CELTIC SONG ADVENTURES

Lesson Materials for Crew Training

Last Updated 11-Feb 2020 by Victoria

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LESSON 1: SAILING 101 (A)

OVERVIEW

This is the first class you will take when becoming crew on the Celtic Song. You will meet the Captain and some of the Crew, tour Celtic Song's systems and capabilities, and work through the DaySail Checklist in preparation for your first sail aboard Celtic Song. There are four sections to 101A (note you'll usually cover the next lesson 101B on your first day, too):

1. Celtic Song Check On/Off
2. Cockpit Lines
3. Essential Knots
4. Line Handling

COMPLETION CRITERIA

In order to be signed off for this lesson, you should be able to:

- Perform all duties on the DaySail Check On List.
- Perform all duties on the DaySail Check Off List.
- Name the cockpit lines on the port side.
- Name the cockpit lines on the starboard side.
- Tie a proper cleat hitch.
- Tie a clove hitch.
- Tie a slippery hitch.
- Tie a fender off with a round turn and two half hitches.
- Tie a fender to the stern with a rolling hitch.
- Tie a bowline.
- Tie a sheet-bend and understand its function.
- Coil a line.
- Heave a line.
- Ease a line on a winch and off.

1.1 Check On

Sailing safely, like flying an airplane, means building pathways toward a consistent pattern of behaviors and procedures. Checklists are a way to formalize that process. The lists below represent an organized way to prepare Celtic Song to leave her slip and get underway. You will find paper copies on board. They are published here for you to study. Use them as a way to prepare for sailing and to review what you've learned once you're back on land. Having each crew member perform tasks in the same way every time will lead to better communication, safer sailing and a more enjoyable experience.

Check On

Checking systems below and above deck, creating a log entry, and preparing the boat for departure from the dock.

CHECK ON (BELOW DECK)

Log Book

- ☐ Create log form on empty right-hand page based on previous entries (dated and in ink)
- ☐ List crew names and emergency contact names and numbers of each POB
- ☐ Weather: Wind speed, direction; wave height, intervals; weather forecast; tides, current, moon
- ☐ Engine: Check engine oil level; have second crew member check that dipstick is properly seated; alternator belt (1/2" slack or less) hoses, clamps, check pad under engine for oil, fuel, debris
- ☐ Enter fuel level, engine hours, oil pressure and water temp. after starting engine (Fuel and engine hour gauges located above circuit breakers)
- ☐ Safety Equipment: Locate and note flares, horn, life jackets, fire extinguishers, bell, throwable, Lifesling, First Aid Equipment
- ☐ Radio check and operation: Hail Tow Boat US on 16, switch to designated channel, request radio check for San Diego Harbor (or current location). Know how to transmit for assistance & the degrees of vessel distress (Pan-pan, Securite, Mayday)
- ☐ Bilge: Note counter number and test bilge pumps
- ☐ Battery: Log in voltage for house
- ☐ Enter any maintenance items or additional notes on the left-hand page. Print your name and date on bottom of right-hand page

Electronics

- ☐ Locate depth sounder transducer under V-berth cabin sole
- ☐ Clean knot meter impeller and install; located next to transducer; have second crew check for leaks
- ☐ Electrical panel: turn on radar/chart plotter switch (bottom two yellow dots)
- ☐ Get a fix on master chart plotter. (Press FIND SHIP for latitude and longitude)
- ☐ Turn on ST2000 — top two yellow dot switches on electric panel
- ☐ Turn on slave unit, near companionway, starboard (Press FIND SHIP for current lat and long)
- ☐ Turn on AIS located above navigation station

Boat Systems

- ☐ Check whether Head is operational and yellow valve in proper position
- ☐ Log fridge _____ and freezer _____ temperatures
- ☐ Check bilge water level and cleanliness; lift floor board on sole next to nav station

Additional Safety Equipment

- ☐ Locate and count life jackets (Number: Adult_____Child_____)
- ☐ Locate first-aid kits

CHECK ON (ABOVE DECK)

Clearing Deck, Checking the Rigging

- ☐ Remove canvas (sail and wheel covers, etc.); stow in port lazarette
- ☐ Remove and store plastic instrument covers in canvas bag under nav station
- ☐ Attach halyard shackle to main and secure under sail tie; don't let halyard get away from you
- ☐ Unwrap jib sheets from forward cleats
- ☐ Flake mainsheet down companionway; drop topping lift and boom vang lines down as well
- ☐ Open clutches for reefing lines, boom vang, and boom brake. All lines ready to run free
- ☐ Identify all lines in cockpit, and understand their purpose
- ☐ Center traveller

Other Equipment

- ☐ Check bow anchor is properly fastened
- ☐ Windlass operational? Take chain off windlass before using the switches
- ☐ Winch handles in coaming box
- ☐ Turn on VHF in the starboard coaming box.
- ☐ Boathook attached to starboard mid-deck grab rail; understand how to open and use
- ☐ Air horn in cockpit
- ☐ Attach horseshoe buoy to stern with clove hitch
- ☐ Attach Lifesling to Stern Lifelines with Bowline.
- ☐ Fenders (how many & where?)
- ☐ Dock lines and location

Engine Start Procedure

- ☐ Turn off power switch at dock (slip 115); unplug electric cord from boat, secure it to rail on steps Center helm
- ☐ Place transmission in neutral; start engine by turning key (starts like a car); tuck key float inside plastic engine cover. Control panel located post side of cockpit near binnacle
- ☐ Check engine water discharge off port side stern area.
- ☐ Test gears (forward idle, neutral, reverse idle)
- ☐ Enter fuel level, engine hours, oil pressure and water temperature in log book

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1.2 Check Off

Sailing safely, like flying an airplane, means building pathways toward a consistent pattern of behaviors and procedures. Checklists are a way to formalize that process. The lists below represent an organized way to return to the slip and leave Celtic Song ready for the next daysail or passage.

CHECK OFF

Necessary steps to stow gear, shut down systems and depart from the boat.

