



Ottawa's Waterfront Sports Centre

2024 Sailing Theory

**TO BE UPDATD WITH THE RIVERHOUSE
NEW DOCKS CONFIGURATION**

Martin Rhéaume

communications@sailonec.com

2024-01-01

Matters to be covered

- Training Area
- Weather
- Boat parts
- Rigging
- Points of Sails
- Right of Way
- Capsized
- Seamanship

Training Area



From the first upriver “No wake buoy” to the tip of Kettle Island.

We keep the training area small so it is easier for the rescue boats to provide help as required and for instructors in power boats to go to each individual boat to provide instructions as required.

You need to factor the current ! Stay upriver from the docks as much as possible.

Weather

Where to find wind: flag, smoke, other sails boats and ripple on the water

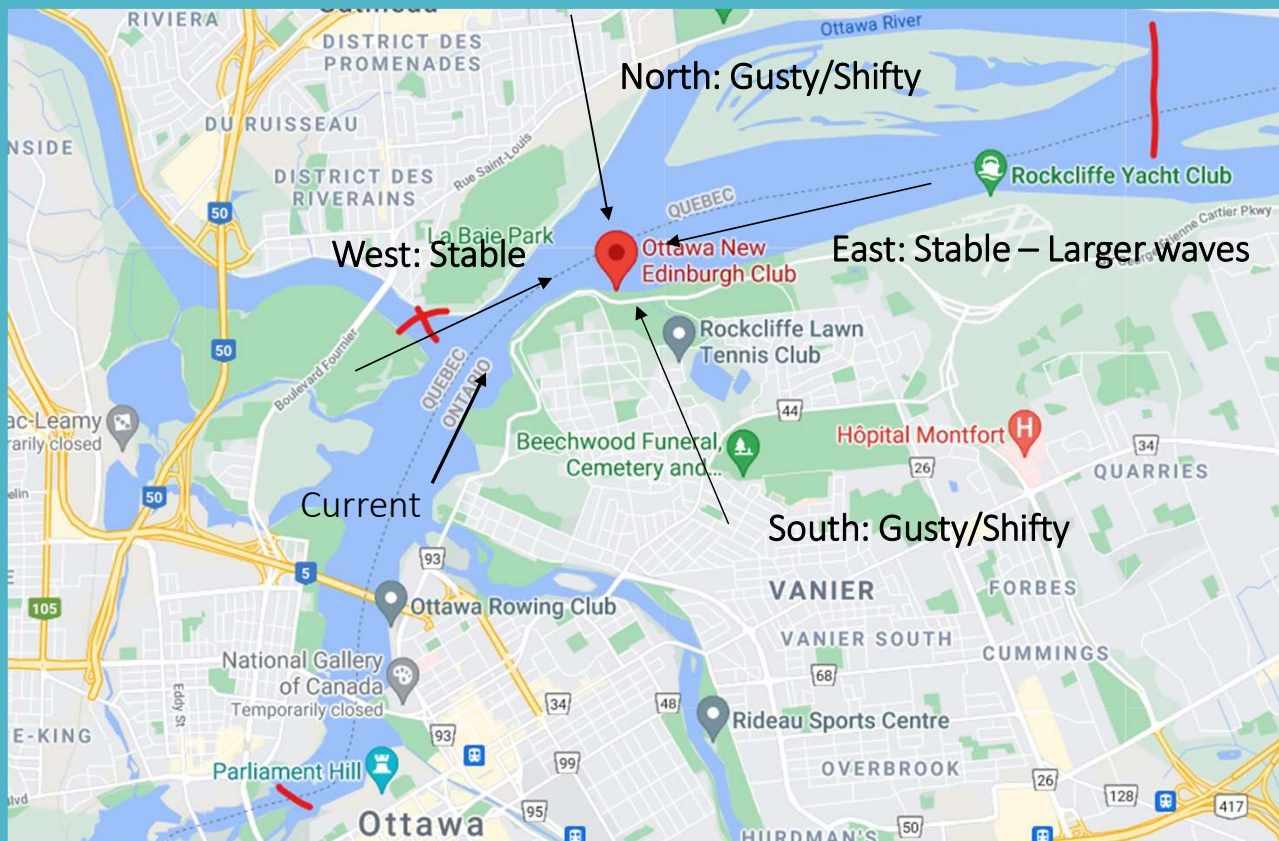


← and on water surface →



Weather

All weather conditions are not equal



- Wind Direction
- Wind Speed (Steady/gust)
- Time wind has been blowing
- Distance wind has been blowing
- Geography
- Current – Direction & speed
- Air Temperature
- Water Temperature

Considerations

- Is there whitecap on the water ?
- Does my crew and I have the skills level necessary ?
- Does my crew and I have the necessary weight to balance the boat ?
- Does my crew and I wear appropriate clothing ?
- Can the club boat, in its current condition, handle the conditions ?

Weather Various

Sailors like to use “knots” - 1 knots approx. 2 km/h

True vs apparent wind

For training, wind speed “should” not be more than 10-13 Kts unless you are with an experience skipper

Wind pick-up in the afternoon

Storm in Ottawa usually ends around 1700-1800



Parts of the boat

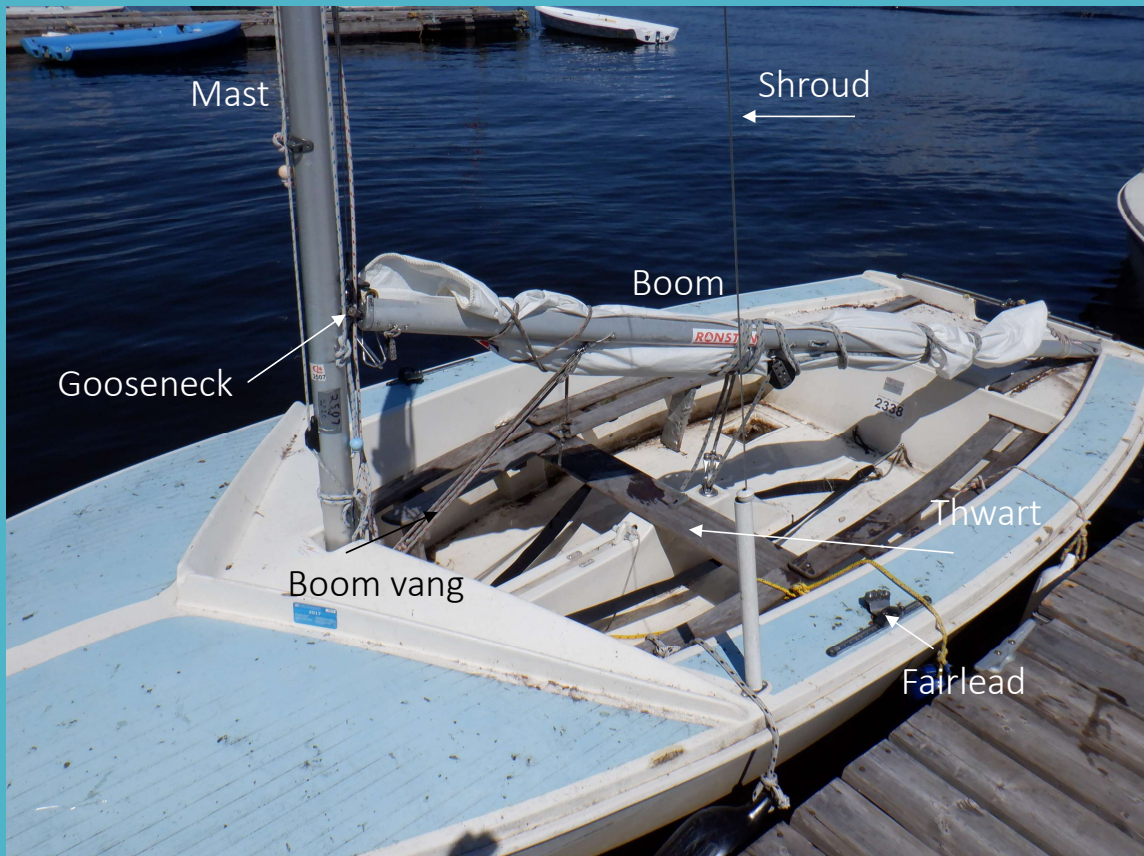


Why know them ?

