CSC DINGHY SAILING MANUAL

August 2023

Introduction

There's no substitute for actual sailing if you want to learn to sail. This booklet is only intended as a technical reference, to reinforce sailing lessons. If you're new to sailing, relax—you're in good company. Most new members of the Cal Sailing Club do not know how to sail when they join. Put this book down until later, and go sailing.

Credits

Editor: John Bongiovani

Author: John Bergmann

Change History

Anonymous. First published edition. The club began about a century ago as an offshoot of a loose association of UC students and professors who were interested in sailing. Perhaps there was a manual—who knows?

A manual for sailing was put together using a typewriter and hand drawn pictures, distributed in booklet format. The most memorable part was a cartoon telling how to get onto a Lido from the water, showing a shark. Fitting conveniently in a pocket, most copies were turned into pulp during the new owner's first lesson. Sometime in the 1970s.

Various minor changes stemming from disputes over gybing and other pettifoggery. Sometime during the disco era.

The advent of the computer in revising the manual, but keeping the same organization. Major discovery: pdf's don't fit in pockets. Sometime in the Clinton era.

Major revisions to reflect the end of the Lido, which had served the club (poorly) since 1959. Sometime in the Bush II years.

V11. Joel Brandt. June 2011.

V12 John Bergmann, updated content and format, added detail on the RS Ventures. March 2016.

V13 Made corrections, added content on Quests, added more figures, and added a table of figures.

V14 No more Bahias, online dinghy log, and other 2017 and 2018 changes to the club.

V15 Updated descriptions of the Quests as well as CSC procedures on working with them.

V16 Add RS Toura, revise docking, crew overboard & departing procedures. Other edits and revisions. December 2022.

V17 Minor edits. August 2023.

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1 Safety First

While sailing is less dangerous than other outdoor sports, there are certain risks you should guard against:

Always wear a lifejacket when out on a boat. We have several sizes and styles of life jackets (AKA personal flotation devices or PFDs). Most of our PFDs are Class III which are intended for conscious users, in inland waters, where rescue will be quickly forthcoming. If this doesn't suit your needs, choose a bulkier Class II or I PFD that provides more flotation (see coast guard definition).

Watch out for the boom, and don't stand up in the boat unless you're absolutely sure it's safe to do so. If the boat capsizes, shield your head with your arms to avoid getting clobbered. In a capsize you may be falling into the rigging - avoid falling backwards, and always look where you will land. A helmet may be a good idea, and more dinghy sailors are wearing them now.

Dinghies are very easily tipped by your weight on the boat. Don't stand up without holding onto something, and pay attention when you step

onto an empty dinghy—it can easily tip you into the water. When you are first getting used to dinghies, crawl onto the boat supporting your weight on your hands and knees so as not to fall between the boat and the dock. This way, your center of mass will be low and you will be more stable. Also, when moving around in an empty dinghy keep your body as close to the center line of the boat to avoid tipping it over. Slippery shoes, bare feet, and wet hands can cause you to take a hard fall. Wear windsurfer booties or shoes that won't slip on wet plastic, as well as gloves with non-slip palms (preferably with open fingers for untying knots and twiddling with hardware).

If there's wind, sailing can be wet and cold. Wear a warm hat; it can reduce heat loss dramatically. To reduce heat loss from your body in our sailing conditions, a wetsuit is ideal, and the club has lots of loaners, thanks to the Department of Parks, Division of Boating and Waterways.[1] If you prefer not to wear a wetsuit, polypropylene fleece and wool are best for warmth because they hold in heat even when wet. Avoid cotton clothing, when wet it loses lots of heat and weighs a ton. The club has loaner foul weather gear that you can wear over a wetsuit or warm clothing to cut the wind and shed some of the water. Be alert for hypothermia, first signaled by uncontrollable shivering, that can slow your reactions and distort your judgment.

Sunburn is painful and can lead to skin cancer. Wear a hat with a wide brim and plenty of sunscreen. The club keeps a gallon jug in the clubhouse.

A broken part can leave you stranded out on the water, and it may be some time before you will be rescued. Learn how to check your equipment over carefully and thoroughly before you go. Learning to identify damage and to repair equipment is a major focus of the club's teaching program (see Repairs section near the end of this booklet).

[1]Cal Sailing Club has received generous grants from the State of California Department of Parks, Division of Boating and Waterways (formerly the California Department of Boating and Waterways) that we've used to buy equipment to teach boating safety. The grants bought most of our dinghies, sails, PFD's and wetsuits, as well as equipment for our keelboat sailing and windsurfing classes.

2 Wind

It's what makes sailboats go, so it's the most important thing to learn about. You "read" the wind by looking at the water and at flags and other sails, by feeling it with your body, and by the telltales and sails on your boat.

The water is a good indicator of the wind's **strength**. The water is glassy smooth in light wind, develops wind ripples (little ripples a few inches apart) as the wind increases, darkens where gusts pass over it, shows white capped waves in strong wind, and has blown over breaking waves in really strong winds. Remember that the stronger the wind is, the more skill and weight you need to sail a dinghy in it. If the expert windsurfers are having a great day, it's gonna be wet and wild in a dinghy.

The best way to feel the wind's **direction** with your body is to use your ears and nose—when your nose is pointed straight into the wind, the wind feels equally strong on both ears (provided you don't have an 80's style asymmetrical hairdo). The same is true when your nose is pointed straight downwind. The telltales (yarn or tape streamers) on the boat's shrouds indicate the wind flowing across the boat, which is influenced by the boat's movement, and if you turn the boat into the wind, the flapping sails indicate the true source of the wind the way a flag does.

Summer afternoon winds are generally strongest, especially when there's a high pressure ridge aloft offshore, low pressure inland, and higher temperatures in the Central Valley than in the Bay. The strongest wind in Berkeley comes from the southwest, because the main flow through the Golden Gate turns to cross Richmond to head for the Delta. Winter storms can bring south winds that only expert windsurfers should go out in, or north winds that will shred sails. Between these two extremes are plenty of days when the wind will provide hours of pleasant sailing, especially if you're willing to wait long enough for the wind to get really good.

2.1 Links to Wind Predictions

Best info on the wind:

- Cal Sailing Club Webcams: *https://whatskraken.cal-sailing.org/wind*

View CURRENT conditions at Cal-Sailing and forecasts of tide and wind!

- iWindsurf.com - CA- SF North Bay Wind Data:
  http://www.iwindsurf.com/windandwhere.iws?regionID=125&geographicalAreaID=999

  Shows wind direction from various sensors around the Bay

- http://www.sailflow.com/map#37.908,-122.012,10,1,!409,2

  (Free) memberships give (temporary) access to Berkeley wind sensor and excellent forecasts (you may need to disable ad-blockers from your browser)

- The View - From The Lawrence Hall of Science:
  http://static.lawrencehallofscience.org/scienceview/scienceview.berkeley.edu/html/view/index.php
  Tables of recent conditions around SF Bay
- 9414847: Point Potrero Richmond, CA - NOAA Tides & Currents:
  http://tidesandcurrents.noaa.gov/ports/ports.html?id=9414847&mode=threedayswl

3 Weight

Weight in the right place is essential to sailing a dinghy, especially in strong wind. Without strategically placed weight, the wind will tip over the boat. And to maneuver the boat, the weight in the boat must be moved around to balance the changing force of the wind.

Rated maximum capacities for CSC dinghies are shown in the table below.

Name	Maximum number of sailors	Maximum Pounds	Maximum Kilograms
RS Venture	6	1,050	480
RS Toura	5	910	412
RS Quest	3	800	365

Name	Maximum number of sailors	Maximum Pounds	Maximum Kilograms
RS 500	2	330	150
Laser	1	190	90
JY15	3	525	240

Overloading the boat is a very bad idea. Even these limits should be reduced in some circumstances. Fewer people should be carried if some are heavier than average or less agile and the wind is strong. With a less agile person aboard, reduce the sail area by reefing, and take someone who's extra agile and can help balance the boat.

In strong wind, having too little weight in the boat can also be a serious problem. If the windsurfers are tearing up the waves in 20+ knots of wind, two small persons are not going to be able to keep a boat upright, even with a reefed mainsail and no jib. That just isn't enough weight to balance the force of the wind. In stronger wind, don't go out alone or with another light person; get someone heavy to come along.

4 Learning To Sail

Sailing is no more complicated than driving a car, and a lot more fun to learn. Some people grasp it immediately, while others take longer. Sailing requires some physical agility as well as some mental ability to handle new concepts and language. To make it easier, don't try to take on everything at once. In the sailing lessons, concentrate on practicing sailing, and leave sailing theory to later, when you can read a good book (see list near the end of this booklet) or discuss things at the club.

Out on the water, you should first learn to steer a boat with a tiller. Once you've got that down, move on to learning to trim the sails. Along the way, you learn how to turn around and go the other way (coming about or tacking, maybe even gybing too). Then you learn to use your body weight to balance a dinghy sailboat. Unlike a keelboat, which has a big

lead weight underneath, a dinghy sailboat stays upright mostly because the skipper and crew use their weight to balance the force from the sails.

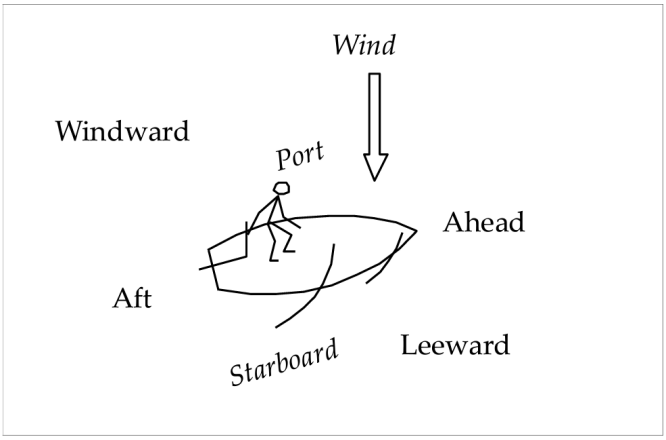
You will also learn how to sail slowly up to a dock, use the anchor in an emergency, reef the sails to handle strong wind, heave to, and a bunch of other useful maneuvers. Your teachers may have different ideas about how to teach, but hopefully they'll ask about your progress and challenge you without overwhelming you. If they are not an effective teacher or boat skipper, remember part of the learning process at the club is being a volunteer teacher; they are also learning to both be better skippers and better teachers.. Sometimes there will be big waves and strong wind, other times there will be little if any wind. The boat will handle differently, and there will be different things to learn. Have fun, and get that Junior Skipper rating so that you, in turn, can teach new sailors.

5 Sailing Basics

A sailboat's course is the direction it is heading. Fig 1: Sailing "directions" shows that Ahead refers to the direction the sailboat is heading, while Port refers to the side that's on your left when you're facing Ahead.

The skipper usually sits on the windward, or upwind, side of the boat, and the sails are always on the leeward,[2] or downwind, side.

[2] Leeward is pronounced "lee-word" by regular people, "loo-erd" by salty types, and "lurid" by people making fun of salty types.



The **wind direction** is named for its source. A west wind comes from the west.

Heading up means turning toward the wind (see Fig 1: Sailing "directions"), so the boat is pointed more toward the direction the wind is coming from. Falling off or bearing away, the opposite of heading up, means turning away from the wind.

5.1 Coming About and Gybing

Coming about and gybing are the two ways of turning a sailboat so that the sails switch from one side to the other.

Coming about (also called tacking) means heading up, briefly pointing **toward** the wind during the turn, continuing the turn and thus falling off until the boat is sailing again. The sails will flap their way across the boat as it turns through the wind. The boat will turn through a zone of about 90 degrees where there is no power generated by the sails.

Gybing means falling off, pointing **away** from the wind, and causing the sails to be flipped across the boat (see section 6.6). In gybing, the sails are powered throughout the maneuver.

5.2 The Meaning of Port and Starboard Tacks

Determining whether you are on port or starboard tacks is critical to right of way rules. The port side of the boat is the left one when you are facing ahead (forward). On a port tack, the mainsail is on the starboard side of

the boat, and the wind is coming from the port side or aft (from behind the boat).

The way to determine port or starboard tack is by the **opposite of the side that the mainsail is on**.

5.3 Right of Way

The right of way rules have been adapted from the US Coast Guard's Navigation Rules Online and apply to situations in the Berkeley South Sailing Basin.

The basic rules:

- Generally, sailboats have right-of-way over power boats. The exceptions are when a sailboat is passing (overtaking) a power boat, the boat being passed has right of way. If a power boat is towing (e.g., a windsurfer or a sailboat), it has right-of-way.
- When the two sailcraft are on different tacks, the one on **starboard** tack has right of way. (If your boat has the mainsail on the **your** port side and the other sailboat has their mainsail on **their** starboard side, you have the right of way.)
- If both sailcraft are on the same tack, the **downwind** or **leeward** one has right of way.
- A vessel unable to maneuver (technically "not under command") has right of way over everyone else. So if you are hove to and reefing or shaking out a reef, you automatically have right of way over everyone else. If you are hove to and able to maneuver, normal right of way rules apply. Even when reefing, it's a good idea to heave to on starboard tack in case an oncoming boat doesn't realize you're not under command.

Avoid a collision!

- If you have right of way, hold your course. Yell and gesture to the other boat or windsurfer if it looks like they're on a collision course with you and they don't see you. If they don't make eye contact with you and respond by changing their course, change your own course to avoid the collision. A quick tack is often the best

emergency maneuver to avoid a collision, but sometimes it's better to just change course (without tacking) or gybe.

