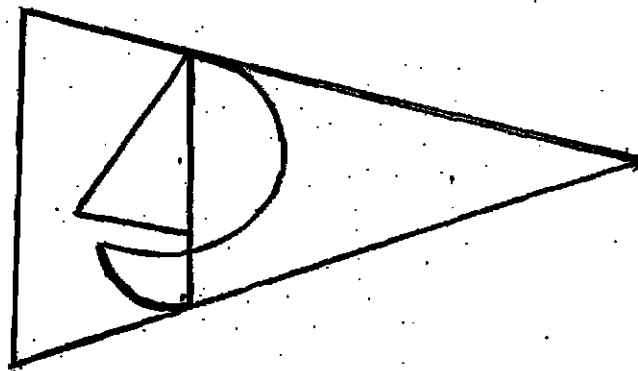


CONVAIR
SAILING CLUB
INSTRUCTION BOOK



REVISED 2005

Convair Sailing Club Sailing Handbook

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Foreward

This sailing text has been developed to address the specific needs of the Instruction Program for the Convair Sailing Club (CSC). The CSC instruction program consists of three 3-hour classroom instructions and four 4-hour water instruction sessions followed by a water checkout session. Upon the successful completion of this program the club member is given a key to the club facilities along with the privileges and responsibilities of a "Skipper" in the club.

If in some way we could stretch this course out twice as long, it would still be too short. The time will go fast, if you are really interested in learning the art of sailing and you'll be able to control the boat well enough to venture into a new world of pleasure. And then – sail, sail, sail. Read a lot about boating, all you can. Talk the language. It's surprising how quickly you can catch on to this lingo, but only if you talk it and use it with someone else. Don't be shy about using it at the marina, around the boats and on the water.

The first classroom session will not go into sailing theory because the "how" is more important than the "why" in preparing for the first water session.

Action of wind, water sails, boats, skipper and crew is discussed in the second classroom session.

In the first and third session you'll learn about our water environment, tides, current, buoys, etc. A review and a final written exam, as well as your critique of the whole course are included in the third session.

Appendix 1 is a syllabus of the classroom material. This syllabus has a cross reference to the appropriate chapter in the book, the handbook or other references.

Appendix 2 outlines the nominal progression of topics and activities of the four water instruction sessions.

However it is more important to understand that the expertise gained during water sessions is cumulative. Certain activities cannot be attempted until others have been mastered. For instance, if you have not learned to tack and jibe you will not be able to

perform "man-over-board" exercises.

Therefore, you will

be permitted to progress at your own speed. If you are a quick learner or have had sailing experience, you may be ready for check out in less than four sessions. If you have never sailed before and need more lessons, more water instruction will be provided. Besides satisfying us that you are ready to be skipper, we want you to be confident of that also.

Upon completion of this course, we do not expect you to be expert sailors. That comes as a progression as you accumulate sailing hours. We do expect that you will have achieved a level of competence to:

- Be safe
- Be responsible
- Take care of our and your equipment to minimize our maintenance burden.

To improve your sailing skills, continue to study the art and techniques of sailing. This text has an appendix of references to complement the subjects covered here and a bibliography of books that can extend your knowledge and expertise.



Figure 12-1 Victory 21 Sloop

Chapter 1 - Types of Sailboats

As an introduction this chapter sets the stage in terms of the equipment used by the Convair Sailing Club. It will include a brief overview of the different sailboat configurations, the major characteristics that determine configuration and where our boats fit in the spectrum. For our purpose, the spectrum is limited to the kinds of cruising, racing and recreational sailing craft one is likely to encounter on San Diego Bay and Mission Bay.

First consider the categories of characteristics that determine a boat's configuration

Sails: number, shape, relative size and how they are set.

Hull: number, shape, keel and rudder configuration, ballast.

The most visible category is the sailing configuration. Over the centuries sailing innovators have produced innumerable sailing configurations but the process has been evolutionary and today we have comparatively few that are commonly seen and produced. Figure 1-1 shows the six commonly identified configurations. The order of types is a very rough indicator of size but don't depend on that as a rule. Also there are many subtle variations of these types.

The **Catboat** is the simplest configuration with one sail mounted on a mast located well forward. The **Sloop** is probably the most popular configuration and happens to be the configuration of all of our CSC boats. The sloop has a mast located a little farther aft than a catboat and has a forward sail called a jib. The rear sail is a mainsail (pronounced mains'l). A variation in sloops that should be noted has to do with how the jib is mounted. If the headstay or jib stay attaches to the mast at a point below the top as shown in Figure 1-1, it is called fractionally rigged. Our Ensigns have this configuration. The alternative is a masthead rig shown in Figure 0-1 in the Foreword. Here the headstay attaches to the top of the mast. Both our Victories and our Commander are of this design.

A **Cutter** is similar to a sloop but differs in that the mast is stepped further aft and usually carries an additional jib called a staysail. The advantage of a cutter over a sloop is that a greater variety of sail combinations is available for all types of weather. This may be preferred for offshore cruising.

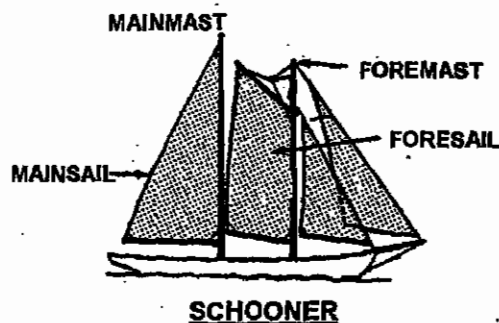
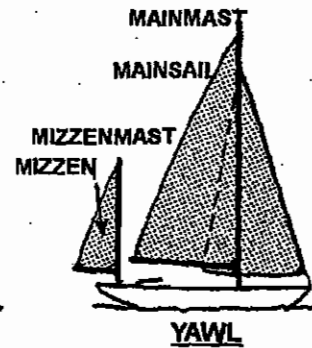
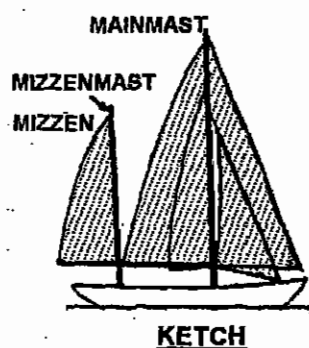
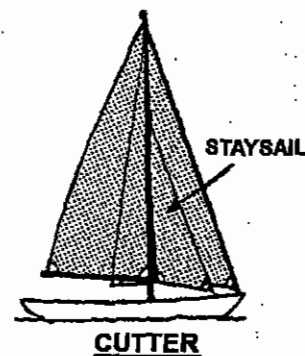
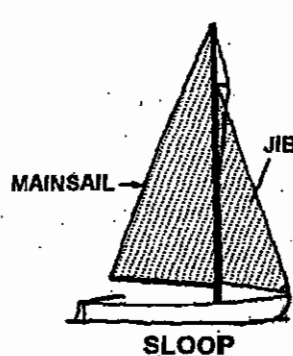
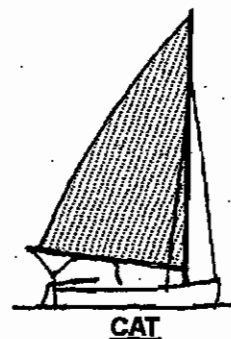


Figure 1-1 Sail Configurations

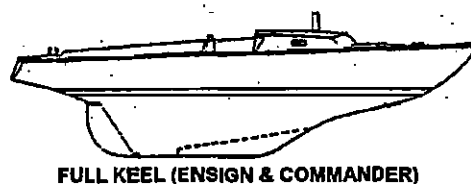
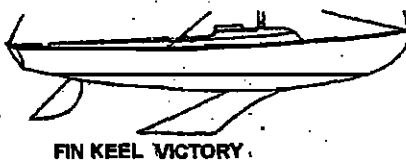
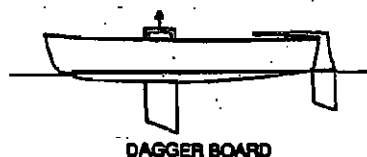
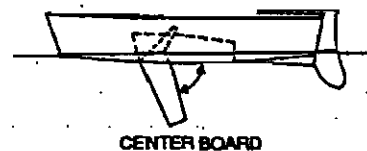
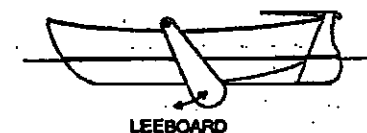
The **Ketch** and the **Yawl** have an additional shorter mast aft called a mizzen. The difference between the two is

The ketch has the mizzenmast stepped forward of the rudderpost and the yawl has it stepped aft of the rudder. (Sometimes this discriminator is not useful because it may be difficult to discern where the rudderpost is located.)

The mizzen sail on the ketch is usually larger than the yawl mizzen relative to the mainsail.

The **Schooner** has its second mast (foremast) stepped forward. The foremast is not taller and is usually shorter than the mainmast. The prime example of a schooner locally is the *Invader*. The schooner depicted in Figure 1-1 happens to have a gaff rigged foresail. There are many variations of sail configuration for all the types shown above and the schooner probably has the most.

Leeboard, dagger board, center board boats maintain stability by the weight of persons on board and if not handled properly in windier conditions may capsize. Keelboats such as ours maintain stability by means of the keel and are more forgiving of mistakes.



Chapter 2 - Parts of the Boat

It is very important for you to be familiar with and know the nomenclature and language associated with boats and sailing. Our boats are provided with a laminated instruction card showing the process for rigging and de-rigging the boats. This card is kept on the boat at all times and is indispensable while you are learning. Later after you have been through the course and have some experience you will be able to rig and de-rig without using the instruction card. However, it is still useful as a checklist to be sure you have done everything you need to do.

There is one catch concerning the rig and de-rig instructions. If you do not know the nomenclature then the card will be of little benefit. In this chapter, we identify this nomenclature and describe the function, where necessary, of the parts of the boat.

Parts of the Hull

The terms defined in the next couple of pages are illustrated in Figure 2-1 (overleaf).

The **Hull** is the main body of the boat. You can consider it to be the part that floats. Actually the whole boat floats. Its total weight is called the **Displacement**, which is also the weight of water that is displaced when the boat floats.

The front end of the boat is the **Bow** and the rear part is the **Stern**. The vertical back end of the boat is called the **Transom**. Our Ensigns have a transom mounted motor mount. Looking forward, the left side of the boat is the **Port** side, and the right side is the **Starboard** side. Here's a way to remember port and starboard: **PORT** and **LEFT** are four letter words while **Starboard** and **right** are longer. These terms are used frequently.

The upper edge of the side of the boat is called the **Gunwale**, pronounced "gun`el". When the boat is floating level in the water, the vertical distance between the water line and gunwale is called the **Freeboard**. Our Victories have what is called a **Rubrail** at the gunwale and across the stern of the boat.

On a boat like the Victory, the cabin is called a **Cuddy**. Our Victories also have a stowage compartment at the stern of the boat called a **Lazarette**.

We also have some directional terms that are relative to the boat. It is useful to understand the subtle differences in their meaning. If you are referring to relative points or positions on the boat these terms apply:

Aboard	On or In the boat
Forward	Toward the bow
Aft or Aft	Toward the stern
Amidships	Central portion of the boat between the bow and stern
Athwartships	At the right angles to the centerline of the boat

These terms apply to locations beyond your boat, possibly to describe the relative location of another boat:

Ahead	In the direction of and beyond the bow
Astern	In the direction of and beyond the stern
Abeam	At right angles to the centerline of the boat

Supporting the sails are two structural members. The general term for these members is **Spar**. On some boats these could be wooden poles or, as on our boats, extruded aluminum tubular sections.

Mast The vertical spar

Boom The horizontal spar that can swing either to port or starboard and holds the foot of the mainsail

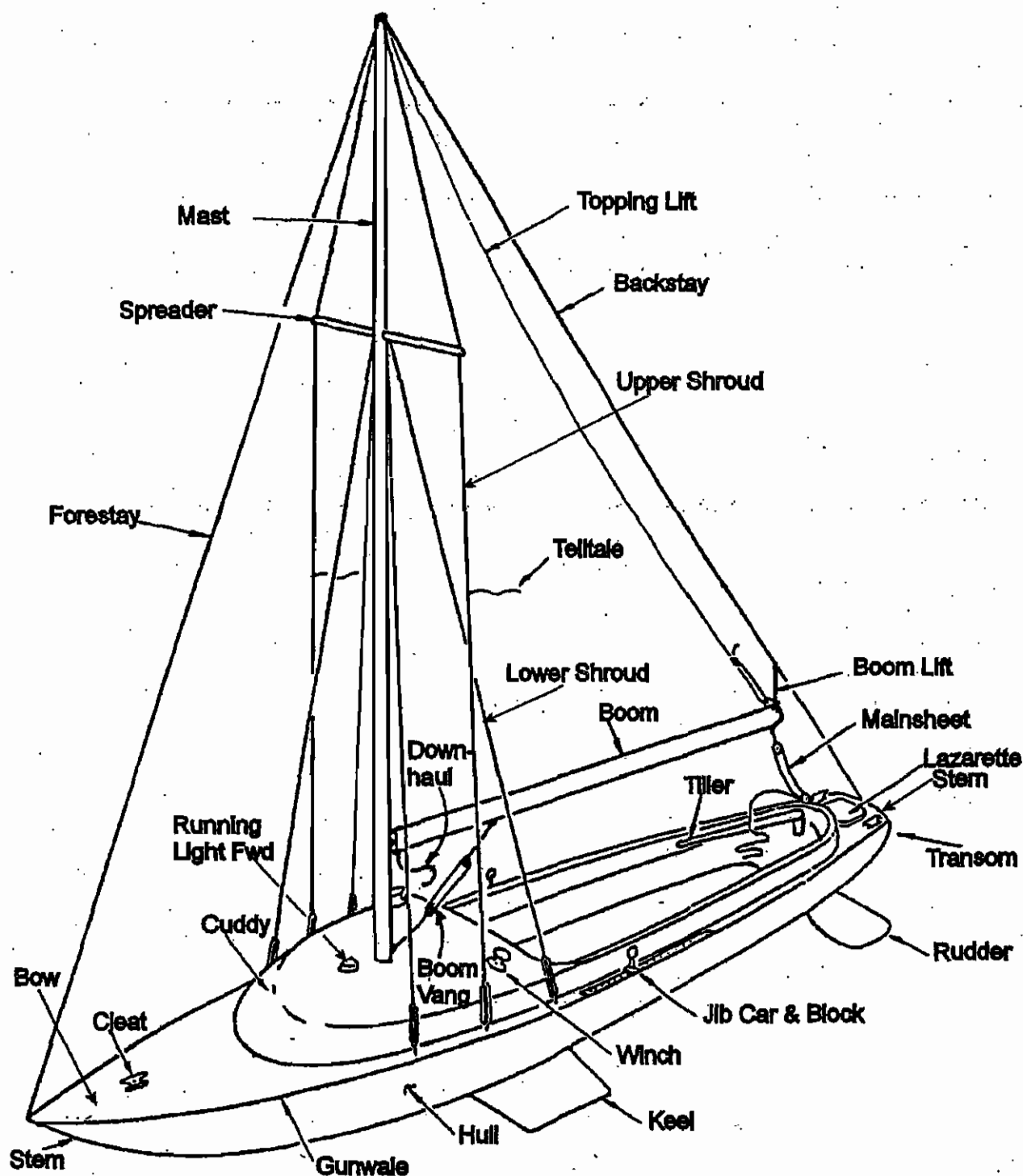


Figure 2-1 Parts of the Hull and Standing Rigging

Rigging

Rigging is a general term used to describe the lines (rope), shrouds or stays (cables made of wire) that support the spars and control the sail. There are two categories of rigging – Standing rigging (below) and running rigging (page 2-11)

Standing Rigging

Standing Rigging – the shrouds and stays that support the mast. The standing rigging is normally left in place when the boat is de-rigged or put away at the end of the sailing session. The only time a portion would be removed is for replacement or if there is an occasion to remove or **unstep** the mast. (The operation of erecting the mast is called stepping the mast). The standing rigging consists of the following:

Forestay

Backstay

Port and Starboard Upper and Lower Shrouds

The upper shrouds pass over a pair of **Spreaders** part way up the mast. The shrouds and spreaders provide lateral stiffness in addition to support of the mast.

When a mast is stepped (erected) the standing rigging is put in place and adjusted using turnbuckles at the lower end of the stays and shrouds. The adjustment of the turnbuckles to get the proper position and bend of the mast is called **Tuning**.

Parts of the Sail

Before we discuss the running rigging we need to identify the parts of the sails (the mainsail and the jib). We will describe the mainsail (the "main") first. As pictured in Figure 2-2 the main is attached to both the mast and the boom. We will discuss the aspect of it later. First you must become familiar with the sail parts; most elementary are the corners and the sides.

The corners are:

Head the top corner

Tack the forward lower corner

Clew The rear lower corner

The sides are:

Luff front edge attached to the mast

Leech rear edge

Foot the bottom edge

Most mainsails will have more material at the leech which results in an arc rather than a straight line. The material to the rear of the straight dashed line drawn between the head and the clew of the sail is called the **Roach**. The roach is provided to offer a little more sail area than just a simple triangular shape. However, the roach area does not contribute to sail efficiency if it is not held smooth and molded

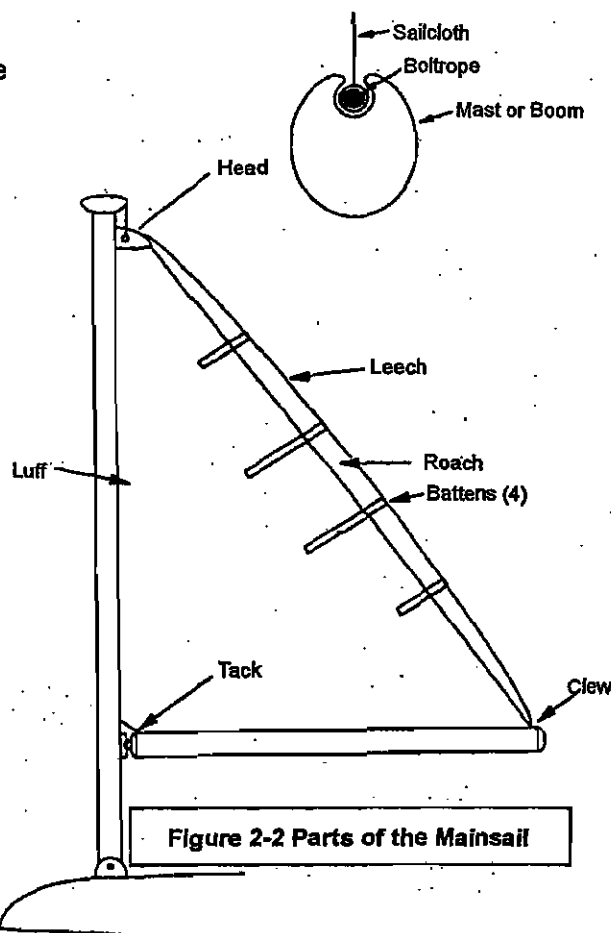


Figure 2-2 Parts of the Mainsail

into an effective airfoil. **Batten Pockets** are sewn into the leech of the sail and they contain removable slats made of wood or plastic, called **Battens** to help maintain the smooth shape of the sail.

Other significant aspects of mainsail construction are that the sail is not a flat piece of fabric. It is constructed so that it's kind of "baggy". This "bagginess" permits it to form an airfoil in the wind.

On Victorys the foot of the sail has a rope called a **Boltrope** sewn into them. More specifically a luff uses "slides" that guide the main up and down.

The **Jib** has very similar nomenclature to the mainsail as seen in Figure 2-3. The sides of the triangle are the same: Luff, Leech, and Foot, as are the corners: Tack, Head, and Clew. The jib is attached to the forestay a by a series of spring-loaded fasteners called **Hanks**. The "eyes" in each corner are called **Cringles**, and the corners are reinforced by extra layers of sail material. The tack of the jib is attached to the boat at the bow by means of a shackle.

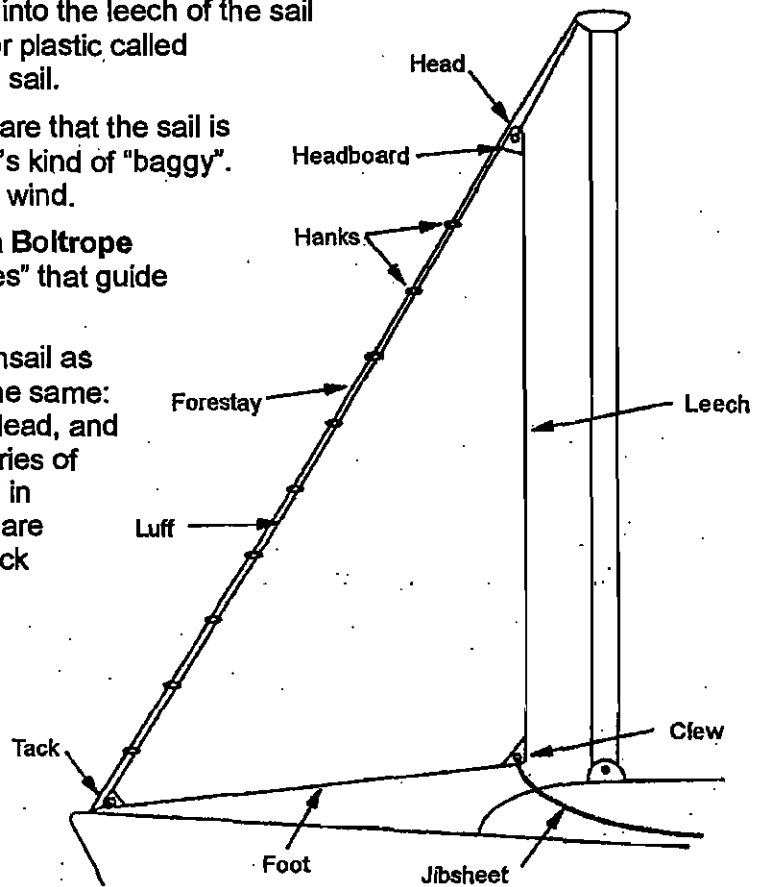


Figure 2-3 Parts of the Jib

Running Rigging

Running Rigging consists of the lines used to hoist/lower and control the sails. There are two lines used to hoist the sails: a **Jib Halyard** and a **Main Halyard**. These halyards are attached to the heads of their respective sails with shackles and run up over a system of **Blocks** at the top of the mast and return down along the mast to a **Cleat** on either side of the mast as shown in Figure 2-4 (overleaf). Insets in the Figure show the configuration of the blocks at the top of the mast. Block is a nautical term for pulley.