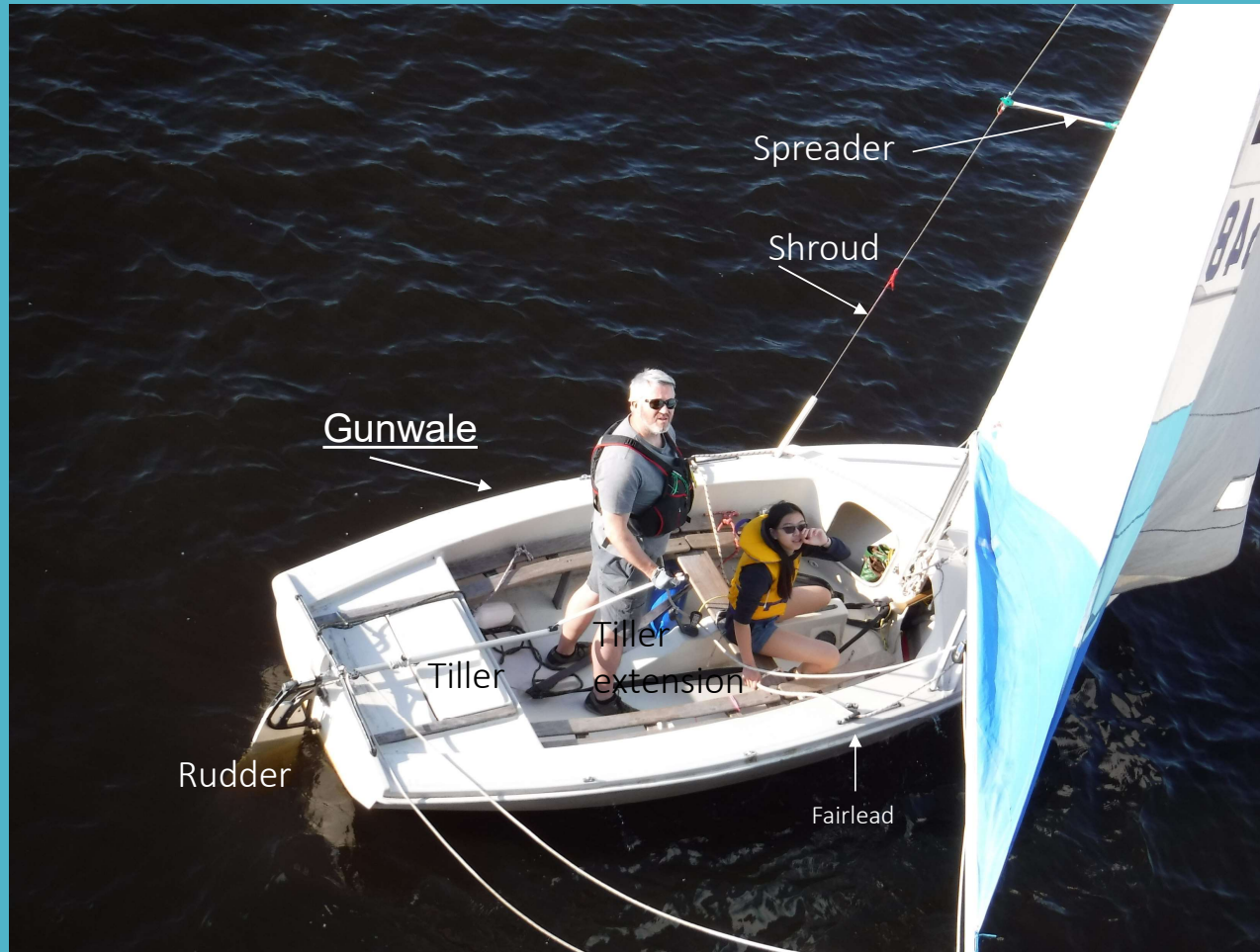
- Safety
- Efficiency



Parts of the boat II

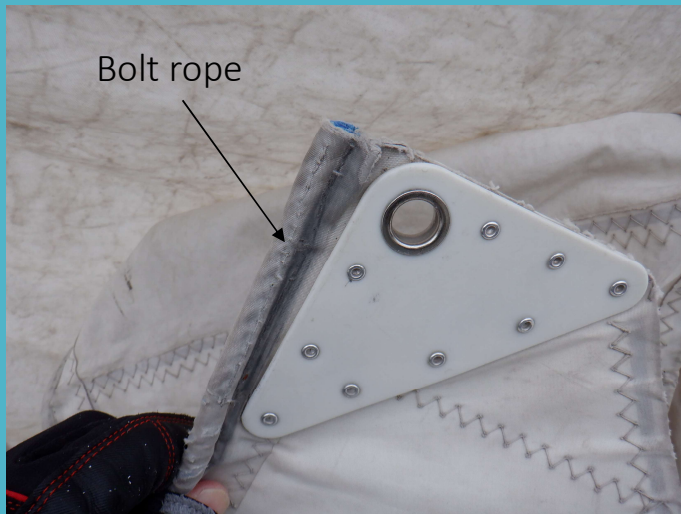


Parts of Boat III



Parts of Boat IV

Luff of the mainsail/ Boltrope



Bolt rope slide into groove of the mast



Gooseneck

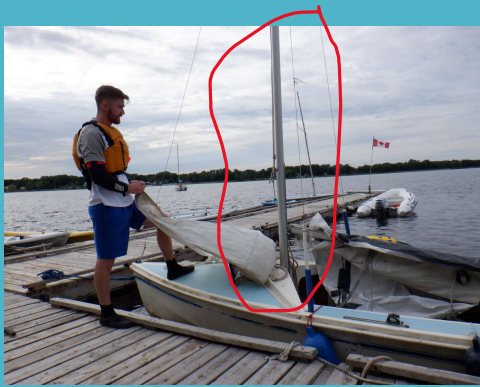


Butterfly nut: Adjust height of the boom

Parts of the boat

Halyards and Sheets

Raised the jib and main sails: Halyard



Control/trim the jib and main: jib sheets (x2) and mainsheet (x1)



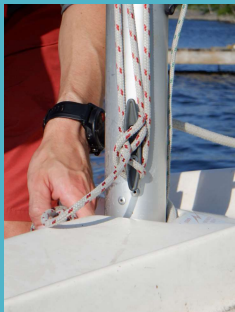
Parts of Boat - Cleats

In nautical contexts, a cleat is a device for securing a rope.

Horn cleat



jib and main halyards



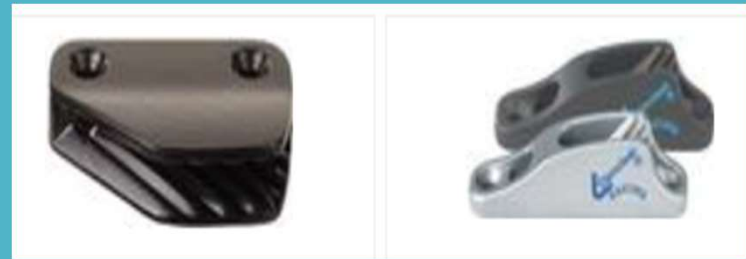
Cam cleat



Jib sheets and mainsheet



Clam cleat

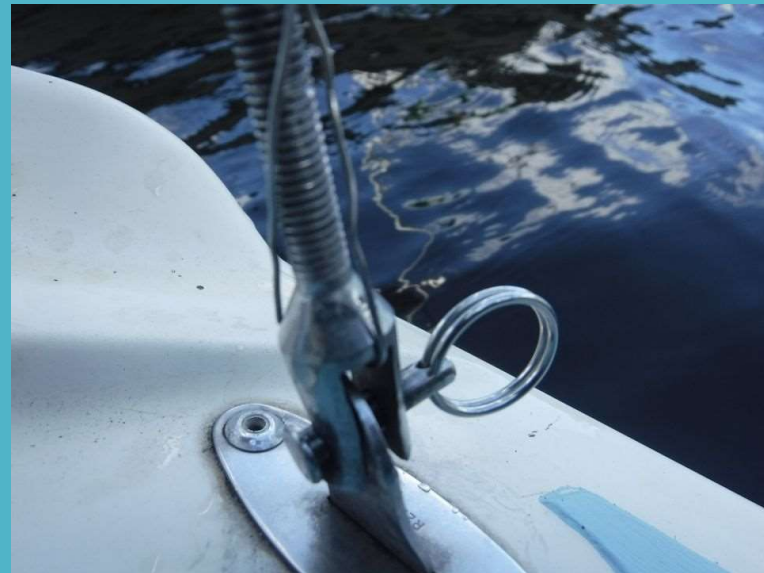


Boom vang
Rudder line



Parts of Boat – Split rings

You need to care about split rings.... This small piece of metal, not worth more than \$1, is an item of everyday life..... Almost anyone has at least one on their person holding their keys.... On a CL-16, there are between 15 to 20 split rings (some of them hidden) around the boat keeping pins in place..... Most important of all, they secure the turnbuckle which in turn secure the shrouds as well as the forestay and keep the mast (worth over \$1000) upright ! So, when you rig a boat, take 2 minutes and ensure the split rings are properly installed around the boat. If you need some spares, there are plenty in the workshop.