- In the Novice Area, stay away from windsurfers, especially on weekends. They are just learning and are focusing on other things than right-of-way rules.
- In summer, give even more room to boats in Cal Adventures' beginner classes for kids! They have lots of fun, but can capsize hard without warning.

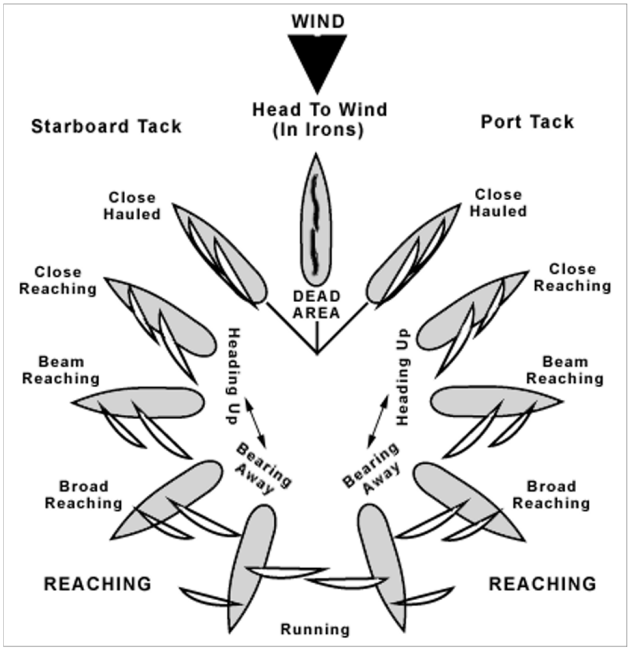
5.4 Collision Courses

Check frequently for other boats or windsurfers coming your way, and always do so before coming about, gybing, or turning suddenly. A boat or windsurfer coming at you is on a **collision course** if it appears to stay in a fixed position relative to a fixed point on your boat. Look at the boat or windsurfer and line it up at a spot on your hull. As they get closer, see whether the spot on your hull moves. If it does, you're not on a collision course; if it does not, you are.

You will hear that you can determine whether you are on a collision course by lining the other boat against something on the background and seeing whether it moves. ***This does not work.*** It is sailing mythology.

5.5 Points of Sail

Points of sail are names for the angle between a sailboat's course and the wind.



In irons means the boat is headed directly into the wind (less than an angle of about 45 degrees to the true wind).

Close hauled means the boat is headed as high as it can into the wind, which is about 45 degrees to the true wind or 15 degrees to the

apparent wind.

The fastest way to get directly upwind is to sail close hauled, coming about in 90 degree turns to switch direction. Zigzagging upwind in this manner is called **beating**, possibly because of the wind and spray suffered by the crew in **heavy weather** (high winds and waves).

A **close reach** is any upwind course at an angle between about 45 and 90 degrees.

A **beam reach** is when the wind direction is at about 90 degrees to the boat's direction of travel.

A **broad reach** is more than 90 degrees and less than about 135 (=90+45) degrees.

A **run** is when the wind is aft (behind the boat). A **dead run** is sailing straight downwind.

By the lee is when the wind is coming from the same side of the boat that the sail is on. Sailing by the lee can be dangerous-- if the boat turns or the wind shifts, the boat can accidentally gybe.

5.6 Parts of the Sail

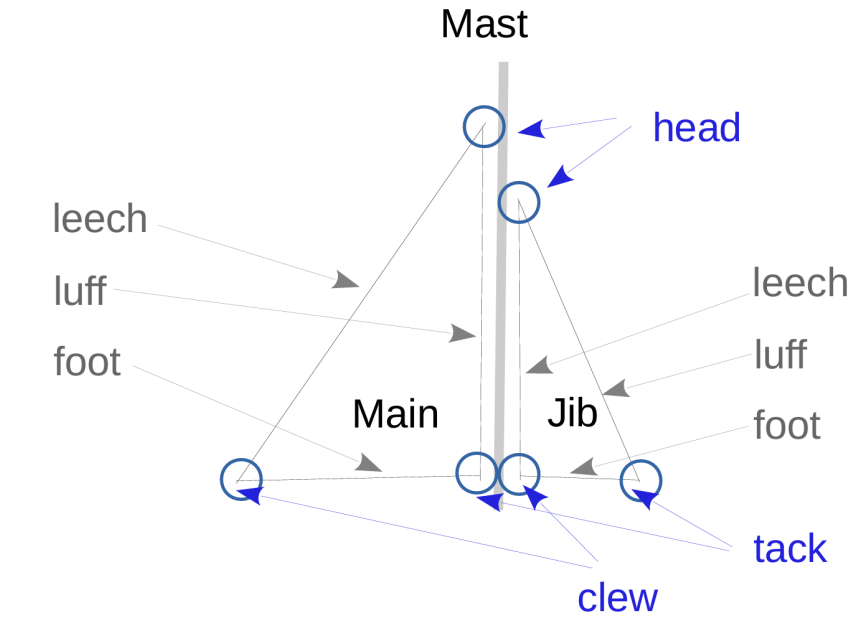


Fig 3: Sail parts

On our dinghies, the sails are roughly triangular.

Edges:

- Foot: bottom edge
- Luff: front edge. On the main, it is the edge closest to the mast. On the jib it is attached to the jibstay or roller furling.
- Leech: aft edge of the sail.

Corners:

- Tack: bottom front corner (connecting the foot to the luff).
- Clew: bottom aft corner (connecting the foot to the leech).
- Head: top of the sail (where the halyard is attached).

5.7 Sail Trim

The power from sails depends on the angle between the wind and the sail. The **sheets** are the lines that can be used to adjust the angle of the sail to the wind—mainsheet for the mainsail, jib sheets for the jib. Pulling in (or "trimming") the sheet decreases the angle, while letting out (or "easing") the sheet increases the angle.

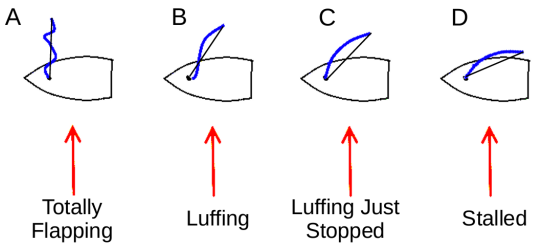


Fig 4: Sail trim.

Fig 5: Luffing mainsail.

A. Sail angle parallel to wind.
B. Sail at too large an angle to the wind.
C. Sail trimmed properly.
D. Sail pulled in too close to the wind (stalled).

To go upwind or across the wind (reach), a boat must get **lift** from its sails. Going upwind, the sail is a wing, just like an airplane wing. Sails only work when they are in a small range of angles to the wind. The objective of sail trim upwind is to keep the sails within that small range of angles. You will feel when this is happening, as the boat will not only be moving forward, but will want to heel (lean) to leeward. If the boat flattens, the sails are no longer generating lift. . The wind blowing across the boat is the apparent wind, which is influenced by the boat's motion.

To go downwind (run), the wind pushes the sails, and they develop maximum power when let out until they are square to (at 90 degrees to) the wind.

When a sail is not pulled in at an angle to the wind, it flaps in the wind like a flag (see Fig 4: Sail trim. .). In sailing terminology, it is completely luffing (**A**). As the sail is pulled in, it becomes partly luffing (**B**): the back part of the sail (near the 'leech') takes on a curved shape, while the luff or

front part (near the mast or forestay) continues to flutter or retain a bubble-like indentation (see also Fig 5: Luffing Mainsail). As the sail is further pulled in, it stops luffing and develops maximum lift (**C**). If the sail is pulled in further, it loses lift and is said to be stalled (**D**). The wind pushes on the sail, creates more heeling of the boat, but does not create much lift. To aid in sail trim, strings or ribbons are attached to both sides of the jib (see Figure 6). The windward telltales are drawn with solid lines. As the crew is aft of the sails, the leeward telltales are 'behind' the sail and can be difficult to see. They are drawn with dotted lines. Some boats have clear windows sewn into the sails to help one see the telltales. Unfortunately, our boats don't.

When the jib is trimmed properly, wind is flowing smoothly over both sides of the sail and the telltales are both steaming toward the leech (panel 1).

When the Sail is luffing slightly, the windward telltale falls or spins - (panel 2). Either trim the sheet or fall off the wind.

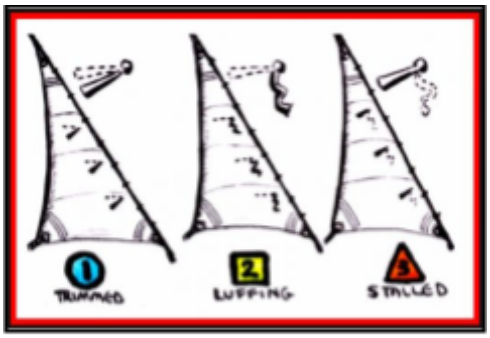


Fig 6: Reading Telltales

When the sail is beginning to stall, the leeward side of the sail is in the 'shadow' of the sail and the leeward telltale will begin to flutter or drop (panel 3). Ease the sheet or head up to windward..

To get the most force out of the sails when on a reach (wind coming across the side of the boat), let out the sheets (or head up) until the sails luff, then pull in the sheets (or fall off) until the sails just stop luffing. On a run (wind coming from behind the boat), let out the sheets all the way—the shrouds usually get in the way of letting out the mainsail, while the jib won't stay out at 90 degrees by itself. When sailing downwind, the sail is a parachute, and so the telltales are not of much use.

The **windward shroud telltale** is useful for judging the direction of the wind blowing across the boat. (Keelboats have wind vanes on top of their masts for this, but club dinghies need masthead floats to keep their masts out of the mud, and the first capsize would break the wind vane.)

To sail upwind in a close hauled point of sail, pull in the jib sheet hard, then steer the boat to keep the jib properly trimmed. Adjust the mainsail to manage heeling and boat balance. In wind shifts, the helm will adjust the course to keep the sail properly trimmed. Each boat has its own close hauled angle based on its rigging and shape.

In all other points of sail, the helm should set a course, and the crew should trim the sail to the chosen point of sail. As the wind shifts, the crew will need to constantly adjust trim to keep the sails properly trimmed.

The definition of close reach also varies from boat to boat. A close reach is the point of sail that allows you to completely depower the main. Generally this is determined by the angle at which the boom touches the shrouds - once the boom is in this position, you cannot depower and slow down. The close reach is the best point of sail for slow sailing (see Docking and COB Maneuvers).

6 Dinghy Sailing Maneuvers

The maneuvers described below—leaving the dock, coming about, gybing, sailing in small circles, sailing backwards, righting after a capsize, anchoring, and docking—involve skills that are absolutely necessary to safely handle a small boat. For this reason, they are included in a Junior Skipper sailing test.

The maneuvers can be done in different ways, and not all the possible ways to do them are described below. Also described below are how to deal with groundings (getting stuck in the mud) and equipment failures on the water.

6.1 Leaving the Dock

Before leaving the dock, check the boat over carefully, especially:

- Are all the hull drain plugs in place? This can't be stressed too much. Leave the dock with the hull drain plug out, and you're in a world of hurt.
- Is everyone's life jacket on securely?
- Is the rudder and centerboard all the way down (unless it's low tide)(and if applicable, are the rudder or centerboard downhaul lines cleated)?
- Look for boats or windsurfers approaching the dock, as well as boats or windsurfers who are also about to cast off. Check for swimmers.
- On the Quest and Venture, the jib should be furled (rolled up) when at the dock. You may unfurl the jib once underway.

Instructions

- Check the wind direction by checking the wind sock.
- To leave the dock, first we sail backwards. The boat is naturally pointing into the wind when docked. To gain speed backwards, ask the person on dock to give you a firm push backwards. You may also backwind the main sail by *pushing* the boom *out* beyond the centerline

of the boat, so the wind fills it on the back side.

- You want to use the backward speed to turn the boat into a close reach position facing outwards. You do so by holding the tiller towards port so the boat turns counter-clockwise. You also want to heel the boat gently to port (port side low) by sitting on port. The port heel helps you turn in the right direction.
- Once the boat is on a course away from the dock at least 45 degrees away from the wind (check the wind sock), gently sheet in the mainsail. This powers up the boat forward.
- Once the boat is going forward, immediately center the tiller, sit on the windward side to balance the boat, and hold the course.
- Watch out for swimmers as you head out. Running them over is very, very bad.

Common mistakes

- In the first step, the tiller does not work without boat speed. Maintain backward speed by backwinding the main if necessary so you can turn.
- When going backwards, sitting on starboard and heeling the boat starboard will prevent the boat from turning correctly. Either keep the boat flat or sit on port. Move to starboard only when the boat starts moving forward. At low speeds, the boat's heel has a greater turning effect than the rudder.
- When sheeting in to go forward, don't sheet in super hard, especially if the wind is light. Sheeting in too much actually causes you to lose power and drift sideways. You want to adjust based on wind speed and direction.
- When you are turning the boat, resist using land objects as reference but instead use the windsock. While being parallel to the dock is the right course with Westerly wind, you need to turn more towards the second dock in a Southerly wind.
- If you start turning the wrong way, and start drifting sideway into the seawall:
  - Try to head back up to the dock to try again. Sheet out on main to

lessen the sideway force on the boat.

- Or try to sail backwards, hike out and heel the boat to port to turn the boat back.
- The best advice is to not get into this situation in the first place, by heeling the boat and turning the boat the correct way.

For more tips and a hands-on problem set to try out, see the blog post here.