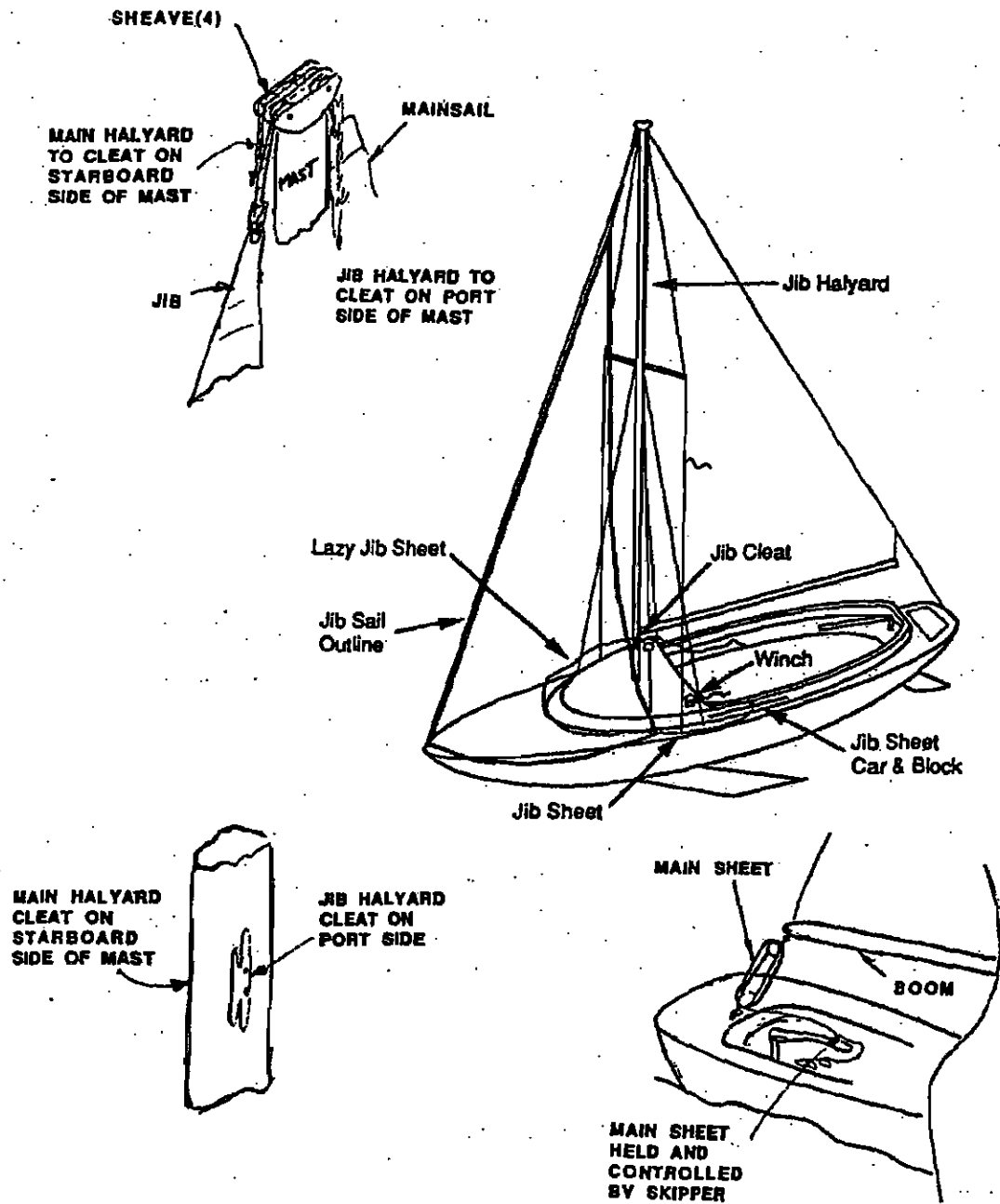


Figure 2-4 Running Rigging

A **Cleat** is a fixture (pictured in Figure 2-4) to which a line may be secured or in nautical terms **Made Fast**. How to make a line fast to a Cleat is shown in Chapter 12.

One very important point that must be stressed is that on all CSC boats, the main halyard is always cleated to the starboard cleat and the jib is always cleated to the port cleat.

Sheets are the primary lines for controlling the sails and are in constant use while sailing. The **Mainsheet** consists of block and tackle attached to the end of the boom and a point just aft of the tiller as pictured in Figure 2-4. Using the mainsheet the skipper controls the angle of the boom and therefore the mainsail.

There are two **Jib Sheets**, both attached to the clew of the jib. The jib sheets are routed around the outside of the starboard and port shrouds respectively, then through blocks near their respective gunwales amidships. These blocks are mounted on slides called **Cars** which ride on short tracks to allow adjustment of the angle the sheet pulls on the sail. From the jib sheet blocks the sheets are lead around one or other of to winches and cleated.

Only one jib sheet is used at a time depending upon which tack the boat is being sailed. The opposite sheet not in use at a particular time is the **Lazy Sheet**.

Other parts of running rigging that normally require adjustment less often are:

Boom Vang

Downhaul

Outhaul

The boom vang consists of block and tackle attached to the boom and the base of the mast. Sometimes just called the Vang, it serves to hold the boom down and thus flattens the mainsail. (see figure 2-1)

The hardware used to attach the boom to the mast is called the **Gooseneck**, so called because it allows directional freedom for the boom to move both up and down and sideways. The end of the boom is allowed to slide up and down in the same groove in the mast that holds the luff slide of the mainsail. The **Downhaul** is a line attached to the forward end of the boom that can be pulled down and cleated to adjust the vertical location of the gooseneck and boom. See figure 2-5.

Shown in Figure 2-6 is the **Outhaul**. The outhaul is used to adjust the tension along the foot of the mainsail and thus help shape the sail for sailing conditions.

Authors Notes:

The illustrations above are representative of but not real depictions of Victory hardware. We have substantially limited this chapter to terms that describe and depict the parts of our boats. Be assured that there are many more terms and you will need to know which are related to the operations and functions in sailing and seamanship. Hopefully, we will define them as we need them in the remaining chapters.

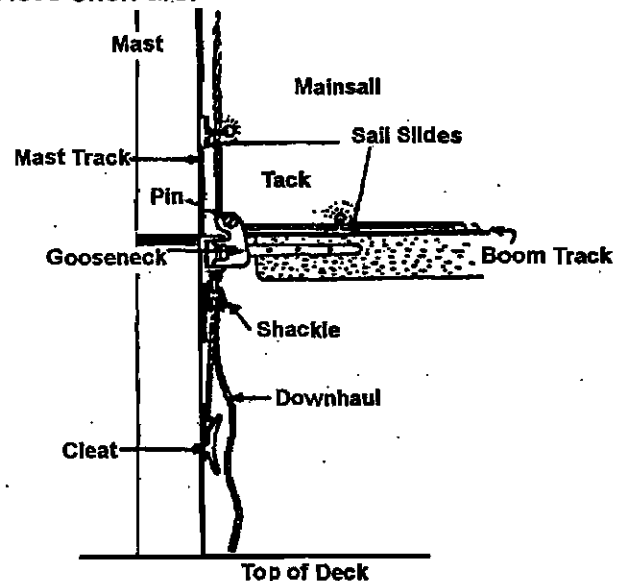


Figure 2-5 Gooseneck & Downhaul

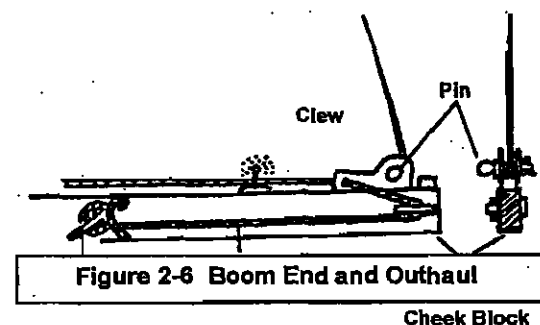


Figure 2-6 Boom End and Outhaul

Chapter 3 - How Boats Sail

The context of this chapter on how boats sail addresses the capability of a sailboat to sail in a selected direction relative to the wind.

Propelling forces

We will discuss two major categories of forces: aerodynamic forces on the sail(s) and hydrodynamic forces on the hull, keel and rudder. The sail provides a component of aerodynamic forces in the forward direction of the boat. However it is the combination of forces on the sail and reactive forces of the water that permit the boat to be sailed in a particular direction and to be steered.

Let's first consider how aerodynamic forces are created by wind flowing past a sail. Figure 3-1 shows a horizontal section through a mainsail with wind moving past that section. The section is an airfoil and the air is deflected as shown. The airflow over the convex upper surface in the figure has to speed up and a change in air pressure occurs – a decrease on the convex side and an increase on the concave side. Daniel Bernoulli first quantified this phenomenon in 1738. Thus the air flow around the air foil is said to behave according to Bernoulli's Equation.

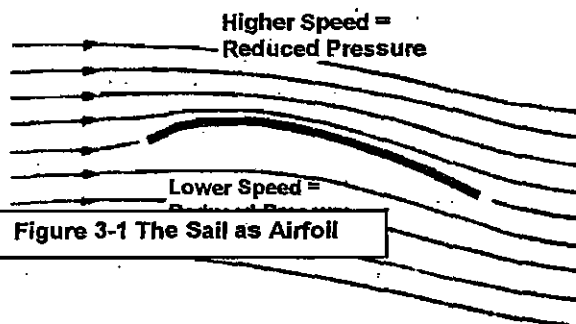
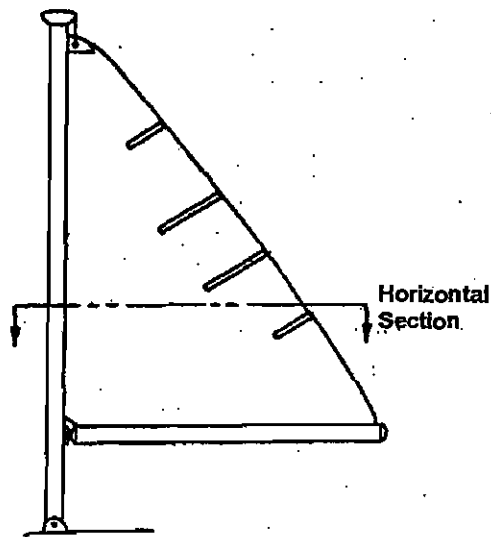
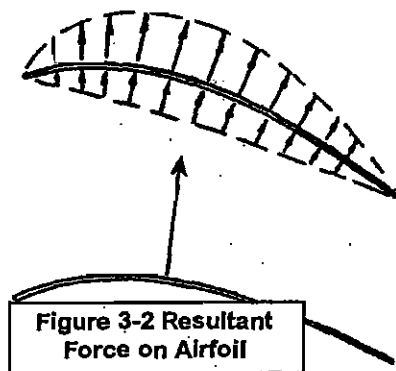


Figure 3-1 The Sail as Airfoil



The change in pressure actually amounts to increments of force over the surface of the sail as depicted in Figure 3-2. If we add all these forces increments over the whole surface of the sail we can represent them as a single net force vector as shown in the lower part of Figure 3-2.

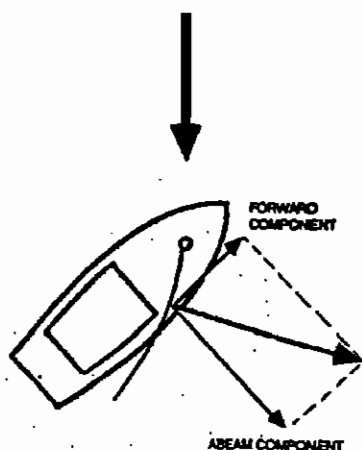


Figure 3-3 Aerodynamic Driving Force on Sail

Now let us put the sail on a boat and orient it to get some forward force as shown in Figure 3-3. The solid vector is the same net force shown in Figure 3-2. But that force can be broken down into orthogonal components – a forward component and lateral or abeam component.

Considering this situation kinematically, we would expect the boat to be moved in the direction of that net force vector. But there are other forces on the boat. There is of course a buoyant force acting vertically that keeps the boat from sinking, and there are horizontal forces generated by the water on the boat when the boat is moving through the water. Figure 3-4 shows these forces.

The effect of the keel is to act as a water foil just as the sail acts as an air foil. We can represent the hydrodynamic force by two vectors – a beam force which is useful and a drag force that we

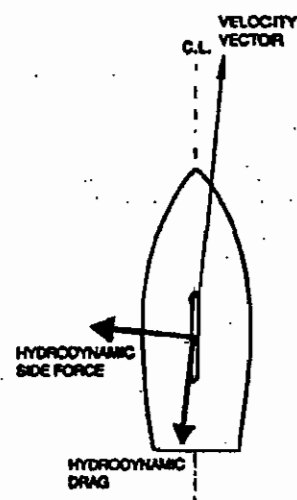


Figure 3-4 Hydrodynamic Forces on Hull

have to put up with.

Notice that the velocity vector of the hull moving through the water is slightly off the center line of the boat. This means that along with forward motion there is also a small side slip. This side slip is what generates a small angle of attack of the keel and thus the side force – more about this later.

So, let us put these forces together and see the result in Figure 3-5. When the boat first starts to sail the forward aerodynamic force exceeds the hydrodynamic drag and the boat speeds up. As the boat accelerates, the hydrodynamic forces increase and when it becomes equal to the aerodynamic force the boat will have reached a constant maximum speed for the conditions of sailing. Under steady state conditions the hydrodynamic side force just balances the aerodynamic side force.

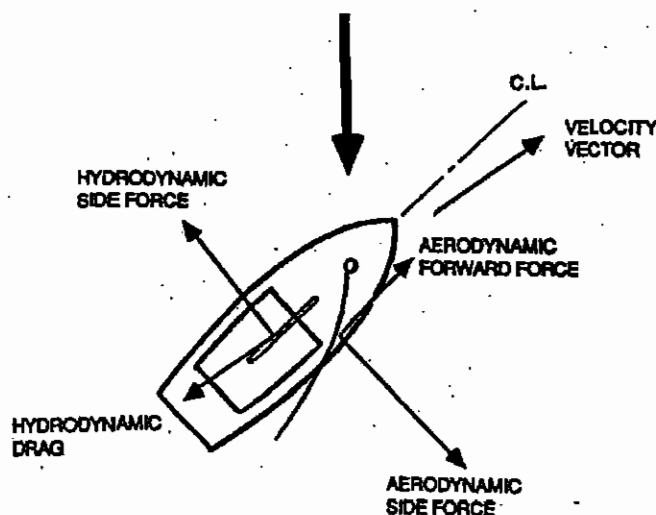


Figure 3-5 Balanced Forces Drive Boat Forward

Stability

Figure 3-5 is only part of the story. It appears, at least in the two dimensional world, that these forces do indeed balance. But there is more – the hydrodynamic forces shown are essentially horizontal forces in the water while the aerodynamic forces are essentially horizontal in up the air at a height roughly a third of the way up the mast. So, why doesn't the resulting moment shown in the first view in Figure 3-6 tip the boat over?

Before we answer this question, we need to be acquainted with some centers of force. First there is a point above the waterline where the total force of the wind can be said to act. We alluded to this earlier in the chapter for the case of one sail. This is referred to as the Center of Effort (CE) which takes in to account all the sails that may be on a boat as well as all other surfaces above the waterline. Figure 3-6 shows the location of the CE and the aerodynamic side force in the transverse or beam plan of the boat.

Next there is the Center of Gravity (CG) and a point called the Center of Buoyancy (CB). The CB is the single point where the upward force of the water acts on the boat to keep it from sinking. The first view in Figure 3-6 shows a no-wind condition where the buoyancy force balances the gravity force. In the second view some wind is added and the boat heels but the CB moves off the centerline of the boat. This is due primarily to the shape of the hull. If we sum moments about CG, the buoyant moment acts to oppose the heeling moment of the wind.

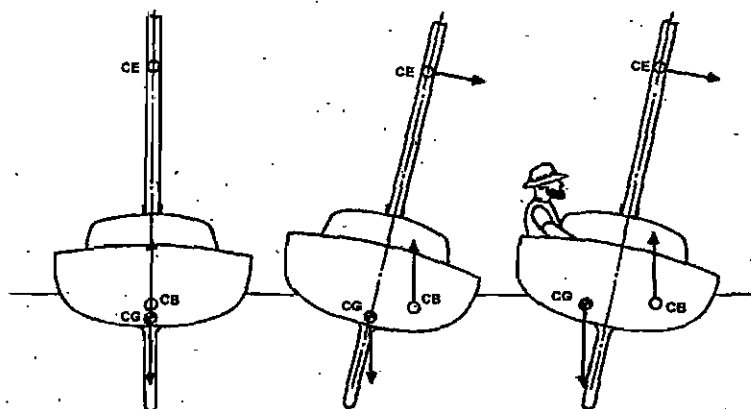


Figure 3-6 Balanced Forces Control Heel of Boat

Now let's consider the primary factors that contribute to this lateral stability. A weighted keel tends to lower the CG and since the CG of the basic boat is on the centerline, for a given amount of heel the moment arm of the CB force is increased. The other factor is illustrated in the third depiction in Figure 3-6 where the location of the crew on the windward side of the boat shifts the total CG to the left and further increases the moment arm of the buoyant force.

Steering

The tiller is a lever that controls the rudder as shown in figure 3-7. Pushing the tiller to the left causes the boat to turn right and vice versa. How does this work? Pushing the tiller to the left angles the rudder to the right; the force of the water on the angled rudder pushes the stern of the boat to the left; as a result, the boat pivots to the right around a vertical axis called the Vertical Yaw Axis, which passes through the Center of Lateral Resistance. (discussed

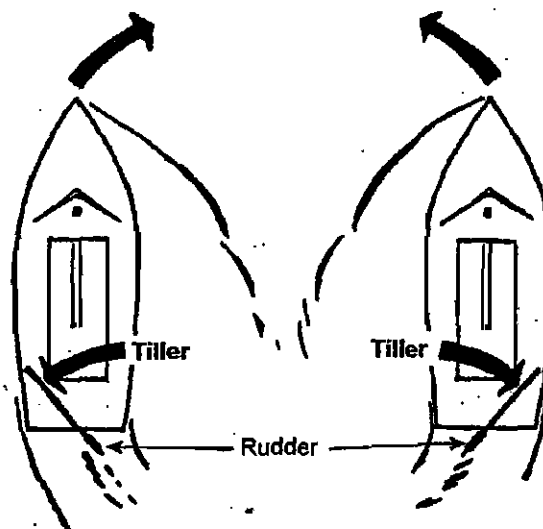


Figure 3-7 The Rudder

below). So, not only does the sailor have to learn the skill of steering the boat with the tiller, which is not intuitive to most new skippers, but the act of steering causes the bow and the stern of the boat to swing in opposite directions, potentially causing inadvertent collisions with other boats or with the dock. For this reason we will spend a little more time on the subject.

The Knack of Steering

Steps in the process (Figure 3-8)

- A. Push the tiller
- B. The rudder deflects the water stream
- C. Stern swings in the same direction the tiller moves
- D. Boat pivots around Vertical Yaw Axis, which passes through the Center of Lateral Resistance (CLR – see below)
- E. Bow swings opposite to tiller
- F. Center the tiller

Remember:

- Any movement of rudder caused by a force on the tiller causes drag and slows the boat
- After the initial push on the tiller (maybe 3 or 4 inches), ease the force. The rudder will follow the new water stream of the swinging stern.
- The stern swings in the same direction the tiller is moved
- Never push the tiller as far as the coaming. The boat will stop and not turn.
- **If the boat is not responding, bring the tiller back to the middle. Then the boat will gain headway and respond to steering**
- Do not get into the habit of moving the tiller back and force to correct small variations in the heading. Any rudder movement caused by tiller force is a braking movement.

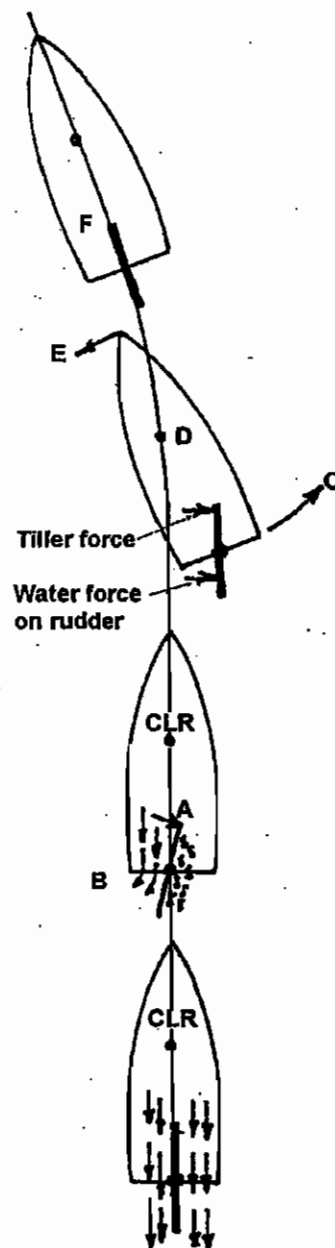


Figure 3-8 Steering

Sail Trim

Sails are trimmed by means of the sheets on the jib and mainsail. There are ways to find tune the shape of a sail, such as raking the mast, adjusting the tension in shrouds, adjusting tension of the luff, foot, and leech. In our club we leave the fine tuning to the Fleet Captain. But please do use the sheets to ease the sail to the verge of luffing for maximum thrust, or to trim the sail in to keep a smooth air flow over both sides of the sail. Figure 3-9 illustrates what happens to air flow as a sail is trimmed in more and more for a given wind direction. Note the thrust diminishes greatly and the boat will begin to slide sideways because of the increased leeway component of the sail. When you sense a stall, the only solution is to ease the sail out to a complete luff and then start trimming in to re-establish the laminar flow.