Parts of Boat – Damage sails

If you see a tear in a sail, you need to fix it using proper sail tape (found in the workshop) and not duct tape !
Else, the damage sail will be very hard to fix in the off season.



Rigging

Where to position the boat

- You want the bow of the boat into the wind (in irons) – No wind pressure on the sails
- You want to be able to leave the docks easily – Watch out for other boats and anchor lines
- When leaving the docks, you need to think about size (footprint) of boat with the sails... not just the hull



Green: Right locations to rig a boat as the bow of the boat will be into the wind when it is from the West (Upriver)

Red: Not a good location. Wind will create pressure in the mainsail. It will be very hard to get away from the docks)

Rigging

Where to be/not to be when rigging the CL-16

When rigging the boats, you need to keep in mind:

- Our CL-16s are quite old
- There is no support under the bow and stern
- Bow and stern compartment are not very solid.
- Do not stand up... lie down on your stomach



Rigging CL-16

- Mandatory piece of equipment

- Whistle 

- PFD - 1 person and must be worn 

- Paddle 

- bailer/pump 

- towing rope

- From bow to stern (Jib, Main, Rudder, Tiller)

- Centerboard:

- Down: give greater stability

- Up: allow the boat to move more easily



Rigging – Bailing the boat

1) The Cockpit itself



Using bailer/pump

2) Centerboard trunk



Using pump only



3) Stern compartment (+plug)



Using bailer/pump

You can open the plug to help drain the interior of the boat



Rigging – How to raised the sails

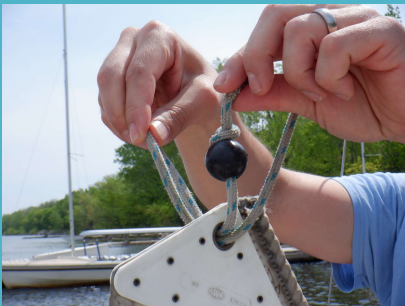
1) Take the head of the sail



2) Fold the halyard and put it through the hole



3) Put the end of the halyard through the loop



4) tighten the rope



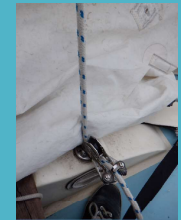
Rigging

Not able to raise the mainsail

Luff (bolt rope) snag in the groove



Main sheet is cleated



Tiller over main sail



Boom vang is cleated



Main sheet is wrapped around end of boom



Wind pressure in the sail



Sail snagged in horn cleat



How to rig

Laser: <https://www.youtube.com/watch?v=aDL4JgUjCTI>

RS Feva: <https://www.youtube.com/watch?v=pGT3FeijTNE>

Rigging guide available at: <https://www.rssailing.com/project/rs-feva/>

RS Quest: <https://www.youtube.com/watch?v=1ms3XlbG8j0>

Rigging guide available at: <https://www.rssailing.com/project/rs-quest/>

RS Zest: <https://www.youtube.com/watch?v=QRuZOobNIQg>

Rigging guide available at: <https://www.rssailing.com/project/rs-zest/>

Topper : https://www.youtube.com/watch?v=h-CMexAd_p4

Rigging Laser

When you raise the mast:

- Move it over the mast step
- Lower the mast

Do not use Laser mast step as leverage

Mast go straight in the mast step.. Harder but protect equipment



De-rigging

Reverse of rigging: from stern to bow - Leave the boat as you would like to find it

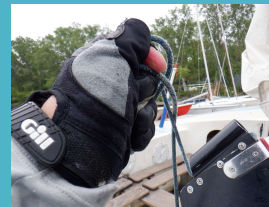
If something broke, fix it or let someone know



Rudder can be hard to remove, use a paddle and give a nudge



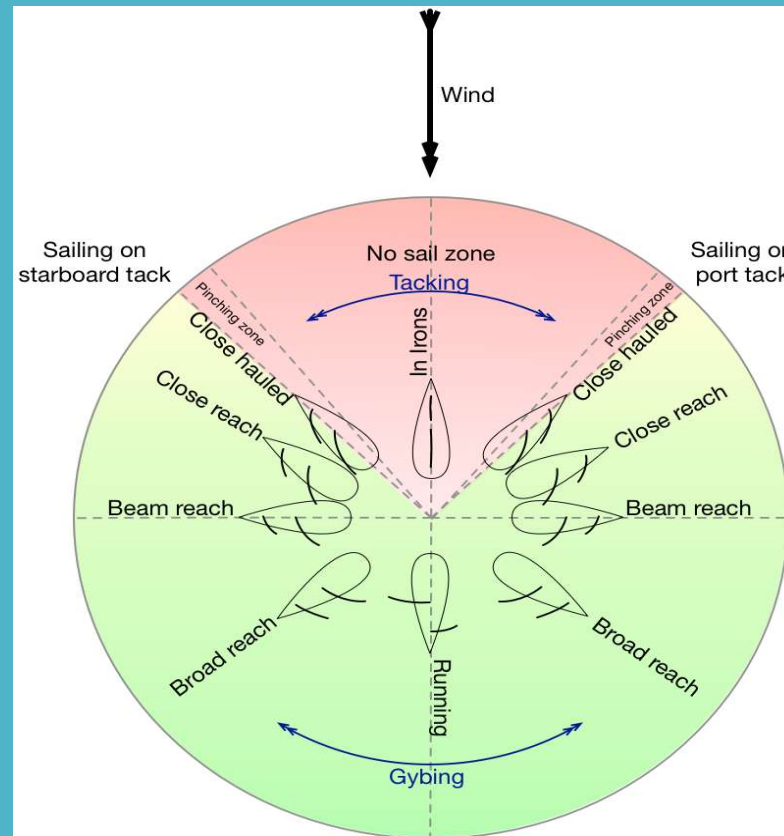
Always wrap the rudder line when you install/remove rudder



Fenders – Need to protect boat

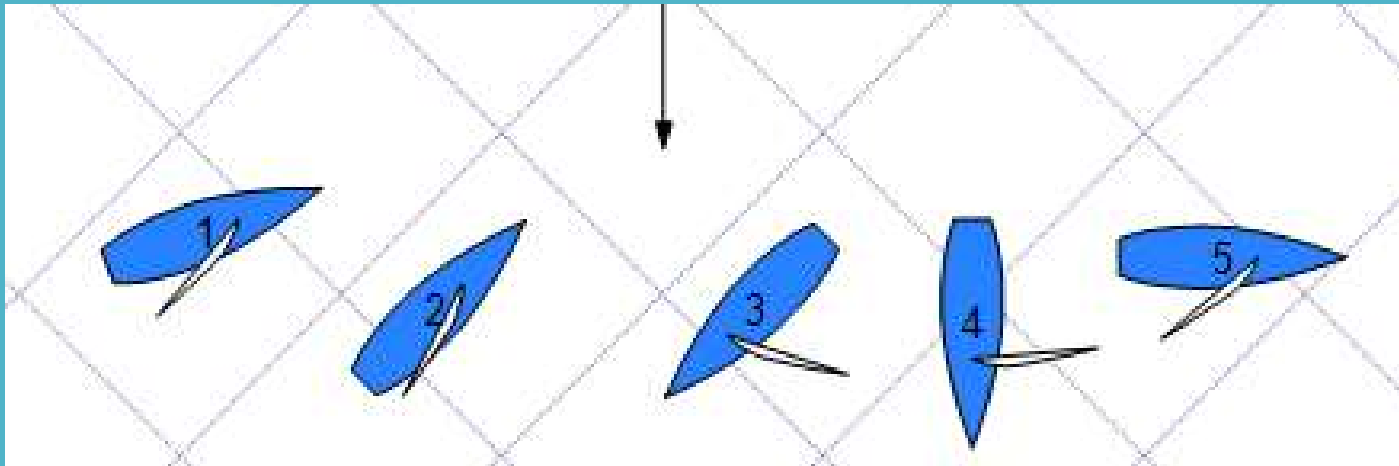


Points of sail or Angle between the boat and the apparent wind



Points of sail

Which point of sails are the boat on ?