6.2 Docking

It's generally best to approach the downwind side of the dock on a close reach, so that you can slow sail up to the dock, in good control of the boat's speed and direction.

Instructions

- Brief your crew well away from the dock on what they need to do: furl the jib when you tell them, step off the boat with the dock line in hand. Prepare them for a possible quick turn at the dock to bleed off speed if you come in too hot.
- Start your approach from a point well downwind of the dock, so that you have plenty of room. Note the wind direction and strength at the dock, and check carefully for swimmers and boats or windsurfers that may be leaving the dock. A close reach is about 60° to the true wind, so check the windsock at the dock to plan your course.
- Sail to the dock in control with a small amount of speed all the time. You need speed to control the boat, but not too much. Accelerate by pulling in on the falls, brake by letting the mainsail out. Do not let your speed get to zero before you get to the dock, or your next acceleration will drive you sideways. Ideally, you'll let the mainsheet out and glide to the dock and just touch it.
- Let the crew know that they'll have to go forward to tie the boat up. If you're alone, get someone on the dock to catch your boat, come in alongside another docked boat and grasp it, or crawl forward yourself as the boat reaches the dock.
- Aim for a point about half a boat length out from the dock. When you get to that point, turn into the wind and glide to the dock. Increase the

half-a-boat-length distance if you are going fast (i.e. turn early).

Common mistakes

- Situation 1: If you come in too slow.
  - Effects: You cannot steer the boat without speed. The boat also drifts downwind towards the seawall. Any attempt to sheet in and accelerate only moves the boat sideways. You lose control.
  - Fix: Sheet in by the falls to maintain a steady speed. If you are in irons, fall off to a close reach so you can accelerate.
- Situation 2: If you come in too fast.
  - Effect: You ram into the dock causing damage.
  - Fix: First, make sure the sail is luffing (depowered). Make a sharp turn upwind into irons so the wind blows against the boat. If these fail, you can push the main sail out with your arm to back-wind the main.

Tips

- If you have a problem docking or leaving the dock, never try to gybe the boat near the seawall. This is because sailing downwind is much faster than upwind, and you can run out of room to gybe very fast. Head the boat up toward the dock, even if this means drifting gently onto other boats.
- Make a bailout plan. Bail out (by tacking) but remember that you need forward speed to do it. Best to turn downwind to get forward speed and distance from the dock, so that when you do tack, you don't hit boats at the dock
- Practice slow sailing to a buoy, treating it as the dock cleat, with the benefit that if you ram into it, both the buoy and your boat will be fine. Plus, there is no scary seafall to drift into.
- Watch out for swimmers. Running them over is really, really bad.

For more tips and a hands-on problem set to try out, see the blog post here.

6.3 Sailing Upwind

When you sail upwind, there's a sideways force from the sail that increases with wind speed. The centerboard prevents the boat from going sideways, so the force tilts the boat over (heels it). As the boat heels, you need to counter that force. You have three controls: your weight, the mainsheet, and the tiller. As the boat heels, you can move your weight out farther, ease the mainsheet a bit, and steer slightly higher into the wind. With experience, you'll understand how much of each to use. In most winds, you'll need to be on the side opposite the mainsail to balance the sideways wind force with your weight.

In light wind, the wind may not have enough force to hold the sail and boom over, so you'll need more weight on the leeward (downwind) side to heel the boat. You'll use gravity to pull the sail and boom over and to form the sail shape, which the light wind will then fill, and the boat will go.

Especially in lighter winds, you want to start out more downwind after a tack to build up speed before you go as high as you can to the wind.

6.4 Coming About (aka Tacking)

Here's a great video showing the steps in coming about: https://youtu.be/qEzESnb0Fu8

Be sure to **check for windsurfers or other boats** behind and upwind of you before coming about, or you may collide with them when you come about.

Be sure your crew is ready to come about. Call out "**Ready about**" and wait for their "**Ready**" signal before beginning; then call out "**Helm's a-lee**" or "**Coming About**" as you actually head up.

To come about (or 'tack'), you push the tiller firmly toward the sail, and the

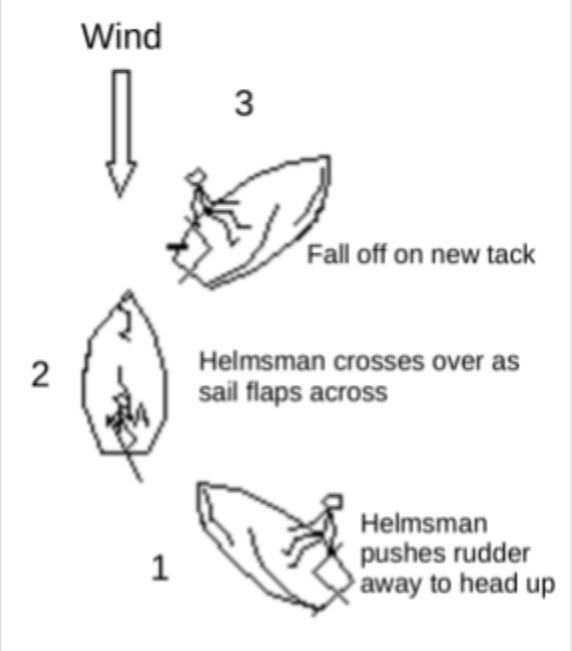


Fig 7: Coming About, or "Tacking"

boat heads up from the old tack and then falls off onto the new tack as it continues to turn (see Fig 7: Coming About, or “Tacking”). If the tiller is not moved quickly enough toward the sail to approximately a 45 degree angle, the boat will lose too much speed attempting to rotate through the eye of the wind. Also, if the tiller is pushed more than 45 degrees over, it will act partially as a brake to the forward motion of the boat.

You should **cross from one side to the other as the boom comes across,** so your weight balances the boat as the sails depower and then repower on the new tack. To avoid a capsize, **uncleat the mainsheet** before the tack. During the tack, you can let go of the mainsheet, but don't drop the tiller.

The crew should **release the jib** when it starts to luff, and let the wind carry it across to the other side, then **bring the jib in** after the clew has passed the mast. In very light wind, the crew can hold the jib sheet tight as the bow comes thru the wind and back fills the jib and pulls the bow across.

6.5 Heaving To

Heaving to is used to stabilize the boat for offshore picnics, changing drivers out on the water, or making adjustments to or fixing problems on the boat. To initiate the heave to maneuver, move the tiller toward the mainsail as if you were coming about. In this case, the jib is left in place and the mainsail is let out completely so that the mainsail is not repowered on the new tack. As the boat slows, work the tiller to the other side. In lighter wind, pay attention to the jib as you do this. If the jib starts to luff, center the tiller to prevent the jib from tacking back, and then slowly work it back into position. In higher winds, the boat will stop quickly, and you won't have to worry about this.

In a dinghy you can also heave to without tacking. For example, if you are on a starboard tack and decide to reef, and if your boat is reefed on a starboard tack, you can use this technique. Back the jib to starboard, release the mainsheet completely, and push the tiller to port. In lighter winds, the boat will take some time to slow down, so you have to watch the jib to make sure it doesn’t tack. If the jib luffs, center the tiller, wait a few seconds, and then push the tiller toward the boom again. You might have to do this several times.

A boat that is hove to will drift downwind, possibly rapidly in high wind and waves. Keep an eye out…

6.6 Gybing

Gybing is a trickier maneuver than tacking, because the sail is out all the way on one side and we're going to pull it all the way across the boat to the other side. We need to beware of people's heads, and the higher risk of capsizing. To gybe, we do what's called an S-turn (see Fig 8: Gybing). To do this, you pull the tiller away from the sail, the boat falls off beyond a dead run and the wind flips the sail over to the other side. You then turn back the other way to stop the turn. We'll go over the steps.

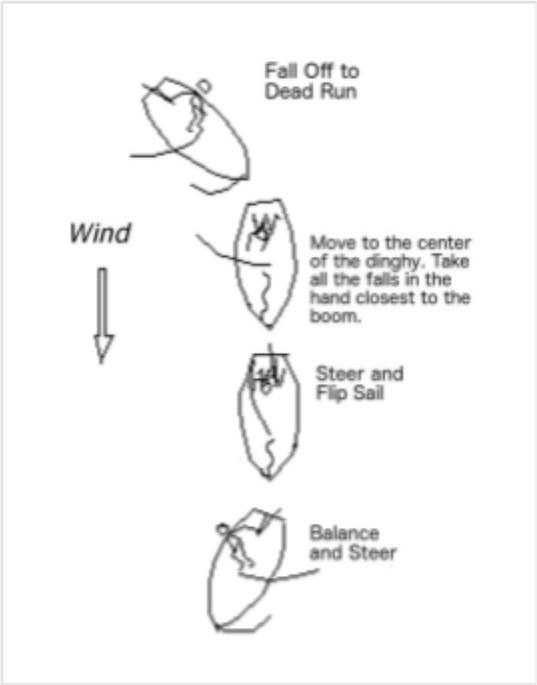


Fig 8: Gybing

First get the dinghy sailing on a dead run by pulling the tiller away from the sail and preparing the crew for the gybe. The jib sail will become limp as it is hidden from the wind by the mainsail. Prior to the gybe, place yourself between the tiller and the boom. Your weight should be shifting to the future windward side of the dinghy. Take the falls (the parts of the main sheet between the blocks) in your outside hand (closest to the boom).

First get the dinghy sailing on a dead run by pulling the tiller away from the sail and preparing the crew for the gybe. You know you're on a run when the jib goes limp and tries to cross the boat. As you head down wind, you'll need to come further into the boat as the boat stops heeling. In high winds, uncleat the gnav to make things easier. Take the falls (the parts of the main sheet below the boom) in your hand closest to the boom. Make sure the crew is ready for the gybe. **(*"READY TO GYBE? HEADS DOWN!"***)

After hearing affirmative responses from your crew, resume or continue turning the boat past a dead downwind course (this is the first part of the S). As you feel the tension release from the falls, guide the boom across the boat by pulling on the falls. As the wind carries the boom across, slow the boom down with the falls, call out GYBING *(**gibe ho,** or **DUCK!!**)*, and simultaneously move your weight to the new windward side to keep the boat flat.

 Never start a gybe without warning the crew, since they could get their skull cracked by the boom swinging across. You should also remember to stay low yourself during the gybe, lest the boom tell you how it got its name.

As soon as the boom comes across, pull back on the tiller to stop the turn and stay on a run. (This can be seen as the 2nd part of an S turn). This is important in order to prevent a broach (spinout and tip over) and capsize. Do NOT turn back too far, or you could make an accidental, unexpected gybe back. This quick counter-steering tiller maneuver is the key to a successful gybe. When the sail settles on the new side, the boat will want to spin and continue turning. You stop it from doing that by counter-steering the tiller a few inches to the other side of center until the boat stops trying to turn on its own, and then quickly center the tiller again. You need to stay downwind, and this will do it.

You can tell when the gybe is just about to happen because the mainsheet goes slack. In heavy wind and waves, try to pull in the boom just as a wave passes underneath the boat and see if it feels lighter, and gybe then.

When the boat is moving fastest, the force on the sail is least. If the main feels heavy, don't gybe yet, wait for it to lighten.

6.7 Small Circles

Sailing in a small circle around a buoy requires that you do fast upwind turns with a tack and fast downwind turns with a gybe.

Get instruction on this critical Junior maneuver, as it is quite difficult.

You may never do full circles in real life, but you may have to do fast turns with a tack or gybe to avoid a collision.

6.8 Steering While Drifting Backwards

Steering while the dinghy drifts backwards is required to leave a crowded dock, and can be useful to recover control if you stop while coming about.

When the boat is drifting backwards, the tiller works the opposite way compared to when the boat is sailing forwards. If you move the tiller to port, the bow moves to port.

When sailing backwards, it can help to face backwards, as you're steering the stern and it's a lot clearer how you do it.To practice steering while drifting backward, head up until the boat is in irons. Let it coast to a stop while in irons. The bubbles in the water alongside the boat will indicate when you start to drift backwards.

6.9 Crew Overboard Drill

Introduction

- The COB maneuver is used when a person falls off a boat, such as during a capsize when a crew drifts away from the boat. It can also be used to retrieve floating objects lost to sea (e.g. your hat).
- It's critical to keep them in sight so you don't lose them. Assign someone to watch them.
- To pick them up **safely**, the boat must be going slowly enough that they can be brought in.

- The crew overboard relies on slow sailing, which is the same skill for docking: sailing slowly with good control over boat speed and position.

Instructions:

- Easy way to remember: "broad reach—tack—close reach back."
- After assigning someone to watch the crew overboard, sail away on a broad reach, so that you will be able to return on a close reach.
- After sailing a few boat lengths on the broad reach, tack.
- To go slowly with good control, a boat must be on a close reach with the sails partly luffing. There are several indicators for whether you are on a slow sailing course:
  - Let the sheets out and see if you get a strong luff in the sail (brake pedal). Sheet in on the falls and see if you can accelerate (gas pedal). Luffing slows you down, sheeting in accelerates the boat as the sail fills and gains power.
  - The boom should be at about 45 degrees to the boat, swinging freely when not sheeted.
  - Tip: The boat should be pointing at the MOB when testing your course. It is always good to check your course often. You have more time to adjust if you adjust early.
- When within 20 feet to the crew overboard, tell the crew to furl the jib.
- As you approach, keep the boat pointed at the crew overboard, or a little upwind to compensate for leeway. If you don't maintain speed, the boat drifts downwind. The boat should come to a stop at the crew overboard, with the boat pointing into the wind.
- The crew grabs the jug by the side of the boat. If it's a real human, bring them in from the stern to avoid capsizing.

