make sure your sails are uncleated and eased. Then begin pushing the boat into the water while holding the painter.



2. Using the painter pull the boat towards the pylon.



3. Before bringing the boat around to the windward side of the dock you should check the prevailing wind direction to determine which direction the bow of the boat should be pointing. Generally the wind will blow from the ocean towards the shore. Pass the painter to your crew around the pylon; do not walk on the outside of the pylon.



4. Keep the bow pointed into the wind. An onshore breeze is the norm (wind blows from the ocean), so your bow will be pointed toward the top of the channel most of the time. Occasionally, however, the wind will come from inland. Then, your docked boat must have its bow toward the marina. The key is to keep the bow pointed into the wind!



5. Never leave the boat unattended on the windward side. Hold the boat so that it does not bang into the dock.



6. In order to reach the sailing area, you must sail across the power channel, so before launching, check for traffic coming down the power channel.

*Happy is he who like Ulysses has been on a beautiful voyage.*

— Joachim Du Bellay, *Les Regrets*





7. When there is a clear lane to cross the power channel without cutting too close in front of oncoming boats, you are clear to launch. Remember, you must keep clear of all boats in the power channel. It is best to pass clear astern of any power vessels.



8. The crew should sit in the boat, centering their weight so the boat is stable.



9. From the dock, the skipper pushes the bow away from the dock until the boat is approximately perpendicular to the dock and the wind (this will change when the wind comes

from a different direction). The easiest method to accomplish this is to push with your forward hand and pull with your aft hand. **NEVER** hold the boom of the boat while launching.



10. The skipper steps into the boat over the stern, and centers the tiller. **DO NOT JUMP** into the boat! The boat will not sail away if the sails are uncleated and the boom is free.



11. The skipper and crew should be on the windward side to balance the boat. Trim in on the mainsail and jib until the sails are not luffing, and you're off! Head directly for the sailing area.

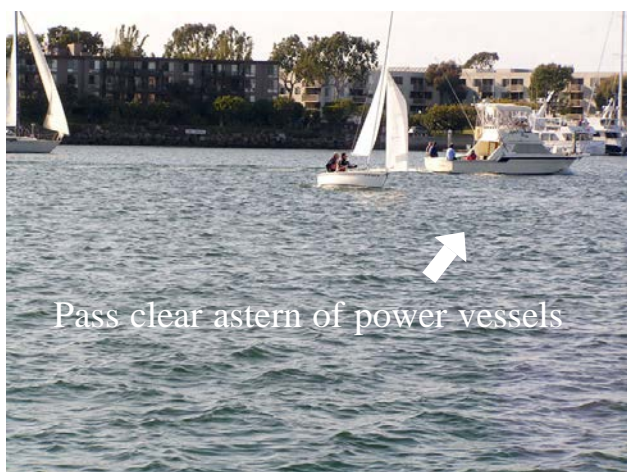




# Docking

The goal in docking is to bring the boat to a stop, bow into the wind, sails eased out and luffing, parallel to the dock. Boats must always be docked bow into the wind on the windward side. Never attempt to dock the boat by sailing downwind toward the dock or by sailing around to the leeward side.

1. Time your approach so that you cross the power channel without cutting in front of power boats, and sail across in the shortest distance: a perpendicular approach to the dock.



2. Plan ahead! You should estimate approximately two boat lengths of dock space in order to stop (there are no brakes on a sailboat). If the dock is crowded, do not cross the power channel until there is enough room for your boat on the windward side.



*A tourist remains an outsider throughout his visit; but a sailor is part of the local scene from the moment he arrives.*

—Anne

Davison

3. As you approach, slow the boat by releasing the jib. Then ease the main out. For the RS Quest roller furl your jib.



4. Your sails should be completely released at a point where you have enough momentum to glide to the dock (not over it or through it!). The stronger the wind the more room you need to slow down. You can always sheet in to regain momentum if you slow too soon.



5. As you glide slowly toward the dock, gradually turn the boat into the wind (tiller toward the mainsail) until you are parallel to the dock. A perfect landing is one where you come to a stop next to the dock without hitting it or any boats in front of you.