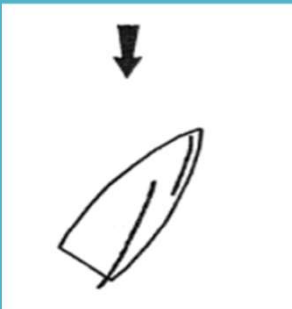


| Boat | Tack | Point of Sails | Centerboard |
|------|-----------|--|-------------|
| #1 | Port | Close Reach (70 degrees off the wind) | 20% up |
| #2 | Port | Close Hauled (45 degrees off the wind) | Down |
| #3 | Starboard | Broad Reach (135 degrees off the wind) | 40% up |
| #4 | Starboard | Running (180 degrees off the wind) | 60% up |
| #5 | Port | Beam Reach (90 degrees off the wind) | 80% up |

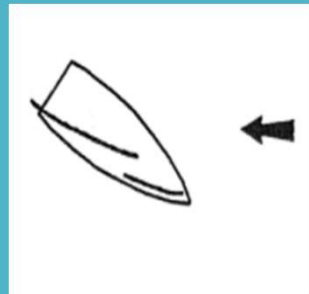


Points of sail What point of sail ?

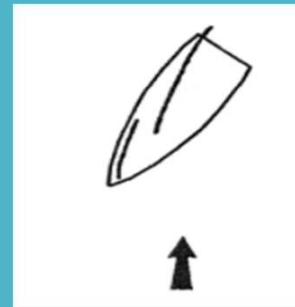
North wind



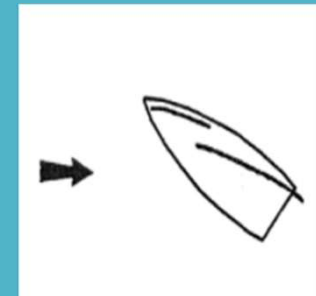
East wind



South wind



West wind

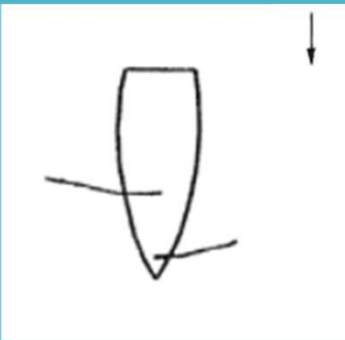


Points of sail

Special sail positions

Wing on Wing

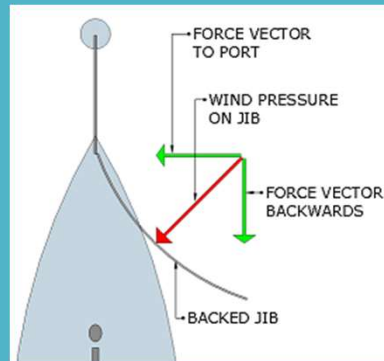
One sail on each side of the boat



Usually, the skipper will grab the jib sheet
Crew will grab the boat to prevent an accidental gybe

Back Wind the jib/main

Sail is on the side that the wind is hitting



Crew will grab the clew of the jib and push it on the side of the boat.
Best way to get out of Irons
Possible to backwind the main sail as well.

Sailing by the lee

Sails are on the side that the wind is hitting



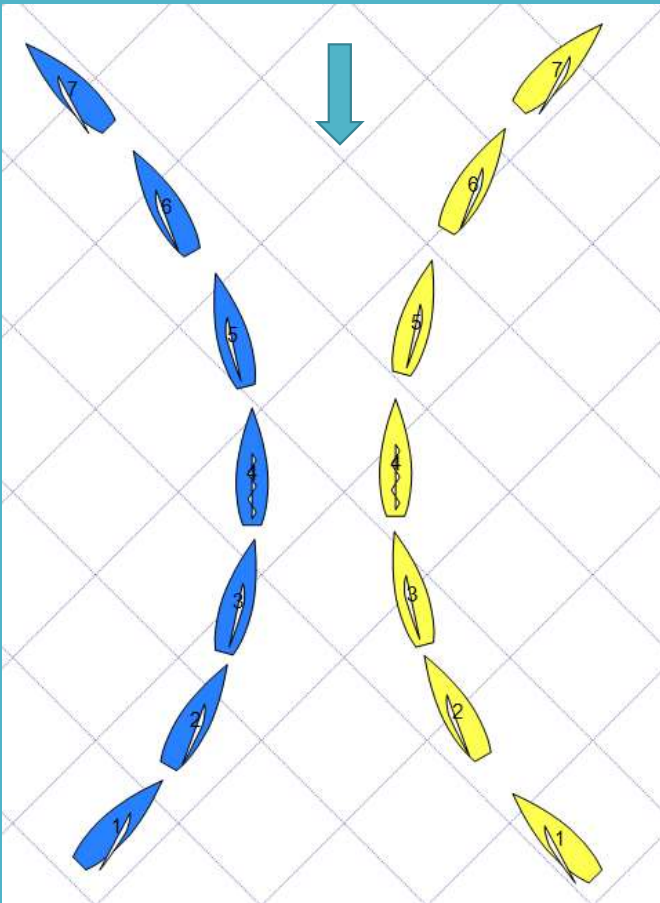
High risk of an accidental gybe

Tacking & Gybing

Tacking

From a Closed Haul position

Mainsail/Boom travel a short distance

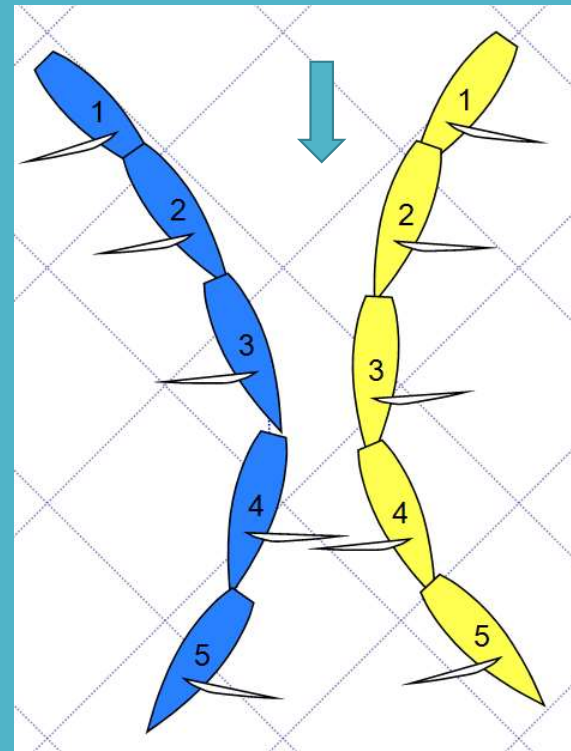


Gybing

From a Broad Reach/Running position

Mainsail/Boon travel a long distance - Can have lot of force distance

Could happen accidentally if there is a shift in the wind



Right of Way

Sailboat

Vs

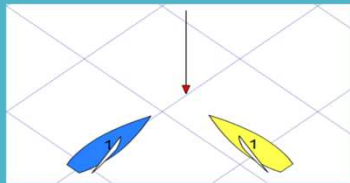
Rowboat, kayak, rowing scull (They have right of way)

Powerboats (They do not have right of way – Boat under sails have right of way)

Other Sailboats (It depends...)