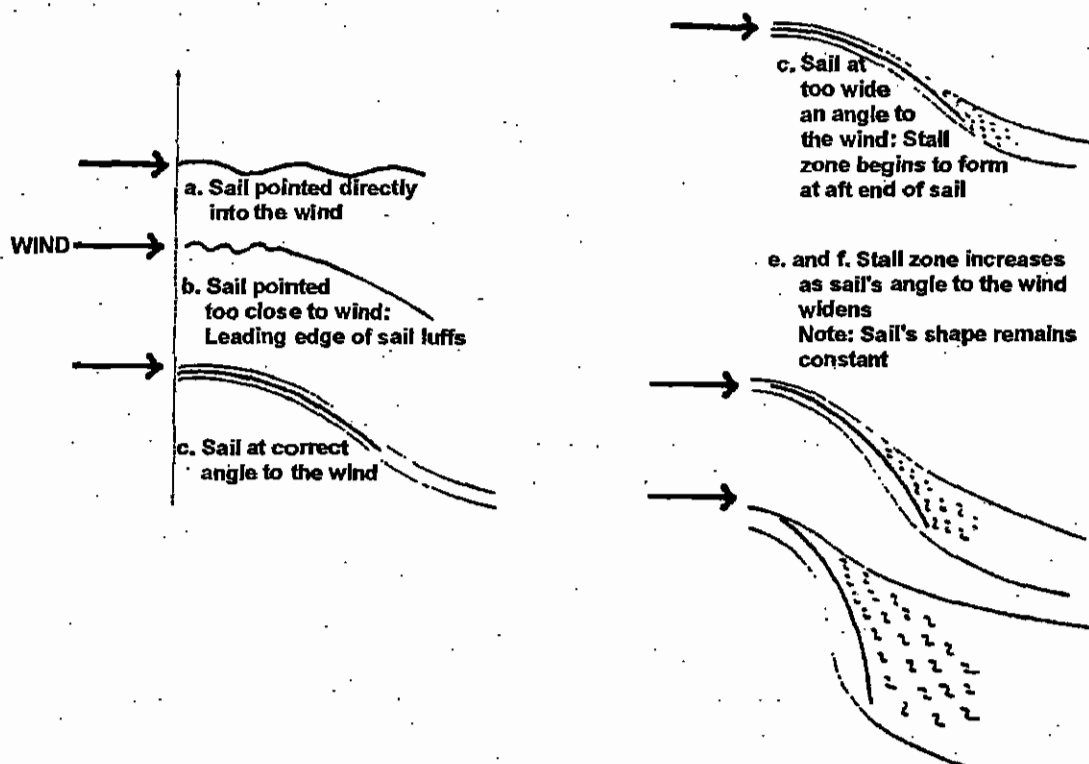


Figure 3-9 Sail at Different Angles of Attack

Weather Helm and Lee Helm

A boat has weather helm if she tends to head up toward the wind (when sailing on a beam reach or above): The helm must be pulled or pushed to windward (**weather**) to compensate. Lee helm is the tendency to bear away from the wind: the helm must be pushed to **lee** to compensate. A good skipper tries to keep the force on to the tiller to a minimum: the boat is in **balance**. If he is sitting on the high side of the boat and has to pull on the tiller with excessive force, the boat has too much weather helm. If the skipper has to push the tiller away, the boat has too much lee helm. What causes lee or weather helm?

If the forces generated by the hull moving through the water (focused on a point called the Center of Lateral Resistance – CLR) are not in balance with the forces generated by the air on the surfaces above the waterline (mainly the sails), focused at the CE, the boat will tend to rotate, and the skipper must apply helm to compensate.

Imagine that our sloop is rigged only with the jib: As illustrated in the lower right of Figure 3-10, CE moves forward and the force on the jib causes the boat to bear away. The skipper has to push the tiller to the lee side to keep the boat on her heading. If the sloop is rigged

only with the mainsail – illustrated on the upper left of Figure 3-10 – the CE moves aft, and the boat will head up unless it is countered by a force on the tiller to weather.

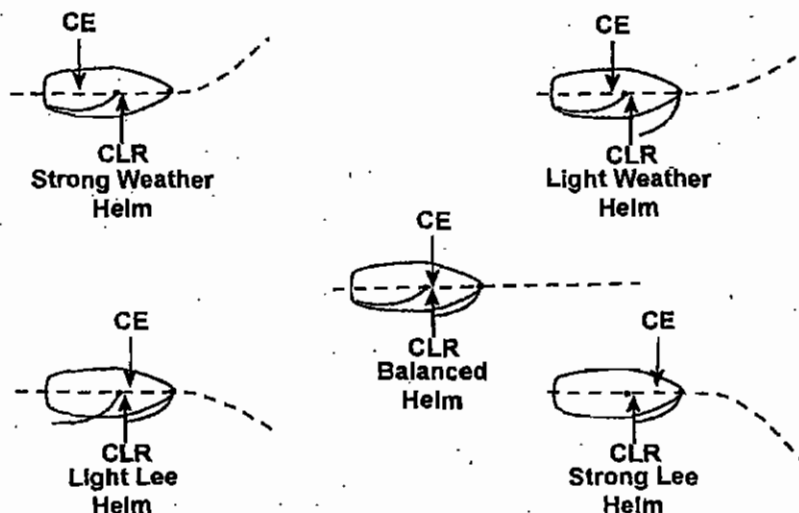


Figure 3-10 Weather and Lee Helm

When the boat is rigged as a sloop (center of Figure 3-10), CLR and CE are balanced and the skipper only needs to apply a small force on the tiller to keep the boat on course. Most sailboats are designed with light weather helm as a safety feature: The boat will round up and stop if the tiller is dropped. However, excessive weather helm is problematic because it causes excessive heeling and tiller forces, and can lead to loss of control. Some things to do to alleviate excessive weather helm:

- Ease the main sheet
- Trim in the jib sheet
- Move weight aft
- Prevent excessive heeling

Hint: In heavy weather (strong wind, high waves) excessive weather helm occurs. Carry a big luff in the mainsail to reduce heeling and ease traveler to leeward.

Chapter 4 - Points of Sail, Beating, Reaching, Running

This chapter is concerned with the directions you can and cannot sail with respect to the direction of the wind.

Sailing Circle

Figure 4-1 illustrates the points of sail. This figure shows that the points of sail are all relative to the wind direction. The wind direction is sensed by the telltales attached to each upper shroud. For CSC boats we use audio cassette tapes. If you don't have a keen, inherent sense of the wind's direction (which really does seem inherited by some people) makes sure there are telltales on both shrouds. Telltales should be attached

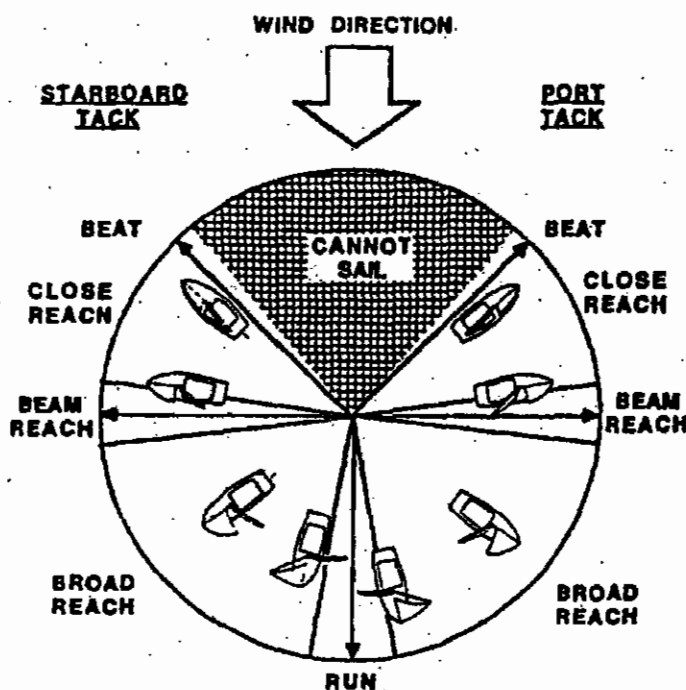


Figure 4-1 Points of Sail

about 5-6 feet above the deck. The club has a supply of used audio tape for this purpose in the dock boxes.

In figure 4-1, we see the following:

The **Beat** or sailing **Close Hauled** is approximately 45 degrees off the wind. This is a condition where both sails are sheeted in as close as practical. We say approximately 45 degrees off the wind because that angle varies from boat to boat and also varies with the cut of the sails and the ability of the skipper and crew to trim sails. High performance racing boats can be trimmed to sail closer to the wind than 45 degrees. Victory 21s achieve around 50 degrees at best. Close hauled is as close on the wind that can be sailed. If one tries to sail closer into the eye of the wind, the sail begins to luff and loses its effectiveness.

If we ease off the wind from a beat and sail at between approximately 50 degrees to about 85 degrees of the wind we say we are on a **Close Reach**. To get the maximum

speed on this point of sail the sheets of both sails should be eased slightly from their position on a beat.

A **Beam Reach** is a point of sail approximately 90 degrees from the wind direction. With most sloops, the beam reach is the fastest point of sail. Again, if we are adjusting our direction from a close reach to a beam reach we would let out the sheets more.

If we continue to fall off the wind and ease the sheets more we are **Broad Reaching**. The broad reach is a band of directions from 90 degrees to about 170 degrees off the wind.

Note that the boat can be sailed on either a Starboard Tack or a Port Tack. For a starboard tack, the wind comes from the right side of the boat and on a port tack, the wind will be coming from the left. Starboard and port tacks apply to all of the points of sail. Then, if you wanted to describe to another sailor a particular point of sail you might say "I was sailing along on a broad reach on starboard tack" which means that the direction relative to the wind was somewhere between about 100 degrees and 170 degrees off my starboard bow.

The **Run** is somewhat of a special case where the boat is sailing close to directly downwind. At this point of sail the sails no longer act as airfoils (described in Chapter 3). The sails are adjusted to present the maximum sail area to the wind. On this point of sail, if the jib is sheeted on the same side as the main, it will be utterly ineffective because main will be blanketing it. So to maximize sail effectiveness we move the jib to the opposite side from the mainsail and go **Wing and Wing**. This will allow the area of both sails to be presented to the wind. This is still an unstable situation for the jib, so if we expect to remain on a run for long we should use the **Whisker Pole** to hold the jib out as shown in Figure 4-2.

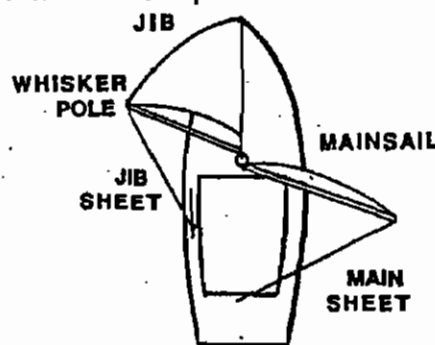


Figure 4-2 Wing-and-Wing on Port Tack

Starboard and port tack also applies to a run but the simple definition about which side of the boat the wind is on breaks down because the wind is behind us. Therefore the definition of starboard and port tack must be extended. Notice in Figure 4-1, on a reach or a beat the boom is on the opposite side of the boat from the wind. So the rule can be extended to read:

If you are on a starboard tack the boom is on the left side

If you are on a port tack the boom is on the right side

There is one additional categorization that you may want to keep in mind: That is, the difference in concept between a beat and a reach – any reach, close, beam or broad:

- On a beat, after you have trimmed your sails for beating (hailed in the sheet) you steer the boat where the wind lets you and leave the sails fixed. Typically when you are beating and tacking back and forth, your goal is to get to a destination upwind to which you cannot sail directly. Thus simply stated, you sail 2 or more beats on opposite tacks, but on either tack you sail as close on the wind (presumably approximately 45 degrees) as you can get with the sails set in the optimum manner for a beat. On a beat, the helmsman continually observes the telltales and tests the wind to keep the boat on the optimum course.

- On a reach you steer the boat toward your destination (with possible navigational corrections such as side slip, or tidal current) and adjust sails to achieve the optimum performance for the point of sail. On a reach the skipper and crew are continually watching telltales and adjusting sails to accommodate wind shifts and puffs.

This leads to somewhat different tasks for helmsman and crew when on a beat or a reach, as indicated in the following table

Helmsman and Crew Tasks on Beat and Reach		
Point of Sail	Helmsman Responsibility	Crew Responsibility
Beat	Sheet in main and steer to the wind watching tell tales closely	Sheet in jib and observe trim
Reach	Steer to a point and adjust main frequently to optimize	Adjust jib frequently to optimize, and observe

Polar Plots of Boat Speed

There is one further depiction of points of sail that may help you to see what's happening with regard to boat speed as a function of point of sail. Figure 4-3 shows a polar plot of boat speed which is the scale on the concentric circles. The plot is boat speed as a function of point of sail measured in degrees for one given wind speed. We would have additional plots for different wind speeds. This one happens to be for a wind speed of 10 knots. These plots are established by testing and are unique for each boat design. Figure 4-3 is typically for an average sloop and a particular sail configuration and not precisely representative of any of the club boats.

Notice that the maximum speed is attained on a beam reach as was stated earlier in this chapter. Note how the speed curve diminishes rapidly near the beating point of sail. When you try to sail just a little closer on the wind than optimum, the boat speed decreases significantly. When you point off just a little, you pick up a little more boat speed but you sacrifice the direction angle from your destination.

On a run the boat speed is always less than the wind speed. This is due primarily to the drag of the hull in the water.

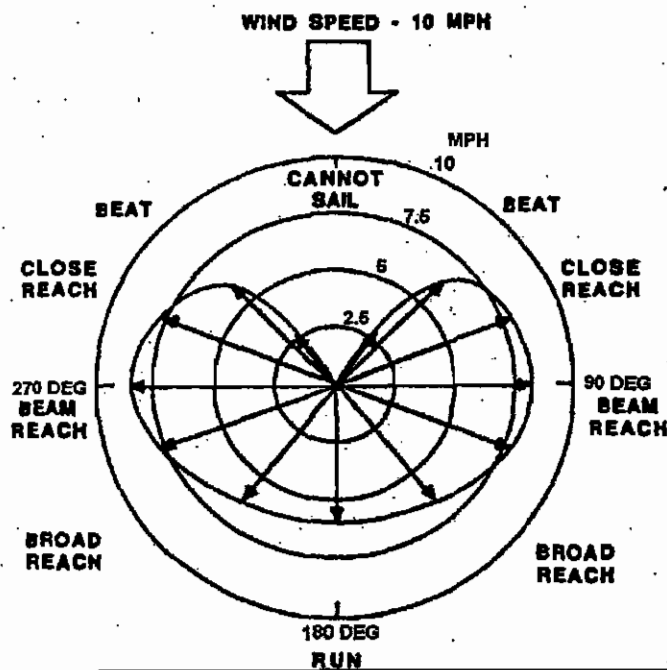


Figure 4-3 Polar Plot of Boat Speed as a Function of Point of Sail

Chapter 5 - True and Apparent Wind

It is useful to understand the concept of true and apparent wind. The **True Wind** is that experienced by a person or boat that is standing still. The **Apparent Wind** is that experienced by a moving sailboat or anything moving for that matter. The apparent wind is the vector resultant of the true wind and boat velocity. Suppose there were zero true wind, that is, it's a dead calm. You are moving, maybe running, driving your convertible, riding a motor boat, or just paddling your becalmed sailboat. You would sense the presence of a wind which is caused by that motion. This is the apparent wind.

Now vectors have both a speed magnitude and a direction, and have both a true wind velocity vector and a boat velocity vector, they are combined vectorally to get the resultant apparent wind. Figures 5-1 through 5-4 show the vector addition for a boat moving along at some velocity for cases of different true wind aspects.

These diagrams illustrate some interesting phenomena. For instance, when we are sailing on a beat or close reach (Figure 5-1) the apparent wind is actually greater in magnitude than the true wind and it would appear that we are pointing closer to the wind than we really are with respect to the true wind.

In contrast, consider Figure 5-4, where the boat is on a run. Here the boat velocity nearly subtracts directly from the true wind. This explains why after a very breezy beat, we turn downwind and find the wind seems to have died down substantially.

The important consideration to remember is that the wind you sense on the boat either on your body or from the tell tail on the windward shroud is apparent wind. There is no way for the boat to know true speed unless it has an apparent wind indicator, a knot meter, and a computer. You can estimate the true wind by keeping these diagrams in mind.

Another way to estimate the force and direction of true wind is by observing flags, smoke from stacks, wind vanes, wind socks and other objects around you. As you become more skilled at sailing you will find yourself continually searching for wind indicators.

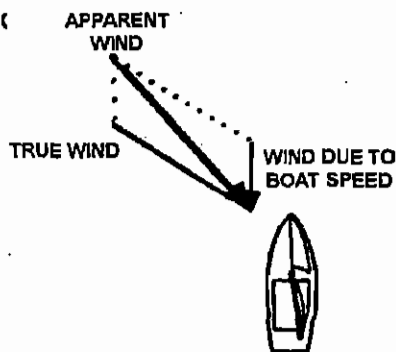


Figure 5-1 Beat or Close Reach

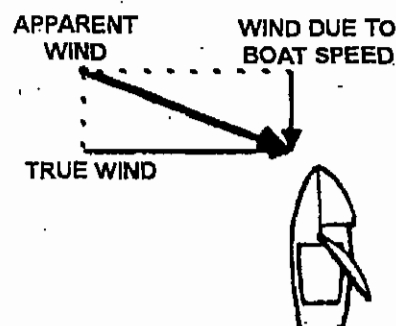


Figure 5-2 Beam Reach

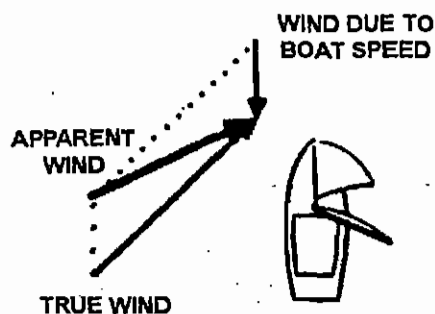


Figure 5-3 Broad Reach

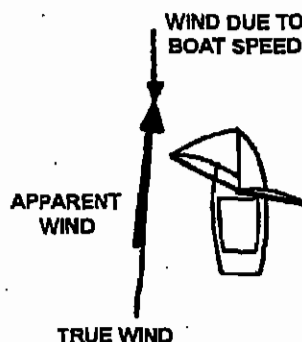


Figure 5-4 Run

Chapter 6 - Tacking and Jibing

In Chapter 4, we saw that we could be on a starboard tack or a port tack. There are obviously occasions where we will want to change from one tack to the other. To do this we will either **Tack** or **Jibe**.

The word tack can be confusing to the novice sailor. This is particularly because it is used as both a noun and a verb and can be used to identify a succession of jibes. Here are some definitions that hopefully will ease the confusion.

Definition 1: Tack (noun) refers to the category of point of sail thus one is sailing on either a starboard tack or a port tack.

Definition 2: Tack (noun) is the lower forward corner of either sail.

Definition 3: Tack (verb) is to perform the maneuver of coming about – turning the boat from one tack (noun definition 1 above) to the other tack (noun definition 1 above).

Definition 4: Tack downwind (verb) is a series of jibes from one broad reach to the other. Occasionally tacking downwind can be faster than a run to get to a downwind destination.

This chapter is primarily concerned with the verb “tack” as in definition number 3 above. There are various reasons to tack but let's limit this to the obvious one. Let us assume that we want to get to a point upwind from us that happens to be in a direction within ± 45 degrees of the wind direction that is in the “cannot sail direction” of Figure 4-1. This will require sailing two or more tacks (def. 1) as shown in Figure 6-1. If one is already close hauled on one tack. It may require only one tack (def 3). However it could take more because of possible obstacles before you reach the tacking point or you just may make a poor guess on when to tack. Also, a wind shift might influence your decision on which tack (def. 1) to be on.

The following is a detailed description of the tacking (Definition 3) process shown in Figure 6-2.

In order to tack effectively, you should have established some speed on your current tack because while you are tacking you will lose speed. You will lose speed because as you turn, your rudder will cause extra drag in the water and the sails will be luffing and therefore not contributing any forward thrust.

What you are doing is passing through the “cannot sail zone”. To do it effectively, the tack must be executed in a coordinated manner. If you have inadequate boat speed or you are on a reach instead of a beat you will not complete the tack and wind up **IN IRONS**.

1. Look around for the presence of other crafts and determine that you can safely complete your maneuver. The basic rules of the road (described in Chapter 10) apply only for vessels on established courses. You have no rights while on a tack maneuver.
2. Decide on a tentative target for your boat to be aimed on the next tack. This target should be at approximately 90 degrees from your present course. Some-

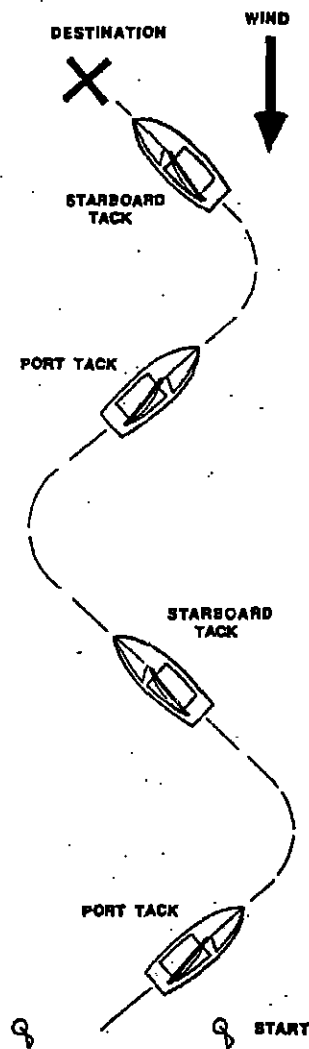


Figure 6-1 Tacking to Reach a Destination to Windward

times we tend to get a little disoriented during the tacking maneuver, and having a predetermined heading helps.