For more tips and a hands-on problem set to try out, see the blog post here.

6.10 Avoiding Capsizes

Capsizes can almost always be prevented. If the boat gets really overpowered, let the sheets out (fastest response), hike out, or head up into the wind.

Always keep the mainsheet handy so you can immediately release it if the boat heels suddenly in a gust. Always be ready to move your weight suddenly if necessary, and scramble for the high side if the boat heels suddenly.

Never sail with the boat heeled over so far that it's only an inch or two away from taking on water. That not only puts you closer to a capsize but also slows you down. Head up a little and let the sails luff more.

There is a nice kinesthetic image of controlling the boat in puffs and lulls, the so-called "two handed drill." You have a sheet in one hand and a tiller in the other. When the boat gets over-powered in a puff, move both hands down. You're depowering the sail by both turning the boat into the wind and by easing the sail. When the boat flattens, bring both hands back up.

You'll find that you can keep the boat balanced and moving with relatively small movements, and it's a lot easier than hiking out all the time to respond to changing winds.

If you do capsize, keep calm and plan your actions so you'll be back sailing more quickly. Never swim away from the boat or cling to the high side of a capsized boat.

6.11 Recovering from a Capsize

First **check that everyone is OK.**

No one should leave the boat to swim after any paddles or clothing.

No one should climb over the top until the other tasks below are completed.

6.11.1 Before Righting the Boat

- Uncleat all the sheets
- It's best to **point the bow into the wind** by holding onto the bow while you float in the water. Because your body acts as a sea anchor, the wind will push the hull downwind. If you're alone, hold the bow to point it into the wind, then quickly get onto the

centerboard. If you're out with crew, assign one person to hold the bow while another rights the boat.

- If it's really windy, **anchor.** Anchoring makes sure the hull won't float away from anyone faster than they can swim. Anchoring also points the bow into the wind.
- In very windy conditions it is also advisable to lower the sails or loosen the gnav or vang BEFORE righting. Loosening the gnav or vang completely will allow the mainsail to spill most of the wind which will make it easier to right the boat and keep it upright. Lowering the sails is even more effective, but requires more time to accomplish and to raise the sails again afterwards.
- When single-handing, anchor the boat to avoid having it sail away without you after you right it.
- Make sure the boom end is not stuck in the mud. It may be necessary to pull in the mainsheet to raise the boom to check. If the boom is lodged in the mud, the boat can't be easily righted. Pulling in the mainsheet will help pull the boom end out of the mud. Then cleat in the mainsheet partway to prevent the boom falling back into the mud.
- Anyone not needed to point the bow into the wind or to right the boat can float between the hull and the boom, holding onto a hiking strap (but not putting any weight on the hull). As the boat comes upright, they should pull themselves into the cockpit using the hiking strap.
- Next make sure all the **sheets** are uncleated.
- To right the dinghy, stand on the centerboard and pull on the hull or a line to tip it back upright.

6.11.2 Righting the Boat

To get into position on the centerboard, climb up the hiking straps inside the cockpit, then onto the mast and up over the hull onto the centerboard. Or, while your crew holds the painter, swim over to the centerboard, and climb up onto it.

Here's a video of someone doing this at the dock, without going into the water (this is called a "dry capsize"):
https://photos.google.com/share/AF1QipNQuIcxHyUyTjsFBxg1h0rNX6nWq4C4gR7Fnr8rf5CuFyUS29IQdjVzXHD8gmI30w/photo/AF1QipM2Og6

O7wIS74H7vicpdddftVfbrth9OVRCLFPF?key=bTlGcjhqU0Y1UWlvQWp5N3BZU25zbUdvNlFYSHh3

On the Venture, there's a righting line you can pull on to right the boat. It's under the rail. On the other boats, you can pull on a jibsheet, but make sure you are pulling on the part that leads to the stopper knot, not the part that leads to the sail.

Once you have leaned back while standing on the centerboard, it may take a few seconds before your weight can break the sails free of the water.

It's OK to step out on the centerboard. Putting all your weight on the centerboard isn't as much stress as the centerboard normally bears while sailing in strong wind. But don't jump up and down on the centerboard; it could break it.

If you have trouble righting the boat, release the gnav or vang control line, or uncleat the main halyard and **pull down the sail.** Furl or lower the jib as well. Having the gnav or vang completely released, or taking the sails down makes the boat much easier to right and keep upright because the wind can more easily spill from the mainsail.

If the boat capsizes with the mast downwind, righting the boat slowly will cause the boat to head up towards the wind as the boat rights, and you can cause the boat to end up upright, on a close reach, with the sails luffing. Righting the boat too quickly can cause the boat to end up upright on a beam reach with the sails full, which causes the boat to heel and can result in a capsize.

If the boat capsizes with the mast upwind of the hull, the best course for a beginning sailor is to (have your crew) hold the bow painter until the capsized boat drifts around so the bow points directly upwind, then right the boat. More advanced sailors can try this: Right the boat with the mast still upwind of the hull (WATCH YOUR HEAD, WEAR A HELMET), but get in the boat earlier than you would when the mast is downwind of the hull. If you get in with your leg over, you can get to the center of the boat before the boom leaves the water and crouch as it comes over. This can allow you to avoid having to hold the bow painter so the capsized hull drifts around so the bow points upwind, but still stop a recapsize after the boat rights.

6.12 Anchoring

The anchor line should always be tied to the boat and should be laid neatly so that the anchor is always ready for use. Anchor if you capsize near the rocks, if the boat breaks, or if you are having any trouble righting after a capsize.

The anchor should be let down over the side, not thrown. Make sure to let down the anchor in front of the shrouds on the side where it's rigged and under all other lines (jibsheet and possibly jib furling line). Take care not to wrap the anchor line around the forestay or mast. In addition, make sure the anchor line is free of the jib sheets, shrouds, or bow painter.

Once the anchor is resting on the bottom, let the line out as the boat drifts down wind so that the line cannot kink or knot between you and the anchor. Once you've let out about twenty feet of anchor line (so that the line enters the water at a 45 degree angle), pull sharply on the line to set the anchor and to test that it is holding. If the anchor doesn't grip, pull it back in, check for a snagged line, and let it out again. If it grips, let out the rest of the line as the dinghy continues to drift downwind until the anchor line is fully extended. If your boat is drifting fast while you are trying to anchor, you'll need to let out the anchor and then the anchor line quickly so that the anchor has time to set in the bottom, or else the anchor may just skip over the bottom without setting.

To make sure that you are not dragging the anchor, sight two stationary objects that appear next to each other and that are roughly perpendicular to the direction you may be drifting. It is important that one of the objects is actually closer to you than the other. If the objects seem to be moving relative to one another, you are drifting and you should try again to set the anchor. If necessary, you may need to pull in the anchor, make sure it is not covered with seaweed or otherwise fouled before trying to anchor again.

6.13 In Case of Grounding

If you go aground, raise the centerboard halfway to get away. In very shallow water and very light wind, raise the centerboard and rudder all the way, and use the paddle to steer. Or get out and walk the boat, resting most of your weight on the hull so you don't sink into the mud. If you're near the rocks, don't get out unless you're wearing foot gear, the rocks can

cut up bare feet. In strong wind and big waves or if there's a risk of going on the rocks, put out the anchor and signal for a tow. You will probably need to get out and fetch a line thrown to you by the skiff, which will have to anchor in deeper water in order to rescue you.

6.14 Equipment Failure

If any club equipment breaks while you are sailing, return to the dock immediately and fix it as soon as possible (see section on Repairs). If you can't sail back, anchor and try to fix it; if you can’t fix it, then signal for a tow.

The distress signal consists of standing up and waving your arms up and down at your sides. To get a tow from the rescue skiff, you should tie the bow painter to the skiff's tow line with bowline knots. Raise your centerboard before being towed, and follow the instructions of the rescue skiff.

7 Knots

Note—really good website to learn knots, hundreds of them with animated sequences:

http://www.animatedknots.com

7.1 Bowline

Pronounced *bo'-linn*, this is the most useful knot for sailors, since it forms a loop that will not slip or jam, and can be untied easily even after being used for heavy loads.

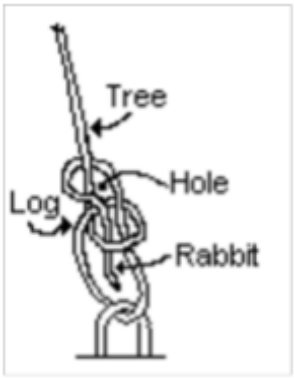


Fig 9: Bowline

The phrase to memorize: "*The rabbit pops up out of the hole, jumps over the log, runs behind the tree, and pops back down the hole*".

The "rabbit" is the end of the line, which you pass through the fitting you want to attach.

The "hole" is a loop formed in the main part of the line (not the end). The loop spirals toward you, so that the "log" is in front of the "tree". If the "log" is behind the "tree", the knot will fall apart (Fig 21: Main halyard cleats: Horn (A) and Jam (B) Cleats).

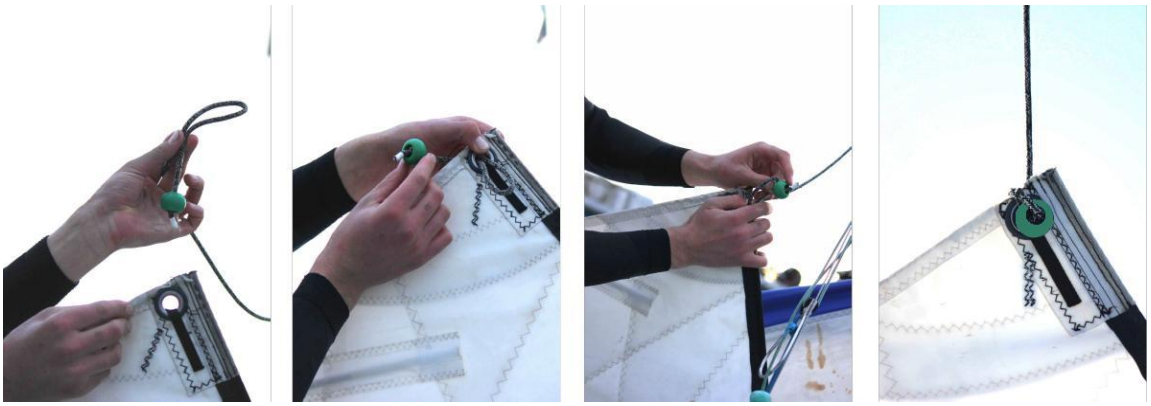

A B

Fig 10: Bowline on halyard

To untie a bowline, you loosen it by bending the main part of the line over and pushing on the loop formed around the main part of the line.

The bowline is frequently used to attach the mainsail halyard to the head of the mainsail (Fig 10: Bowline on halyard). The halyard is fitted with a bead that prevents the halyard from being accidentally pulled into the mast if it is not secured. In panel A the bead is pulled out of view to show the bowline knot. Panel B shows the bead sitting on the knot.

7.2 Bead Knot



This knot is an alternate way to attach the halyard to the head of a sail (Fig 11: Securing Halyard To Mainsail With Bead Knot). It can also be used to secure the free end of the halyard to the standing rigging when the halyard is not in use. To tie the knot, make a loop near the free end of the halyard (Fig 11A). Push the end of the loop through the cringle in the head of the sail (Fig 11B). Catch the bead in the loop (Fig 11C), and pull the loop tight (Fig 11D).

7.3 Triple Half Hitch on a Bight

This is just a fancy name for three knots made with a loop of the bow painter around the rail. You won't find this knot in any knot book, it's just too simple. It's the best way to tie Cal Sailing Club boats to the rings on the dock (Fig 12: Triple half hitch on bight).

Be sure to tie the boat up close to the dock—about a foot between the boat and the dock—so that no one falls in trying to jump aboard.

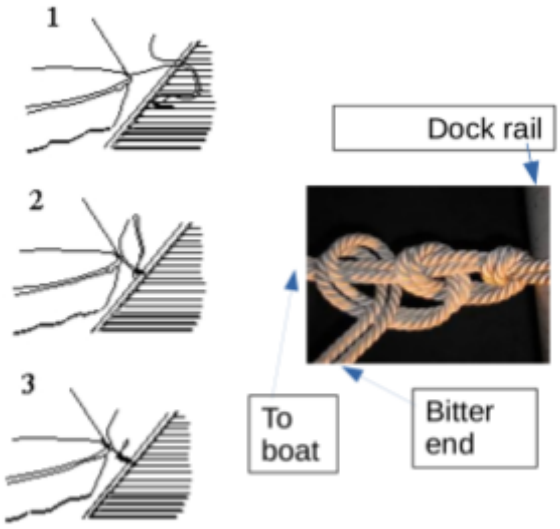


Fig 12: Triple half hitch on bight.

7.4 Cleat Hitch

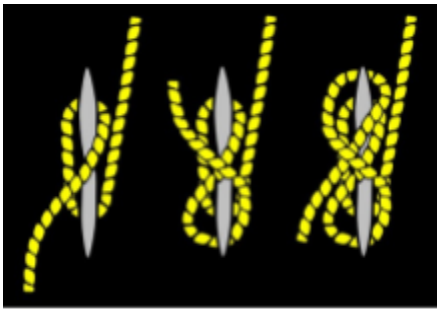


Fig 13: Cleat hitch

The cleat hitch is the best way to tie a line around a cleat to secure the halyards (Fig 13: Cleat hitch). First loop the line around the cleat, then diagonally over it.

Next form a loop in the end of the line, and slip the loop over the cleat, twisting the loop so that the end of the line is trapped under a diagonal across the cleat. This is a "locking hitch" that keeps the line from coming undone. When securing a halyard to a cleat on the mast, the locking hitch should be on the upper horn of the cleat so that gravity holds it on rather than pulling it off the cleat.

You should end up with the line crossing the cleat twice in one diagonal direction underneath another diagonal crossing in the other direction.

Good video on cleat hitch:
https://www.youtube.com/watch?v=KaF9lFn0Inw

Fig 13a: cleat hitch on halyard

Fig 14: Figure eight

7.5 Figure Eight Knot

This knot is used as a stopper in the end of the mainsheet and each jib sheet (Fig 14: Figure eight). Make a loop, then take the end around the main part of the line before bringing it through the loop. Stopper knots are most easily untied by bending over the main part of the line, then pushing the loop to loosen the knot.

7.6 Reef Knot

This is the trusty square knot of Scouting fame. In a reef knot, you cross the lines one way for the first knot, then the other way for the second knot (Fig 15: Reef knot). In an ordinary double knot (also called a granny knot) you cross them the same way both times. The reef knot is more reliable and can be untied easily even after carrying a heavy load. Just pull one end against the main part of the line nearest it. The reef knot should not be used to tie two lines under varying loads, as it can come undone easily when the lines slacken. Instead, use a knot with the word "bend" in its name.

Fig 15: Reef knot

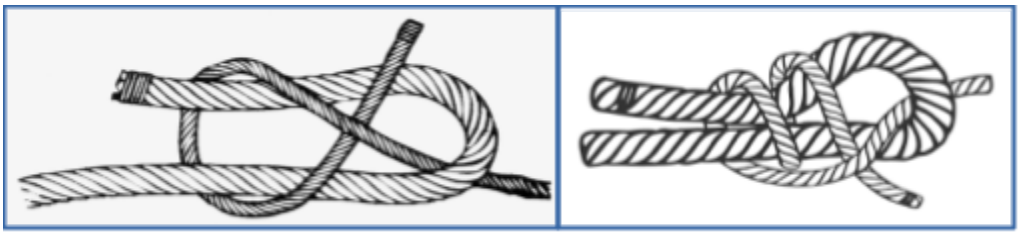
7.7 Slip Knot

Slip knots are useful as stopper knots that are in the middle of a line and/or that you may want to quickly undo. They are frequently used to back up a cleat or to hold a halyard that supports a jib sail cover. When used for this purpose, make sure the side of the knot that 'slips' is opposite the side that needs to be "stopped."

Fig 16: Slip knot

7.8 Sheet Bends

A good knot for tying two lines under load, for example your bow painter to the rescue skiff's tow line, or an extension to your bow painter if you're using the east crane. If the lines have very different thicknesses, use a double sheet bend (Fig 17: Sheet bends: Single (A) and Double (B)).



A B

Fig 17: Sheet bends: Single (A) and Double (B)

8 How to Rig a Dinghy: General Instructions

8.1 Getting Started

8.1.1 To Sail or Not to Sail

You get an urge to go sailing. Before you come down to the clubhouse, you may want to check the webcam page on the website to see:

- ☐ Whether the whiteboard shows today's date, meaning the Day Leader is in (if the club is open at the time you check)(the Club Status button on the website will show anticipated open/close times for the day).
- ☐ Whether the whiteboard shows any special restrictions imposed by the Day Leader.
- ☐ Whether a very low tide (under 2 feet) will take place while you want to sail, causing a late opening or early docktime.
- ☐ When the docktime will be.
- ☐ How the wind looks: Is there enough wind that your boat will go, but not so much that you won't be able to control it? This question relates to skill, comfort, who you'll sail with, and more.

8.1.2 Selecting a Boat

Once you get to Cal Sailing, the first thing you will need to do is to select a hull from the yard. The hull should have:

- rudder, tiller, and hiking stick,
- hull drain plug(s) (one on Venture, Toura and Quest, two on JY15),
- anchor and anchor line,
- mainsail,
- jib,
- mainsheet,
- jib sheets,
- bailer (on Venture only) tied to hull, and
- at least one paddle tied to the boat.

To select a hull, check the following things:

- ☐ Check the Dinghy Log on the club website, either on your phone or on the computer inside the clubhouse, to see whether there are known issues for particular boats.

- Green Log: No known issues (but no guarantees you won't find any!)
- Yellow Log: The boat has issues but it can be sailed. The issues should be briefly described in the log. You should decide whether you feel comfortable sailing the boat in light of what's known.
- Red Log: The boat is marked as Do Not Sail (DNS) and should not be sailed. Even if the boat looks ok, it may have a hull crack and sink!

☐ Check the sailboat sign out sheet, which is kept on or near the Day Leader desk, to be sure that no one has already claimed the boat you are considering.

☐ Go take a look at the boat you want to see whether there are any obvious problems:

- ☐ Make sure there is no significant damage to the hull.
- ☐ Make sure the mast head float is properly oriented.
- ☐ Give it a once over to assess any other obvious issues.

☐ Sign the boat out on the sailboat sign out sheet.

8.1.3 What to Wear & Bring on the Boat

You will want to consider what you will wear and bring on the boat too. Aside from a lifejacket, you can wait to dress for sailing until the boat is ready, or you can prepare yourself now. Many or most people sailing the dinghies at Cal Sailing wear wetsuits for sailing. If it is cold or very breezy, foulies will help keep you warm. Stow and secure anything you bring on board by attaching with bungies or in a dry bag tied to the base of the mast.

8.2 Prepping the Boat

Now that you have signed out the boat, get it ready to go in the water. You can take these steps in the yard or on the dock near the hoist.

☐ **Take Off Sail Covers**:

- ☐ To remove the jib cover, uncleat and lower the halyard while unzipping the jib cover and pulling it down. Then untie the

halyard from the jib cover and secure it on the boat (you can tie it to something on the mast, to the shroud, or elsewhere). NEVER let go of the free end of a halyard, because it is easy to lose the halyard up the mast ("sky the halyard"). If that does happen, tip the boat at the dock to retrieve the halyard.

- ☐ Note: The jib cover can be hoisted by either the gennaker or mainsail halyards. The mainsail halyard allows the jib cover to be hoisted higher, with less potential to be chafed by rubbing against other parts of the rigging.

- ☐ Remove the mainsail cover.

- ☐ Hang both covers up.

- ☐ **PFD**: Be sure to put on a lifejacket before heading down to the hoist and dock. Lifejackets (personal flotation devices, or PFDs) can be found in the PFD Area at the east end of the yard, which also has wetsuits, foul weather gear, and trapeze harnesses.

- ☐ **Doublecheck Boat Drainage**: As you bring the boat down to the dock, check the hull for water. Use the downslope (in the yard or between the yard and the hoist) to do so. The hull has one or two drain plugs (2 on the JY15, one on the rest). Unscrew and pull out the plug (if not already out) and tip the hull back to drain water.

- ☐ **Plug/s:** When finished draining the hull, screw in the plug securely. (If you don't, water will force its way inside the hull, and after a few minutes of sailing, you may notice that the hull is starting to sink, usually signaled by water accumulating on the cockpit floor.) Check the hull drain plug again before you sail! On the Venture, there is also a cockpit drain plug at the lowest point in the cockpit on each side; these plugs should be inserted before putting the boat in the water. (Only take these plugs out if you take on water while sailing and need to drain the cockpit.) Don't mistake the cockpit plugs for the hull drain plug, which is on the exterior of the boat, just as with the other types of boat.

- ☐ **Rudder**: The rudders on the Quests and Touras are removed when

the boats are stored in the yards, to conserve space and to prevent damage.

- ☐ To install the rudder, remove the keeper ring temporarily. Hold the rudder tucked under one arm and push the rudder's pintles (pins) into the hull's gudgeons (holes) until the blue button clicks into place. Then replace the keeper ring.
- ☐ Make sure the tiller is securely held to the rudder, and check the hiking stick and the universal joint (check for cracks in the rubber tendon) that connects it to the tiller.

☐ **Anchor**: Make sure the anchor line (the "rode") is properly attached to the boat and the anchor, neatly looped, and not wrapped around any of the standing rigging or entangled with any other lines. Make sure the line is secured with a bungee to prevent it from self-deploying in a capsize.

- The anchor rode should be secured with a bowline knot to either the mast or the beam supporting the mast. In a Quest or Toura, it should then pass under the u-bar at the bow (on the starboard side of the forestay) before returning over the u-bar to the anchor.
- Note that the anchor rode should have ~50 feet of line plus ~6 feet of chain.

☐ **Tension the Forestay:** There are different schools of thought about whether to tension the forestay before using the hoist or wait until after the boat is in the water. You can try to appease whoever is nearby or develop your own fervent opinion. Do be sure to tension the forestay before you sail. The forestay is tensioned differently for the different types of boat. Note that tensioning the forestay also tensions the shrouds and rigging generally, since it pulls the mast forward, which tensions the shrouds.

- *Tension in the yard school of thought*: Tightening the forestay before moving the boat from the yard reduces wear on the mast when rolling the boat down to the hoist.

- *Tension in the water school of thought*: A detensioned rig is less likely to be damaged by accidental dings against the hoist.

☐ **Paddle:** Check for a paddle and make sure it is tied to the boat. (Note that the paddle may be stowed under the gennaker sock, but nothing other than the gennaker should ever be placed in the gennaker sock.)

☐ **Rings/Pins**: Check all of the points where the rigging connects to the hull or where two parts of the boat come together. There's usually a pin connecting them and something preventing the pin from coming out. That something is usually a cotter ring, in which case you should make sure the ring is there, is not corroded, and has not spread apart. However, it could be something else, like a shackle or even a cotter pin. For a shackle, make sure the pin is screwed in tight or moused so it can't unscrew. Inspect the following locations:

- ☐ Shrouds: One cotter ring on each side.
- ☐ Forestay. The Quests have 4 rings on the forestay/lever. Any one of those 4 fail, the rig comes down.
- ☐ Rudder: For dinghies other than Quests and Touras, check the rudder's connection to the boat.
- ☐ Gooseneck: Check the gooseneck, where the boom attaches to the mast.
- ☐ Gnav: Check both ends of the gnav.

☐ **Straps**: Tug on the hiking straps to be sure they are not broken.

☐ **Trapeze Lines:** Make sure these run clear of the shrouds.

8.3 Using the Hoist

8.3.1 Initial Considerations

- When using the hoist, you **must** be wearing a PFD for safety.
- Although this step can be done with one person, it's best done with

two: one on the hoist (crane) and the second on the bow painter. If you are working with an inexperienced person, they should be on the hoist controls. Make sure you brief them completely on what they need to do.

- **Key concern:** The main thing to watch out for while hoisting a boat is preventing the rig from hitting the hoist, as this can break a spreader or otherwise damage the rig. The key to preventing this is keeping the boat's movements under control. Keeping the bow painter under tension when the boat is out of reach prevents the boat from swinging around uncontrolled.

Fig 18: Quest Rudder

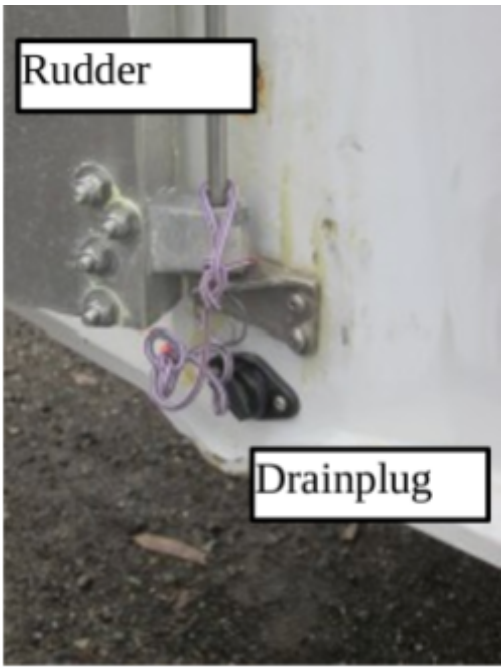


Fig 19: Venture Hull Drainplug

- **In addition:** Don't let anyone or anything get under the boat when it's hoisted! If you need to raise the centerboard while the boat is on the hoist, get help. There are several ways to do this. Don't let other boats get under yours while it's hoisted.

8.3.2 Steps to Get your Boat in the Water

☐ Move the dolly with your boat so that the hull is properly positioned near the hoist, with the bow facing the hills in the east and the stern to

the west. You want the mast close to the hoist but not hitting it, so that you get a vertical lift and not a swing. It doesn't matter what angle the boat is at or how close it is to the seawall.

Fig 20: Sling Location

- ☐ Swing the hoist's boom into position with its hook over the boat's boom.
    - Note: If the sling is not attached to the hook, fetch it from the yard, where it should be hanging to the right as you go into the yard (Fig 20: Sling Location). Lower the hoist's hook and attach the sling's ring to it.
- ☐ Using the controls on the hoist, lower the sling. Attach the sling's carabiner clips (snap links) to the boat's chainplates (U-bolts that the shrouds attach to) or attached loops of rope, as well as the transom. Make sure the sling is over the boom, not under it.
- ☐ Make sure the boat is untied from the dolly.
- ☐ Wrap the bow painter around the outside of the starboard shroud where you can get to it easily.
- ☐ Using the up control, hoist the hull as high as it will go; the hoist operator should hold the stern of the boat as it rises and maintain control over it.
- ☐ The second person should move the dolly out of the way and return to pick up the bow painter.
- ☐ The second person then either jumps down to the dock (high tide) or

goes down the ramp, lining up with where the boat is pointing. You may need to extend the bow painter to be able to walk all the way down the gangway, or you can hitch the bow painter mid-gangway or pass it off to another person.

- ☐ The hoist operator will push the boat out over the water, swinging it around with their hand on the stern, but not letting the rigging hit the crane and not pushing it out so far that they can't control it until the second person is in position.
- ☐ Using the bow painter, the second person pulls the boat out so that it is entirely over the water, while the hoist operator lets go of the stern and tugs the crane line to stabilize the boat and prevent the shrouds from touching the hoist.
    - **Reminder:** Don't let the shrouds or spreaders (horizontal bars that help the shrouds to support the mast) touch the hoist! If you bang a spreader on the hoist, you may bend it. That is bad for the boat, risks demasting, and the job of replacing it will properly fall to you.
- ☐ The second person walks back toward the seawall along the dock, pulling the bow painter in to maintain tension.
- ☐ The hoist operator lowers the boat into the water.
- ☐ Cleat the bow painter to the cleat closest to the seawall on the dock. In very strong winds from the south, use the cleat further from the seawall to keep the stern of the boat clear of the seawall.
- ☐ Step onto the boat, or, **if you are a beginner, crawl** onto the boat, keeping your weight low and to the middle to avoid tipping the boat over. Go around the mast quickly and crouch in the middle of the cockpit, keeping your weight low.
- ☐ Lower the centerboard, then go astern (back) and lower the rudder. If needed on your boat, cleat the rudder downhaul. Having the centerboard and rudder lowered will make the boat more stable.
    - If the tide is low, only lower the centerboard and rudder partway. Lower them until they hit the mud, then raise them an inch or two above the mud. Lower them all the way once the boat is out in deep enough water or if the boat starts to slide sideways into the second dock.
    - **IMPORTANT**: You can break the rudder if it's not down all the

way, so if you have to leave the dock with the rudder part-way up, lower it fully as soon as you can.

- ☐ Now take off the sling by unclipping the carabiners from the boat and reattaching them to the sling.
- ☐ Crawl back off the boat.
- ☐ Raise the sling back up to the top of the hoist.
- ☐ Uncleat your boat and use the bow painter to walk it down the dock to make room for others to use the hoist and to get away from the seawall. The last third of the dock is reserved for windsurfers. Using the triple half hitch on a bight, secure the boat as far out as feasible on the two-thirds of the dock reserved for dinghies, at a safe distance from other dinghies that are already tied up. Don't leave the boat under the hoist when others are waiting to use the hoist.

8.4 Raising the Sails

Double check to make sure the hull drains are properly fastened and that the hull is not taking on water!

Before you raise the sails, be sure the boat is pointed into the wind (note that in an east wind, this means take the boat to the west side of the dock first). Tighten the rig by adjusting the forestay tension.

Don't unfurl or raise the jib until you're ready to go, and furl or lower it as soon as you dock. For the JYs you will need to attach and raise the jib; all our other dinghies have the jib permanently attached on roller furling.

8.4.1 Raising the Mainsail

- ☐ First, unwrap the mainsheet, which is holding the sail to the boom.
- ☐ Make sure the mainsheet is eased out and uncleated, with the boom resting in the cockpit. Adjust the mainsheet so that each of the falls is about the same length. If the wind catches the sail as you're raising it, you want it to push the boom and sail out instead of powering up.
- ☐ Make sure the boom is on the same side of the boat as the vang/gnav fitting is bolted onto the mast (usually port for our dinghies). Otherwise, the vang/gnav fitting will cross the mast track and the sail might catch in it as you're raising it.
- ☐ Unwrap the mainsail.

- ☐ Take the main halyard. Look up at the mast to be sure it is untangled from the rigging and falls unhindered down the aft side of the mast. Attach the main halyard to the cringle in the top corner at the head of the mainsail. To do so, use the bead knot, making sure that the bead is on the side of the sail that is away from the vang. (You can also use a bowline knot.)
- ☐ Check that the "CORVA" lines (mainsail shape controls) are loose. CORVA stands for Cunningham, Outhaul, Reefing, and Vang/Gnav Adjuster. If these adjustments are not loosened, they may prevent you from raising the mainsail all the way.
    - The **cunningham** should be totally loose or not attached to the grommet just above the tack of the sail. You don't want to fight the cunningham when you are raising the mainsail.
    - The **outhaul** should be eased and uncleated so that the foot of the sail remains slack and the tack (and entire luff) can move forward toward the mast. This will allow the bolt rope or the slugs to slide easily in the mast slot.
    - Similarly, the **reefing lines** should be loose and not cleated, as they will pull the sail down toward the boom. Sometimes these snag the aft end of the boom as you raise the mainsail.
    - To relax the leech of the sail, the **vang/gnav adjuster** should be eased out and uncleated.
- ☐ Insert the mailsail's bolt rope into the groove/track in the mast and pull on the mainsail halyard to raise the sail. Keep checking that the bolt rope is feeding in as you pull. If you find yourself struggling a lot to raise the sail or are really stuck:
    - You may have to stop, lower the mainsail an inch or two, and raise again to get the sail's plastic batten pocket ends past the vang/gnav. Clear jams and check whether any of the plastic batten ends have hung up on mast fittings by trying to jiggle past the obstructions by lowering and then raising the sail.
    - You can also recheck the CORVA controls to make sure the lines have not accidentally re-cleated themselves and confirm the mainsheet is fully let out.
    - Double check that the reefing lines are not snagged and confirm that you can raise the end of the boom.

- If you are still struggling, try "sweating" the halyard. While the halyard is taut and at least partially secured to its cleat, pull horizontally on the halyard between the cleat and the point at which the halyard is attached to the mast. (You will get the maximum advantage when the halyard is taut and pulling as far as possible from either the cleat or the other attachment point.) This should raise the sail a few inches. Then pull down on the halyard. While pulling down with one hand, use your other hand to retighten the halyard at the cleat without "giving back" the line you gained with your sweating maneuver. Repeat these moves until the mainsail is fully hoisted; then fully cleat the main halyard.
- A final measure: If sweating doesn't work, get off the boat and tip it over at the dock by pulling the forestay over while pushing away at the dock. You may need to have a foot or two of slack in the bow painter, with the boat still tied to the dock. Once the boat is partway tipped over, work your way hand over hand up a shroud until you can grasp the mast and pull it down to dock level. Then you can pull the sail to the top of the mast with the mast held horizontally. After that, raise the mast to uncapsize the boat, and get aboard to bail out the water and straighten out the tangled lines.

☐ When the mainsail is raised as high as it goes, cleat the halyard. Coil the free end and tuck it between the taut halyard and the mast, ideally pushing it in from the aft side of the mast.

☐ Now tighten and adjust the CORVA lines:

- **Cunningham**: In lighter winds you want this looser and in heavier winds tighter. You tighten the cunningham in order to ensure the tack of the sail is close to the mast and boom and the luff of the sail is flat and tensioned.
- **Outhaul**: Tighten so that there is tension along the foot of the sail and it lies flat along the boom. Just as with the cunningham, in lighter winds the outhaul should be looser and in heavier winds it should be tighter.
- Unless you are reefing, leave the **reefing lines** loose and not cleated, simply tucking any loose ends out of the way.

- **Vang/gnav adjuster**: The vang controls tension on the leech of the sail. In lighter winds, you want the vang loose. As winds increase, the vang should be set tighter. But if you become overpowered in strong winds, then loosen the vang, which will increase sail twist and depower the top of the sail. The vang is a complicated sail control and adjusting it properly is an advanced skill that involves a range of considerations.

☐ Check the sail visually to see whether the shape looks right.

☐ For dinghy specific information on raising the mainsail, see section 9.1.

8.4.2 Reefing

When to Reef

- Reef the mainsail before leaving the dock if you can tell the wind speed is so high and/or the crew's weight is so low that you can't keep the boat from heeling excessively on a close reach, even with the mainsail luffing at times. This is a judgment call, as it depends on your skill, crew weight, and competence.
- You can always heave to and reef on the water. But before you do that, there are other things you can do to depower the sails and keep the boat flat. Don't luff the mainsail continually, it damages the cloth. If you are overpowered, try the following, reefing if necessary. Do these in order, and move on if one doesn't depower the sails enough:
    - First, tighten the sail shape controls (Cunningham, outhaul, vang).
    - Next, loosen the vang to depower the top of the sail.
    - You can also raise the centerboard halfway to prevent the boat from heeling as much.
    - If none of this does the job, reef the mainsail.

How to Reef at Dock

- Follow the instructions for raising the mainsail, but stop when the reefing tack is at or above the boom.
- Adjust the reefing tack to be at the boom and secure it with the cunningham.

- Raise the sail again as far as it will go.
- Cleat off the main halyard.
- Tighten the reef line.
- Now you will tighten the vang.
- Now clean up the lines – halyard and reefing – and tie up the sail.

How to Reef under Sail

- Heave to on the proper tack. This will usually be the starboard tack, unless the vang has been moved to the starboard side.
- On a Quest (and possibly on other boats in higher winds), you will need to pull the centerboard up so that you can pull the boom into the center of the boat to lower the mainsail.
- Derig the cunningham completely and loosen the outhaul and the vang to help pull down the sail.
- Uncleat the main halyard and pull the sail down until the reefing grommet is a few inches above the boom.
    - If the sail won't come down, bring the boom to the center of the boat.
- Continue with the reefing instructions above.
- If you pulled the centerboard up, remember to put it down again.

8.4.3 Casting Off

Once you have prepared the boat for sailing with the centerboard and rudder down, the mainsail hoisted all the way or reefed, and all the CORVA lines properly set for the wind conditions, you are ready to go. Cast off and have fun! (For details on casting off, see section 6.1 Leaving the Dock).

8.5 Taking Over A Pre-Rigged Boat

If you take over a boat someone else rigged, check their job carefully. A few key things to confirm:

- ☐ Are the drain plugs securely in place? If it's a Venture, check the drain plug three times. It's under the rudder in the back. A drain plug left out can mean a sunk boat, a long tow back to the dock, and a lot of time draining the hull.
- ☐ Is the anchor line properly attached and free to run out without getting caught in the rigging or entangled with any other lines?
- ☐ Is the paddle present and properly stowed? It should be tied to the hull.
- ☐ Make sure the tiller is securely held to the rudder, and check the hiking stick and the universal joint (check for cracks in the rubber tendon) that connects it to the tiller.
- ☐ Ask the person who rigged the boat whether there were any issues they had noticed.
- ☐ Check the Dinghy Log on the club website for notes on known issues with the boat you selected.
- ☐ Finally, sign up on the sailboat sign out sheet.

8.6 Derigging

First, dock the dinghy (see section 6.2 Docking).

Once you've docked, someone else may want your boat. This transaction is called buying/selling the boat, and it is nice for everyone, since the buyer gets the benefit of your rigging and you get out of the work of derigging. If this occurs, be sure to sign the boat back in and make sure they sign it out. Otherwise you'll remain responsible for derigging it and putting it away properly.

8.6.1 To Derig

- ☐ Be sure the jib is furled or loosened.
- ☐ Loosen the CORVA lines.
- ☐ Lower the mainsail by uncleating the halyard and tugging the sail down. Guide the boom down as you lower the sail to ensure it

comes down inside the cockpit.

- ☐ When the mainsail is down, remove the halyard and tie it off to secure it safely (e.g. by attaching to the trapeze handle with slip knot).
- ☐ Pull the mainsheet all the way through the block.
- ☐ Roll the mainsail up. Use the mainsheet to attach the mainsail to the boom, tying off however you like – enjoy the freedom!
- ☐ Detension the forestay.
- ☐ Move the boat down to the hoist lift cleat.

8.6.2 Hoisting the Boat

It's best to have two people available when hoisting the hull from the water (ask for help from the Day Leader or a friendly club member if you are singlehanding). The hoist operator will operate the hoist.

- ☐ The hoist operator should fetch the appropriate dolly for your boat and position it with the handle to the east under the hoist, before you lift the hull.
    - Which dolly is the right dolly? Dollies for RS Quests have upright arms that support the rails of the hull at about its middle. Dollies for RS Ventures have no uprights, only plastic covering on the dolly's metal cross member that goes under the hull at about its middle. Dollies for JY15's have upright arms with a webbing strap hung between the two arms. Dollies for Touras are labeled.
- ☐ Next the hoist operator lowers the sling to the second person (below) who attaches the sling to the chainplates and transom (see Using the Hoist).
- ☐ The second person, on the boat, raises the centerboard and rudder (and cleats their uphauls if appropriate).
- ☐ The second person climbs off the boat and uncleats the bow painter, while maintaining control of the boat using the bow painter. As the hoist operator raises the boat, the second person keeps the bow slightly lower than the stern by putting tension on the bow painter. This maneuver will help keep the mast away from

the boom of the hoist, thus preventing the mast, shrouds, and (especially) the spreaders from striking the hoist. Once the boat is fully raised, this tilt is no longer necessary and the bow painter can be completely relaxed.

- ☐ Next, the second person walks south along the dock with the painter to gently swing the bow away from the seawall, as the hoist operator slowly swings the hoist boom over the dolly. These maneuvers will allow the hoist operator to grab the stern of the boat.
- ☐ After the hoist operator has control of the boat, the person on the dock can release the bow painter or, even better, toss it into the boat above.
    - **NOTE:** Either the person on the dock (using the bow painter) or the hoist operator (holding the transom) should have control over the rotation of the boat at any time.
- ☐ After transfer of control to the hoist operator, the second person can go up to the dolly. The hoist operator will position the boat over the dolly and lower the boat, and the second person will help guide the hull onto the dolly.
    - It's not necessary to tie the boat to its dolly.
- ☐ Detach the boat from the hoist sling and move the boat out of the hoist area to make way for the next user. Move the boat to a convenient place to hose it down.

8.6.3 Finish Putting the Boat Away

- ☐ Rinse the boat well. Be sure to rinse all the blocks on the hull and mast, and spray off any mud in the cockpit or on the anchor or hull. Rinsing off salt slows the galvanic corrosion caused by salt water when it is in contact with metals of different kinds (aluminum spars, stainless steel fittings).
- ☐ Drain the hull before you put it away. You can use the incline leading up to the yard as you did when you took the boat out. Leave the drain plug out to allow any residual water to evaporate.
- ☐ If any equipment problems occurred while you were on the boat, repair them if you can, or create an issue log for them on the Dinghy Log on the club website (you will need to be logged in).

Likewise, if the boat takes more than 10 seconds or so to drain, then there is likely more than a gallon of water inside the hull and you should log this on the Dinghy Log (unless you didn't properly install the drain plug).

- ☐ Put the boat in the yard.
- ☐ Put on the jib cover.
    - The jib cover is the thinner sail cover that has the zipper. The jib cover is hoisted with either the mainsail or gennaker halyard; using the main halyard may prevent chafing of gennaker halyards that attach lower on the mast than the main halyard.
    - Tie the halyard to the loop on the top of the sail cover.
    - Zip on the sail cover while raising it with the halyard.
- ☐ Put on the mainsail cover, which is larger and has snaps or ties to secure it around the mainsail and boom. The front end secures to the mast. If it is too short to cover the entire sail, use an old sail cover to cover what is exposed.
    - You may want to doublecheck proper storage of the gennaker, which is easily damaged by UV light from the sun. Even if you have not used it, make sure the entire gennaker, including the corners, is protected from the sunlight by fully stowing it inside the sock. If needed, untie the tack from the bowsprit line.
- ☐ **Be sure to sign the boat back in.**

9 Differences Among Boats: RS Venture, Quest, Toura, and JY-15 Dinghies

The RS Quests and Touras are the Club's primary teaching dinghies. They are versatile, reasonably performant in a range of winds, and have some higher performance features such as trapezes. They also have roto-molded plastic hulls, so they are less likely to get damaged in docking practice. Quests can carry 3 sailors comfortably, and Touras can carry 4. Quests and Touras have similar handling characteristics, as the Toura is essentially a stretched Quest.

The RS Venture is a significantly larger and more stable boat, can carry more sailors (5 or 6), but has a fiberglass hull. It is both faster and less nimble than a Quest or a Toura.

The JY-15 is a very nimble boat used in Club racing. It has a fiberglass hull and can carry 2 sailors comfortably. It is not a good boat for basic instruction, but it is great for the intermediate to advanced student, as it has very different handling characteristics than the Quest and the Toura.

High level details of these boats are here and more detail can be found easily online.

Juniors may sail any of these boats without additional signoff.

Note that there are other boats that may be sailed by Juniors with proper signoff (the Laser and the UFO), and others that are restricted to Seniors with proper signoff (the RS-500 and the RS-800). The Club First Vice Commodores set the restrictions for sailing various boats.

9.1 Rigging Differences

All of these boats are sloops (single masted sailboats with rigging in front of and behind the mast), with very similar characteristics and controls, but there are rigging differences among them.

These are the items that can be different:

- **How the Jib Attaches:** Whether the jib is roller-furled (rolled around the forestay) or hanked-on (attached to the forestay with hooks known as hanks).

- **Control Lines**: Running of the various control lines, including the mainsheet.
- **How to Tension Forestay:** Location and mechanism to tension the forestay.
- **Anchor:** Location of the anchor and how it is secured.
- **Centerboard:** How the centerboard is raised, lowered, and secured.
- **Rudder**: How the rudder is raised, lowered, and secured.
- **Reefing**: How the mainsail is reefed.
- **Vang**: The vang mechanism.
- **Cunningham**: The cunningham.
- **Mainsail Tack:** How the mainsail tack is connected at the gooseneck.
- **Jib Furling Cleat**: Location of the jib furling cleat.
- **Outhaul**: Running of the outhaul.
- **Drain Plugs**: Number and types of drain plugs. All of the boats have exterior drain plugs used to drain the bilge; these must be closed while sailing. Additionally, the Venture has cockpit drain plugs that can be opened while sailing to drain water from the cockpit.

Rigging manuals for each of these boats are available online, but note that the Club has made modifications to the standard rigging in many cases. Even boats of the same type may be rigged slightly differently.

If you want to sail an unfamiliar boat, the best approach is to have someone who is very familiar with the boat show you how to rig it and explain any differences in sailing it.

It's great fun to sail different boats, and seeing the differences among the types at the Club will prepare you for sailing other types of boats elsewhere.

10 Repairs

As a Junior Skipper, you are expected to repair any damage that occurs to a boat that you have checked out. Here is a short primer on basic repairs. Always notify the Day Leader of any damage, write a note in the Dinghy Log on the club website, and check with the First Vice Commodore (firstvice@cal-sailing.org) before undertaking any repair.

10.1 Ripped Sails

Small rips (<1 foot long) can be repaired with sail repair tape, which is sticky-backed white Dacron cloth, kept in the dinghy container (by the PFD Area). Clean the sail with alcohol (from the board hospital's paint locker), dry it off with a paper towel (refugee kitchen or board hospital), and apply tape extending at least a couple of inches beyond the tear.

Sails with larger rips will need to go to the sailmaker. Remove the damaged sail from the boat and replace it with one from the shelves in the dinghy container. Wash the damaged sail off (salt ruins expensive sewing machines), dry it, write a note with the sail number and location of the rip, roll the sail, and tape the note to the rolled sail, then put the rolled sail in the keelboat shed. Log into the club website with your username and password, and create an issue report in the online Dinghy Log, for the boat the sail came from.

10.2 Broken/Missing Boat Parts

If you need new parts, note this in the online Dinghy Log. Make sure that the box is checked to send an email to the First Vice Commodore. New parts are kept on the shelves in the dinghy container. When needed, they can be ordered by our first vice commodores using our wholesale accounts at West Marine, Svendsen's Chandlery, and West Coast Sailing

10.3 Correct Attachment of an Anchor

The anchor rode (line plus chain) that attaches the boat to the anchor should be ~ 50 feet long including 5 feet of chain. The anchor will hold in 8 feet or less of water. This should prevent the dinghies from being blown

onto rocks near the shore. It is not sufficient to securely anchor the boat in deeper water, but it will slow movement of the boat.

The chain at the end of the anchor rode is important as it weighs the rode down near the anchor. The near horizontal chain near the anchor helps it dig into the mud. Without the chain, the same length of anchor line will only hold the boat in about 4 feet of water.

The anchor painter should be led out at the front of boat so that the anchor will keep the boat pointed into the wind. The end of the line is attached to the chain using a crown splice. The chain is attached to the anchor with a stainless steel shackle.

10.4 Frayed Lines

Use a rope cutter (like a hot knife) to melt the ends of lines. The rope cutter and new rope are kept in the dinghy container. Whip the ends of sheets and painters with whipping twine.

10.5 Mast and Booms

Use 3/16" stainless steel rivets or oversize (1/4") aluminum rivets to attach new fittings to masts and booms. Insulate between stainless steel and aluminum with anti-corrosion compound (yellow barium paint or grey anti-seize) or plastic.

10.6 Internal Reefing and Outhaul Lines on the Ventures and Touras

The Venture and Toura reefing and outhaul lines run inside the boom. If any line breaks or comes out, it can be replaced with the aid of a long windsurf batten or garden hose and some tape to push the line through the boom – no need to remove the boom. To thread the lines through the blocks in the boom ends, use a length of thread as a pilot, reach in and grab its end with needle-nose pliers, and tape the line to the thread and pull through.

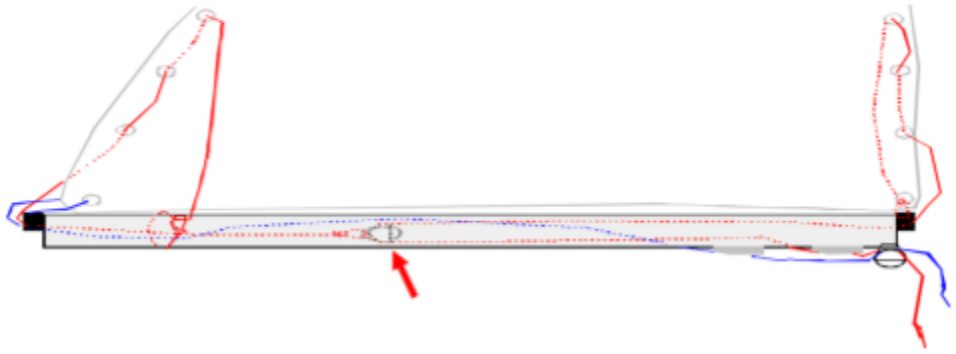


Fig 31: Venture/Toura Reefing and Outhaul Lines

10.7 Hull Damage

JY15 and RS Venture hulls can be repaired with epoxy resin and hardener, filler, and (for larger dings or breaks) glass cloth. Quest and Toura hulls are polyethylene, which is extremely resistant to damage, but any serious hull damage requires special glue plus reinforcement.

Never try complicated hull repairs if you've never fixed a simple ding on a flat surface. For fiberglass repairs, allow the damaged hull to dry before attempting a repair. Clean the damaged area with alcohol, sand with 80 grit paper, clean again with alcohol. Epoxy resin is in gallon cans, hardener is in quarts, both have metering pumps—one squirt from each can gives the right proportion. Resin and hardener need to be thoroughly mixed, mix for at least two minutes. Filler provides some strength to repairs, cloth provides more if it's wetted thoroughly. Paint the finished epoxy repair or the sun will break down the epoxy.

11 Teaching

Junior Skippers are encouraged to teach in the regular Monday/Thursday afternoon and Saturday morning lessons. If it's your first time, ask the students to cut you some slack.

Always start your lesson by asking the students about the number of lessons they've had. Make sure everyone has a PFD on securely, glasses

straps for Rx glasses, appropriate clothing, and no appointments in the next hour or so.

The point of sailing lessons is to give students a chance to take the helm, work the jibs, and observe someone sailing. There are plenty of good sailing books out there, so don't give a lecture on sailing when students could be actually sailing. Instead, try to give clear, short directions, and keep your students busy sailing the boat.

To prevent capsizes, sit near the mainsheet where you can uncleat it in a jiffy. Be ready to hike out if the boat starts to tip. Unless your student is very good, it's not a good idea to hike out with them, because then you can't hike out any harder if the boat starts to tip.

Try to advance students through a simple progression of maneuvers that will develop their skills without confusing them: steering, sail trim, hiking out; coming about, gybing; slow sailing, reefing underway, sailing backwards, anchoring. Don't move on to the next step if the student hasn't mastered a prerequisite. Complicated maneuvers like gybing can be broken down—sail downwind while squatting in the center of the boat, pull in the sheets, gybe while always on a run, gybe from beam reach to beam reach.

Capsize clinics are a great way to help students advance. Get all the students into wetsuits,tie the boat to the dock using a separate line (so they can use the bow painter to right the boat), and give everyone a chance to right the boat. Capsizing and righting the boat erases the most common fear that students have. Note that you'll need a West wind and water sufficiently deep so that the boom doesn't jam in the mud when the boat is capsized.

Don't forget that while you are giving a lesson you are a volunteer, you are also representing the club. Conduct yourself in a way that would make the club proud of your contribution.

12 Club Rules for Junior Skippers

The club operating rules are available at https://www.cal-sailing.org/operating-rules. The rules for Junior Skippers include the following:

- Junior Skippers may sail club boats in the Junior Skipper area only as allowed by the Day Leader. The Day Leader may restrict or prohibit sailing based on weather conditions, member's ability, or other reasons as needed for safety and club operations.
- Stay in sight of the clubhouse (you have to come back in if the fog comes in and cuts visibility).
- The Junior Skipper Area boundaries are:
    - 100 yards away from any downwind shore except when the dock is on the downwind shore
    - East of a line between Hs. Lordships restaurant and the Emeryville Peninsula
    - North of Ashby Ave line (goes through the Claremont Hotel and the radio tower, extends out into the bay)
- Club activities take precedence over individuals' use of club boats. These activities include:
    - Regularly scheduled lessons (Monday/Thursday afternoon, Saturday morning),
    - Fast track classes,
    - Open Houses,
    - Club cruises, and
    - Races
- The Day Leader can prohibit sailing at any time, and can suspend any member's sailing privileges for up to 36 hours for a violation of club rules.
- Special checkouts are needed to sail the Lasers and UFO, and some boats (e.g. RS-500 and RS-800) are Senior only.
- Junior Skippers may not use gennakers.
- Jibs must be furled or lowered at the dock, and mainsails must also be lowered at the dock if the wind exceeds 5 knots.
- Observe the weight and crew loading maxima in Section 3 Weight above.

- Junior rated members must reef the mainsail whenever the wind is such that the crew weight is insufficient, or the crew agility such that they cannot properly control the boat without reefing. Sailing with the boat heeled over and the mainsail flogging is strictly prohibited because it damages sails.
- All boats must be signed out and in. Damage must be noted in dinghy log. Members are responsible for checking over equipment (boats, PFDs, etc.) carefully before using them. Skippers must promptly repair any damage that occurs to a boat that they have checked out.
- Personal Flotation Devices (CSC life jackets or Coast Guard approved PFD's) must be worn at all times when away from the dock in a boat and when tending to sailing equipment on the dock or working the hoist. Wetsuits are strongly recommended on dinghies when the wind is strong.
- To obtain the Junior Skipper rating, you must complete:
    - Online Written test on CSC rules, sailing theory, etc. (Log in with your username and password at www.cal-sailing.org and go to Ratings→Written Test→Junior Skipper Sailboat)
    - Dinghy rigging and sailing tests from a Senior, Senior Dinghy or Cruising Skipper
    - Sailing test requires wind over 10 knots as well as waves.
- To maintain a Junior Skipper rating, you must be a current member, contribute the minimum 2 hours per quarter (and record it and get it approved on the club website), and fulfill your other obligations as a member.

13 Introductory Sailing Books

Links to the manuals for the club dinghies can be found at:
http://www.cal-sailing.org/resources/csc-files

Check your public library, and check Amazon if you want your own copy! These are just a few of the excellent introductory sailing books out there.

Start Sailing Right, US Sailing, Derrick Fries

Learning to Sail: the Annapolis Sailing School Guide, Diane Goodman and Ian Brodie

Sailing for Dummies, J. J. and Peter Isler

Colgate's Basic Sailing, Steve Colgate

The Everything Sailing Book, Michael and Nikki Smorenburg

DK Complete Sailing Manual, Steve Sleight

The Complete Sailor: Learning the Art of Sailing, David Seidman

Sailing Fundamentals, Gary Jobson

Sailing the Bay, Kimball Livingston

An A-Z of sailing terms, Ian Dear and Peter Kemp

And the oldest introductory sailing book…

Practical Boat Sailing, Douglas Frazar, 1879 (available online, Google books)

14 Sailing Dictionary = Glossary

abaft	Extra super salty talk for "aft of," as in "abaft the mast."
aft	Toward the stern of a boat or behind it.
anchor	Metal device for taking mud samples and keeping dinghies off rocks. An anchor is dropped and then weighed.
apparent wind	The wind direction as experienced by a moving observer. The vector sum of the true wind and of the boat speed.
backwind	Hold a sail so the wind pushes its backside.
battens	Semi-rigid slats that are inserted in the main sail's leech to support the roach.
beam reach	Sailing at 90 degrees to the wind's direction.
bear away	Turn the boat more downwind. Also called fall off.
beating	Zigzagging upwind, sailing close hauled and coming about.
bend	A knot used to join two lines. See also *hitch*.
bitter end	The last part or loose end of a line.
block	Nautical term for a pulley.
boom	Horizontal pole that holds the bottom of the mainsail.
boom vang	Line that pulls the boom down toward the mast and controls the angle of the boom to the mast (see also gnav).
bow	The front (pointy) end of the boat.
bow painter	Line attached to the bow; used to tie the boat to the dock,

	etc.
bowline (pronounced bo' linn)	Super salty knot with loopy end. See bowline in Section 7, Knots.
bowsprit	A spar projecting from the bow used as an anchor for the gennaker's tack.
broach	To round up uncontrollably from a run to a beam reach, heeling over. "If broaching sideway to the sea, our dropsied ship may founder by the lee."
broad reach	Sailing at 90 to 135 degrees to the wind direction. When you get in a broad reach on a starboard tack in a West wind you will likely head towards a large white building in Emeryville, which is therefore known as the Broad Reach Condo.
capsize	When a boat tips over.
center of effort	The point of origin of net aerodynamic force on sails, roughly located in the geometric center of a sail, but the actual position of the center of effort will vary with sail plan, sail trim or airfoil profile, boat trim, and point of sail. Also known as center of pressure.
center of lateral resistance	The point of origin of net hydrodynamic resistance on the submerged structure of a boat, especially a sailboat. This is the pivot point about which the boat turns when unbalanced external forces are applied, similar to the center of gravity. On a balanced sailboat the center of effort should align vertically with the center of lateral resistance. If this is not the case the boat will be unbalanced and exhibit either lee helm or weather helm and will be difficult to control.

centerboard	Fin under boat to prevent sideways sailing; swings up for storage.
centerboard downhaul	Usually a stretchy cord that pulls to make the centerboard go down.
centerboard uphaul	Regular line; pull and cleat it to hold centerboard in up or partially up position.
chainplate or 'U-bolts"	Metal piece on a boat that attaches shrouds (wires that hold mast up).
cleat (noun)	Device for holding lines such as jib sheets or halyards.
cleat (verb)	Fasten a line using a cleat.
clew	Aft corner of a sail (where the outhaul pulls it out, "without a clew") – see Parts of the Sail.
close hauled	Sailing at about 45 degrees to the true wind direction.
close reach	Sailing at between 45 and 90 degrees to the true wind direction.
come about	To turn the boat up into the wind and over to change the side the sails are on (also called "tack").
cringle	A ring of metal or sewed in rope that forms a hole in a sail, usually at a corner or along the luff and leech.
cunningham	Line used to pull down on the luff (front edge) of the sail.
dinghy	A little open boat.
ring	Used to guide lines.
falls	The part of the main sheet between the 2 blocks.
fall off	Turn the boat more downwind. Also called bear away.
foot	Bottom edge of a sail – see Parts of the Sail.
forestay	The wire between the bow and mast, which keeps the mast from falling backwards when the jib is off.

furl	To roll or gather a sail against a mast, spar, or mostly in our case, the jib on the forestay.
gennaker	A large, lightweight sail used for sailing a fore-and-aft rig down (such as on our dinghies) or across the wind, also called an asymmetric spinnaker.
gnav	A bar that extends from the top side of the boom to the mast above. The gnav pushes down on the boom to control the angle between the boom and the mast and indirectly the amount of twist in the mainsail. It is a different way of rigging a vang that creates more room for crew to move in a small boat.
gunwale	Upper edge of the hull.
gooseneck	Fitting that attaches the boom to the mast with a flexible joint.
gudgeon	Metal fitting with a hole for the *pintle*'s pin, used as the attachment to the boat to connect the rudder. Not to be confused with the fish.
gybe (jibe)	Turn away from the wind to cause the sails to flip over to the other side of the boat.
halyard	Line used to lift the sails; from "haul yard" since square-rigged boats had yards that were hauled up to lift their sails.
hank	Plastic or metal clip or snap to hold jib on forestay.
head	Top corner of the sail – see Parts of the Sail.
header	A change in the wind direction which forces the helmsman of a close hauled sailboat to steer away from its current course to a less favorable one. This is the opposite of a lift.
heading	The direction a thing's nose is pointing.

head up	Turn the boat more upwind.
heavy weather	Strong winds and waves, possible 60's origin.
heel	Leaning over to one side, usually because of the wind.
helm	A boat's steering mechanism, either a tiller or a ship's wheel.
helmsman	Now that you are a cruising skipper, you are not going to have the tiller anymore – you will leave it to your student helmsmen (helmspeople).
hike out	Move your weight to balance the sails' force, by sitting out on the rail above the seat.
hiking stick or 'tiller extension'	A stick attached to the tiller by a flexible joint, for steering while hiked out.
hitch	A knot used to tie a line to a fixed object. Also see bend.
hull	The floating parts of a boat, not including the sails.
in irons	Pointing into the wind far enough so that you cannot power the sails , therefore you are "shackled" in irons and left to rot in oblivion.
jib	Small sail in front of boat, hooked onto forestay.
jib sheet	line that controls the trim (angle to the wind) of the jib.
kedging	Salty talk for throwing out the anchor and hauling in to move the boat. A good alternative to walking hip deep in the mud dragging the boat when there is no water in the South Basin.
knots	Nautical miles per hour; 1 knot = approx. 1.1 mph.
leech	Aft (rear) edge of a sail. Not to be confused with leeches, which are found on the rear end of sailors who don't know how to kedge when stuck in the mud – see Parts of the Sail.

lee helm	The tendency of a sailboat to turn to leeward in a strong wind when there is no change in the rudder's position. This is the opposite of weather helm and is the result of a dynamically unbalanced condition. See also *Center of lateral resistance*.
leeward	Downwind; pronounced “lee-word” by most people, "lew'ard" by idiots, “downwind” by geniuses, and “lurid” by smartasses messing with the idiots.
lee shore	A shore downwind of a boat. A sailboat which cannot sail well to windward risks being blown onto a lee shore and grounded. Its skipper is liable to get keelhauled.
leeway	The amount that a boat is blown leeward by the wind. Also the amount of open free sailing space available to leeward before encountering hazards.
lift	An enabling wind shift that allows a close hauled sailboat to point up from its current course to a more favorable one. This is the opposite of a header.
line	The correct nautical term for the majority of the cordage or "ropes" used on a vessel. A line will always have a more specific name, such as halyard, uphaul, downhaul that specifies its use.
luff (noun)	Forward edge of the sail – see Parts of the Sail.
luff (verb)	When sails flap because they're not pulled in, or to turn the boat into the wind (“luff up”) or let out the sails so that the sails luff.
luff up (verb)	To steer a sailing vessel more towards the direction of the wind until the pressure is eased on the sheet.
mainsail	Big sail in back.

mainsheet	Line that controls the trim (angle to the wind) of the mainsail.
mast	Long vertical pole that holds the sails up.
outhaul	Line that pulls on the clew of the mainsail to tighten the foot of the sail.
padeye	Metal fitting with a ring on it for attaching stuff.
PFD	Personal Floatation Device, lifejacket, or what it's like when there's no wind.
pinching	Sailing too close to the wind (at less than 45 degrees to the true wind), with the sails partly luffing.
pintle	The pin or bolt on which a boat's rudder pivots. The pintle rests in the *gudgeon*.
pitchpole	To capsize a boat stern over bow, rather than by rolling over.
plane	To skim over the water at high speed rather than push through it.
port	Left side of the boat when you are facing forward.
port tack	Sailing with the mainsail on the starboard side of the boat.
rail	Part of the gunwale on a dinghy, where sailors sit to hike out.
rake	To incline from the perpendicular; something so inclined is raked or raking, e.g., a raked or raking stem, stern, mast, funnel, etc.
reach	Sailing with the wind coming over the side of the boat.
reefing	Reducing the sail area to limit overpowering by bringing the sail partway down & tying up the bottom.
rig (verb)	Put the sails and other pieces on a boat.

rigging (noun)	The hardware on a boat.
roach	The curved part of the mainsail that extends abaft of the straight line between the head and the clew.
rode	A rope or rope/chain attached to an anchor
rudder	Big movable fin that helps one to steer a boat.
run	Sailing with the wind coming over the stern. If it is directly away from the wind, it is a dead run.
running rigging	Rigging used to manipulate sails, spars, etc. in order to control the movement of the ship. Cf. standing rigging.
sculling	Rowing the boat, i.e. by swinging the tiller back and forth.
shackle	Snap or locking ring used to connect lines, sails, spars, and blocks.
shroud	A wire that keeps the mast from falling over sideways.
shrouds	Standing rigging running from a mast to the sides of a boat to support the mast sideways. The shrouds work with the stays, which run forward and aft, to support the mast's weight.
skipper	The person who is in command of a vessel, who should be the one who signs a CSC boat out.
spar	A wooden, in later years also iron or steel, pole used to support various pieces of rigging and sails.
spreader	A spar on a sailboat used to deflect the shrouds to allow them to better support the mast.
stand-on/stand-on vessel	The boat with right of way; the vessel that is supposed to keep her course and speed where two vessels are approaching one another so as to involve a risk of collision.

standing rigging	Rigging which is used to support masts and spars, and is not normally manipulated during normal operations. Cf. running rigging.
starboard	Right side of the boat when you are facing forward.
starboard tack	Sailing with the mainsail on the port side of the boat.
stay	Rigging running fore (forestay) and aft (backstay) from a mast to the hull. The stays support a mast's weight forward and aft.
stern	The back end of a boat, usually the square end.
tack (verb)	Change tacks, usually by coming about.
tack (noun)	The forward and lower corner of a sail ("tack it down") – see Parts of the Sail.
tack (noun)	As in port tack and starboard tack; a boat's heading as determined by the side that its sails are on.
telltale	A light piece of string, yarn, rope or plastic (often magnetic audio tape) attached to a stay or a shroud to indicate the local wind direction. They may also be attached to the surface and/or the leech of a sail to indicate the state of the air flow over the surface of the sail. They are referenced when optimizing the trim of the sails to achieve the best boat speed in the prevailing wind conditions.
tiller	Stick for steering, attached to the rudder.
transom	The flat part of the stern.
trim	Adjustments made to sails to maximize their efficiency. Sheeting in or easing out are examples of trimming.
true wind	The wind direction as seen by a stationary observer.

turtling	In dinghy sailing especially (but can include other boats), a boat is said to be turtling or to turn turtle when the boat is fully inverted with the mast pointing down to the lake bottom or seabed. In the South Sailing Basin, it is usually accompanied by dismasting.
weather helm	The tendency of a sailboat to turn to windward in a strong wind when there is no change in the rudder's position. This is the opposite of lee helm and is the result of a dynamically unbalanced condition. See also *center of lateral resistance*.
whitecaps	White foamy tops on the waves caused by high winds.
windward	Upwind; also called "to weather."