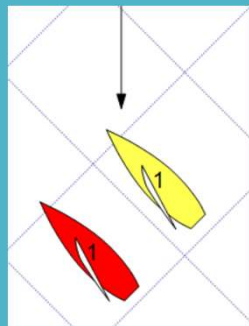


Right of Way between sailboats



Port tack Starboard tack

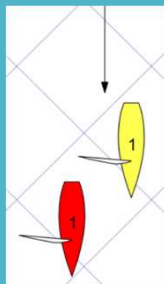
Different tack: Port tack boat must keep clear of a starboard tack boat



Leeward

Windward

Same tack, Windward/Leeward: Windward boat (closer to the source of the wind) must keep clear of a Leeward boat (further away from the source of the wind)



Overtaking

Being overtaken

One boat faster than the other: The overtaking boat (being faster) must keep clear of the boat being overtaken (slower)

Capsized To prevent one

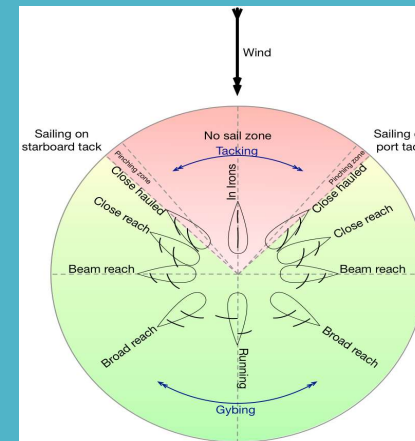


Sit on the gunwale



Let the sails out

Caution: Do not let the end of the boom/sail drag in the water. It may speed up the capsized.



Move toward the wind
(go in irons)

... and you may have to perform all three
technics at the same time !

Capsized To recover from one

Everyone ok ?
Crew: Go to the bow – point
boat into the wind
Skipper: Go to centerboard



Climb on centerboard



Reach for jib sheet



Pull on jib sheet (knots against fairlead)
Lean back – Crew can join if required to add weight



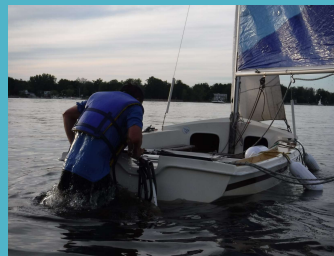
Jib sheet knot must hold !
Mainsheet knot for Laser



The physics does not lie !
Boat will move.... Be patient



Skipper: Climb in boat from stern
and grab tiller to have control
Crew: climb once skipper is control



Feet first does not work
unless you have fantastic abs !



Need Help ?



Seamanship

Skipper & Crew responsibilities

CL-16

Joint:

Communicate clearly
Rigged/De-rigged the boats

Crew:

Keep a lookout for obstacles (other sailboats, powerboats, log, etc...)
Balance the boat
Trim/Adjust the jib sail
Push away from the docks / Ensure safe arrival at docks
Listen to the skipper

Skipper:

Trim/Adjust the main sail
Manage the tiller/rudder

Seamanship Lee-Shore

A lee shore: Shoreline/Docks that wind is blowing toward.

Lee shores are dangerous because if a boat were to lose its maneuverability, they would eventually drift towards the lee shore/docks likely resulting in a grounding or collision with the shore, docks or other boats.

If you try to dock on such a dock, you will arrive at the docks with too much speed and you will not be able to stop.



Seamanship

Additional controls

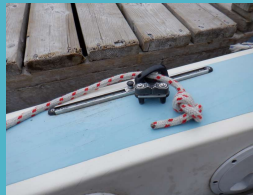
In addition to the jib and main sheets, the following can be adjusted as you sail depending on wind conditions and point of sails to optimize performance:

- Centerboard (heeling / side way motion)

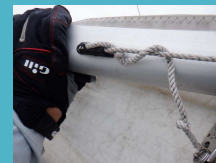


- Boom vang (Shape of mainsail)

- Fairlead (Shape of jib sail)



- Outhaul (Tension in the foot of the mainsail)



- Cunningham (Tension in the Luff of the mainsail)



Seamanship

To bring back a boat to the docks

1-Being towed by the rescue boat
– Only if someone is available



2- Paddling



3- Paddling with your hands



4- Rocking a Laser



Seamanship Towing

- Towline is wrapped around the mast (no knots required). If in a boat with forestay/shrouds, ensure that the towline is located between the forestay and shrouds. When being towed, the towline **MUST NOT** put any pressure on the shrouds.
- Crew hold on the towline.
- Skipper steer the boat toward the stern of the rescue boat.
- Raised the centerboard.
- Lower mainsail (if required).

NOTE: See Annex A for the operation of the powerboats.



Seamanship

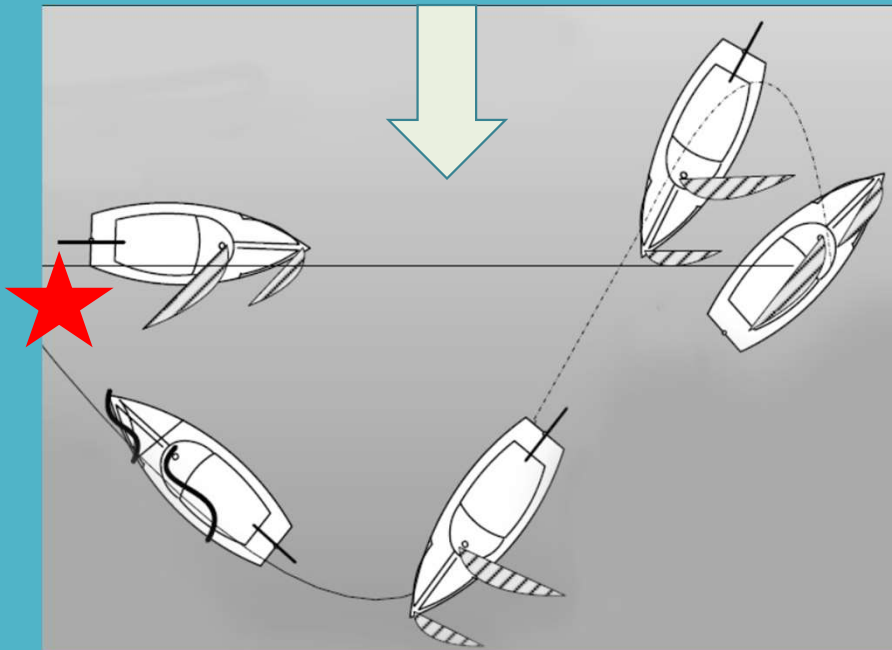
Leaving the boat rigged at the docks

CL-16: Lower the main sail and secure it using the mainsheet
Secure the bow only (allow boat to move)
Raise the centerboard



Laser: Remove the boom
Raise/Remove the daggerboard

Seamanship Men overboard



1. Go on a Beam reach – Stay level with MOB
2. Go 15-20 boat lengths, tack (never gybe) – It will be hard as no one is trimming the jib.
3. Go on a Broad reach.
4. When the MOB is abeam (at 90 degrees to the boat direction), go to a Close Hauled.
5. Let your sails out to loose speed and stop beside MOB.
6. You want the MOB to be on the windward.

Seamanship Docking

1. Sail close to the docks and identify:

- Where is the wind coming from ? Watch out for Lee shore
- Where are space available ?

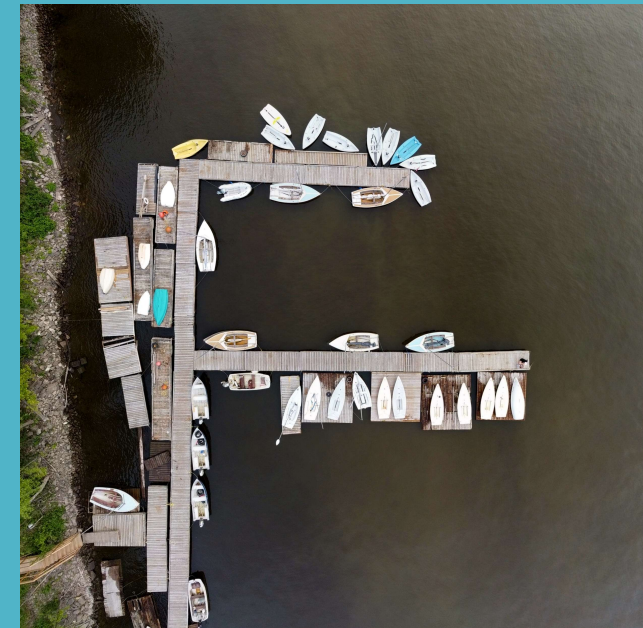
2. Formulate a plan

- Where do you want to dock ?
- Which points of sail will you be when arriving at the docks ?
- How much speed will you need and how will you slow down ?
- Size (footprint) of boat with the sails.
- Any obstacle to watch for ? Anchor line, other boats (ie Shroud) ?