6. If you approach the dock too quickly, tack away and attempt another approach. If you stop too soon, and the boat is a few feet from the dock, pull the tiller away from the dock, and wait for the boat to drift in.



7. Once docked (and the boat has come to a complete stop), the crew can step out (never jump), and hold the boat by the **shroud** (metal cable that supports the mast across the beam of the boat).



8. Have the crew keep the boat from banging on the dock. As other boats pass near the dock they will generate wake which will cause your vessel to crash up against the dock



9. Have your crew pull up the centerboard



10. Walk the boat back to the floating dock. Do not drop your sails until you have pulled your boat back onto the floating dock.



*Land was created to provide a place for boats to visit.*

— Brooks Atkinson



# DERIGGING: RS Quest

Once back at the dock, your goal is to get the boat out of the water as soon as possible! If there is open space on the float, immediately walk your boat around and pull it up. Never leave a boat rigged or unattended on the windward side of the dock. Ensure that the boat and equipment are stowed properly, and that the dockmaster is informed of any wear and tear or other damage that may have occurred or been discovered on the water. We derig from the bow moving aft.

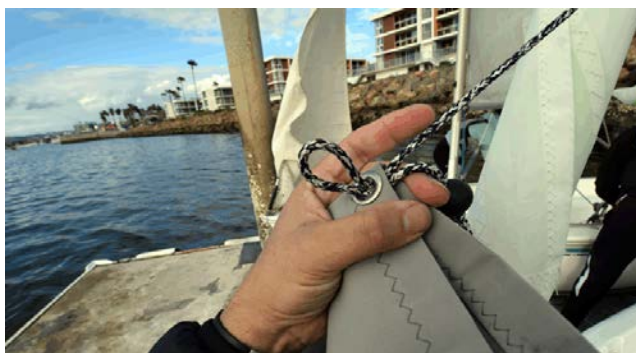
1. Untie the centerboard tie down line. Then **raise the centerboard** by pulling on the centerboard stopper balls. The centerboard should come FULLY up in the centerboard trunk before you attempt to bring the boat onto the floating dock! If the centerboard does not come up check to see if there are lines in the centerboard trunk that are interfering.



2. Walk the boat around to the leeward side and pull it out of the water onto the floating dock. You should leave at least 16 inches of space between adjacent boats.



3. Attach the repurposed spinnaker halyard to the top of the jib sail cover using a ball stopper knot.



4. **Raise the jib sail cover** with the repurposed spinnaker halyard. Have the crew hold the zipper as it is raised.



5. Place the jib sheets between the two buckles. Buckle the two plastic covers. Then zip the bottom zipper. (NB: the jib sail cover has a grommet on the top and bottom of the cover. The bottom grommet has a line attached to identify it.)



6. **Remove the cunningham** from the mainsail.





7. Untie the reefing lines.



8. Release the jib reefing line.



9. **Release the main halyard** from both the horn cleat and the jam cleat. Then slowly **lower the mainsail**. Do not let the boom drop and slam into the boat. Unhook the reefing cringle ring from the hook on the boom.



10. **Remove the figure 8 knot** from the end of the reefing line.

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*Anyone can hold the helm when the sea is calm.*

— *Syrus Publilius*

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11. Release the outhaul and remove the ball stopper knot from the clew.



12. Slide the clew slug out of the track. Then roll the sail upwards **keeping the leech side of the sail flush**.



13. While rolling the sail, have the crew gently lower the mainsail using the main halyard. The crew should also assist the roll on the luff side of the sail.

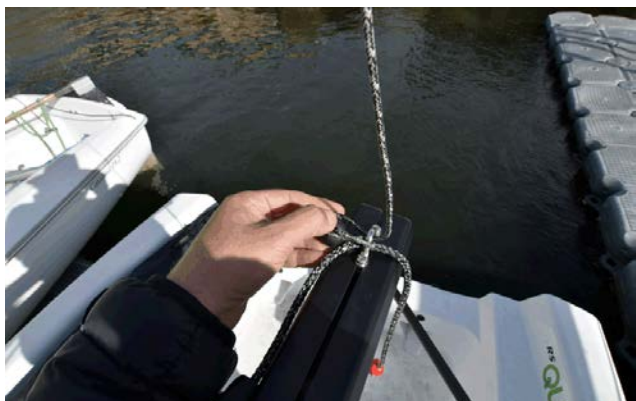




14. Once you have rolled the sail towards the head you will need to **remove the head slug from the mast track** and then untie the ball on a bight knot. (NB: If it is difficult to untie the ball on a bight you will need to push the knot with your fingers through the head grommet towards the ball. Once the bight is on that side untying the knot will be easy.