Ready to try the maneuver? First, let's see what the skipper does. Suppose he's on a beam reach and decides to tack. He heads the boat up to a beat, brings in the mainsail to a close-haul, and sees that the crew close \-hauls the jib. (Skipper, are you sitting on the high side?). Then he gives the first order **"READY ABOUT"** which means "Get ready, crew, we're going to come about." After a few seconds pause, the skipper gives the command **"HELM'S A-LEE"** and begins to shove the tiller away from him, to the lee side of the boat. Not hard, and not too far; the rudder is a good brake and may kill the whole maneuver. He doesn't have to do anything with the mainsail. Just keep it close hauled. As the boat turns through the eye of the wind, she comes upright and the skipper comes over to the other side which will be the new high side. He holds the tiller a-lee until the sails have filled on the new tack.

What is the crew doing all this time? When he hears **"READY ABOUT"** he does not have to respond to the command, but certainly should check the lazy sheet behind him, listen for the command **"HELM'S A-LEE"**. When the jib luffs, he pulls the working sheet straight up off the winch and gets rid of it, grabs the lazy sheet, and his job is done. The advantage of bringing the sheet to the high side is that all adjustments are made right beside him, not having to reach across to the winch on the low side.

If perchance the boat goes into irons (Figure 6-3) while trying to go through the eye of the wind, simply pull either jib sheet tight, which backwinds the jib and the wind pushes the bow away from the wind. Now release the tight sheet, trim in the other and away you go.

The **JIBE** (Sometimes spelled gybe) is an alternative to tacking to maneuver a boat from one tack to the other. When tacking, the bow turns through the eye of the wind to the opposite tack. When jibing, the stern turns through the eye of the wind to the opposite tack.

One of the most common reasons for executing a jibe is on a run or very broad reach we find that we are not pointed at our destination and we cannot get there without **"sailing by the lee"**. SO we jibe and get on the opposite tack. This may have resulted from a slight wind shift or just an initial misjudgment.

The significant aspect of the jibe is that it takes a little more effort than tacking and if not done properly can jeopardize the equipment. Along with learning to jibe properly it is important to learn to avoid an inadvertent or accidental jibe. Inadvertent jibes occur when sailing generally downwind or on a broad reach and especially when sailing by the lee. Figure 6-4 shows what Sailing by the Lee is.

The main danger of an inadvertent jibe is that the boom swings from one extreme angle (because the main sheet is way out) to the other and in so doing builds up a lot of kinetic energy. When the boom finally stops something may break, usually the gooseneck or a rear lower shroud. If the boom vang is not tight enough on a run, the boom tends to raise up when



Figure 6-2 Coming About or Tacking

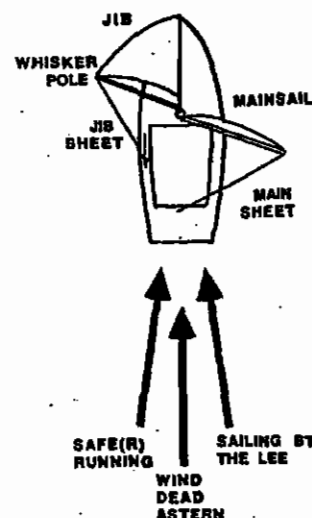


Figure 6-3 Sailing by the Lee

the sheets are let out and when it swings across the boat during a jibe it can foul or even break the backstay and the mast comes down! Injury to crew or skipper can also occur from the swinging boom.

Some pre-requisite conditions to be met before jibing:

- The wind must be aft. If you are on a broad reach, it's difficult to bring the main up to the centerline or to complete the swing.
- The boat should be balanced (upright, not heeled)
- The tiller should be controlled to prevent the boat from heading up to a reach.
- The main sheet should not be loose enough to drag in the water.
- The boom vang and backstay should be tight

After these conditions are met, the skipper gives the order **"PREPARE TO JIBE"** and begins to haul in the main sheet quickly. As the boom nears the centerline, the skipper gives the command **"JIBE-HO"**. When the boom passes the centerline, the skipper immediately lets the main sheet run out to keep the boat from suddenly heeling. If the sail seems to be reluctant to swing to the other side, move the tiller smartly in the direction the boom is to go. Then return the tiller to the center. See figure 6-5.

The crew doesn't have much to do. The jib is blanketed and luffing. He should take up the slack in the jib sheet to stop the clew from wrapping around the forestay. Of course, if the skipper intends to change heading, the crew will trim in the jib to start good air flow across the sail and into the slot.

When on a run, both skipper and crew should be alert for several indicators that the boat is on a stable course and not about to accidentally jibe or head up. The shroud and backstay telltales should be pointing forward parallel to the boat centerline. If they should begin to point away from the boat you are sailing by the lee. Correct it right away by steering the boat "into the telltales". Another good indicator that you are on a run is the jib. It will suddenly seem to collapse, because the mainsail is blanketing it.

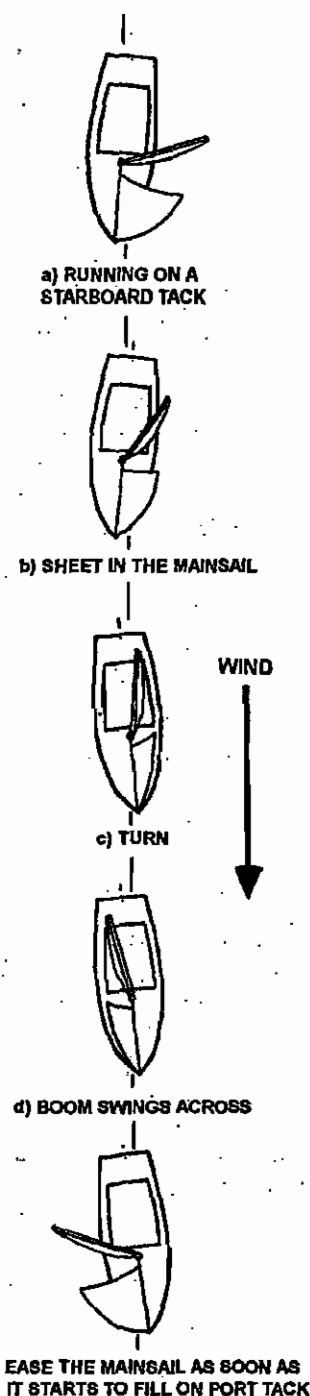


Figure 6-4 Jibing

Chapter 7 - Docking

Like most maneuvers in a sailboat, departing from and returning to docks becomes simple if the skipper uses the wind to his or her advantage, and skipper and crew communicate well with each other.

Departing from a Dock

Prior to departure from any dock the skipper must observe the situation, including location, traffic, winds and potential obstacles, prepare a plan for departure making best use of the wind, and consider options for aborting the departure if the unexpected happens. The skipper must then discuss the plan with his crew:

- Tell the crew what the plan is
- Tell each crew member what his/her role is. If that person is not a skilled sailor, make sure that they understand their role and can carry it out.
- Tell the crew how to abort the departure if needed

The Departure Plan

The most important factor in departing a dock is the wind— observe the wind strength and direction and consider how it will affect the boat during the departure. If the wind is pushing the boat onto the dock or into a slip, departure may be impossible under sail, in which case the skipper must consider relocating the boat to a more favorable position, seeking help to tow the boat off the dock or paddle in. If the wind is pushing the boat away from the dock, or out of the slip, departure becomes much easier, because the wind can be used to advantage.

- Consider where the wind will push the boat during the departure and select the departure path which minimizes downwind obstacles like other boats and docks or shallow areas
- Use bow, breast and stern lines to position the boat at a favorable angle to the wind
- Use crew to provide sufficient boat speed for maneuverability after launching
- Often, departure under jib alone or by paddle (easy on a Victory) is favored

The Departure

After discussing the plan with the crew and rigging the boat, check the traffic and wind a last time to make sure that you will not obstruct others during the launch, and the wind has not changed: Raise the jib and instruct crew to cast off the dock lines, but not let them go. After final check of traffic, instruct the crew to push off and step into the boat. Use the sail to establish maneuverability and to control speed as you make your way to a safe course away from the dock area. Make sure that the boat has sufficient speed before attempting to steer. When you have reached a safe area, raise other sails and trim them as appropriate.

Departure from CSC Docks

The CSC docks at Harbor Island West Marina present special challenges due to the concentration of boats and the prevailing winds. For that reason CSC has established docking procedures which must be followed.

Rigging instructions are on plastic cards kept in each boat. After following these instructions, the Victory should be at a windward position in the slip (usually the west side of the slip at our marina). Departures from any other position in the slip are discouraged at all times and prohibited when winds are over 8 knots.

The jib should still be rigged but down (on the foredeck) and the dock lines should be secured. When everything is ready the jib should be raised and the halyard secured. Please note that the jib should be raised at the LAST step just before casting off. This reduces wear on the jib through excessive flapping and makes the boat easier to control while moving it around in the slip area.

The boat should be held by a crew member while the dock lines are removed from the boat and laid along the pier finger. A line secured to the port winch is useful to temporarily secure the boat, and to guide the boat out of the slip. (breast line)

When all lines are free and the helmsperson is ready, check the traffic in the channel one last time. If traffic will not be hindered, the boat should be given forward speed by pulling on the line on the port winch and, gently, on the shrouds if necessary. The jib should be trimmed in just enough to be effective for the wind condition. (A jib pulled all the way in with a west wind will cause the boat to pivot downwind and not give forward drive.)

Sail the boat on a **broad reach** for a few lengths to allow it to gain speed for control and maneuverability before attempting to come up to a close reach.

The instructions for raising the main are also on the card in the boat and should be followed. Remember that the mainsail should be raised while heading directly into the wind (in irons) and with the Lazy Jacks and Topping Lift slacked off. The sail can be raised easier because there is less sideways force on the sail slides and the battens will not snag on the Lazy Jack lines and the headboard will not snag on the spreaders. The helmsman should wait until all is ready and the crew is ready at the halyard before turning head to wind so that the boat can remain under control while the main is raised. The downhaul may be adjusted after bearing off.

Arriving at a Dock

The same general preparations are required for arrival as for departure

- Check wind and traffic
- Make a plan utilizing the wind
- Inform your crew what the plan is and what their role is

If possible, plan a cross-wind approach, ideally on a close reach, which provides the best maneuverability and speed control.

Arriving at CSC Docks

Lower the mainsail while still well clear of the slip. Follow the instructions in the boat on raising and lowering the sails.

(Remember that the mainsail should be lowered while heading directly into the wind (in irons) and with the Lazy Jacks and Topping Lift tightened. The sail can be lowered easily because there is less sideways force on the sail slides and the battens will not snag on the Lazy Jack lines. Also the wind will force the sail aft instead of forward so that it will lay properly on the boom. The Helmsman should wait until all is ready and

the crewman is ready at the halyard before turning head to wind so that the boat can remain under control while the main is lowered.)

Docking – Jib Only

- Attach a breast line to the winch
- Put out fenders
- Have paddle accessible
- Approach dock as slowly as possible while maintaining steerage
- Approach parallel to dock finger
- Reaching the dock
 - Step-Off boat
 - Wrap Breast line on first cleat
 - Slowly allow breast line to slide on cleat bringing boat to a controlled stop

A line secured to the starboard winch will make it easier for someone to step off the boat from about the winch position and stop the boat. Then the line may be used to tie a short breast line to the dock cleat to hold the boat while the dock lines are attached. (It is a good idea to keep the paddle handy in case you fall short on the landing approach and to have the bow line ready to toss to someone ashore.)

When the boat is securely tied to the dock, the jib should be lowered and preparations made to turn the boat around using the boat's bow and stern lines.

(The jib should be lowered immediately upon landing. The boat can be turned around much easier with the jib down and it will reduce wear on the jib from excessive luffing.)

When everything is ready, the dock lines should be removed, the boat turned around and repositioned away from the landing position if other spaces are empty and the dock lines secured.

The boat should be de-rigged according to the instructions in the boat.

The following is some of the original text from the sailing handbook for possible use or deletion

Departure and Arrivals:

Departures should be from the windward dock at the front of the pier, typically in the order shown (numbered) to make room at the end of the slip for docking and turn-around of boats. Note: During Santa Ana conditions, boat position #2 becomes the windward dock and that boat should leave first.

Arriving boats should be turned in direction shown and docked in reverse order of numbering, except the middle boat (#5) will go in last. This #5 boat position will only be occupied if all the Victories are in the water (none out for repairs).

Ensigns are to be docked nose in and backed out with the motor when leaving. If a motor is not working or is unavailable, the boat may be hand-pulled around to the end of the Commander pier for departure.

Summary

Because our slip and side tie are "Downwind" for most prevailing wind direction, do not sail into or out of our slips using the mainsail. You can not slow down and the boom hits things.

Raise or lower the mainsail in the channel well away from the docks

Depart and dock using the jib only (or paddle)

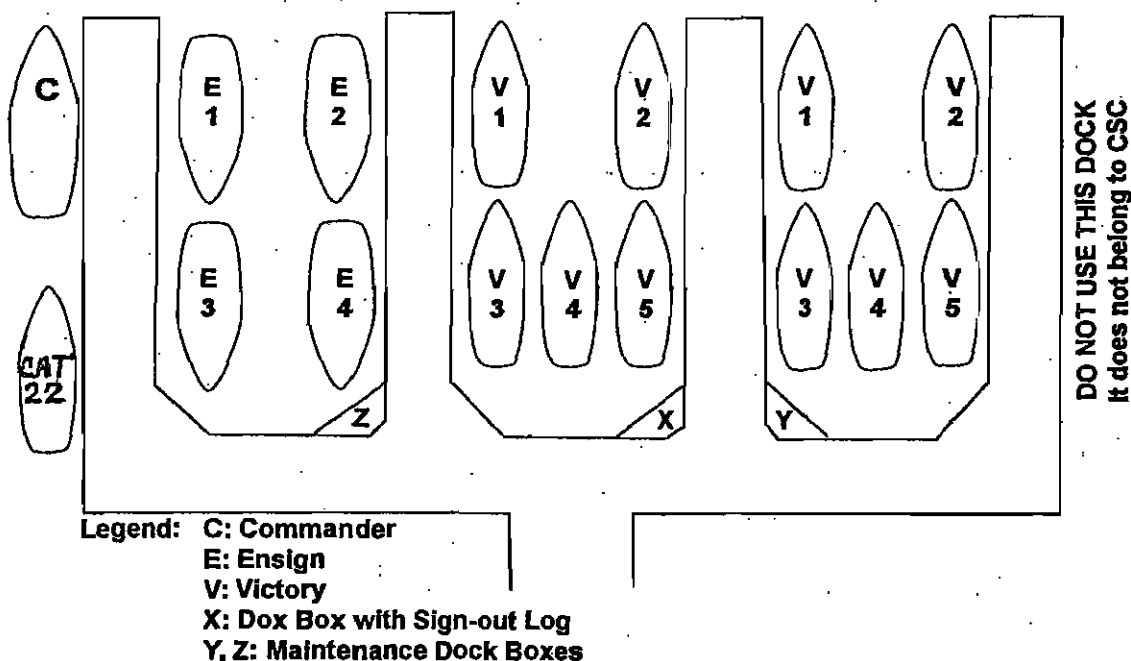
Plan your departure and docking to avoid passing close astern of boats in adjacent slips

Approach our dock at slow speed – one knot or less...glide in. If windy, dock with both sails down.

When strong North West winds are blowing, be especially careful when leaving the dock. If in doubt, cancel your sail.

CSC DOCKS AT HARBOR ISLAND WEST

Order of Use and Storage of Boats



Be mindful of traffic in the channel. It can be heavy on weekends. Be certain traffic is clear before departing. Check on directions before going head-to-wind to raise or lower the main.

Be good neighbors with others in the marina

Do not dock in any slip other than our own

Do not board any other boats

Do not run, or permit children to run in the marina

Do not yell, talk loudly or use profanity

Do not use the water hose from another slip

Procedures for Victory at the Marina Slip

Leaving the Slip: Refer to pages 7-26 through 7-29

Chapter 8 - Anchoring

Each CSC boat has a Danforth anchor pictured in Figure 8-1. The Danforth is relatively light weight for its holding power, however it is not very effective in rocks or heavy kelp. Attached to the anchor with a shackle, is approximately 20 feet of chain and to the chain is attached approximately 100 feet of line. The chain and line together is called the **RODE**.

The Danforth derives its holding power by configuring an essentially horizontal load. This is brought about by two factors: the relatively heavy chain acts to weigh down the rode, and having a substantial **SCOPE**. Scope is the ratio of the length of rode to the depth of water. A scope of 7-to-1 is considered adequate for most conditions of weather and current. Figure 8-2 shows how scope provides a horizontal load on the anchor.

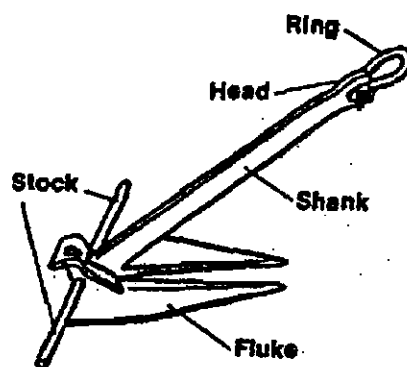


Figure 8-1 The Danforth Anchor

Before anchoring, the skipper should select an area where anchoring is permissible (never in a marked channel) and is free from running aground if the tide should recede or colliding with other anchored boats, docks, buoys or other obstructions. Just as important is the depth. With only 100 feet of rode, 25 feet is probably the maximum depth for anchoring a CSC boat, and then only as a temporary expediency or emergency. Normally, a scope of 6 OR 7 is necessary for a secure anchorage. For anchoring in San Diego harbor, you need to know the depths. Our chart of the harbor shows the depths but, you need to know this or have your own charts if you expect to anchor in the harbor.

Once the area is selected and before approaching the area, the anchor should be removed from the bag and temporarily stowed between the shrouds and cuddy. The bitter end must be attached to the mast with a bowline knot. This is to prevent losing the anchor and rode if it should accidentally slide overboard.

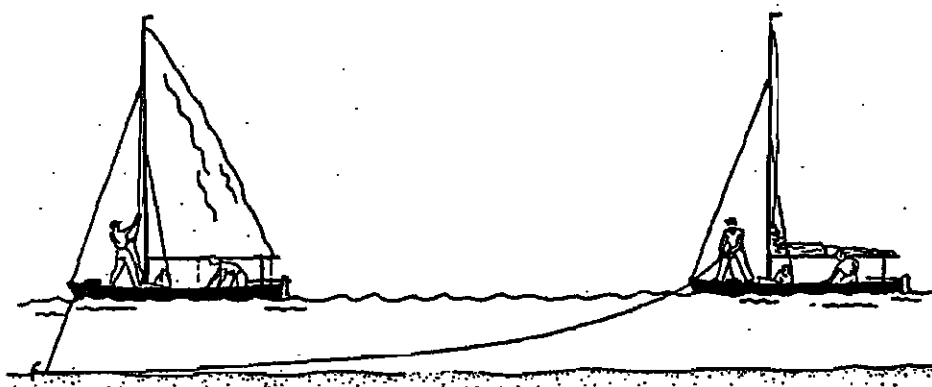


Figure 8-2 Anchoring with Adequate Scope

On approaching the anchorage area, if you are able to, lower the jib, de-rig and stow it in the cuddy. This will afford a clear foredeck for handling the anchor without interference from the jib and jib sheets.

The skipper should then approach the anchorage area, turn into the wind, and the crew will lower the anchor into the water as the boat comes into irons. The anchor should never be tossed because the chain may get wrapped around the flukes and the whole mess will simply drag across the bottom without setting.

As the anchor is lowered into the water and finally touches bottom the crew should estimate the depth. Once the depth is determine, a length of rode 5 to 7 times the depth should be left out and then tied to the bow cleat with a cleat hitch with the bitter end still

tied to the mast. The rode should never be tied off to the shrouds, winch or anything except the bow cleat. This allows the boat to point into the wind or current and offers the least resistance for the anchor to hold.

When leaving the anchorage, the anchor is hauled up, dunked a few times to remove the mud and re-stowed in the bag. Normally, after hauling in most of the rode, you will be pulling almost straight up and this should free the anchor because the anchor's holding capability is achieved from a near horizontal load, not a vertical load. But sometimes the anchor gets set so firmly that you may have difficulty freeing it. Figure 8-3 shows a method for freeing a set anchor using the movable weight of the crew. The rode is cleated taut with both crew members forward, and then leverage is obtained by shifting crew weight aft.

When to Anchor:

- When eating lunch, swimming or staying overnight
- Winds become too high to sail safely
- Fog (use fog horn)
- Sails are damaged or blown-out
- It is too far to paddle.

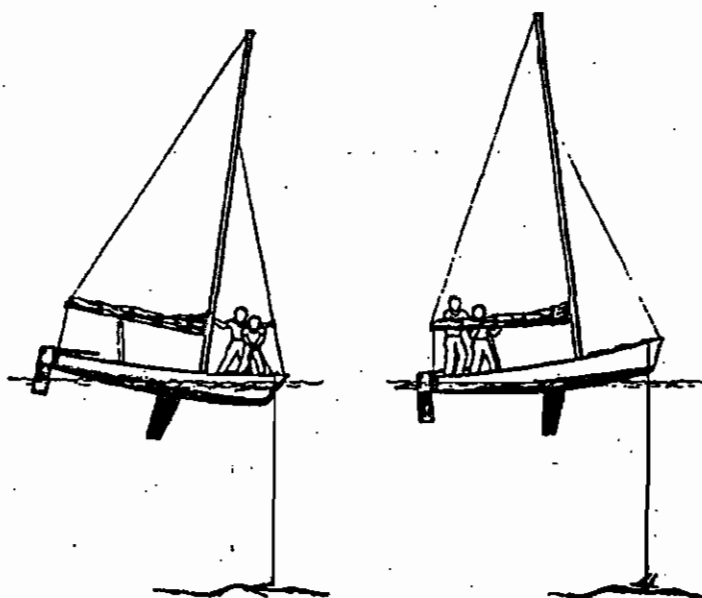


Figure 8-3 Freeing an Anchor

Chapter 9 - Safety

Safety is a subject that cannot be over stressed. In this chapter and in Chapter 10 and 11, we will attempt to summarize the safety considerations in sailing. This includes equipment, procedures and practices. Federal and state laws regulating boating are primarily in existence to promote safety. Applicable laws are the subject of chapter 10, so there is some overlap of these two chapters. [Reference the California State safe boating web site address for current and changing laws]

Safety Equipment

The following is a listing of equipment, some of which is required by law, that is used to enhance safety on the water.

- **Life Preservers** – A life preserver or personal floatation device (PFD) is required for each person aboard the boat, and each person must fit their PFD to their body prior to leaving the dock. The club provides PFDs and they are stored in the boats. It is not mandatory that you wear your PFD, but we recommend it, especially if you can't swim. It is mandatory that children under the age of 13 wear their PFD both on the boat and on the dock. PFDs are sensible safety devices for anyone, any time you are near the water. Consider wearing them as you would your seat belt. As you cruise around the harbor, you will occasionally encounter Coast Guard vessels. Notice that the Coast Guardsmen all wear PFDs.
- **Throwable Floatation Device (TFD)** – one TFD (otherwise known as a cushion) is required on each boat. This TFD is used to throw to a person who has accidentally fallen overboard. It is not to sit on! The TFD should be kept handy at all times.
- **Flare Kit** – The club supplies a signal flare kit including at least three hand held flares. These flares may be used as distress signal if the need arises.
- **Horn** – A horn is used for signaling other traffic as to one's intentions, to respond to the other's signals and as a fog horn. Signal rules are covered in chapter 10.
- **Anchor** – We discussed anchoring in the previous chapter but did not acknowledge its use as a safety device. An anchor can be very useful in such emergencies as equipment break down or unanticipated weather. If the boat becomes unmanageable for any reasons, anchoring may be your best choice until help arrives or until the weather moderates.
- **Bow and Stern Lights** – CSC boats are equipped with bow and stern lights which are required after sunset. Most boats are equipped with a 12-volt system. Rechargeable 12V batteries are located in one of the dock boxes. If the boat you select is still equipped with a 6-volt battery system you will have to supply your own lantern battery. If you plan to sail in the late afternoon like after work, you should equip your boat with an appropriate battery and check the lights before you leave the dock.
- **Paddle** – A paddle is supplied with each CSC boat. Undignified as it may seem to a sailor, winds do die down and the paddle may be your only viable recourse. Our Victorys actually respond quite well to the paddle.
- **Boarding Ladders** – To help get folks back aboard when a "misstep" results in a bath, there are boarding ladders on each of the CSC boats that have been specially designed to work on our boats. These ladders are made of wood pieces, laced together with stout rope, and designed to be hung from the winches on each boat. As

you may have noticed, the winches may be in different positions on different boats. To account for the differences, the ropes on the ladder are of slightly different lengths and are designed so that the ladder will not swing under the boat. **Note:** the ladders must not be swapped between boats with different winch positions because they don't work as well if the rope is the wrong length for that boat.

In addition to the above equipment, the club recommends the following as extra gear that can help you out of a jam:

- Tool kit – this may be as simple as a pair of pliers, screwdriver, crescent wrench and maybe a vice grip. As you gain experience we hope you will discover the supplements to this kit and appreciate the usefulness of it.
- Compass – you may want to carry a compass just to check your tracking and get the bearing of the mark if you are racing or you may want to have a compass just in case the fog rolls in.
- Extra line – a few yards of extra line of different sizes can be the most useful extra you can bring along.
- First-aid kit – A few bandages and gauze pads and an Ace bandage will equip you for most light injuries.

Man-Over-Board (MOB) Procedure

The following are two procedures for rescuing a person who has fallen over board. These procedures are taught beginning with the third water instruction session. It is important to understand the objective, philosophies, and shortcomings of these procedures. You may never be involved in a MOB, however, the importance of being able to react effectively and in a timely manner can not be overstressed.

Preparation – before you sail

- Explain to your crew what to do if you go overboard.
- We recommend that you tie a bowline in the stern line, which each CSC boat is equipped with, and keep the stern line handy for casting. When thrown to the MOB, this provides a loop for him or her to hold on to.
- Make sure that your boat is equipped with the proper ladder for re-boarding

When you observe a MOB situation

Irregardless of whether the MOB comes from your boat or you observe a situation to do with another boat (or dock, bridge, etc.) it is imperative that you act quickly to provide needed assistance. Even in the relatively warm waters around San Diego the body cools quickly when in the water, and exercise such as swimming or treading water serves to accelerate the onset of hypothermia, which is life-threatening. Here are the steps which you must carry out to recover the MOB with minimum delay:

- Call "Man Overboard" to alert your crew and others of the situation
- Throw the TFD towards the MOB; deploy the stern line if convenient
- Instruct one of your crew to watch the MOB and be prepared to point him out to you. This crew member must not be tasked with any other duties.
- Sail to the MOB following one of the procedures below
- Retrieve the MOB using the ladder fastened on a winch

Man Overboard Recovery: MOB Downwind of Boat

Overboard procedure to rescue an MOB in the water downwind of the boat employing a Jibe.

1. Immediately following the discovery of an MOB steer the boat in a circle to approach the victim from downwind on a close reach
2. Allow the jib to luff, and control boat speed with the main.
3. Approach the victim on a close reach at speed just sufficient to provide steerage.
4. "Shoot" to windward to stop the boat close to the victim.
5. Release all sails and recover the victim.

Figure 9-1 shows the process originating on the starboard tack and as a result the student will approach to the right of the MOB so that the student always has the MOB in his view. The mirror of this process should be executed if the MOB occurs on a port tack.

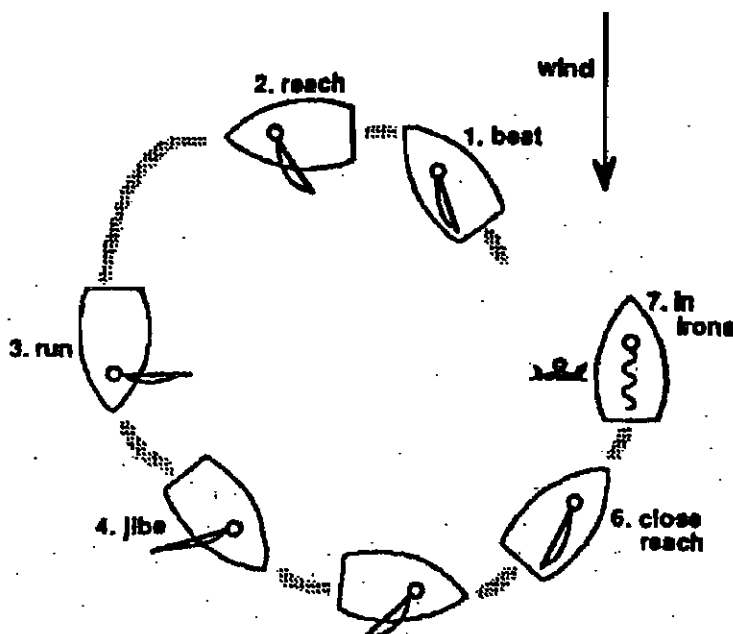


Figure 9-1 Man Overboard Recovery: Victim Downwind of Boat

Man Overboard Recovery: MOB Upwind of Boat

Overboard procedure to rescue an MOB in the water upwind of the boat

1. Immediately following the discovery of an MOB head up to close hauled on the tack you were on, sheeting in the main as you progress
2. Allow the jib to luff, and control boat speed with the main
3. Tack and fall off to a beam reach to position the boat for the final approach to the victim on a close reach.
4. Approach the victim on a close reach at speed just sufficient to provide steerage.
5. "Shoot" to windward to stop the boat close to the victim.
6. Release all sails and recover the victim.

Again the student's final approach to the MOB is on the side where he has a continuous view of the MOB. Figure 9-2 shows the procedure beginning on a starboard tack. The mirror image of the process should be executed if on a downwind port tack.

In either case above, the maneuvers should be performed with haste, the water is cold and it is necessary to get the MOB back on board as soon as possible.

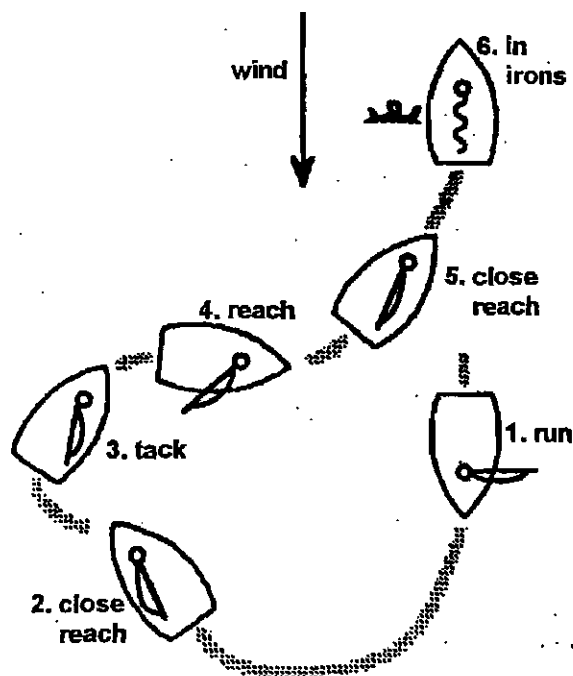


Figure 9-2 Man Overboard Recovery: Victim Upwind of Boat

Chapter 10 - Boating Laws and Regulations

In general, the operation of our boats is subject to federal laws administrated and enforced by the United States Coast Guard. The law is the Federal Boating Safety Act of 1971, and it authorizes the Secretary of Transportation (during peacetime) to establish among other things, minimum safety standards for boats and associated equipment. The Coast Guard acting under the authority of the Secretary of Homeland Security, issues most federal boating regulations. Coast Guard regulations cover boats, equipment and operations, navigation lights and day shapes, aids to navigation, inland water demarcation lines and many other topics.

There are two sets of Navigation Rules applicable to U.S. waters – The International Rules of the Road - International Regulations for Avoiding Collisions at Sea (aka COLREGS) and the U.S. Inland Rules. When the COLREGS came into effect in 1972, demarcation lines were established separating international and inland waterways. San Diego harbor is subject to Inland Rules. The demarcation line extends across the harbor entrance at the Point Loma Light. This line is shown on the San Diego Bay Chart as a dashed magenta line identified as COLREGS DEMARCATION LINE. Since Convair Sailing Club members are not permitted to sail beyond Ballast Point until they become ocean qualified, this handbook will be limited to Inland Rules.

To become ocean qualified, it is necessary to have taken a safe boating course from either the Coast Guard Auxiliary or the U.S. Power Squadron. Either of these courses will cover the applicable differences in International Regulations so they will not be covered in this text. Actually, International Rules and Inland Rules are very similar.

Coast Guard Publication COMDTINST M16672.2A "Navigation Rules, International-Inland" contains the full text of both International and Inland Rules plus other regulations. Several web sites also offer details and training programs.

The FBSA/71 requires that a boat have a number obtained from the state in which the vessel is used. This does not apply to documented and other special vessels. This number is located near the bow of our boats along with an annual California State sticker. The registration for our boats is taped to the mast or mast support in Victorys inside the cuddy. If you are stopped by the Coast Guard or Harbor Police, you will probably be asked to show this registration.

Safe boating equipment required:

Certain equipment is required as a function of boat class. These are four classes:

Class A – less than 16 feet

Class 1 – 16 feet to less than 26 feet

Class 2 – 26 feet to less than 40 feet

Class 3 – 40 feet to not more than 65 feet

All our boats fit in Class 1. (Our Pearson Commander is actually 25'07" OAL.)

Table 10-1 - Equipment Requirements and CSC Compliance

Equipment	Requirement	CSC Compliance
Personal Floatation Device	One Type I, II, or III for each person on board plus one Type IV available to throw.	Vests provided by CSC are Type II. Buoyant cushions provided meets Type IV requirements
Whistle, Bell or Horn	Any device making an efficient sound signal audible ½ mile.	CSC Fog Horn meets this requirement
Visual Distress Signal	Orange flag with black square and disk (day) and an SOS electric light (night) or Three orange smoke signals, hand held or floating (day) or three red flares of hand-held, meteor or parachute type (day/night)	CSC provides three hand-held red flares (flares are dated, so our flare canister contains 3 current flares plus some outdated flares.) If flares are required, use old ones first.

Security Regulations

As the result of the terrorist attacks and the continuing threats, the US Coast Guard has taken measures to increase the safety and security within the Port of San Diego and surrounding waterways and ports. The USCG, Navy Security, Harbor Police and other law enforcement agencies take these rules very seriously, and penalties for violations are harsh.

General Rule:

Stay well away from all Naval vessels and bases, all cruise ships and the Coronado Bay Bridge

Coronado Bay Bridge Security Zone

- Do not sail within 25 yards of any part of the bridge.
- Do not stop or anchor beneath any bridges in the channel. If you do, then expect to be boarded by law enforcement officials.

Naval Vessel Protection Zones

- Do not approach within 100 yards of a US Navy vessel and slow to minimum speed within 500 yards of any U.S. naval vessel. Violators of the Naval Vessel Protection Zone face 6 years in prison and a \$250,000 fine, not to mention a quick and severe response.

Cruise Ship Security Zones

- Do not approach within 100 yards of any cruise ship. Approaching commercial vessels may result in an immediate board.
- Avoid commercial port operation areas, especially those involved in military, cruiseline or petroleum facilities. Observe and avoid other restricted areas near dams, power plants. Etc. Violators will be perceived as a threat and will face a quick, determined and severe response.

Common Sense Rules

- Avoid collisions: Take action in a timely fashion to avoid imminent collisions, even if you feel you have the right of way
- Avoid swimmers, fishermen in inner tubes, drifting boats, kayaks, canoes and rowboats
- Avoid vessels engaged in towing other vessels or persons (e.g. skiers). Do not attempt to sail between a towboat and the object being towed – the tow line or chain is often poorly visible or under water, but it is there and it will catch you!
- Keep a sharp eye out for anything that looks peculiar or out of the ordinary. Report all activities that seem suspicious to the local authorities, the Coast Guard and the port or marina security. Do not approach or challenge those acting in a suspicious manner.
- Wear your life jacket as a badge of support for your Coast Guard men and women on patrol. By displaying your commitment to safe boating, you will help reduce the demands placed on Coast Guard and other responders' limited resources and assets. For more information on how you can help, call (800)368-5647 or go to www.uscgboating.org
- The shipping channels of San Diego Harbor are considered "narrow channels" and Rule 9 of the Inland Navigation Rules apply. Do not impede the passage of large vessels such as cargo ships, cruise liners, Navy warships etc., which can safely navigate only within these narrow channels. Stay out of their way! And remember, these vessels travel fast, covering a mile every 5-15 minutes, and they will affect your wind as they approach your position.
- Be courteous. Avoid arguments. Don't force your right-of-way.
- Beware of small power boats and Sunday sailors. Usually they are "ding-a-lings."

Rules of the Road

The rules define the status of vessels approaching each other as either

1. Stand-on vessels – these vessels are the equivalent of the right-of-way party, and must maintain course and speed during the passing or crossing.
2. Give-way vessels – these vessels must yield right-of-way by keeping clear

The following rules of the road are listed in order of priority, i.e. the first rule supercedes the following, etc.

1. If one vessel is overtaking another, the overtaking vessel is the give-way vessel and must keep clear. There is no differentiation between sailboats and powerboats

2. Sailboats have right-of-way over power boats (exceptions above, e.g. don't bluff the Kitty Hawk)
3. When sailboats approach each other:
 - a. The sailboat on starboard tack is the stand-on vessel and has right-of-way over a port-tack sailboat, regardless of point of sail.
 - b. If both boats are on the same tack, the leeward sailboat is the stand-on vessel and has right-of-way over a windward sailboat.
 - c. Note: Starboard tack is defined as carrying the boom on the port side, and vice versa; Leeward is defined as to the side on which the boom is carried

Keep a good look out

Horn Notification

- One blast = Pass to Port or Port to Port (steer to the right, leaving other vessels on your left)
- Two Blasts = Pass to Starboard or Starboard to Starboard (steer to the left, leaving other vessels to your right)
- Three Blasts = Power vessel is going astern
- Five Blasts = Danger signal. If you hear this from any large vessel, get as far away as possible as quickly as possible.

Accidents

All accidents which involve a significant collision or damage to CSC property or other property must be reported directly by phone to the Commodore, Fleet Captain or a member of the Board of Directors. This includes accidents involving more than one boat; damage to a CSC boat; or any damage to other boats. The oral report shall be followed without delay by a written report to the Commodore and shall include the following information.

Name, address and phone number of the skipper

Date, time and location of accident

Name, address and phone number of owner of damaged property

Identification of the other boat (by name or number) of property.

Forms for the report are available in a folder in the sign-in dock box, as is a list of telephone numbers of Board members. Failure to report is **cause for immediate suspension**. It will remain in effect until a report is received and disposition is made by an investigation board appointed by the Commodore. All members are urged to report any accidents which they may observe. Note the time and sail numbers of boats involved.

Chapter 11 - Environment

In this chapter, we try to make you aware of certain environmental factors peculiar to San Diego Bay which are potential problems. The primary factors are wind and tides.

Wind

In Chapter 7 – Docking, we talked about wind direction and the impact of wind direction during docking maneuvers. Once you are out in the Bay sailing, wind velocity and gusts become factors to deal with.

Winds in San Diego Bay can be very shiftY both in direction and in speed. Gusts are common on some days, especially near Point Loma. Victorys are what we call tender boats, that is to say, they are light weight with light rigging and can be knocked down in winds over 12 to 15 knots. You should be prepared to let out the main sheet when you see a gust coming in order to avoid excessive heel. Gusts can usually be seen approaching by ripples or heavier wave action and/or rapid heeling of other boats to windward.

Then again, you may not sense the gust until you are in it. This is why we expect the skipper to sail with the main sheet uncleated. The most effective recourse to neutralize the effects of gusts is to let out the main sheet – “if in doubt, let it out”

Larger boats usually carry several sails from which to select to accommodate a particular wind condition. In light winds they will use a large genoa jib and switch to smaller jibs in stronger winds. With Victorys, we do not have that luxury. We have two sails and short of lowering one of them when the wind tends to be over powering, we let out the mainsheet some and sail with the main luffing. This is a perfectly normal way to sail when you are only somewhat overpowered.

Victorys become literally unmanageable in winds over 15 knots. This velocity usually produces white caps on the water depending on tidal action. Therefore, **when there are white caps, do not sail**. To know when to expect white caps, it is wise to check the local marine forecast as part of your sailing planning. Sources are:

- VHF Radio, KEC 62, 162.5MHz or one of the marine VHF weather channels. This is the National Oceanic and Atmospheric Administration (NOAA) station and provides the most comprehensive local weather information.
- On-line sources of marine weather info, e.g.
 - NOAA: <http://www.wrh.noaa.gov/sqx/>
 - Weather Channel hourly forecast for Central Bay: <http://www.weather.com/activities/other/other/weather/fcst-hrly.html?locid=92101>
 - San Diego Marine Information System current conditions: <http://metocean.sdmis.org/metoceanpanel.htm>
 - Note: Use a search engine to find other sources, as the web and web addresses are in a constant stage of flux
- Cable TV weather channels – check your channel guide for the correct channel
- The Weather Channel on-line at <http://www.weather.com>

- Your favorite local news station or channel.

Hopefully, the above advice will assure your avoidance of being caught out in heavy weather. But what do you do, if for whatever reason, you are caught on the water and white caps do occur.

First off make sure everyone on board is wearing his life preserver. These are the most likely conditions for man-over-board, and the most difficult to effect a recovery. Also make sure you have a bowline tied in the stern line to assist in recovery (Chapter 9).

Next, reduce sail by reefing the main. Do this in a timely fashion: if you think you might have to reef, do it now! It's much easier to reef in lighter winds, and shaking out the reef is child's play if the wind lets up again. Still overpowered? If conditions allow, douse (lower) the jib and secure it from blowing overboard. This is a very hazardous operation in high winds and seas, as the foredeck of a Victory offers little to hold on to. If conditions are too hazardous, douse the jib from the cockpit and secure it with the jibsheets as well as possible. You will be able to control the boat under this configuration and make your way to sheltered waters to wait out the storm and sooth shattered nerves.

Finally, if you find it impossible to make headway and control the boat, get anchored and wait out the weather. Anchoring procedures and principles outlined in Chapter 8 should be employed.

Tide

It is essential for sailors to understand and be aware of currents and tides. Tides are a cyclic rise and fall of water level in a specific area resulting from gravitational attraction of the sun and moon. In San Diego, the maximum water level variation during a month is typically 7 feet, but it can be greater. The tidal changes can generate substantial currents in San Diego Bay due to its long, relatively narrow shape. This current is much like a river current and can develop speed of as much as 3 to 4 knots. Therefore, if you are out sailing and the wind dies, you will be subject to what ever tidal current is present. It follows that you should know what currents to expect before you finalize your sailing plans, and plan your route to take advantage of the tidal currents. The narrows at Ballast Point are particularly subject to fast currents, and you may find that you cannot sail past Ballast Point against the tidal current.

You will find tide tables or the tide tables in the daily San Diego Union Tribune weather page, or in a tide booklet (example in figure 11-1) obtainable at marine supply or nautical bookstores. One of these should be in your sailing bag. The chart is preferred over tables because the graphical representation permits a visual aid in estimating the magnitude of the current. Notice that for most of the month, San Diego gets two tides a day with maximum tidal change occurring near the full and new moons. During these periods we get the maximum rate of change of water levels and this is where to expect maximum tidal currents.

Let's take an example from Figure 11-1 (overleaf). On October 5th, there is an ebb tide during the period from 10:05 AM to 4:45 PM. This will create a substantial current towards the entrance of the harbor. If you happen to be west of Shelter Island or near Ballast Point at noon, you will have the tide working against you coming back in the afternoon. Notice that during the fourth week (1st quarter moon), there are a few days with only a single tide. During these periods tidal current velocity will be low and on the 26th there should be no perceptible tide at all until late in the afternoon.

1990



For what it's worth, the charted clearance for the Coronado Bridge is 195 feet.



Chapter 12 - Marlinspike Seamanship

Definition: a marlinspike is an iron tool that tapers to the point and is used to separate strands of rope or wire as in splicing

The object of this chapter is to explain about knots. Knots are part of "marlinspike seamanship" so we thought it would be useful to explain a little about that subject too.

Marlinspike seamanship is about rope and the care and use of lines which are made from rope, and includes the following:

- The selection of the proper type and size of rope for a particular application
- The preparation of the line for the particular application
- Coiling lines
- Splicing (joining two lines by a splice and forming an eye splice)
- Knotting
- Whipping
- Blocks and tackle

The above outline is intended only to provide a perspective of a very important aspect of boating. We hope this will arouse your curiosity and get you to look further into some of the works listed in Appendix 9 and to learn more about this subject which is part science and part art.

In this Chapter we cover the seven basic knots that you must know in order to "Check-Out" plus a few extra ones that usually come in handy.

First, we need to get some basic nomenclature straight. When you buy this material, you buy "rope". When that "rope" gets on a boat and has some function, it usually becomes "line". On a boat the term "line" is still a general category. "Lines" have special functions and these functions give rise to special names which include: halyards, sheets, dock lines, downhauls, outhauls, and so on. But these are still lines.

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Incidentally, some of the "rope" that is still called "rope" on a boat is bolt rope which is the rope sewn to the edge of a sail or, in the case of the Victory mainsail, into the luff and foot. (See Chapter 2)

A line has 3 names used to describe its parts:

- 1) Bitter end (or just "end").
- 2) Bight (usually the curved part used to tie a knot or otherwise fasten the line) and
- 3) The standing part (usually straight or nearly so, to carry the load).

These terms will be used in discussions below.

The first seven knots or hitches discussed in this chapter are absolutely essential for you to learn. The remaining three are very useful extra knots that may come in handy.

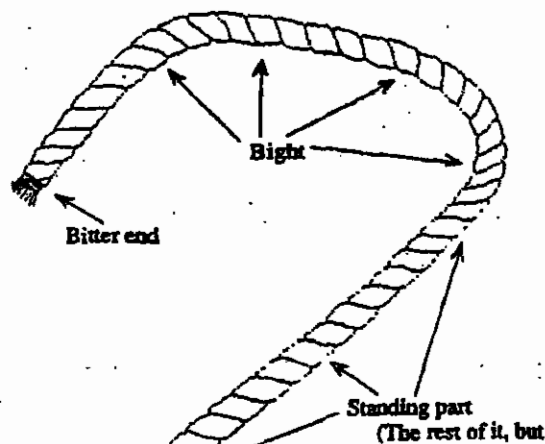


Figure 12-1 Parts of a Line

The Figure Eight Knot

The figure eight knot is tied near the end of a line as a stopper when you want to keep it from going through a block. When rigging, figure eight knots are tied in the bight close to the end of the main sheet and both jib sheets. This will prevent the sheets from pulling through the blocks while under way, which can be a very awkward situation and possibly dangerous if you are sailing near another boat or an obstruction.

The primary attributes of a figure eight knot are that it is an adequate stopper and as a temporary knot it is easy to untie (compared to a simple overhand knot). When forming a figure eight knot in a line such as a sheet, it is a good idea to leave a 4 to 6 inch tail. Occasionally, on some boats, the knot may get jammed into the block and if you don't have a tail to grab, it may be difficult to pull out the block.

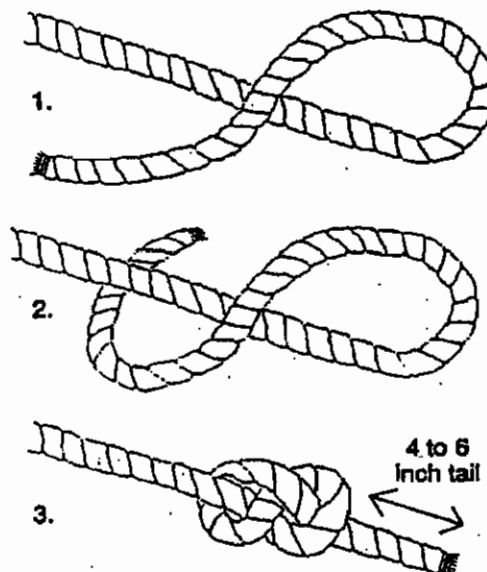


Figure 12-2 Figure Eight Knot

The Cleat Hitch

The cleat hitch is used for two important functions at CSC:

- We use it to tie down both the jib and the mainsail halyards after the sails have been hoisted
- We use it to secure bow and stern lines as well as spring lines to docks we are visiting (the CSC docks have lines already prepared for our boats).

The cleat hitch may also be used in other applications depending on the situation. Most down-hauls and some outhauls also have cleats and should be tied with the cleat hitch.

The primary principle to understand about the cleat hitch is that it does not require a lot of wraps around a cleat to make it secure. If you do it properly that's all it takes – **Once around, once across and tie off.**

In the case of the halyard cleats, the Victory cleats are rather small for the line (they act more like jam cleats) and there simply is no room for the many wraps. Especially, on the jib halyard cleat (where we have to loop for mechanical advantage) there is limited capacity.

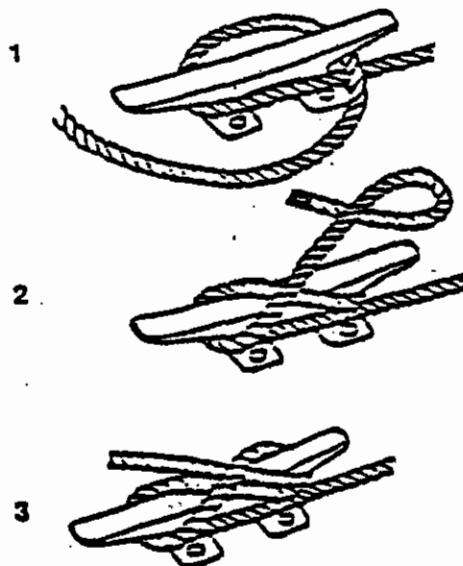


Figure 12-3 Cleat Hitch

The Slip Knot

The slip knot is an overhand knot tied around the standing part of the same rope or line. We tie a slip knot in each halyard to fasten the halyard shackle when securing the halyards during dergigging of the boats. It's simple, but take a look at Figure 12-4 to see what we have in mind. The slip knot is also used in the "truckers hitch."

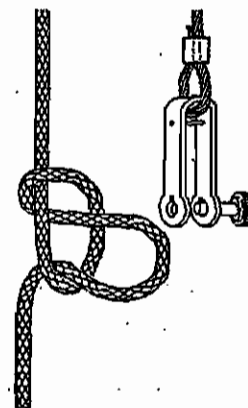


Figure 12-4 Slip Knot

The Bowline

The Bowline (pronounced bow'-lin) is generally considered to be the most useful of all knots aboard a boat. It has excellent holding efficiency, doesn't slip and it can easily be untied.

Use the bowline whenever you need a loop. In Chapter 9 we recommend that you tie a bowline in the stern line of the boat so that it can be used to recover a man-over-board. Much of the running rigging is attached to fittings using bowlines, which makes the rigging secure yet easy to remove and replace if needed. If you need to tie two lines together, you can use a bowline in each. Nothing is wrong with that; however there are easier knots to use, as you will see later in this chapter.

The usual rule for tying a bowline is "the rabbit comes out of his hole, goes around the tree and back into his hole". This is shown in Figure 12-5.

Figure 12-6, is a sketch by the late Ken Brown showing a somewhat easier method if you are willing to take the time to learn it. The thing that makes it easy is that you form a slip knot as you would for securing a halyard, but the standing part should be the slipping element. Ken's diagram explains the rest. If you experiment with the knot for a while, you will see that both methods produce identical knots.

The bowline is used to tie the permanent stern lines to the dock for the Victories. **Do not untie these bowlines!** These stern lines stay on the dock as opposed to the bow and stern lines which stay with the boat.

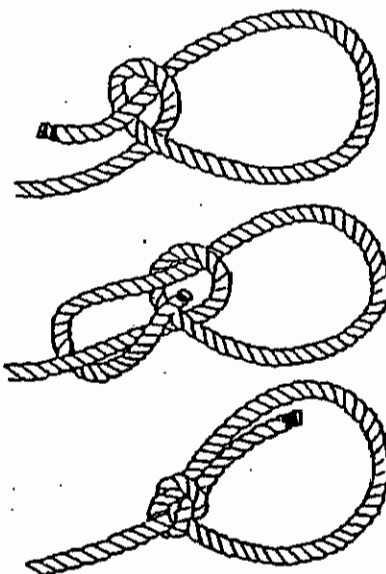


Figure 12-5 Tying a Bowline

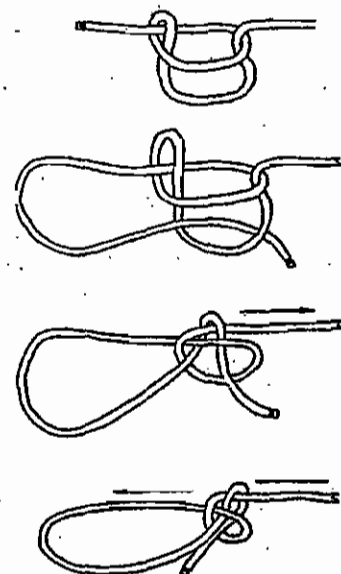


Figure 12-6 An Alternative Way to Tie a Bowline

Two Half Hitches

We don't generally use a half hitch by itself, but two half hitches are quite effective. It is used to secure fenders to the side of the boat. It is also the standard for tying down the halyards in the de-rigging procedures. Figure 12-7 shows how it is used to secure a line to a pad eye when de-rigging. When used for this purpose one can tighten the line by pulling up on the knot while pulling down on the standing part below the knot (Figure 12-8).

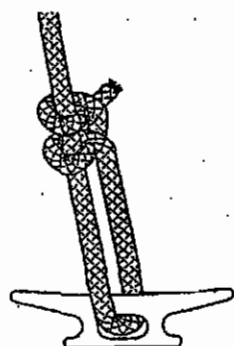
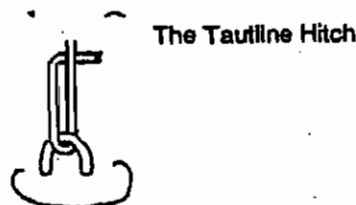


Figure 12-8 Applying Tension with Two Half Hitches

A variant of the two half hitch knots that is more effective is the tautline hitch. We recommend you use this for tying down halyards when de-rigging. It is also two half hitches except there are 2 turns on the first half hitch. (Figure 12-9)



The Tautline Hitch



A double half hitch



Followed by a...



Single (ordinary) half hitch

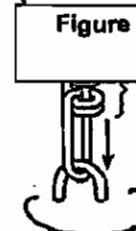


Figure 12-7 Two Half Hitches

ch
lock.

Pull up on the knot, while pulling down on the standing part of the halyard.

Figure 12-9 Tautline Hitch

Coiling

There are several different configurations of coiling depending on what you want to do with the line.

- Coiling the mainsheet to be hung from the end of the main boom:

-Generally coiling begins with looping large even coils over one hand all in the same direction (Figure 12-10 a to c). With about the last 3 to 5 feet, take several turns around the middle of the whole coil and carry the tail through the top of the coil. Use the tail to go up over the end of the boom and tie 2 half hitches.

- Coiling the jib sheets to be stowed with the jib in its sail bag or to be stowed with other coils as in the Storm Watch Chest or in the Auxiliary Locker:

-Coil as above except that a loop of the standing part (attached to the jib) or the bight near the other bitter end (if for storage) is taken through the upper part of the coil and carried over the top to tie the upper loop as in Figure 12-10 (i to m). While this does fairly well for storage, a better method (for storage only) is shown in Figure 12-10 (d to h)

-In this method the coil is tied as the jib (i to m), but before pulling the tie tight, the second bitter end is passed around the neck of the coil and through the upper loop but under the turn that

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was passed over the top (g). Then the end is again passed through the upper loop but above the turn as in (h). When this knot is all pulled tight the coil is locked very well and should never work loose in handling or storage.

Figure 12-10 (x) is intended to show the situation that happens sometimes with a new or a stiff line. When you try to form the coil, you may find that it wants to be in a "figure-eight" shape unless you twist it a lot so that it will lie in a simple coil such as (a). In this case, it is much better to let it be as in (x) and do the tie starting with that type of crossed coil. If you twist the line to force it to take the shape as in (a), someone must later untwist it and that can take considerable time or involve some danger for a person, if they do not notice that the line was twisted.

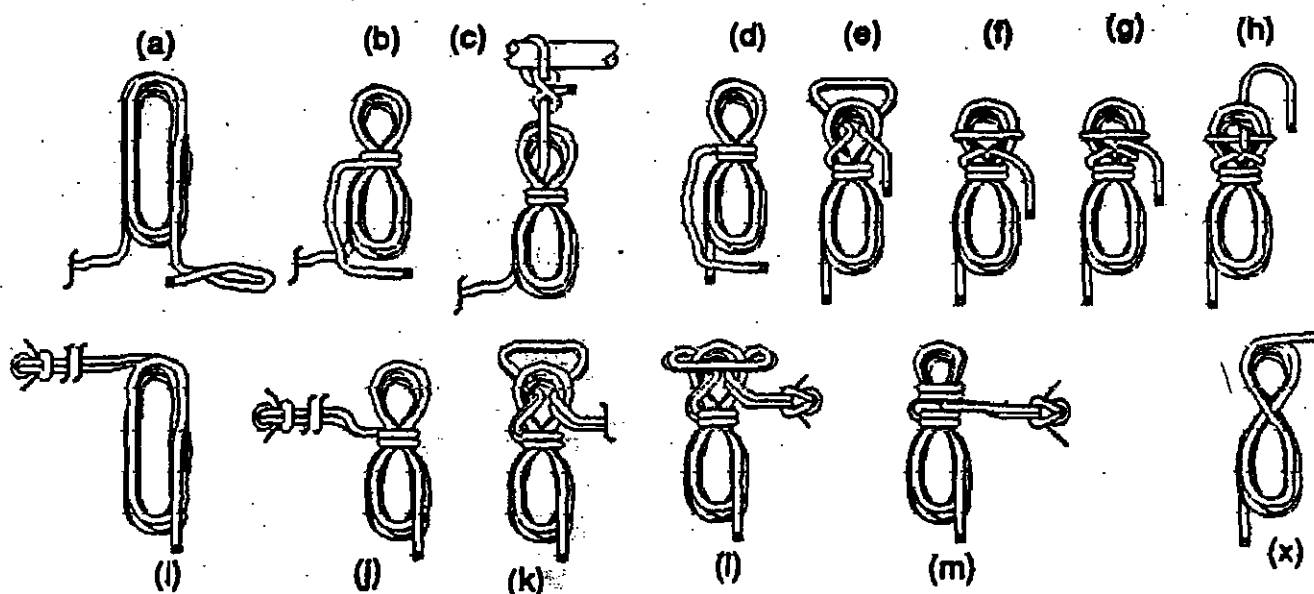


Figure 12-10 Coiling Rope and Line. a - c Coiling Mainsheet to Tie to Boom; d - h Coiling for Storage; j - m Coiling a Jibsheet for Storage while Attached to the Jib; x See Text

The Reef (Square) Knot and Variants

The nautical reef knot is exactly the same as the common square knot. It is usually used to join two similar lines together. The reef knot holds well when properly used and can be easily untied as opposed to the granny knot which is what you usually get when you tie a reef knot improperly. Figure 12-11 shows the Reef Knot.

The Granny is shown in figure 12-11

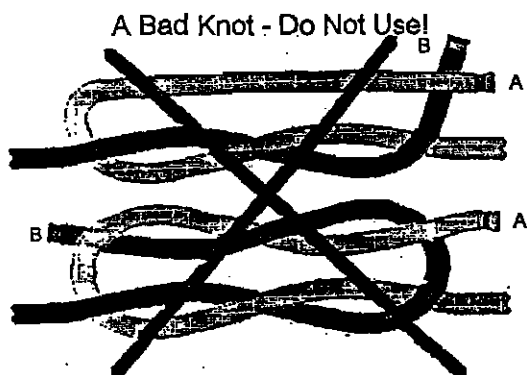


Figure 12-12 Granny Knot

The variant to the reef knot is the Slippery Reef Knot shown in Figure 12-13 and has the advantage that it can be undone more quickly. We use either the Reef Knot or Slippery Reef Knot to tie the mainsail after it has been furled on the boom. The woven ties for this purpose are called sail stops or gaskets. These knots should only be used for applications where there is a relatively constant load. Varying loads can cause these knots to come undone over a period of time. (This knot is, of course, similar to the common shoelace knot)

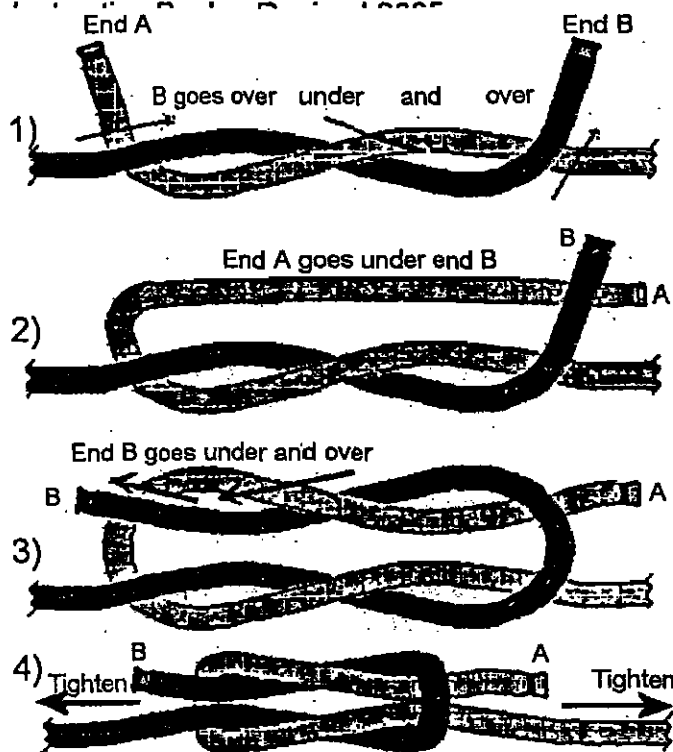


Figure 12-11 The Reef Knot

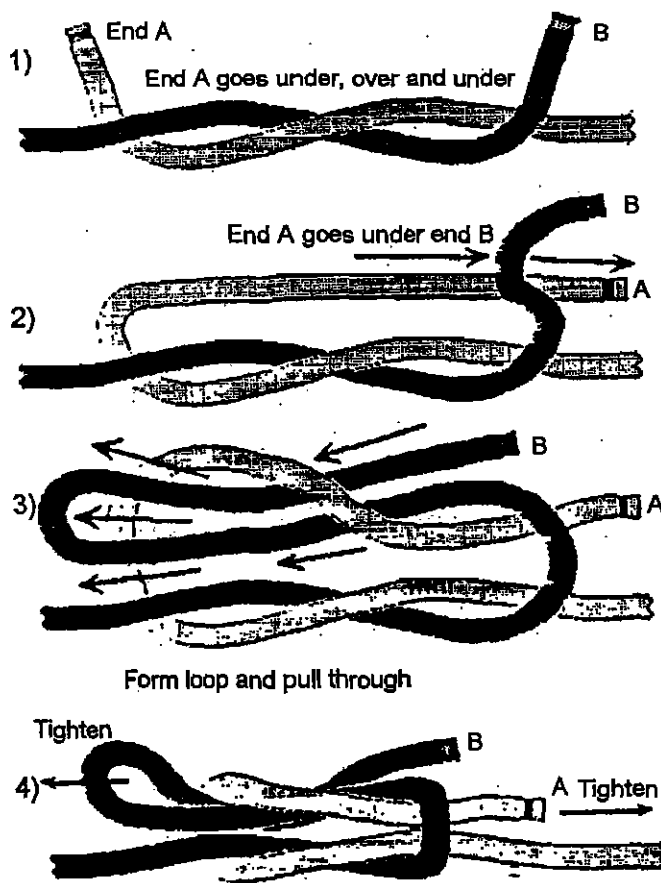


Figure 12-13 The Slippery Reef Knot

The Sheet Bend and Double Sheet Bend

This knot, see Figure 12-14, is a preferred way to join two lines. It is especially good when the two lines being joined are of dissimilar size. The double sheet bend is even better. If one of the lines is smaller in diameter, it should be the one that wraps around the larger one, as shown in Figure 12-15. You may notice that this knot is quite similar (if not identical) to the bowline. The same methods may be used to tie them. If you use a sheet bend where one of the lines already has a loop in the end, just use the loop as the starting bend and you have a variation called the becket hitch or double becket hitch.



Figure 12-14 The Sheet Bend



Figure 12-15 The Double Sheet Bend

The Clove Hitch

The Clove Hitch is handy to use when you are docking some place temporarily when you must moor to pilings. It is also used to secure a line to the standing part of another line. This figure (figure 12-16) is mechanically the same as two half hitches (see Figure 12-16 and Figure 12-7).

If you take an additional half hitch with the bitter end around the standing part, you will provide additional security.