*** Unsure what to do: Dock at a safe location (even the rowers dock) and paddle the boat to a proper location once unriggered ***

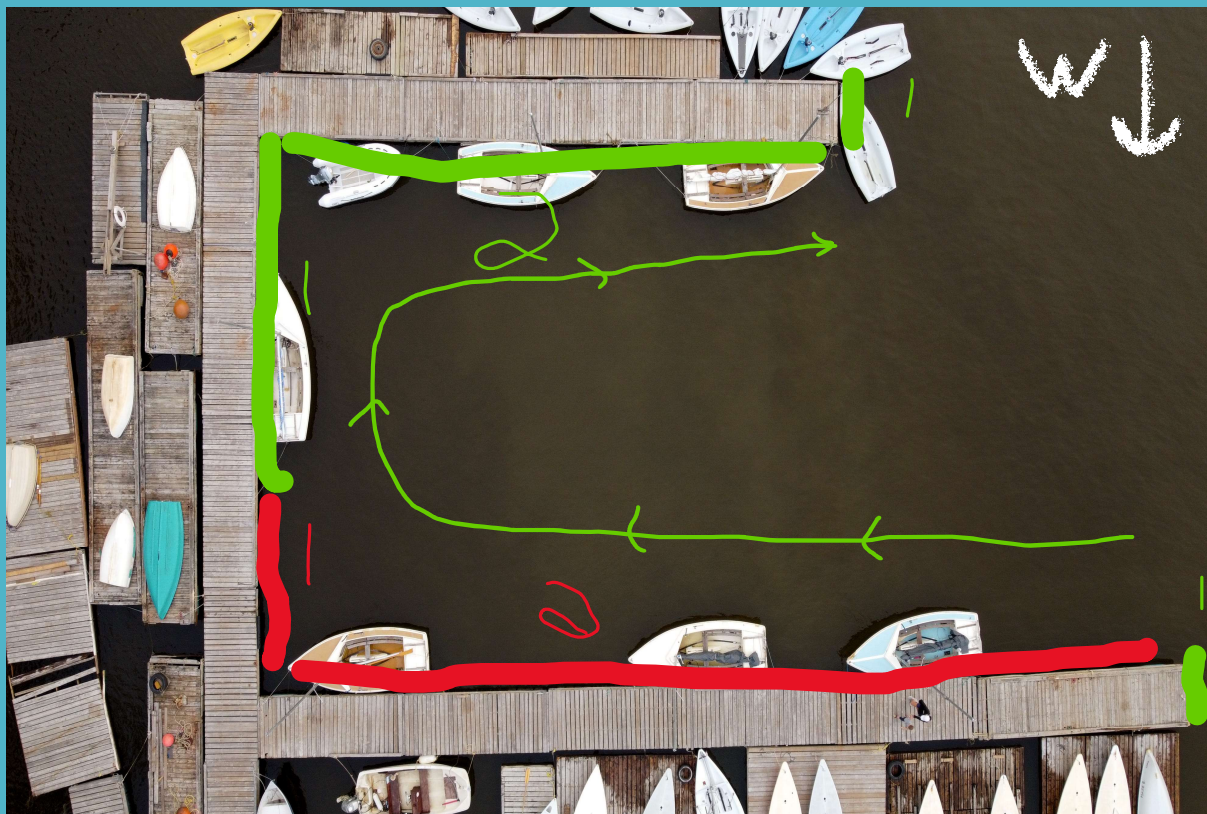
3. Implement plan

- Nothing wrong if you miscalculate. Abort and try again.
- Let the jib out as you will loose some speed.
- Once you are at the docks, lower the sail and move the boat to the worst possible position hence allowing the best position for others boats still on the water.



Seamanship

Docking – Where to go or not go (West wind/Upriver)



Green 1: Will stop at the docks bow into the wind. No pressure on the sails. Easy to disembark.

Green 2: Will stop at the docks bow into the wind. No pressure on the sails. A bit more complicated for the crew to get out.

Red 1: Approach very difficult. Not enough time to reduce speed and turn the bow into the wind. High risk of collision with the dock.

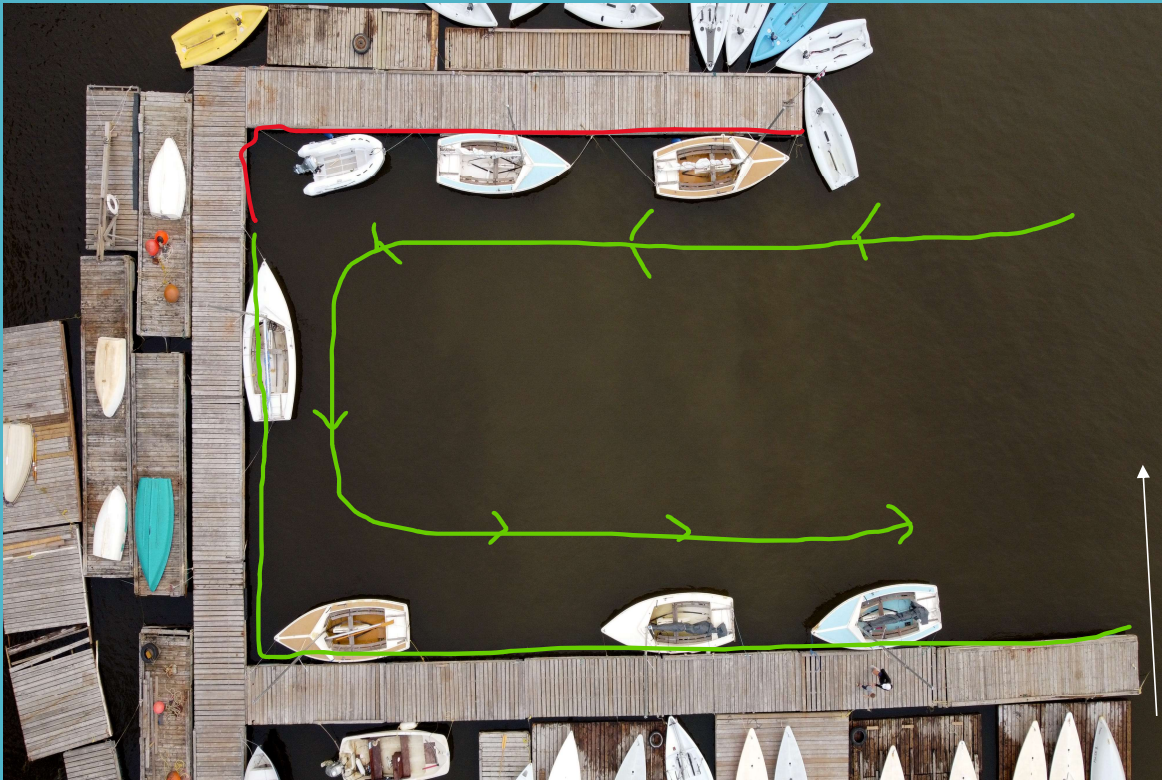
Red 2: This is a Lee Shore. You will arrive to the docks on a Beam Reach (fast). Not able to slow down. High risk of collision with the docks/boats.

Seamanship

Docking – Where to go or not go (East wind/Downriver)