15. **Secure the main halyard to the boom** using a ball on a bight knot through the outhaul fairlead.



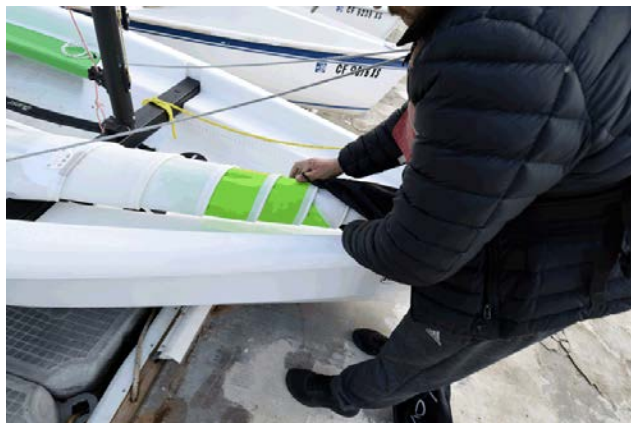
16. Complete the final roll for the main sail by flaking the sail back and forth near the top batten which is not parallel.



*And all I ask is a tall ship and a star to steer  
her by*

— John Masefield, *Sea Fever*

17. **Place the mainsail into the sail bag** luff side first. This way the next time you rig the boat you should place the sail with the open end towards the stern. This will ensure that the sail does not need to be flipped to be raised.



18. **Take the slack out of the mainsheet and cleat it** to prevent the boom from swinging. Coil it neatly over the mainsheet block. Coil up any other loose lines.

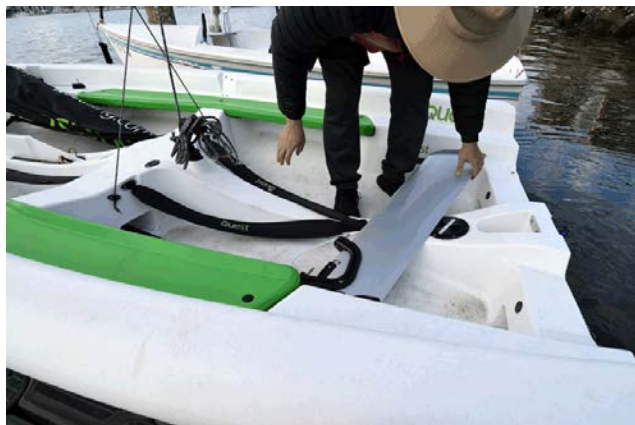


19. **Remove the rudder** by pressing aft on the rudder lock.





20. **Place the rudder in the boat** with the tiller through the aft cross beam.



21. **Hose the boat down** with fresh water, and do a final check to make sure everything is shipshape. Pay special attention to washing off all the metal fittings.

22. Carry, do not drag, the mainsail up to the boat yard and place it back on the sail rack. Please note that each level of the rack is labeled with the type of vessel.

EQUIPMENT CARE: Damage or wear to equipment should be reported to your instructor and/or the dockmaster, as mentioned before, it is very important to keep an eye out for anything that looks amiss and make sure that any problems get noted on the **Repair Request**.

*Sing to me of the man, Muse, the man of twists and turns  
driven time and again off course, once he had plundered the  
hallowed heights of Troy.*

*Many cities of men he saw and learned their minds, many  
pains he suffered, heartsick on the open sea, fighting to save his  
life and bring his comrades home.*

*But he could not save them from disaster, hard as he strove—  
the recklessness of their own ways destroyed them all, the blind  
fools, they devoured the cattle of the Sun and the Sun god  
blotted out the day of their return.*

*Launch out on his story, Muse, daughter of Zeus, start from  
where you will — sing for our time too.*

— Homer, *The Odyssey*

Your derigged vessel should look like the one below:

