Missionary Sailing School

***Video*: Watch this 6min. sailing video.** Enjoy the scenes of a pleasant, several-day sail. Boat is first motored out of its marina slip and then out into waters similar to the Intracoastal Waterway of central Florida. Once sails are raised the sea conditions are more like Biscayne Bay in Miami or, occasionally, a calm day at sea. Note, too, the suspender-like self-inflating life vests some of the crew is wearing. Also, the main sail is pulled out from its hiding place inside of the mast rather than raised. Don't forget to practice naming the parts of the boat and observe the shape and characteristics of the sails properly trimmed.

http://www.youtube.com/profile?user=Lucilla#p/u/0/EJ24EPhWEE4

Lesson 3: Rigging and Sails

Open the following **webpage**:
http://www.sailingcourse.com/keelboat/parts_of_the_boat.htm

1. Standing Rigging

[Scroll down on the webpage to "**Rigging – Lines, Cables, Spars**" and read the first two definitions before continuing here.]

• The definition for ***mast*** (as given here) does apply to sloops and cutters, but remember it would also apply to all vertical structures used for sails (two on ketches, even more on some schooners) and also for the towers which hold radars, antennae, etc. (found more often on powerboats.) An easy way to remember the term ***boom*** is to remind yourself, "*If you don't duck when it comes swinging across it will go 'boom' on your head*!!" Some jibs (especially on cutters) will have one, too (these are referred to as a "footed jib".)

[Now read the terms that apply to "Standing Rigging"]

• ***Standing rigging*** is called such because, as the name implies, it isn't expected to move. If it does, then either your mast is falling or soon will! These are the cables and their accessories that keep the proper tension on the mast(s). This is a key point: a failure anywhere in this setup can have disastrous results. For this reason I need to cover some key inspection points that are a must before any boat purchase and also should be conducted before a major sail.

Shrouds support the mast from the side. There can be more than one on each side and, depending on the height of the mast, be 'draped' over one or

more ***spreaders***, which distribute the angle of support. [Picture to left is of a tall-masted boat having many shrouds and spreaders.]

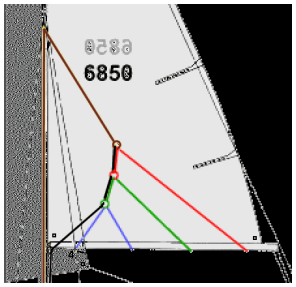
Most smaller boats will have a single set [as seen in photo at right] the '**spreaders**' here being highlighted by yellow arrows.

These cables (or wires) are usually stainless and should be rust free. Caution: if you are considering a boat to purchase and the stays are painted, assume it is to cover rust or other forms of corrosion. By all means avoid boats using galvanized wire since they can rust from the inside out and be further 'gone' than might be readily apparent!

[Scroll down to the photograph of shrouds attached to the deck - it is opposite of the section title "Running Rigging". Click on the photo to enlarge it]

At the ends of stays will be 'fittings' (or ***turnbuckles***) used for adjusting the tightness of the stays and shrouds [they appear in the photo with white tape covering cotter pins or retaining clips.] Inspect these fittings for any signs of 'fatigue' [hairline cracks or discoloration?] Then press against the stays about chest high to measure how much 'give' [slack] they have. A properly ***tuned*** rig will have only the slightest give in the stays. There is an exact way to adjust the tension in the rigging, using a special tool, but it will be sufficient for average cruising needs to make your adjustments by first setting all stays with about the same tightness. Then, one by one, make the same measured turn on the **turnbuckles**. By twisting in one direction they 'contract' making the wire shorter [or tighter] - the other direction does the opposite. Be careful not to over tighten!! Best to do a partial turn at a time on all stays, in rotation. [now, return to the webpage]

Not all boats will have a ***topping lift*** but one will certainly make lowering the mainsail easier. An even better solution (especially for cruisers) is called ***lazyjacks***, a series of lines descending from a point about midway up the mast that 'cradle' the sail as it is lowered and thus simplifying the process of putting away the main after



use (as well as keeping the boom in a position horizontal to the deck.)