CHECK OFF (ABOVE DECK)

- [ ] Stow Lazy Jacks
- [ ] Attach halyard to end of boom next to topping lift
- [ ] Cover instruments with black plastic covers
- [ ] Plug in electrical cord, secure to stern pulpit with attached line; turn power on at dock.
- [ ] Propane tank off, solenoid valve off
- [ ] Replace sail cover and all canvas covers
- [ ] Stow ignition key above circuit breaker panel
- [ ] Stow type IV throwable and horseshoe buoy below in head
- [ ] Stow PFD vests below near nav station
- [ ] Stow winch handles
- [ ] Coil cockpit lines and place over winches
- [ ] Install hatch boards
- [ ] Hose off boat

CHECK OFF (BELOW DECK)

- [ ] Check instrument gauge above circuit breakers to make sure power is on
- [ ] Turn off all yellow switches at nav station
- [ ] Turn off AIS
- [ ] Turn off VHF
- [ ] Wash and dry any dishes in sink
- [ ] Plug in electrical dehumidifier in master cabin
- [ ] Flush head with fresh water
- [ ] Close yellow intake valve in head

1.3 Cockpit Lines

Port Side Clutch

Clutch:

1. Staysail Sheet
2. Topping Lift for Genoa Pole
3. 1st Reef Clew
4. 1st Reef Tack

Clam Cleat:

Traveller Port Side

Starboard Side Clutches

Clutch 1

1. Boom Vang
2. Topping Lift
3. Main Halyard
4. Empty

Clutch 2

1. 2nd Reef Tack
2. 2nd Reef Clue
3. Staysail Sheet

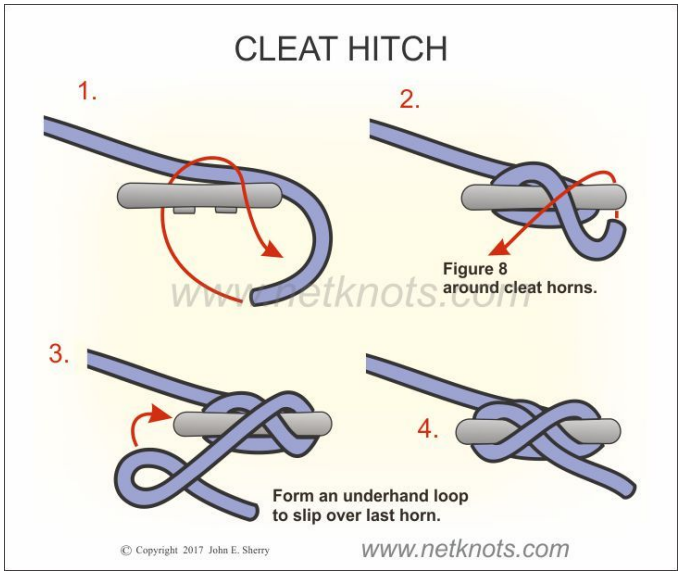
Clam Cleat:

Traveller Starboard Side

1.4 Essential Knots

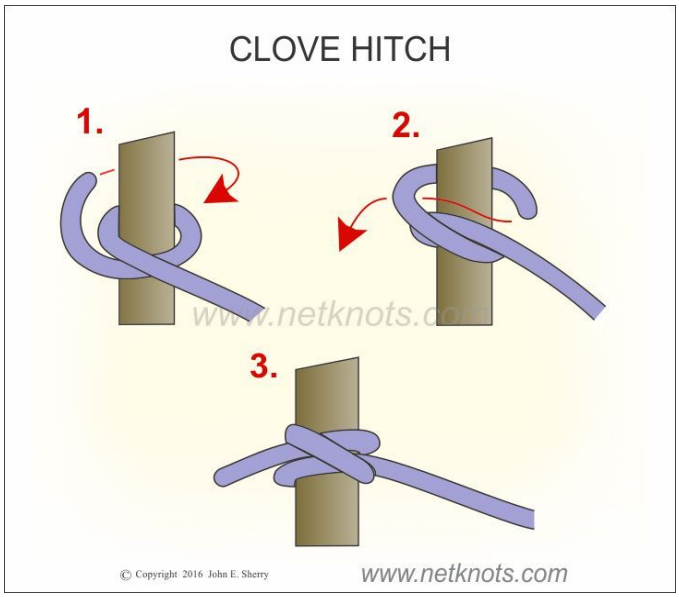
Cleat Hitch

Used to secure lines to a horn cleat at dock or on the boat.



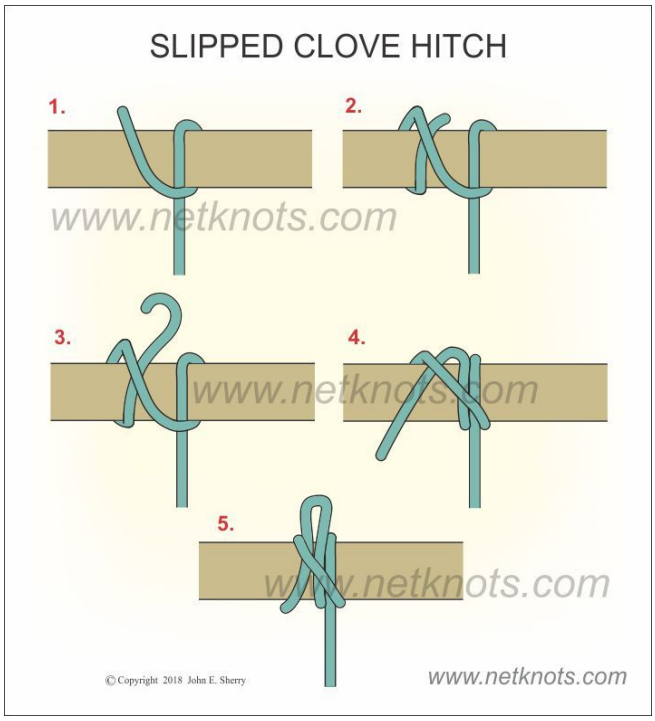
Clove Hitch

Used to secure throwable to stern rail.



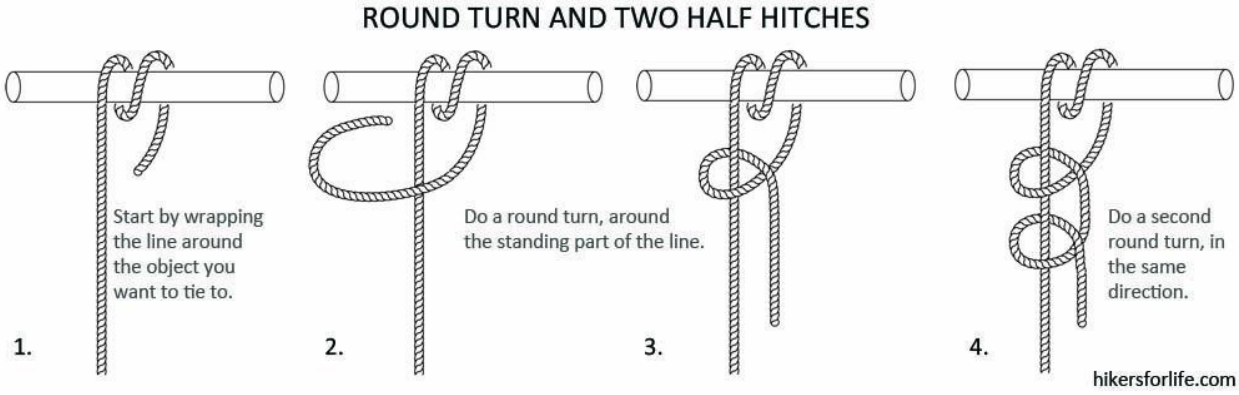
Slippery Hitch

Used on sail ties along the port side of the sail.



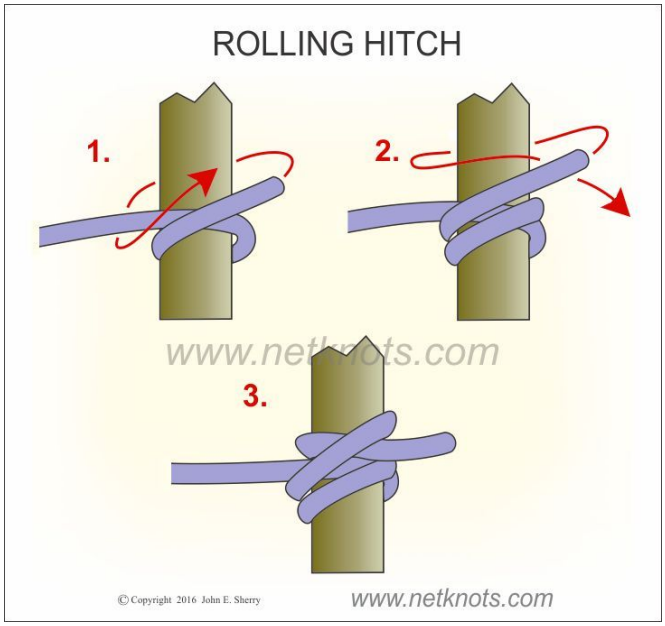
Round Turn & Two Half Hitches

Used to tie off fenders on the stanchions.



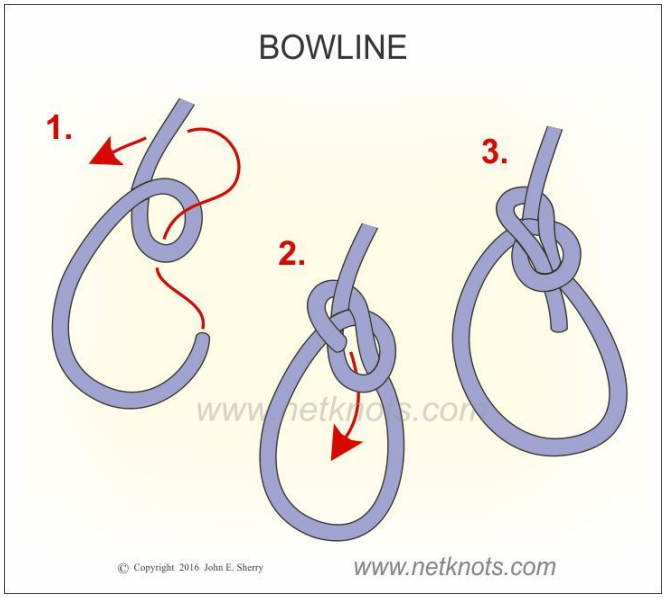
Rolling Hitch

Used to secure fenders off the stern of the boat. Used to tie anchor snubber.



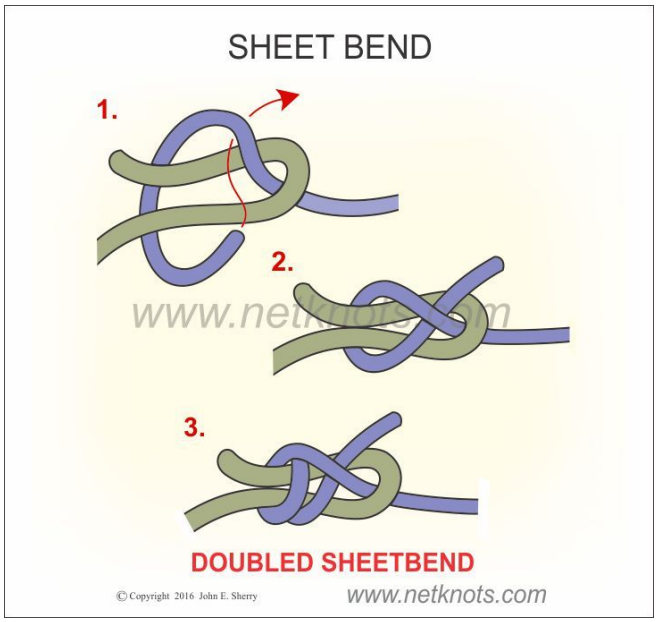
Bowline

Strong, fixed loop. Used for everything.



Sheet Bend

Used to tie two lengths of line with different diameters



1.5 Line Handling

Coiling a Line

There are many resources online for this skill. Practice and keep it neat. When stowing free line wrap an end bight around the top. When hanging off a cleat or stanchion feed the working end through end bight and tie off.

Heaving a Line

Find secure footing with proper leverage against the line to be heaved. Keep the back of your hands facing the winch or clutch you are heaving against. Some precautions:

- **DO NOT PUT A LOOP AROUND YOUR HAND FOR GRIP**.
  If the line is under load you will be unable to remove your hand in time and will likely be injured or worse.
- When pulling a line around a winch by hand, have only 1 -2 wraps. Any more wraps and you're working against yourself, fill the winch up and put in a winch handle.
- When using a winch and winch handle: **DO NOT PUT THE LINE OVER THE WINCH HANDLE**.
  Place the line over the winch until it is fully loaded (3-4 wraps), then around the tooth and into the lips of the self tailer, now put in the winch handle and grind.

Easing a Line

- Not on a Winch
  Keep the back of your hands facing the loaded end of the line. Release the line hand over hand without letting it slide through your hands.

- Around a Winch
  Remove the line from the self tailer while keeping a firm grasp of the line. Place one hand on the side of the wrapped line on the winch and turn it around the winch while easing pressure with the line in your other hand.

LESSON 2: SAILING 101 (B)

OVERVIEW

This will usually be covered in the first session you will have aboard when becoming crew on the Celtic Song. You will meet the Captain and some of the Crew, tour Celtic Song's systems and capabilities, work through Lesson 1, and prepare to take your first sail aboard Celtic Song. There are five sections to the Basics lesson:

1. Leaving the Dock
2. Getting Underway
3. Basic Maneuvers
4. Dropping the Sails
5. Preparing to Return to Slip

COMPLETION CRITERIA

In order to be signed off for this lesson, you should be able to:

- Demonstrate proficiency in procedure for leaving the dock.
- Raise the mainsail.
- Unfurl the jib.
- Tack.
- Gybe with boom brake.
- Heave To.
- Furl the jib.
- Drop the mainsail.
- Demonstrate proficiency in procedure for returning to the slip.

2.1 Leaving the Dock

The helm factors in wind and current conditions and outlines the exit plan and assigns crew responsibilities.

- Crew members are stationed on the dock on each side of the boat.
- The helmsman centers the helm by turning the wheel all the way in one direction and then back to center. Check the instrument above the cockpit steps to make sure indicator shows helm is centered.
- Helm briefly engages transmission in forward (then back to neutral) and reverse to make sure everything works. Also tests bow thrusters.
- Upon signal from the helm, crew releases lines in this order: bow then stern, announcing to helm after each action. Bow and stern lines remain on board; crew boards at shrouds, ready to release red spring lines that remain on dock.
- Before helm gives order to release spring lines, they place engine in reverse idle. Crew release spring lines and places them on dock.
- The helm applies power in reverse and, keeping his hand on throttle, backs away. Increase throttle to about 1,500 RPM to get water moving over rudder and boat moving, then reduce RPM. When most of the way out of the slip, turn the wheel hard to starboard. Use of bow thrusters may be necessary to keep the bow parallel to slip during the exit. Thrusters move the bow in the direction of the thruster arrow. Remember to keep a firm grip on the wheel at all times in reverse.
- Once out of the slip with plenty of room away from lee shore and with enough momentum to clear dangers off the bow, the helm deploys FWP — Forward, Wheel, Power. Remember to shift from reverse to neutral before engaging forward gear.

2.2 Getting Underway

Stowing Lines

- Coil the dock lines in a figure 8
- Secure each of the lines by taking 3 to 5 turns around the bundle secure with a loop over the top
- Tie the bow line ends together with a square knot and store bow and stern dock lines in the aft propane locker, careful to avoid crimping the propane hoses
- Tie the four fenders to the stern rail with rolling hitches and two half hitches on the standing part of the line. Do not stow fenders forward of the blue tape on the port side

Raising the Main

- Center the main
- Make sure brakes for reefing lines, boom brake, boom vang are open so the lines can run free
- Head to wind, remove sail ties from front to aft
- Take slack out of the main halyard
- When all sail ties are removed and crew are in the cockpit, release main sheet
- With main halyard in self-tailing winch, raise the halyard from the helm using the slow speed drive. Keep your eyes on the sail, making sure it goes up smoothly
- When the sail is two feet from the top, hand grind the main sail until luff has no crinkles or bends. Close Halyard Clutch and remove the halyard from the winch.
- Sheet in the Main.

Unfurling the Jib

- Brief Crew on roles.
- Prep Jib Sheets by flaking Port and Starboard lines and removing them off their winches. Put 1-2 wraps around the winch to be loaded.
- Uncoil the black roller furling line (port side) and flake so it can run free
- Open roller furling clutch on the Port Midship.
- Crew member prepares to ease out the line, keeping tension on it (never let the line run out uncontrolled - this person will let it out hand over hand)
- Helm falls off the wind to a close reach
- Crew holding roller furling line eases line as other Crew sheets in the Jib until first furl is out.
- These two people will work together. Make sure the lazy jib line runs free. Crew eases roller furling line until Jib is fully out.
- Crew sheets in the jib sheet; on a close haul or close reach, the telltales should fly parallel to the deck. Use winch handle to adjust.
- If still under motor, turn off the engine by pressing and holding the red button until engine stops.
- Turn off key. Never turn the key off while engine is running.
- Coil and secure furling line

2.3 Basic Maneuvers

Tacking and Gybing

- Brief Crew on Roles
- Helm calls "Prepare to Tack", Crew stations themselves at Jib Winches.
- Crew on Windward Side places a wrap around their winch, Crew on Leeward side removes Jib
- Sheet from Self Tailer, respond "Port/Starboard Ready."
- Helm calls "Tacking", puts helm into and past the wind.
- Crew on the Jib Sheet to be eased holds line with full wraps around winch until the Jib passes through the forward triangle of the standing rigging. Crew then twirls line off the winch and releases line.
- Crew on the Jib Sheet to be tightened pulls slack of sheet until jib passes through forward triangle. Crew sheets in Jib by hand, then puts full wraps around winch and the line in the self tailer, grinds the sheet in.
- Gybe Differences: Tighten boom brake and tie boom brake line to staysail winch. If not using boom break, sheet in the main before the maneuver.

Heaving To

Helm Tacks the boat without changing any lines. Once the Jib fully backwinds turn the wheel all the way to windward and lock the steering wheel.

2.4 Dropping the Sails

Furling the Jib

- Brief Crew on Roles.
- Helm falls off the wind into a Beam Reach.
- Crew eases loaded Jib sheet while other Crew pulls in on the roller furling.
- Close Roller Furling Clutch.

Dropping the Main

- Brief Crew on Roles.
- Tighten Lazy Jacks on Port and Starboard Side. Take Coiled Halyard off winch.
- Helm Turns into the wind.
- With Crew in Cockpit, open the Halyard Clutch.
- Tie off the sail with slippery Hitches.

2.5 Preparing to Return to Slip

Steps for returning to slip:

- Crew deploys fenders and readies bow and stern lines being careful to run the lines on the outside of the lifelines and flaking them on top of the lifelines for easy deployment.
- Helm assesses wind and current conditions and adjusts approach accordingly.
- Helm outlines arrival plan and assigns crew responsibilities.
- Helm adjusts speed to conditions: slow enough to stop when necessary but fast enough to maintain steerage control. Celtic Song weighs about 24,000 pounds so keeping speed to minimum in neutral is necessary. Try not to rely on reverse because prop walk will turn the stern -- and the bow -- just as you're trying to go straight.
- Approach the slip with a speed of 1 to 1.5 knots, using forward and neutral to maintain steerage. If you're going too fast, apply 1,500 to 2,000 RPM in reverse to slow the boat and lessen any impact.
- As boat glides into slip, crew members step off from shrouds onto dock and secure the boat with the spring lines. These will stop any forward motion.
- Helm powers on reverse to completely stop boat. Crew secures stern and then bow lines.
- Three things to keep in mind:
    - If wind shifts or boat is at an angle coming into slip, keep going. Small bumps into a cushioned dock won't damage boat. Trying to back out in a panic will.
    - Crew on dock must not attempt to stop boat by grabbing the lifelines or shrouds or even hauling on lines. Don't ever place yourself in harm's way.
    - Be self-sufficient. Politely refuse offers of help during docking. Rely instead on our trained crew
- Helm should take a walk around the boat to make sure all lines are secured properly.

LESSON 3: MAN OVERBOARD

OVERVIEW

Man overboard (MOB) is one of the most important skills to have practiced, disciplined, and ready for any passage or time you step off land. Nothing strike's more fear in a sailor than the shout of "man overboard," so we practice until it becomes second nature to retrieve someone from the water. There are five sections to the MOB lesson:

1. MOB Considerations
2. Quick Stop Method
3. Use of Life-Sling at the Dock
4. Heave To
5. Life-Sling in the Water

COMPLETION CRITERIA

In order to be signed off for this lesson, you should be able to:

- Use of life-sling and hoist at the dock.
- Heave To.
- Use of life-sling in the water.
- Quick Stop.
- Pick Up a Crew Member.
- Be picked up by another Crew Member.
- Pick up crew with Engine.

3.1 MOB Considerations

When someone goes overboard, the only goal is to get that person back on board as quickly and safely as possible. While we practice MOBs in relatively calm winds and waters with our crew in the water, an unintended MOB is most likely to occur in heavy seas, weather, and winds.

The most important thing to do is to Turn the boat around. At 5kts we travel 507 feet away from the victim in just 60 seconds! At 7kts for 10 minutes, the victim is 1.2 nautical miles away. When we ask what to do when someone falls overboard answer, "Turn the boat around!"

We practice MOB retrieval both under motor and under sail. Be careful whenever a person is in the water when the prop is moving and be mindful of lines in the water, an MOB situation can grow exponentially more serious with flustered crew and sloppy seamanship.

On Celtic Song we most often utilize the Quick Stop Method in conjunction with a life sling in the water. If enough crew are on board when someone falls overboard we also assign Crew to the following American Sailing Association recommendations:

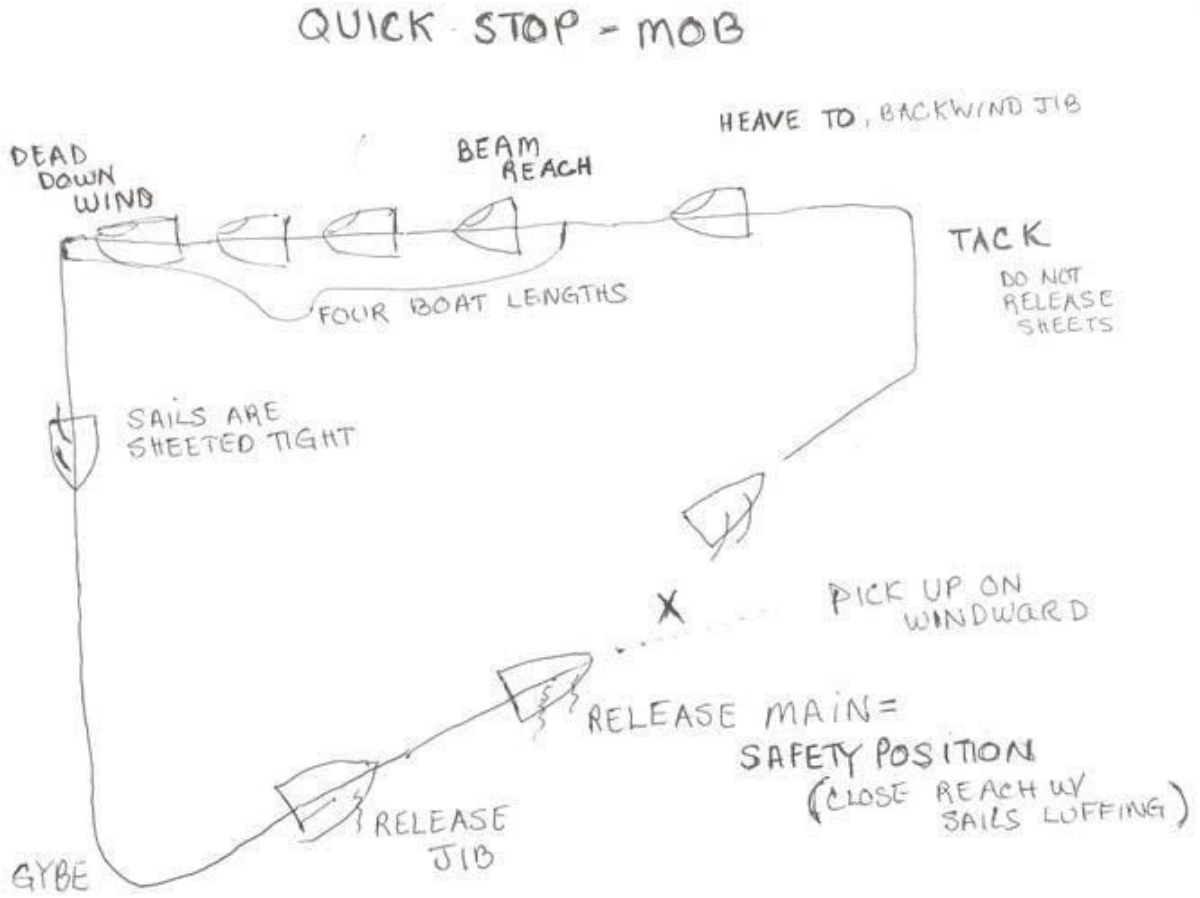
Y - T - P - S – C

- YELL to alert crew.
- THROW horseshoe buoy or other buoyant material to victim.
- POINT to keep victim in sight.
- SET the MOB button on the chart plotter located just inside the companionway to starboard. That sets a waypoint.
- CALL on VHF 16 if you need assistance.

3.2 Quick Stop Method

The quick stop method used on Celtic Song follows this procedure.

1. Victim falls overboard. If there are enough crew on board, Helm assigns them to follow Y - T - P - S - C
2. Head up and tack without releasing the jib sheet. This will backwind the jib and slow the boat.
3. Bear away on a beam reach for three to four boat lengths.
4. Jibe and line up a little downwind of the victim. Let the sails luff.
5. Return to the victim on a close reach with the sail luffing. This is the safety position. Recover the victim on the windward side of the boat. If the victim is capable and sea conditions permit the MOB can board via the swim ladder. In most other cases lead the topping lift to the MOB in the life sling to hoist them up via electric winch.



3.3 Use of Life-Sling and Hoist at the Dock

Sheet in MainSheet. Remove Topping lift from boom and bring to midship shrouds.

Lower topping lift shackle to victim in life-sling. Await for shackle to be secured.

With a crew at the shrouds to guide the hoisting of the victim to the deck, place the topping lift line into the electric winch and begin to hoist them up. Whenever using an electric winch, pulse it on and off, do not let it go continuously; this helps prevent a runaway winch.

3.4 Heave To

Described in Basic 101

3.5 Life-Sling in the Water

Person falls overboard…

Helm begins Quick Stop method outlined above. Crew throws life sling located on stern pulpit.

Helm begins to circle the victim. Crew sheets in MainSheet for Gybe.

Circle the victim until the lifelong reaches them. Allow the Jib to backwind when coming across the wind, do not change lines.

QUICK STOP (outlined above)

Tack, leaving jib backwinded in heave-to position; sail past the victim on a beam reach, leaving 3 to 4 boat lengths before turning downwind, jibing and then heading up on a close reach, returning to the victim in the safety position (close reach with your sails luffing).

PICK UP CREW

When not in winter and with a willing Crew member you will perform the above procedures with a person in the water. A wetsuit clad Crew Member will jump from the boat and upon retrieval will provide critiques on the Crew's performance.

LESSON 4: REEFING

OVERVIEW

Understanding strategies to de-power the sails when the wind comes up are as important sail maneuvers as tacking and jibing. Reducing sail is not only a safety measure for boat and crew, but it also improves boat handling, performance and speed. In this lesson, you will cover four sections:

1. Why and When To Reef
2. Reefing Procedure
3. Reefing Under Sail
4. Shaking out a Reef

COMPLETION CRITERIA

In order to be signed off for this lesson, you should demonstrate a comprehensive understanding regarding:

- How wind force is exponential rather than incremental
- Several strategies for reducing the wind's force
- Layout of the lines that lead back to the cockpit
- How to lay in the first and second reefs
- How to shake out the reefs

4.1 When and Why to Reef

As the wind increases, many forces act upon the boat. The effect can seem dramatic because the force on the sail is proportional to the square of the wind's velocity. So an increase in wind speed from 10 knots to 20 knots is a four-fold increase in force on the sails (10x10=100 vs. 20x20=400). The effect on the boat is noticeable: angle of heel increases, often accompanied by a tendency for the boat to head up or develop weather helm.

Reefing not only adds to safety for the boat and crew, but the maneuver can also increase speed and performance. The extra wind exposes more of the hull and creates drag on the rudder. Reefing flattens the boat, increasing speed and ease of handling — plus you get a smoother ride.

Several strategies de-power the sails include: moving traveller to leeward; easing the main; easing the jib sheet and moving the jib sheet fairlead car aft; heading up or pinching in a gust. But the most reliable way to gain control is to reef. And it's always easier done sooner, when you first think of it, rather than later when there's more drama. You can always shake out the reef if you don't need it.

4.2 Reefing Procedure

NOTE: The following assumes you are under motor; the approach while under sail is very similar (see section 4.3).

Setting 1st Reef

Helm outlines roles and assigns crew.

- Helm heads into wind and luffs the main
- One crew member stationed by port clutch; a second by starboard clutch. Close 1st tack and clew clutches.
- With main luffing, helm signals starboard crew to ease main halyard until the first row of cringles set into the main reaches the boom.
- Crew at port clutch starts hauling both tack and clew reef lines as halyard is eased.
- Crew at starboard clutch also hauls in 2nd reef tack and clew to take in slack.
- Goal for port crew is to snug both tack and clew to boom.
- When 1st reef tack and clew are secure and tight against the boom, the helm gives order for starboard crew to raise the main.
- Crew releases the mainsheet and raises the main using winch until the luff is taut. 2nd reef tack and clew clutches remain open.
- Helm falls off, resumes sailing and shuts off engine.

Setting 2nd reef

The procedure is essentially the same as tying in the first reef. The 1st reef remains secured.

- Helm heads into wind and luffs main
- Starboard crew closes tack and clew clutches and eases main halyard to second set of cringles while hauling in tack and clew reefing lines. Second crew can help here.
- Ease the mainsheet; snug the 2nd reef tack and clew against the boom and raise the main. Crew adjusts the main sheet while helm resumes course and shuts off engine.

4.3 Reefing under Sail

Celtic Song can be easily reefed while under sail or heaved to. The bat cars on her mainsail track allow the sail to move freely when off the wind on a beam reach to a close haul.

- Position the boat on a close haul or heave to
- Trim the jib so it continues to drive the boat forward
- Close the reefing clutches
- Ease the main sheet
- Drop the halyard to the desired reef point
- Pull in the reefing lines (tack and clew); make sure both are tight against the boom
- Raise the halyard, making sure the main sheet remains loose
- Trim the main sheet and jib to follow desired course

4.4 Shaking out reef

Process works in reverse

- Helm turns on engine and heads into wind to luff main
- Crew open tack and clew reef clutches.
- Crew eases mainsheet, winches up main then hauls in mainsheet
- Helm resumes course and shuts off engine.

LESSON 5: USING THE STAYSAIL

OVERVIEW

The staysail is a small, rugged sail that attaches to a foredeck halyard located between the mast and the forestay. Celtic Song has a nifty removable stay that lives starboard of the mast when not is use. It has a turnbuckle-like gear that fastens it to the foredeck and tensions the stay. There are three parts to this lesson:

1. When and Why to Use the Staysail
2. Rigging the Staysail
3. Location of Reefing Lines

COMPLETION CRITERIA

In order to be signed off for this lesson, you should be able to:

- Explain what a staysail is used for and when you'd want it
- Know how to rig a staysail
- Know how to de-rig it

5.1 When and Why to Use the Staysail

The staysail can be used to increase sail when flying both the main and jib. It can also nicely balance a reefed main in heavy winds when flying the jib would overpower the boat.

5.2 Rigging the Staysail

Set up and tension the stay on the foredeck.
Attach the tack to nearby eye.
Hank on the staysail.
Uncoil the green staysail lines in the cockpit.
Find the ends on deck in the staysail fairleads. Untie the stopper knots and run the leads between the two inner port and starboard shrouds. Attach port and starboard clew lines to sail cringle using a bowline.
Find the black running backstay lines bundled near mast on the port and starboard sides.
Untie the lines, run them to about a third of the way from the stern and clip them into the eyes located there. Tighten using the cam cleats.
Attach the halyard located on the starboard side of the mast.
The sail is raised from the mast, using the winch located there.
Remember to ease the running backstay on the leeward side so the mainsail doesn't chafe against it.
Check the clew leads when on a broad reach or run. They may need to be repositioned so they don't rub against the shrouds.
Reverse the procedure to douse the sail.
In port, once the lines are off, leave the sail attached to the stay, pull the sail along the leach, flake it and fold from back forward.
Place in sail bag so tack comes out first.

NOTE: Running backstays support the mast while flying the staysail.

5.3 Location of Reefing Lines

Port Side Clutch

- *Staysail sheet*
- *Topping lift for genoa pole*
- 1st reef clew
- 1st reef tack

Starboard Side Clutch

- 2nd reef tack
- 2nd reef clew
- *Staysail sheet*
- *(4th spot is empty)*

LESSON 6: DOCKING

OVERVIEW

Docking is a critical skill. You are often at the mercy of the wind and current. You must necessarily go slowly, reducing maneuverability, yet you are confronted by boats and other hard objects that threaten the safety of your boat and crew.

Docking 101 is an attempt to mitigate the stress and provide helpful strategies to get you on and off the dock efficiently and safely. Learning the proper sequence of events is important, but practicing them is vital. Understand, too, that conditions change, and you must be prepared to anticipate and change with them.

COMPLETION CRITERIA

In order to be signed off for this lesson, you should be able to demonstrate proficiency in:

- Proper procedure to depart from Celtic Song's slip
- Proper procedure to return to the slip
- Prop wash and prop walk and its implications for docking
- Concept of FWP — Forward, Wheel, Power
- How to dock boat using a single spring line
- How to spring out the bow using a spring line
- How to spring out the stern using a spring line
- Difference between a forward and an aft spring line
- How to safely run in reverse
- Best way to proceed toward a mooring

6.1 Docking Considerations

Three conditions affect docking:

1. Wind (tip: wind will always blow the bow down)
2. Current
3. Vessel — its maneuverability and the effect of its propeller

Prop walk pushes Celtic Song's stern to port when in reverse. Compensate with the wheel to starboard which will work as soon as you have speed through the water. You can eliminate prop walk by putting the engine in neutral. Remember you can use the bow thruster.

Remember that docking conditions constantly change depending on wind, current and surroundings. Use the most valuable instrument on board: your brain — to determine proper procedures and then communicate clearly among the crew. Best way to become proficient is to practice, practice, practice. You won't get it all in one outing.

6.2 Departing the Slip

The helm factors in wind and current conditions and outlines the exit plan and assigns crew responsibilities.

Crew members are stationed on the dock on each side of the boat.

The helmsman centers the helm by turning the wheel all the way in one direction and then back to center. Check the instrument above the cockpit steps to make sure indicator shows helm is centered.

Helm briefly engages transmission in forward (then back to neutral) and reverse to make sure everything works. Also tests bow thrusters.

Upon signal from the helm, crew releases lines in this order: bow then stern, announcing to helm after each action. Bow and stern lines remain on board; crew boards at shrouds, ready to release red spring lines that remain on dock.

Before helm gives order to release spring lines, they place the engine in reverse idle. Crew release spring lines and places them on dock.

The helm applies power in reverse and, keeping a hand on the throttle, backs away. Increase throttle to about 1,500 RPM to get water moving over rudder and boat moving, then reduce RPM. When most of the way out of the slip, turn the wheel hard to starboard. Use of bow thrusters may be necessary to keep the bow parallel to slip during the exit. Thrusters move the bow in the direction of the thruster arrow. Remember to keep a firm grip on the wheel at all times in reverse.

Once out of the slip with plenty of room away from lee shore and with enough momentum to clear dangers off the bow, the helm deploys FWP — Forward, Wheel, Power. Remember to shift from reverse to neutral before engaging forward gear.

Crew stows lines and ties fenders to stern pulpit.

Continuous communication among helm and crew is critical throughout the process both in leaving and returning to the dock.

If bow thrusters are unavailable during this maneuver, then crew on windward side of boat will use the bow line to keep the bow parallel to dock during departure.

6.3 Returning to the Slip

Crew deploys fenders and readies bow and stern lines being careful to run the lines on the outside of the lifelines and flaking them on top of the lifelines for easy deployment.

Helm assesses wind and current conditions and adjusts approach accordingly.

Helm outlines arrival plan and assigns crew responsibilities.

Helm adjusts speed to conditions: slow enough to stop when necessary but fast enough to maintain steerage control. Celtic Song weighs about 24,000 pounds so keeping speed to minimum in neutral is necessary. Try not to rely on reverse because prop walk will turn the stern -- and the bow -- just as you're trying to go straight.

Approach the slip with a speed of 1 to 1.5 knots, using forward and neutral to maintain steerage. If you're going too fast, apply 1,500 to 2,000 RPM in reverse to slow the boat and lessen any impact.

As boat glides into slip, crew members step off from shrouds onto dock and secure the boat with the spring lines. These will stop any forward motion.

Helm powers on reverse to completely stop boat. Crew secures stern and then bow lines.

Three things to keep in mind:

- ➢ If wind shifts or boat is at an angle coming into slip, keep going. Small bumps into a cushioned dock won't damage boat. Trying to back out in a panic will.
- ➢ Crew on dock must not attempt to stop boat by grabbing the lifelines or shrouds or even hauling on lines. Don't ever place yourself in harm's way.
- ➢ Be self sufficient. Politely refuse offers of help during docking. Rely instead on our trained crew

Helm should take a walk around the boat to make sure all lines are secured properly.