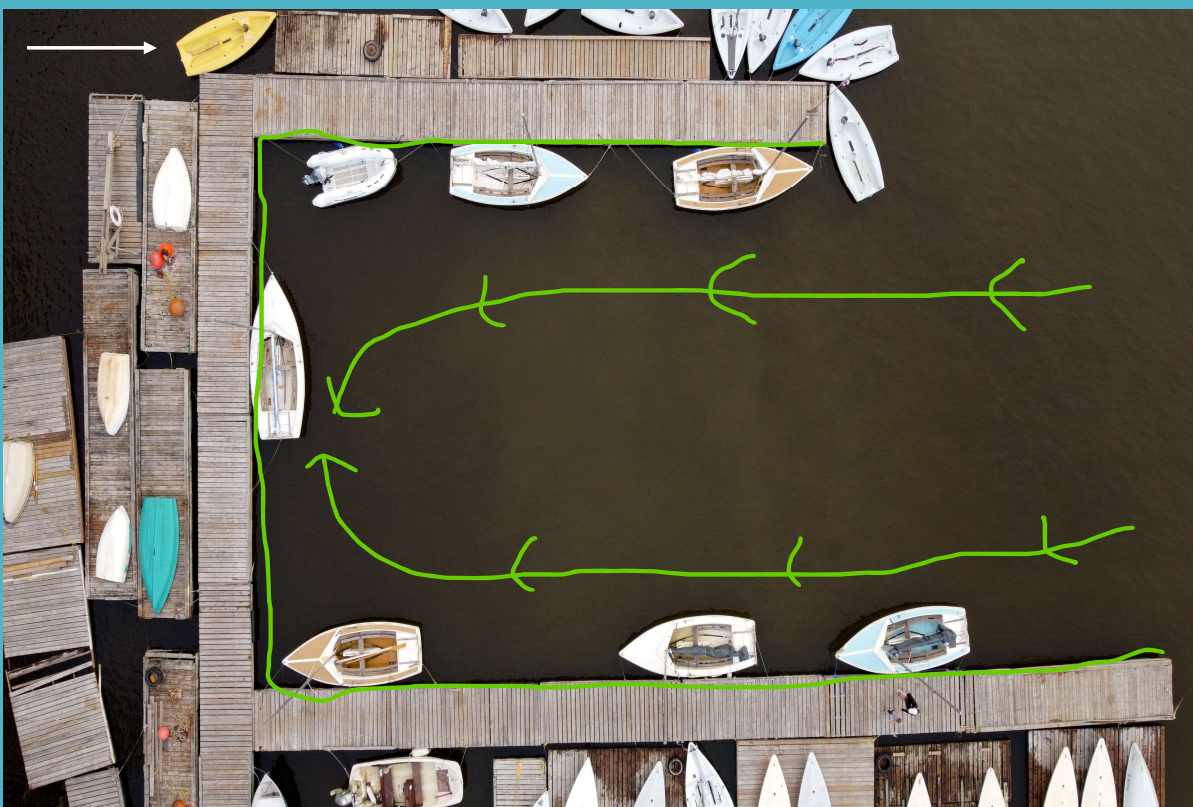
Green: Best locations possible

Red : Approach as the boat will approached the docks while running/broad reach. High of collision with the dock.



Seamanship

Docking – Where to go or not go (South wind/Ottawa)



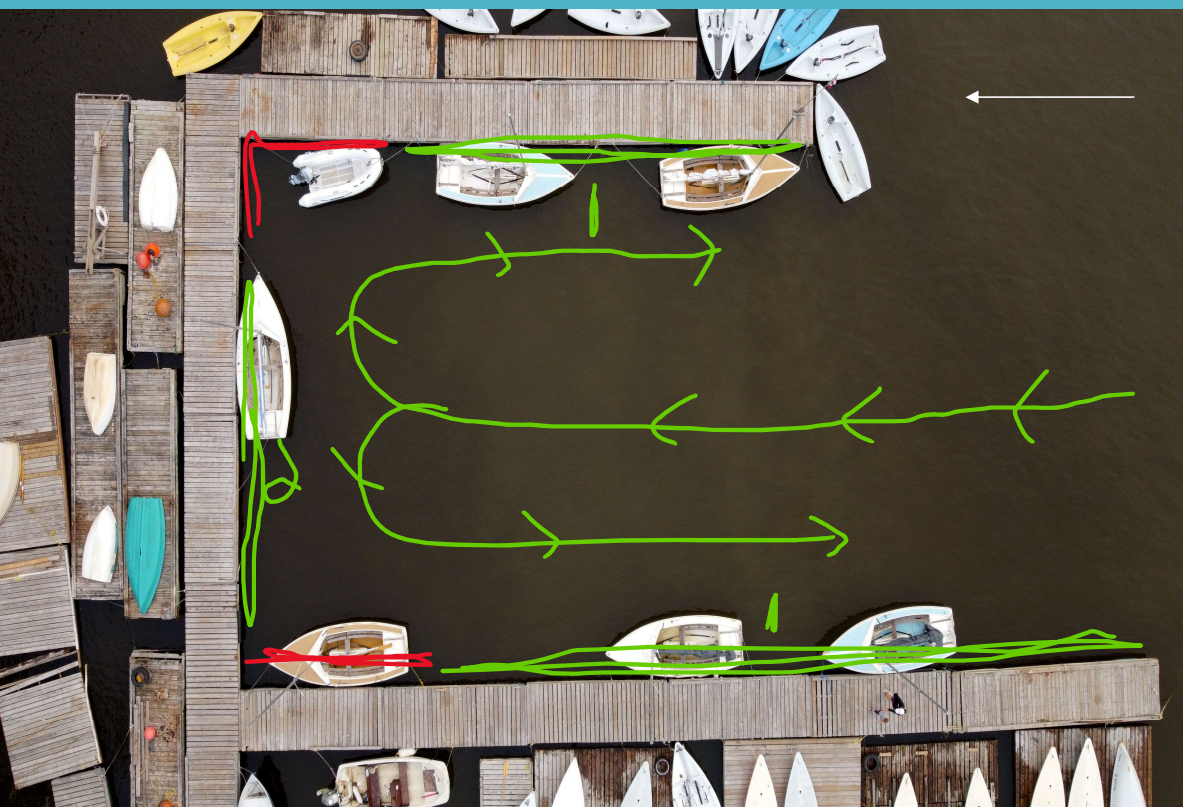
Docks: Alex Pierre

Green: In theory, when the wind is from the sought (from the Ottawa shore), all docks can be used.

However, a south wind is usually very shift, hence at the last second the wind may change direction.

Seamanship

Docking – Where to go or not go (North wind/Gatineau)



This is the most difficult scenario especially in high wind as you will arrive to the docks on a run (wind behind you) and you will have to gybe in the harbor.

Green 1: Best locations possible

Green 2: As you will be in a beam reach at the docks, it is possible only in light wind/low speed.

Red: Approach very difficult. Not enough time to reduce speed and turn the bow into the wind. High risk of collision with the dock.

Ontario vs Quebec Shores

Ontario shore

1. Rocky shore.
2. Good depth close to shore hence it is possible to get close to the shore.

Quebec shore including Kettle & Duck Islands

1. Sand bottom.
2. Very slow slope. Unless you want to beach the boat, stay a good distance away.
3. Be careful that centerboard and ruder does not touch bottom.

Paperwork

While we try to keep paperwork to a minimum, some is required for the good working of the club. We try to keep it all in one single binder.

It should be located near the balcony door.

Membership card - Well as they are now on sheet of paper, they are more a log than card but the name stick.. Important to keep track and see the new members achieves objectives through the training program.

Guest Waiver - You are a certified skipper and you want to bring a guest out ? No problem, but your guest needs to sign a waiver.

Racing Scoring Sheet - Need to keep the results somewhere !



Questions ?

Recorded 2023 zoom session: https://us02web.zoom.us/rec/share/8vOE3uf22mtepNKDy3G8U_wDcFmlQCKd-3ooFx_t6RnPh9AT0QXB4EeeMJDYNryL.GcZIDJ8kPsF8oLy1

Passcode: Jr*n6#g2

Annex 1 - Powerboats

ONEC has different types of powerboats, and they are shared between all watersports.

The powerboats are used for: rescue, race organization, training, and the movement and maintenance of docks and boats.

We have multiple types of powerboats available to us:

| Boston Whaler | Princecraft | Inflatable |
|--|---|---|
| Favorite of the sailing program | Rarely use | Use by day camp |
| Made of fiberglass | Made of Aluminum Boat | Made of Vinyl |
| Heavy so stable in both heavy wind and waves | Light so not stable in heavy wind and waves | Light so not stable in heavy wind and waves |
| Can carry heavy load | Can carry heavy load | Can carry small load |
| Resistant to damage | Resistant to damage | More prone to damage |
| Have an anchor | Does not have an anchor | Does not have an anchor |



IT IS MANDATORY TO HAVE A VALID PLEASURE CRAFT OPERATOR CARD TO USE ONE OF THE POWERBOAT.

<https://tc.canada.ca/en/marine-transportation/marine-safety/office-boating-safety>

Powerboats - Rigging

They all need to be rigged in a very similar fashion before being used:

- Transport Canada requires this safety equipment:
 - PDF for everyone (Not provided by ONEC).
 - Whistle (Not provided by ONEC).
 - Already in the boat: bailer, towing line and oars.
- Fuel tank (Always loosen the vent at the top of the tank to allow oxygen to go in)
- Deadman switch
- Engine key – with some smaller engines, this is not required.
- Unlock safety cable - This cable secures the boats to the docks to prevent theft.
- Before leaving the docks, always start the engine to ensure it works properly.