2. Running Rigging [look over the terms in this section on the **webpage** before proceeding here]

The definition given is "*Lines which control and adjust the sails.*" To fit in well with the sailing community remember this simple rule: *lines* are ropes which have been 'put to work' (it's only a "rope" while it is still on the shelf at the marine supply store!)

• There will be one ***halyard*** for each sail although, for long distance cruising, it is highly recommended that you carry a spare (especially for the main) since they are usually longer and lighter than most other lines in use on board. Halyards chafe and occasionally break. Another important caution: always keep the end of the halyard secured (whether attached to something or in your firm grip!) The wind can easily whip it away into the air and, believe me, it will be a wild runaway, very hard to recover!!

• We will discuss how ***sheets*** are used in the next lesson but let me comment on the terms ***leeward*** and ***windward***. The former refers to anything on the side of the boat opposite of the wind's direction (such as 'the leeward rail') A ***lee shore*** would be a destination downwind but could be a place you want to avoid if the weather has taken a severe turn for the worst.

• "On larger sailboats, the ***boom vang*** is often a combination of a shock absorber and a rope with pullies to tighten the system as shown in this picture."

[source: Wikipedia]

Before discussing ***outhaul*** and the terms that follow, scroll back up the webpage to the black and white illustration of the parts of a sailboat. Click to enlarge it and review the terms we have covered so far. Also, using your chair, practice again the "Parts of the hull".

Now enjoy this short ***video*** of a great sail in the Bahamas (don't forget to identify the parts of a boat!)

http://www.youtube.com/watch?v=k423rEKm55Y&feature=related

3. Sails

Look over the definitions for ***outhaul*** and ***reefing lines*** then this entire list carefully. Locate them on the illustration "Parts of the Mainsail" [don't forget to click to enlarge]

• ***Reefing lines*** are used to secure lower sections of the sail when it is necessary to only partially raise the sail because of strong winds. It is important to have at least two ***reef points*** in your main [two rows of reefing lines, one above the other] for more options on how much sail you can put up. The stronger the wind the less you would want to raise. When buying a boat, be sure to ask about the reefing of the sail.

• The ***roach*** of a sail refers to the roundness of the trailing edge. A 'full roach' sail would be larger (more arched) and thereby provide more surface for catching the wind. Most multihulls use this type of main.

• Not all mainsails are designed with ***battens***. Short ones are used to prevent 'flapping' of the ***roach.*** Long ones, usually running the full length of the sail [referred to as a 'full-batten sail'] add to the strength and durability of the sail but at a cost of more weight aloft. Many multihulls have full-batten sails because they don't heel (which would allow the release of some of the wind's stress on the sail) and thereby need the added strength of the battens.

• A note about ***chain plates***. These are usually elongated 'straps' of metal which should be securely fastened to the hull or a strong ***bulkhead*** [inner wall]. Remember what we said about 'back plating' all critical bolts when attaching things which will come under heavy load or stress? Inspect the chain plates of the boat you wish to buy and be convinced they are adequate for hard work and longevity.

A final word: the ***sail plan*** [the type and how many sails a particular boat is able to use] can be '**conventional**' [as in the

boat on the left, below] or '**exotic**' [like the one on the right.] Your boat and its *plan* needs to suit your *cruising ground* [offshore or near-shore] and your ***crew*** [how many *hands* onboard and how *able* are they]. Know your limitations and stay safely within them. Things can get out of hand with too much sail or too big a boat. ***Sail plans*** need to match your plans!

Review:

• Take these two 'self-tests' below on Rigging and Parts of a Mainsail [note: when you hover over the '**???**' the correct name of that part will appear on the left]

>http://www.sailingcourse.com/keelboat/rigging-self-test.htm
>http://www.sailingcourse.com/keelboat/sail-self-test.htm

• What does it mean to "tune the rig"?

• Before buying a boat what do you look for concerning the 'standing rigging'? the chainplates?

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Now reward yourself with one more *video* of a typical morning anchored in the Caribbean:

http://www.youtube.com/profile?user=clallaire#p/u/34/5-gxA5bF4qk