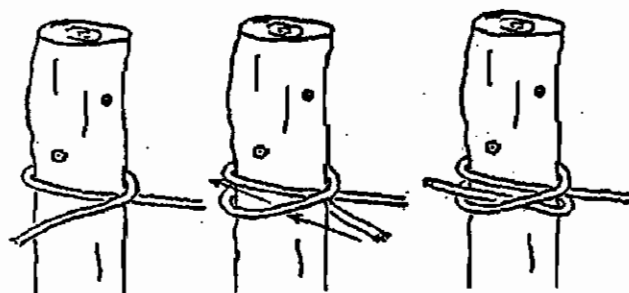


Figure 12-16 The Clove Hitch Made fast to a Piling

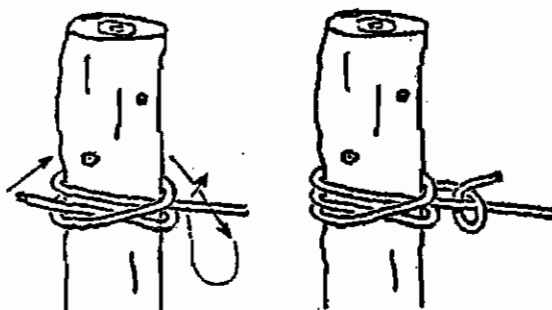


Figure 12-17 Clove Hitch with Half Hitch

The Rolling Hitch

The Rolling Hitch is a very good knot to use to bend a line to a piling, a spar, a chain or to the standing part of another line. The particular attribute of the rolling hitch is that it can be loaded in any direction and it won't slip. This knot is shown in Figure 12-18.

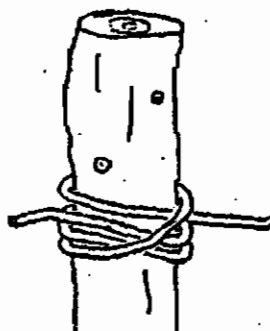


Figure 12-18 The Rolling Hitch

Appendix 1. Lesson Plans - Classroom

First Classroom Session

Welcome (by Chief of Instruction)

Volunteers welcome you, take an interest, talk the language, study, sail often, be safe and have fun.

Membership forms, dues and cards issued

Instruction Schedule and Instructor introduced

Water classes and schedules

Class supplies

The Handbook

Organization of the Club

Responsibilities: participate actively, pay for sailing and accidents, volunteer.

Restrictions:

The checked out skipper is the only one authorized to sign the log.

Keys shall be loaned only to currently checked-out members

All CSC properties are to remain with club equipment (do not borrow)

To sail beyond Ballast Point you must be ocean-qualified by CSC Board

Ensigns & Commander require additional check out by Chief of Checkout

Don't Sail when there are white caps on the bay

Etiquette at the marina

Equipment: Jackets, cushions, lights, batteries, fog horn, compass, boom vang, anchor, whisker pole (boat hook), oar, flares, ladder, breast line, sunscreen

Outboard Motor: extended shaft: 4 to 7 HP; fire extinguisher

Accident Reporting:

Contact the Commodore and submit a report immediately

Notify the Marina office if another boat at the marina is involved

Write it up on the discrepancy sheet in the sign-out locker

Contact the owner of the other boat

The Instruction Book

Basic parts of the boat

Hull: Hull, Keel, Deck, Cuddy, Spars, Helm

Standing Rigging: Shrouds, Stays, Turnbuckles, Cleats

Running Rigging: Halyards, Sheets, Outhaul, Downhaul

Sail: Luff, Foot, Leech, Head, Tack, Clew

Knots:

Basic Parts: Standing Part, Loop, Bight, Bitter or Working End

Learn to tie four knots: Figure 8, 2 half hitches, bowline, cleat tie

Knot Practice

Rigging (see rigging instructions)

Points of Sail – Boat headings relative to true wind. Beating, Reaching, Running

Rules of the Road

Homework: Read Chapters 2, 4, 5, & 6 before Water Class 1.

Schedule first Water Class

Second Classroom Session

Homework & Review of Terminology

Theory of Sailing

How sails are cut (effect of roach on foot and luff)

The boat as a system: hull, keel, rudder, sails and the skipper

Aerodynamic theory of reaching and beating

Barn door theory of broad reaching and running

Sail Trim for the Basic Points of Sailing

Beating: Sails close-hauled; continually test boat heading to verge of sail luffing

Reaching: Steady heading; continually test trim by easing sheets to verge of luffing

Running: Mainsail extended and flat, jib is useless except for wing-and-wing

Coming About

Sit on windward side; have adequate headway; close-hauled; beating

"Ready About": action of skipper; action of crew

"Helms alee": action of skipper; action of crew

Jibing

Wind aft; boat balanced; tiller and mainsheet under control

"Prepare to Jibe": action of skipper; action of crew

"Jibe O": action of skipper; action of crew

Knot Practice

Boat Balance

Position of skipper and crew

Heeling: in light air, sit on leeward side to cause a little heel

To relieve heel in strong wind:

Ease mainsheet

Head up

Hike out

Weather Helm & Lee Helm

True Wind and Apparent (relative) Wind

Dangers in Sailing

Sailing in strong or gusty wind with mainsheet cleated

Running: sailing by the lee; goosewing jibe, broaching, swamping

Beating: irons and methods for getting out of irons

Reaching: sails close-hauled (should be eased out to verge of luffing)

Homework: Read Chapters 10, 13 & Standard Docking Procedures

Third Classroom Session

Review Rules of Road

New dividing lines between inland/international is Zuniga Jetty to Point Loma Light
beating over running free (inland) not valid

Basic Right of Way – Starboard/Port, Leeward/Windward, Overtaken

Review Accident Reporting

Must report by phone to board member **Same Day**

Follow up with written report to Board per handout instructions

All sailors must pay for damage due to carelessness

Discuss limits of club insurance liability

Final Exam (45 minutes)

Grade Test: 107 points possible, 80 points needed to pass

Instructor reads correct answers

Students correct their own tests & subtracts number wrong from 107 points possible

Students writes total at top of answer sheet & circles it

Exams are returned to Instructor and submitted to Chief of Instruction

Checkout Procedures

Call Chief of Checkout and schedule appointment to be checked out

Bring signed off Student Club Card

Discuss what checkout will include

Ensign Checkout: Minimum of 30 logged hours sailing Victorys

Commander Checkout: Minimum of 30 logged hours sailing Ensign

Ocean Qualification:

Submit request to board on appropriate form

Minimum 50 hours sailing experience (logged or personal recommendation to board)

Complete US Power Squadron or Coast Guard Auxiliary Boating Course

Critique of Sailing Course

Instructions

Ways to improve course

Sign Off Cards

Schedule Third Water Class

Appendix 2. Lesson Plans – On-Water

WATER INSTRUCTION - LESSON PLAN I

Four Hour Class: 10 a.m. to 2 p.m.

Initially when instructing, the assumption should be made that the student has little or no sailing experience. Lesson one of the water instruction is designed to acquaint the student with all of the aspects of operating a Victory sailboat in a manner which will instill confidence. Care should be given to not give cause for alarm; novices are frequently uneasy about the boat heeling, the unfamiliar footing, sails flapping, water in the boat, etc. Give positive reinforcement and encouragement, while minimizing abrupt changes in boat heel or direction.

Basics (at the blue keycard box):

- Describe procedures: Keycard Box and Reservation Log.
- Show facilities of the marina complex including restrooms before going to dock.

At Dockside:

- Describe procedures: Dock Boxes, Sign-In/Out Log, Maintenance Log, Dock Lockers.
- Select a boat by position in dock and wind direction. Explain correct point on dock from which boat is launched and docked and berthing arrangement.
- Review balancing boat by weight distribution (Don't step on gunnels or abruptly change positions on boat while boarding or rigging).
- Review boarding and moving about on boat (Use standing rigging. Don't step on ropes, sails or covers; snaps on covers break when stepped on.).
- Perform equipment check. Show use of ladder, install onto winch. Practice donning life preserver (Coast Guard Regulations require fitting a life preserver to each person before sailing; they may then be removed.)
- Constantly use and review correct terminology and nomenclature (port-starboard, forward-aft, lines, blocks, etc).
- Demo use of tiller, tacking and jibing in docked boat; students to perform as dry run.
- Demo docking with breast-line technique. Also explain bow and stern line technique.
- Demo preparing, raising and lowering mainsail.
- Emphasize use of correct knots and their correct names. Tie a bowline! Demo heaving a bowline.
- Discuss Rules of the Road and need for care launching boat into channel

Rig boat - Jib only. Instructor to read check list to student. Explain proper halyard tensions.

Sail - Jib Only:

- Sail triangular course with student as crew; as skipper.
- Tack, jibe, wear about, sail downwind without accidental jibes.
- Student to sail triangular course and downwind, solo (instructor remains in boat).
- Explain artificial airfoil, ripples on water, wind and current indicators.

Sail - Full Sail:

- Demo raising mainsail. Explain proper outhaul and downhaul tensions.
- If time permits, sail briefly with full sail.
- Demo lowering mainsail.

Docking - Jib only

- Use fender for dock approaches. Demo approaching dock and aborting approach. Discuss bare pole approach, paddling technique.
- Demo increasing and decreasing speed on approaches.
- Student to practice docking approach.
- Dock using breast-line technique. Explain bow and stern line method. (Student to skipper during initial dockings. Depending on agility of student, some discretion may be required. On first water instruction, it is intended that students remain in cockpit unless they demonstrate an ability to comfortably maneuver on deck).
- Drop jib. Turn boat.
- De-rig (instructor reads instructions). Fold jib (do not stuff in bag), release outhaul tension on mainsail.
- Move boat to empty slip. Does boat look shipshape? Sail covers on, fenders, loose lines, etc.
- Sign out.

WATER INSTRUCTION - LESSON PLAN II

Four Hour Class: 10 a.m. to 2 p.m.

The second water instruction lesson is structured to make the novice comfortable with being in control of the boat, aware of some potentially adverse considerations, and what can be done to correct them when necessary. Instructor should encourage as much independent participation on students' part as possible, and challenge the student to recall and perform learnings from previous lessons.

Basics:

- Sign in.
- Equipment check.

Discuss

- Review procedure for raising mainsail with student as crew; as skipper
- Discuss "Rules of the Road," buoys and signs
- What to do if whitecaps appear when out sailing
- Reefing and the use of reefing lines
- Bare-pole docking
- Use of paddle in docking and other applications

Rig boat - jib only (Instructor to read check list to student, emphasize correct knots, terminology, nomenclature).

- Tie bowline, taut line hitch, etc
- Launch boat (Describe/demo aborting a launch by turning downwind).

Sail - Jib Only

- Sail triangular course; downwind, wear about and explain difference between tack and jibe.
- Sail to predetermined upwind destination.
- Practice docking approaches and aborting docking approaches.
- Repeat previous 3 exercises with student as skipper sailing "solo" (instructor remains in boat).
- Demo and practice person-overboard approaches.
- Demo and practice "getting out of irons."

Sail - Full Sail

- Demo raising mainsail (student as crew).
- Practice raising mainsail (student as skipper).
- Sail triangular course; tack, jibe, wear about and downwind (no whisker pole).
Explain accidental jibes.
- Demo and practice person-overboard approaches (using fender as person).
- Demo and practice "getting out of irons."
- Demo lowering mainsail (student as crew).
- Practice lowering mainsail (student as skipper).

Docking - Jib only

- Practice approaches
- Practice controlling speed.
- Dock using breast line technique. (Keep student in cockpit).
- Turn boat.
- De-rig (Instructor reads instructions to student. Stress correct vocabulary, knots).
- Move boat to empty slip. Demo using bow and stern lines to move boat to opposite side of dock.
- Sign out.

WATER INSTRUCTION - LESSON PLAN III

Four Hour Class: 10 a.m. to 2 p.m.

The completion of Water Instruction III should result in the students having achieved a degree of proficiency that will enable them to be fairly self-sufficient in managing a Victory solo, with a jib only, in moderate weather conditions. Students should be comfortable on deck while under sail and, in an emergency, be able to launch and dock on an independent basis.

Basics:

- Sign in.
- Equipment check.

At dockside:

Discuss

- running aground
- use of anchor
- pick-up of crew

Rig boat - Jib only

- Student to perform complete rigging procedure without check list. (Instructor to comment on results). Stress terminology, nomenclature, correct knots. Tie several knots.
- Instructor to demo whisker pole technique (including jibing); students to practice.

Verify each student has:

- Sailed with jib "solo" (instructor in boat): the triangular course, tacked, jibed and downwind without accidental jibes
- Practiced "person-overboard" drill and "getting out of irons" (jib only and under full sail).
- Practiced docking approaches as crew and as skipper.
- Raised and lowered mainsail while underway.
- Sailed with full sail as crew, as skipper..
- Become conversant on "rules of the road," buoys and meaning of 5 horns (or whistles).
- Tied a bowline.
- Review any of those areas from water lesson I and II where students appear to need help.

Sail - Jib only

- Student to sail "solo" in a triangular course and demonstrate docking approach.
- Student to position boat head to wind such that mainsail can be raised.

Sail - Full sail. Each student to:

- Raise mainsail as crew; as skipper.
- Sail triangular course, jibe, wear about, as crew; as skipper.
- Sail downwind without falling into or bordering on an accidental jibe.
- Use whisker pole downwind for wing on wing sailing.
- Practice "person-overboard" drill and "getting out of irons."
- Lower mainsail as crew; as skipper.

Docking - Jib only

- Practice approaches.
- Practice controlling speed.
- Practice docking using bow and stern lines.
- Turn boat.
- De-rig (student to attempt de-rigging procedure without instruction sheet. Instructor to comment).
- Move boat to empty slip.
- Sign out.

WATER INSTRUCTION – LESSON PLAN IV

Four Hour Class: 10 a.m. to 2 p.m. (with ½ hour break)

With the completion of Water Instruction IV, students should be reasonably proficient in all aspects of operating a Victory sailboat as both a skipper and a crew member. For some individuals, this session can be a combined water instruction/final check out. For others, it may be necessary to refer the student to Chief of Instruction for additional instruction or practice.

Basics:

- Sign in.
- Equipment check.

Sail - Full sail.

- Demo and practice reefing and shaking out mainsail reef; explain use of reefing
- Student to practice:
- Positioning boat in channel to raise mainsail.
 - Raising mainsail.
 - Sailing triangular course, jibing, sailing down wind without bordering on, or falling into, accidental jibes.
 - Rigging whisker pole, sailing downwind, securing whisker pole. Review proper jibing technique for jibing with whisker-pole.
 - Person-overboard drill.
 - Getting out of irons.

Sail - Full Sail (extended sail into San Diego Bay)

- Sail all conditions of wind direction.
- Sail both to a predetermined destination and following wind shifts with no specific destination.

Continually discuss:

- "Rules of the Road" (continually question student on vessel rights of way as they are encountered).
- Signals, buoys, flags, signs, use of lights/night sailing hazards, who to contact in the event of an accident.
- Safest courses (to leeward or comfortably to windward of obstructions, avoiding shoal water, heavily trafficked areas or burdened vessels).

Docking

- Practice approach and controlling speed, if required.
- Dock using breast line technique.
- Turn boat using bow and stern lines.
- De-rig boat. Student to de-rig using checklist, if desired. Instructor to comment on results.
- Move boat to empty slip.
- Sign out

CSC Water Instruction Weekly Evaluation Form

Student: _____ Water Lesson # 1 2 3 4 Date: _____

Instructor: _____ Start Time: _____ Stop Time: _____

OBJECTIVE	RATING	COMMENTS
1. Lockbox and log-in		
2. Select boat		
3. Preparing mainsail		
4. Rigging jib		
5. Leaving slip		
6. Tacking with jib		
7. Raising mainsail		
8. Tacking		
9. Points of sail: Beat		
10. Points of sail: Reach		
11. Points of sail: Run		
12. Whisker pole technique		
13. Wing on wing technique		
14. Maintaining a heading		
15. Irons and Recovery		
16. Person overboard		
17. Lowering mainsail		
18. Returning to dock		
19. De-rigging		
20. Locating to proper slip		
21. Logging out		
22. Rules of the road		
23.		
24.		

RATING: 0 = Not a clue 2 = Needs practice
 1 = Requires instruction 3 = Competent 4 = Excellent

Notes:

Appendix 3. Sails – Care, Furling and Folding

Furling Procedures for the Mainsails

The mainsail is secured onto the boom when the boat is derigged. Care must be taken to avoid bending or breaking the battens and kinking the sailcloth. To achieve this, carefully flake the sail back and forth across the boom while pulling firmly aft. This technique removes most kinks and results in the battens lying parallel to the boom. Beginning aft, secure the sail with two or three gaskets and cover with the sail cover.

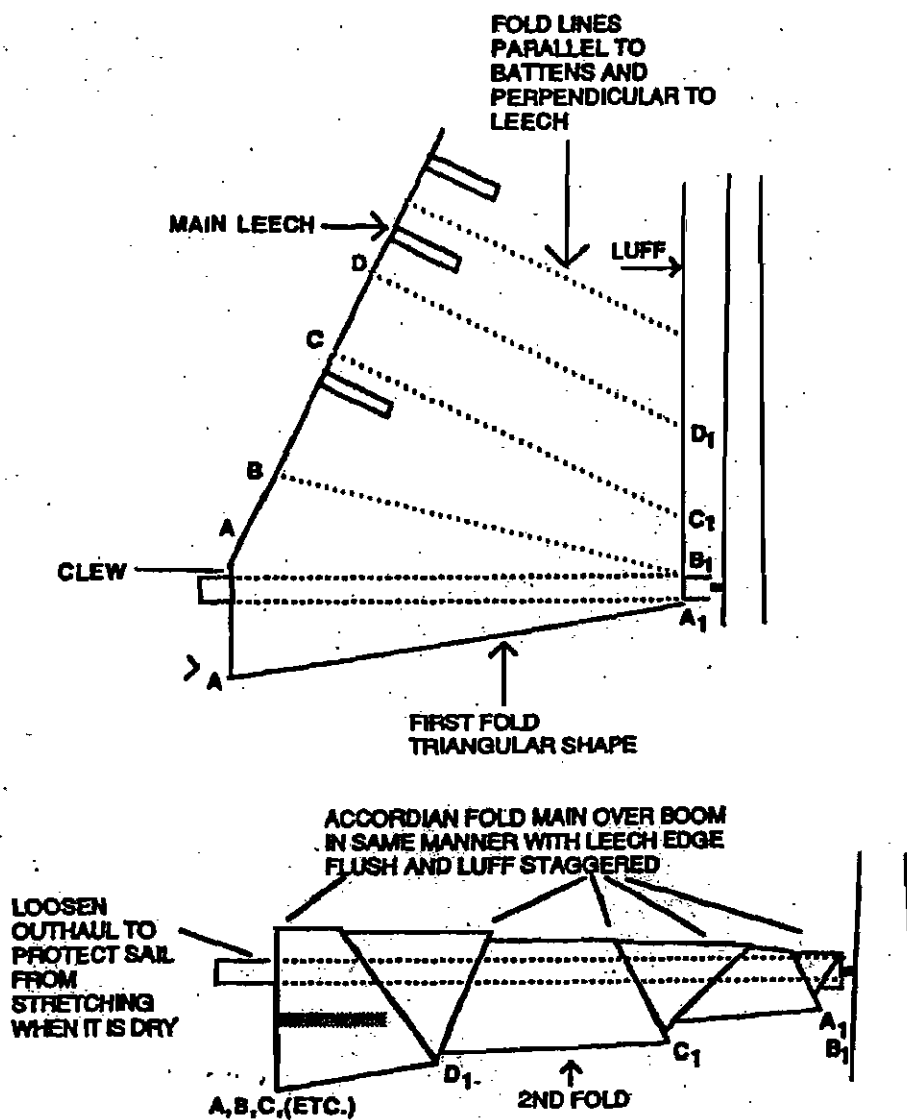


Figure 1-1 Furling the Mainsail for Storage

Stowing the Victory Jibs



1 Get tube out of the Cuddy



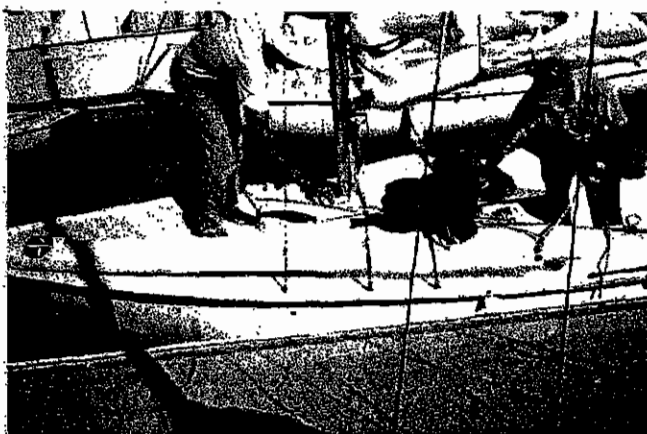
2 Attach shackle to tube



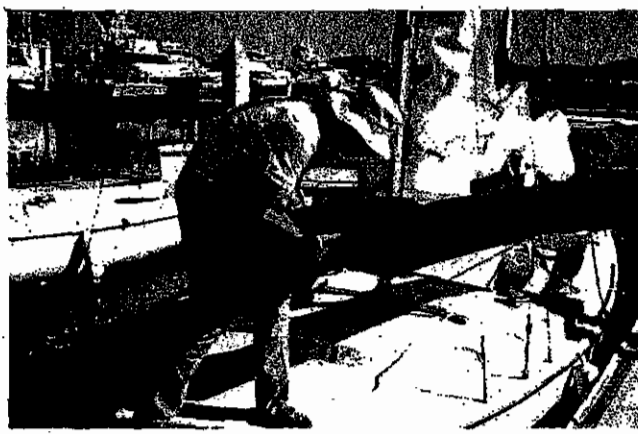
3 Roll with leach 90° to tube



4 Smooth sail while rolling



5 Complete roll & get bag



6 Slide sail/tube into bag

Figure 12-2 Stowing the Victory Jibs on the Roll

Appendix 4. Equipment Care and Handling

Victory Rigging Instructions

Inspect the boat before rigging it to insure it is in condition to sail. Check the hull, deck, fittings, standing rigging, running rigging, etc. for obvious damage or weakness. Check for docking line, paddle, anchor, fog horn, bailing bucket, TFD (cushion), PFDs (Life Preservers), and flare kit.

Secure docking line to winch and dock cleat. Load personal belongings in the cuddy. Fit PFDs (CSC recommends wearing them)

Remove cover and gaskets from mail sail and tiller. Put Jib on the foredeck and stow the covers and Jib bag in the cuddy.

Jib: remove the jib halyard from the tack shackle (do not release either end of the halyard): attach the halyard shackle to the pad eye on the front of the mast and secure the halyard to port jib mast cleat. Bend on the jib and attach the jib halyard shackle to the head of the sail. (Do not raise Jib yet, you may tie the halyard around the jib to prevent it from blowing around) Run Jib sheets outside shrouds and through jib blocks and tie figure eight knots at ends

Main halyard: untie and attach the shackle to the head of the mainsail. Secure the bitter end to the cleat on the starboard side of the mast. **Make sure that the main halyard runs free between the lazy jacks.**

Downhaul: Untie from pad eye on front of mast;

Bowline: Flake out and feed under the jib sheets into the cuddy so it doesn't fall off the foredeck or foul the jib sheet.

Lazy Jacks: Loosen at the small cleat on the boom so that they are slack.

Boom Vang: Loosen leaving sufficient slack to hoist the mainsail fully

Mainsheet: Flake out, working the line to remove kinks. Tie a figure eight knot in the end if not already present. Adjust the topping lift to hold the boom up. **Remove the boom lift** and cleat the main sheet to stabilize the boom.

Move the boat into a position from which you can leave the dock with the docking line. Load passengers now.

Recheck boat and look for wind direction and traffic. Leave dock under sail with jib alone or paddle out clear of dock and boats. Do not raise the mainsail until well clear of the dock.

Raise the jib and secure the halyard.

Push off and sail off the dock or paddle well clear to the middle of the channel and remove fenders.

Turn the boat into the wind, uncleat the jib sheet to run free (with no resistance from the jib boat will stay in irons). **Next, make sure that the downhaul, boomvang and main sheet are uncleated and that all gaskets (sail ties) are off.** Raise the main and secure the halyard to mast. Secure the downhaul. Tension outhaul and adjust boom vang.

Have a fun safe sail.

Victory De-Rigging Instructions

Before approaching the Dock:

Mount fenders

Tighten lazy jacks

Turn boat into wind and douse mainsail; secure aft part of sail to boom with gasket to avoid sail obscuring vision; fasten boom lift and cleat mainsheet to secure boom.

Approach dock under jib alone, or douse jib when close to dock and approach dock with "bare poles."

Douse jib immediately upon landing

Turn Victory with bow and stern lines

Secure dock lines

Unload passengers, personal belongings and anything that should not be left in the boat.

Jib: Do not step on the jib while derigging – slippery! Remove halyard shackle from head of jib and secure shackle to halyard using slip knot at forehead height

Untie stop knots in jib sheets and coil sheets for stowing

Unbend jib from forestay

Secure Halyard with taut line hitch to bow shackle

Fold working jib and stow in jib bag. If using "racing" jib, roll per separate "Instructions for Rolling Up & Storing New Jib"

Loosen Outhaul

Untie Downhaul

Uncleat and loosen Boom Vang (leave uncleated)

Mainsail: Flake out on boom and tie using gaskets; ensure battens are parallel to boom

Raise Gooseneck a short way up mast with downhaul & tie to pad eye on front of mast

Main Sheet: Coil and tie to end of boom using clove hitch knot

Main Halyard: Remove shackle from head of mainsail & secure to halyard using slip knot at forehead height

Secure halyard to starboard jib block with a taut line hitch

Put covers on mainsail & tiller handle

Flemish (coil) bow and stern lines

Inspect Boat:

Make sure it is properly secured.

Replace these instructions

Close and lock cuddy

Report any damage or needed repairs so they can be promptly attended to! (to make reports on boat repairs, log the relevant information in the maintenance log book which can be found by the sailing log)

Reefing a Sail

The prudent sailor reduces sail area by reefing when he or she anticipates that winds might get a little too strong. Reefing is easy to do and makes the boat much easier to handle in high winds, without sacrificing performance. In winds above ten or twelve knots, the boat will go just as fast to windward, but without all that tipping and splashing and rounding up. Figures A4-1 & -2 illustrate a Victory with a fully raised main sail and a reefed main sail, respectively. The sail area is reduced about twenty square feet, or approximately 20%, and the center of effort is about one foot lower.

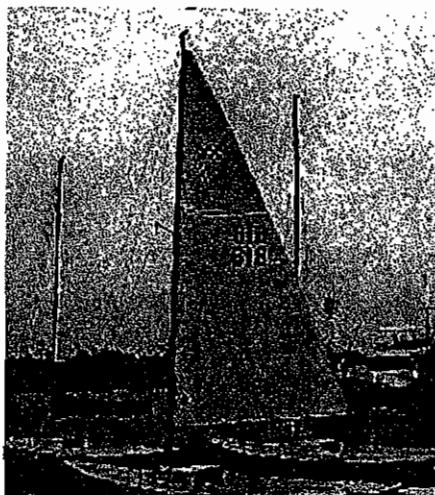


Figure A4-1 Full Main Sail

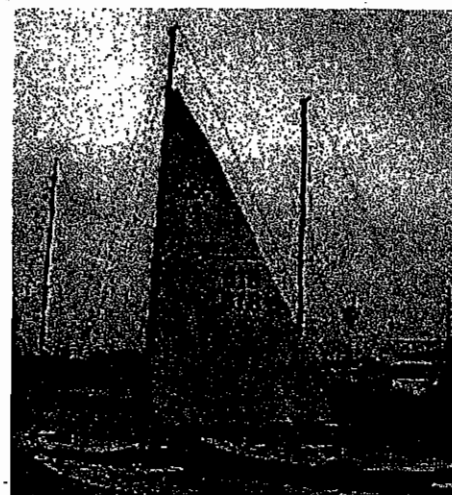


Figure A4-2 Reefed Main Sail

The Ensigns and the Commander have roller-furling jibs that can be partially or fully furled to help reduce area. All of the Convair Sailing Club boats, except one of the Ensigns, have reef points (grommets) in the mainsails for reefing. The Commander and



Figure A4-3 Tie at Luff

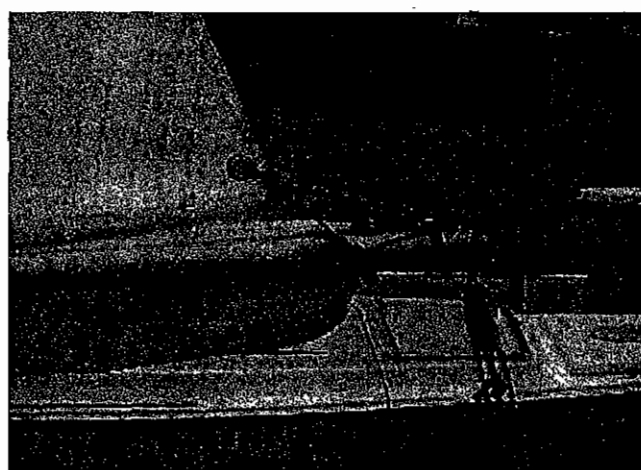


Figure A4-4 Tie at Leech

Ensign 1122 even have slab reefing (aka jiffy reefing).

To reef a mainsail, either before it is raised or afterward, just pass a short piece of line through the reef tack grommet at the luff, which is about two feet above the tack grommet, and pass it around the mast, then back through the grommet and around the boom or gooseneck fitting and tie a reef knot in it. (See figure A4-3). If the sail is up, you will have to lower it at least two feet, and raise it again after it is tied. Then pass another piece of line through the leech clew grommet in the leech of the sail and pass it through the outhaul fitting, pull it tight, and tie a reef knot here also. (See figure A4-4).

Note: the skipper must supply his own reefing lines. One four foot line and one six foot line should be ample. In a pinch, any line, even a gasket, will do the trick.

Motors

The Club's outboard motors are presently all in working order. However, they are after all, four cycle, outboard motors.

General Operating Instructions:

- Before attempting to start and operate one of the outboard motors:
 - Check the fuel supply
 - Connect fuel tank or turn on fuel flow valve on motor
 - Squeeze the priming bulb on the external tank fuel line until firm
 - Open fuel cap vent on tank or on motor
 - Set the choke "on". (Be ready to reduce choke setting as soon as motor starts)
 - Set throttle to about midway or a little higher. (Note: the "start" setting works well on new engines.)
 - Be ready to reduce throttle setting immediately when motor starts to avoid over speeding. (not too low!)
 - Pull starter rope handle briskly. Several pulls will usually be necessary.
 - After the motor starts, keep the speed somewhat above idle until the motor has a chance to warm up. (There are no automatic chokes on these motors.)
- It should not be necessary to adjust the low speed adjustment on the older motors.
- ***When shifting gears, slow the motor down as low as reasonable without killing it (you must do this), and be ready to increase throttle setting as soon as you get it in gear.
 - Shut the motor down by retarding the throttle (on the old engines) or pressing the "kill" button on the motor. This is sufficient if you are going to start the motor up again in a while. If you are through for the day; shut off the fuel supply and let the motor run itself almost out of fuel. When it starts to sound like it will stop, retard the throttle and/or press the "kill" button. Raise motor (forward gear), attach hose and open valve and flush with fresh water for 3-4 minutes. Remove hose and close valve, place cover on the motor.

Common Operating Problems:

Outboard motors can be difficult. The "throttle" control actually is an ignition spark advance control that also, after some motion, opens the throttle valve on the carburetor by a cam action. These operations are synchronized in the design of the motor and only minor adjustments can be made.

Common problems are:

- No fuel supply connected or turned on.
- Motor is "flooded". It doesn't really flood in the same sense that an automobile engine floods but the effect can be the same. It usually means that the spark plugs have too much oil on them to operate. The solution is to disconnect the fuel line or turn off the fuel supply, open the throttle all the way, and pull the

starter rope many times. Then begin the starting procedures all over again. If this fails, the spark plugs must be removed, dried and replaced.

- Spark plugs are old and deposit on them inhibiting the spark formation. The plugs don't clean very well, so new plugs are usually required.
- The last person who used the engine, either choked it to kill it, or let it idle a little too long before shutting it off, or did not shut off the fuel supply and let the engine run for a while before shutting it off. One or all of these events can cause fouled spark plugs. (See flooded, above)
- There are also functional problems that may develop with the motors, such as ignition system failure, or plugged fuel lines. These are for the maintenance people to handle. Just make a note in the maintenance log.

New Four Stroke Motors for the Ensigns:

The Board voted at Board of Directors Meeting to purchase four new four stroke out-board motors for the Ensigns. Orders were placed for three 4 hp motors and one 6 hp motor (for the race committee boat). As of this writing, one 4 hp motor has been received and installed on Ensign 192. Operation of these motors is essentially the same as the white Johnson, two stroke, and motor we have been using with a few exceptions.

First; these four stroke motors use regular gasoline without any oil mixed in instead of the 50:1 fuel/oil mixture that the two stroke motors use. Please be careful to use only the proper fuel. The containers at the slips will be clearly marked as to which fuel they contain.

Second; the external fuel tank connectors are different than those on the tank used for the white Johnson motor. Please don't try to connect the wrong tank to the wrong motor, or you will damage the connectors and cause fuel leaks.

Third; the internal fuel tank shut off valve on the new motors is on the port side of the motor instead of the starboard side (to be turned on to utilize the internal fuel).

Fourth; the four stroke motors will require choke to start and about half choke while the motor is warming up. On the two stroke motors, leaving the choke on too long would kill the motor.

Fifth; the new four stroke motors must be shifted into forward gear (motor NOT running) in order to tilt the motor up out of the water.

These new motors run very smoothly, start easily and can be idled down to low speeds without dying; which makes shifting gears much easier. Shifting gears while the engine is running at too high an RPM is the chief cause of failed shear pins and sheared propeller hubs on the Johnson and the other motors.

Please take good care of these new motors and report any problems to the Fleet Captain so that prompt corrective action can be taken

Boat Cleaning and Inspection Check List

Inspection Items	
Clean Topsides	
Acetone	
Rags	
Rubber gloves	
Clean Deck	
Comet	
Brushes	
Clean Bilges	
Sponges	
Battery Charger for bilge pump batter	
Inspect Standing Riggings	
Cotter pins in turnbuckle clevis pins	
Turnbuckles frozen or corroded or cracked	
Forestay, backstay and shroud cables for frayed or corroded	
Uneven tension in shrouds (side to side)	
Inspect Running Rigging	
Halyards worn or frayed rope and wire	
Shackles for damage	
Mainsheet rope and hardware	
Winches for proper orientation	
Bow and stern lines long enough (26 ft) and condition	
Hull and Deck	
Collision damage	
Excessive abrasions	
Hull/Deck joint for integrity	
Bilge for drainage	

Keel bolts for corrosion	
Cleats for integrity	
Cuddy sliding hatch and boards	
Lazarette hatch hinges and general condition	
Electrical System	
Lights and wiring in working order	
Corrosion	
Wire routing	

Boat Number	Date
-------------	------

Boat Captain	
--------------	--

Check list of equipment

Ref: ABC's of the California Boating Law (1996-97)

Required by State & Federal Law	Check Mark or Note Here
Type I, II, or III Personal Floatation Device (PDF). (Life Jacket. We provide Type II.)	Quantity? Condition?
Type IV Throwable Floatation Device (TFD) (Cushion)	
Sound Signal Device (Horn)	
Flares (Orange canister of three flares provided)	Current?
Fire Extinguisher (if outboard installed.)	Charged? Current?
Navigation Lights (required after sunset & before sunrise)	Do they work?
Under Sail:	
10 pt red to point	
10 pt green to starboard	
12 pt white aft	
Or flashlight.	
Under Power:	
Add 20 pt white forward	
Flashlight won't do	
Essential but not required by Law	
Paddle	
Bucket- Bailing	
Bilge Pump on Ensign & Commander	Does it work?
Anchor & line	
First Aid Kit (not provided)	
Flashlight (not provided)	
Local Chart (not provided)	
Mooring lines (Bow & stern lines provided)	
Batter for lights (not provided)	

Appendix 5. The Harbor Island West Marina

Location- The marina is located near the western end of Harbor Island. The eastern end of the marina, our fleet is located at the end of the 1100 dock.

Office - The marina office is on the ground floor in the northeast corner of the same building housing the Boat House Restaurant. Office hours are 8:00 a.m. to 5:00 p.m., seven days a week.

Parking – Parking on the marina lot is restricted to tenants and guests with valid parking permits. CSC members may park on the lot most days. However, CSC has agreed with marina management to avoid the marina parking lot on days when heavy usage is anticipated (e.g. Memorial Day and Labor Day weekends; Fleet Week Parade of Ships). Public parking is available on the road in front of the marina, and in the parking lot to the east. Overnight parking is permitted only when you have requested a temporary permit from the marina office. CSC members' vehicles are not to be left in the parking lot overnight.

Security and Key Box – The marina facilities are locked at all times. Gates and doors must be opened by means of coded cards, which are accessible in CSC's blue key box. Keys must be returned to the key box prior to departing the marina.

Restrooms – Restrooms are located next to the office on the side of the building facing the marina. A larger restroom and shower facilities are located in the breezeway near the key box.

Pool – The swimming pool and hot tub are located next door to the marina office. The card is needed to open the gate.

Dock – To get to our slips, walk around the pool, through the security gate, turn right to the eastern end of the marina, and turn left to the far end of the finger. Our slip is center slip at the end.

Nearby facilities – Next to the marina office is a deli with an outside eating area, upstairs is the Boat House Restaurant and a shop specializing in marine clothing and supplies is next door. The deck in front of the Deli is for general-purpose use of marina tenants and guests, and is not restricted to Deli patrons.

Appendix 6. Checkout Criteria

Convair Sailing Club Check Out Check List

Scheduling

Allow sufficient time for full checkout (about 1-2 hours)

Reschedule for too little or too much wind (no white cap sailing)

Club Rules

Emphasize safety

Prohibit sailing with whitecaps

Report accidents and damage

Follow proper reservation procedures

Rigging

Select correct boat according to boat tie-up alignment

Check equipment and rigging for proper conditions

Rig into the wind (use rigging instruction card)

Cat rig for first part of checkout

Leaving the Dock

Plan the departure for wind and traffic

Use safe and effective shove-off

Stay clear of the floating breakwater, if any

Sailing

Sail in 360 degree circles

Follow a specific course

Check sail setting (s) for beat, reach, and run.

Tack and jibe

Sail cat and sloop rigged

Sail in a given direction

Sail with a given sail setting

Slow the boat (on any heading)

Use the commands

Get out of irons (on selected tack)

Rules of the Road

Know the "Right's of Way"

Recognize collision course

Man Overboard

Throw TFD (throwable flotation device) immediately

Convair Sailing Club

Return quickly and approach slowly

Use leverage for recovery (drag stern line overboard)

Returning to the Dock

Identify true wind direction (continuously)

Use proper approach (for either CSC dock)

Dock into the wind (have boat hook and paddle ready)

Plan abort

De-rigging

Tie down boat properly

Show care of boat and sails

Report discrepancies

Check other boats for proper tie-up

Club Office

Log completion

Payment procedure

Maintenance write-up

General location of items

Convair Sailing Club Ocean Qualification

As stated in the CSC By-laws, No CSC Boat shall be sailed seaward beyond Ballast Point unless the Skipper is participating in an organized race or has their membership card signed for Ocean Qualification.

To become qualified, a member must be checked out through the CSC sailing course with their membership card signed to that effect; must complete the "Basic Sailing and Seamanship" course given by the U.S. Coast Guard Auxiliary or equivalent; and must have at least 50 documented hours at the helm of a sailboat. Member must certify to these conditions by signing the application below.

This application and certification of successful completion of the course may be submitted by the member at any meeting of the Board of Directors for action. If unable to attend, the member may ask any member of the Board to present it for him/her. If the Board approves, the member will turn in their current membership card and receive a new card signed for Ocean Qualification by a Board Member.

For your safety, CSC insists that you have proper and adequate equipment and a strong working knowledge of sailing to assist you in coping with water traffic, adverse weather, tidal currents, orientation of position and any unforeseen problems that may arise. The requirement of fifty hours of helm experience allows you to become fully familiar with the boats in varied conditions to prepare you to deal with the rigors of ocean sailing. You must understand that ocean sailing is inherently dangerous and believe in and respect the power of the ocean.

For ocean sailing, CSC requires that you have the equipment listed below: (starred items are furnished by CSC; you must furnish the rest).

Required Equipment for Ocean Sailing: *USCG-Approved Life Jacket for Each Person on Board, *Bow and stern lights, Fresh batteries appropriate to the voltage installed on the boat (if 6V, skipper must supply at least two 6V lantern batteries, two back-up batteries also preferred; if 12V, use rechargeable batteries in dock-box), *Fog Horn, *Flares, *Paddle, USCG-Approved Fire Extinguisher-if a motor is on board, Tool Kit, First Aid Kit, Compass, Chart of the Sailing Area.

Note that there is no requirement for an outboard motor, but you should have one. Use an extended shaft motor of 3 to 7.5 horsepower.

APPLICATION FOR OCEAN SAILING

- A. I certify that I successfully completed the basic sailing course on _____ (date)
(Present course completion card or certificate to the Board as verification.)
- B. I affirm that I have at least 50 hours of documented experience at the helm of a sailboat.
- C. I understand that ocean sailing is inherently dangerous. As attested to on the Membership Registration form, I recognize and accept such dangers and assume full responsibility for all risks.

Print Member Name_____
Member Number_____
Member Signature_____
Date

APPROVAL: Approved by Board at meeting on _____ (date) .
(if denied, give reason below)

Signed by Board member _____

Appendix 7. The Beaufort Scale of Wind Forces

Taken from "The Annapolis Book of Seamanship"

Beaufort Force	Wind Speed (knots)	Wind Description	Sea Conditions	Wave Height	Implication for the Sailor
0	0	Calm	Smooth, like a mirror	0	Light conditions. Safe for all sailors, assuming water not too crowded, boat is properly equipped and crewed
1	1-3	Light air	Small ripples like fish scales	¼ - ½ foot	
2	4-6	Light breeze	Short, small pronounced wavelets with no crests	¼ - ½ foot	
3	7-10	Gentle breeze	Large wavelets with some crests	2 feet	
4	11-16	Moderate breeze	Increasingly longer small waves, some with white caps (foam crests).	4 feet	Challenging to beginning and novice sailors, particularly in small boats. Convair Sailing Club Advisory: Do not sail; Return to safe harbor if caught at sea
5	17-21	Fresh breeze	Moderate lengthening waves, with many white caps and some spray	6 feet	Beginners and novices tend to lose control of their boats and feel overwhelmed
6	22-27	Strong breeze	Large waves, extensive white caps, some spray	10 feet	Very experienced sailors feel challenges and sometimes overpowered, particularly if the wind is gusting in sudden puffs.
7	28-33	Near gale	Heaps of waves, with some breakers whose foam is blown downwind in streaks	14 feet	Small Craft Advisory Sustained winds from 25-33 knots and/or seas >7 ft within 12 hours Gale Warning 1-min sustained winds 34-47 knots Most boats cannot make progress to windward and must heave to or run with wind. Small boats must not leave shore
8	34-40	Gale	Moderately high waves of increasing length, and edges of crests breaking into spindrift (heavy spray). Foam is blown downwind in well-marked streaks	18 feet	
9	41-47	Strong gale	High waves with dense foam streaks and some crests rolling over. Spray reduces visibility	23 feet	
10	48-55	Storm	Very high waves with long, overhanging crests. The sea looks white, visibility is greatly reduced, and waves tumble with force	29 feet	Storm Warning Wind strength > 48 knots Survival conditions – no place for any boat
11	56-63	Violent storm	Exceptionally high waves that may obscure medium-size ships. All wave edges are blown into froth, and the sea is covered with patches of foam	37 feet	
12	64-71	Hurricane	The air is filled with foam and spray, and the sea is completely white	45 feet	

Appendix 8. References/Bibliography

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