AND DO NOT FORGET YOUR PLEASURE CRAFT OPERATOR CARD (PCOC)

At the end of the day/back at the docks: Reverse the actions indicated above.

Do not leave the fuel line in the bottom. Keep it elevated to prevent ingress of water.

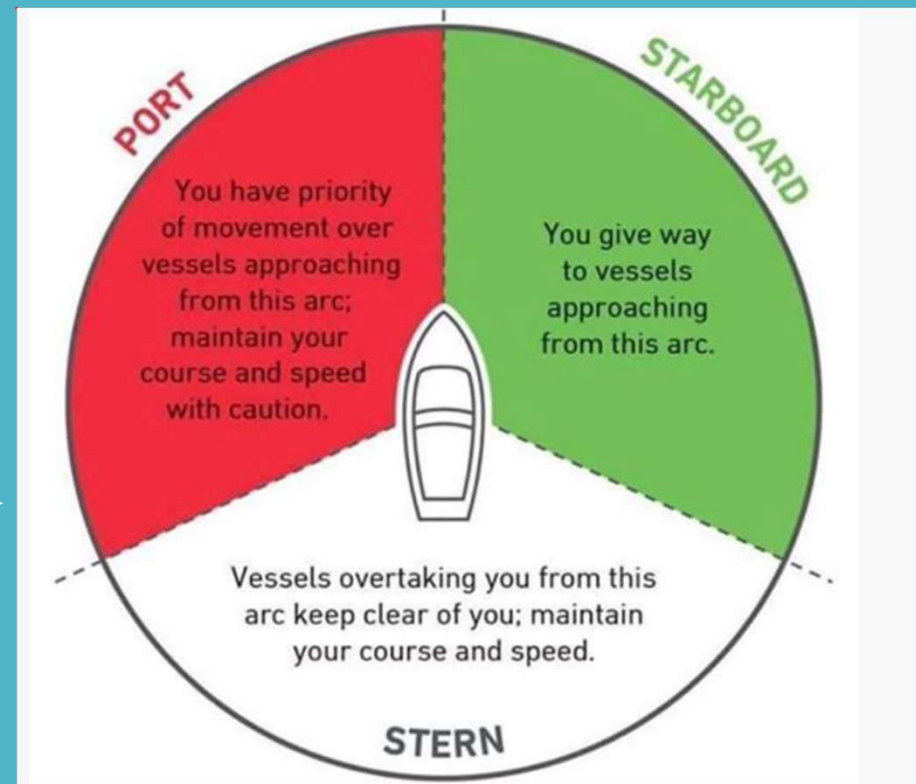


Powerboats- Right of Way

Always give way:

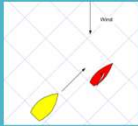
- Sailboats under sail
- Kayak, Stand-up Paddle Board, rowing shells
- Swimmer
- Ottawa River tourists boats
- Boats towing/being towed.

For any encounters, check this diagram

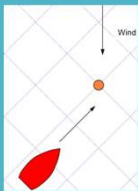


Powerboats- Operation

- When leaving the docks:
 - Lift the fenders and put them in the boat. If you leave them in the water, it will create resistance (so it may splash water upward so you may become wet. The line may also break and we will lose the fender.
 - Be very careful of the dock anchor lines. You do not want a line to get wrapped around the engine propellor.
- When approaching a moving craft (powerboat, sailboat, kayak, rowing shell, etc...), always do so from the stern. When the people on the other craft notice you and they know you are coming, only then can you move up beside them.
- When moving to go beside another craft :



- If it is a sailboat: Move up to the windward side of the boat. You do not want the mainsail and boom to be over the power boat as it may create some safety issues.



- If it is a kayak or rowing shell: As the power boat will be much heavier, you want the light craft to be push on the heavier one due to wind or current. So choose the correct side appropriately.

Powerboats- Helping a capsized boat

If you see a capsized boat:

- Keep your eye on the boat and head toward them counting heads as you. Example: You should see two heads for a CL-16 and one head for a Laser.
- If there is missing a head, situation seems to be out of control, exhaustion, risk of injury or hypothermia get to the boat immediately so you can better evaluate the situation.
- Priority is for the individuals. If need to, bring them in the powerboat immediately and worry about the sailboat later.

Unassisted capsized recovery

- When situation is under control the crew is trying to right the capsized boat, stay around but not too close.
- Maintain prop away from the individual in the water.
- Be ready to provide help as required.

Assisted Capsized Recovery

- Crew are not able to right the capsized boat without help so the powerboat needs to help.
- Powerboat approaches the mast tip slowly and puts the engine in neutral.
- Grabs top of mast and lifts it out of the water. [If it is a CL-16 and turtle, go to the bow]
- Walks the mast up and then the shroud, using hand-over-hand technique. [If it is a CL-16 and turtle, walk the forestay up, then the mast, then the shroud]

Scoop recovery

Same as Assisted Recovery above. Only difference is that the boat's crew stays hold on to something in the cockpit (hiking strap?) to get scooped in when the boat is righted.

Powerboats- Men overboard

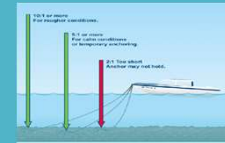
If you are going to rescue an individual that is in the water:

- Safest way to approach is from downwind. You will have more control over your boat with the bow pointing into the waves and wind and will be able to reach the person swiftly. Navigate the boat next to the person and shut off the engine when you are close enough
- Approach slowly, because you don't want the boat's momentum carrying it into the person.
- If a person in the water is going to be anywhere near the stern of the powerboat (e.g. to climb in), stop the engine. [A spinning propeller is a serious hazard, and an engine in neutral can be thoughtlessly put into gear at the wrong time. By the time the operator reacts and switches back to neutral the damage will be done].
- When you help someone in the powerboat, always pull on their PDF only. Never pull their arms or wrists as you may easily cause injury.
- Avoid entering the water to retrieve the person unless absolutely necessary. If the person is panicked, they could drag the rescuer underwater or cause further injury. If you do, wear a life vest and take a flotation device with you when you swim to the person. Keep the flotation device between them and yourself as you pull them back to the boat.

Powerboats- Anchoring

We rarely need to anchor the powerboat, but we do need to use anchors for the racing buoys. The process is very similar.

- 1) The boat/buoy will not be directly over the anchor as you need to have some slack in the anchor line, to allow movement of boat/buoy due to wind and waves.
- 2) Be aware of the wind and current as once the anchor is dropped, the boat/buoy will be pushed back and align with the wind/current.
- 3) You want to create as much distance between the anchor line and the propeller. As such, always drop the anchor/buoy from the bow of the boat.
- 4) Do not “throw” the anchor overboard. Lower the anchor by hand so that you will feel when it touches bottom. Then you can add enough line to allow for wind/current and waves.



Powerboat - Towing

- Approach the sailboat from astern.
- Throw the towline from the powerboat to the sailboat. It is preferable to use the towline from the powerboat.
- Once the towline is secured and the crew is holding it, slow move the powerboat forward.
- Once the towline has tension in it (no slack), only then can you increase speed.
- When at destination, slowly reduce speed. Otherwise, the sailboat may rammed the stern of the powerboat.



Powerboats- Trouble shooting

| ENGINE DOES NOT START | |
|--|---|
| <u>Possible cause</u> | <u>Correction</u> |
| Kill switch not properly installed. | Installed the kill switch |
| Have you pumped the bulb of the full tank line ? | Prim the bulb |
| Control lever not in neutral position | Shift level to neutral |
| Out of fuel | Refuel tank |
| Bad fuel | Change tank – Identify and separate the fuel tank from others to prevent further contamination. |
| Battery connections loose | Tightened he connections |
| Fuel line not properly attached to the fuel tank and the engine. | Re-attached fuel line |
| Battery dead | Change battery |
| Rope caught around propeller | Remove rope |



| ENGINE STARTS BUT THEN STOPS | |
|----------------------------------|--|
| <u>Possible cause</u> | <u>Correction</u> |
| Engine not getting enough oxygen | loosen the vent on the fuel tank to allow air into the fuel tank |
| Fuel tank is empty | Refuel tank |
| Kill switch became loose | Re-insert kill switch |
| Rope caught around propeller | Remove rope |

Questions ?