6.4 Approaching a Dock

Use these procedures when stopping or tying up at fuel dock or any other dock:

Crew deploys fenders and readies the appropriate lines. Here we'll focus on docking by securing the boat with a single spring line.

Helm surveys the scene, develops a plan and communicates to crew and assigns roles.

Best approach is into the wind so it can help slow the boat. Other approaches may be necessary. What's important is for helm to develop a rational plan and communicate it to crew.

Arrange spring line at aft third of the boat on the side you will dock. Lead spring line through chock near gate (taking care to run line outside of lifelines) then back and secure to horn cleat and jib winch.

Helm slowly approaches dock at a 40- to 45-degree angle. As boat nears dock, helm turns wheel so boat is parallel to dock. Crew steps off at shroud and secures spring line to cleat.

Helm centers wheel and places throttle in forward idle. Helm may have to adjust position of wheel so the boat lies parallel to the dock.

The boat will remain in this position with engine in forward idle allowing the crew to secure the stern and bow lines for an extended stay.

6.5 Springing Off

You can use spring lines to spring out the bow or the stern. The overall technique is essentially the same.

Helm explains the maneuver to the crew and assigns roles.

To spring out the bow clear of the dock, crew leads the forward spring (a line secured to the stern) to a cleat forward of the stern and wraps the line a full turn around the forward horn of the cleat. Crew steps back aboard holding other end of line.

Another crew holds a fender near the stern of the boat to cushion it from the dock during this maneuver.

Helm places engine in reverse idle to back down against the spring. That will force the stern against the fender-cushioned dock and move the bow away from the dock.

At signal from helm, crew flicks the spring line off the horn of the cleat.

Helm employs FWP — Forward, Wheel, Power — being mindful not to swing the departing stern into the dock.

Springing out the stern (leaving stern first) is similar except you use an aft spring, cushion the bow with a fender, ease the gearshift into forward idle and let the boat push against the spring. Turning the wheel toward the dock will speed the process until boat is at a 45-degree angle to dock. Crew flicks off line and boat backs away.

Spring-line nomenclature: An aft spring line leads aft from the bow and keeps the boat from moving forward; a forward spring line leads forward from the stern and keeps the boat from moving aft.

6.6 Running in Reverse

Key concept here is to hold the wheel firmly since pressure on rudder is intense and could cause damage if wheel is allowed to turn freely. The stern turns in the direction you turn wheel. Make gradual rather than sharp turns. If you're running in reverse for an extended distance, consider stepping on the other side of the wheel facing the stern. ALWAYS MAINTAIN A GRIP ON THE WHEEL WHILE IN REVERSE. You can remove prop walk in reverse by putting the engine in neutral.

6.7 Running for a Mooring

Helm assigns crew the responsibility of directing how to head to mooring.

Crew stations himself forward of the mast and directs the helm to the mooring using the same signals as anchoring. It's important that helm acknowledges each signal from crew.

Whenever possible, crew directs helm to stop the boat at the mooring facing directly into the wind.

LESSON 7: ANCHORING

OBJECTIVE

When you stop the boat for the night, you will want to know that when you drop and set the anchor, the boat and its crew will ride safely — even when the winds pick up at night.

COMPLETION CRITERIA

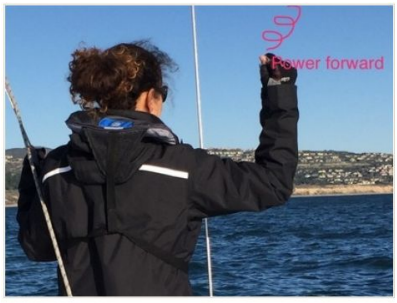
In order to be signed off for this lesson, you should be able to fully explain:

- The anchors aboard Celtic Song; their location and specifications.
- Hand signals that allow the crew and helm to communicate effectively over the wind and engine noise.
- Proper scope of chain to water depth.
- Procedure for safely lowering the anchor and testing its holding power.
- Procedure for safely raising the anchor

7.1 Anchoring and Mooring Signals

Communication between the helm and crew is important at all times but especially so when anchoring or picking up a mooring. The wind and the engine noise make verbal communication difficult. The helm, steering from the stern, must rely on the designated crew to guide him. Crew is stationed forward of the beam and controls the boat with hand signals from that vantage point. The helm must respond verbally to each signal so crew has adequate feedback. Here are the signals. Learn and use them.

Helm response: In forward idle

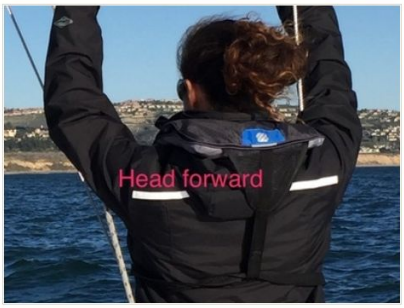


Helm response: Forward power

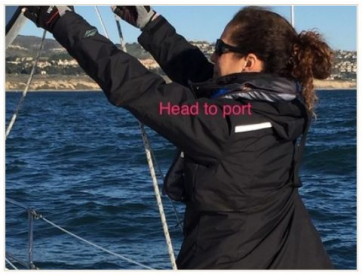
Helm response: In reverse idle

Helm response: Reverse power

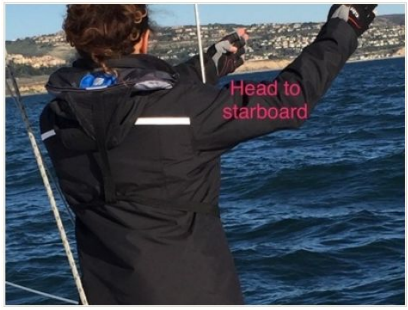
Helm response: In neutral



Helm response: Heading forward



Helm response: Heading to port



Helm response: Heading to starboard

7.2 Anchoring Basics

One secret to exploring the world, finding secluded coves and getting a good night's sleep is to learn the art and skill of anchoring. Each anchorage and situation will be different, but practicing and knowing a standard procedure will ease the anxiety.

Celtic Song has a CQR anchor on the bow and a Danforth stern anchor. The bow anchor is secured to the front of the bow with a pin and a line around the shackle. It is operated with an electric windlass. The rode is 300 feet of 3/8 chain set off every 50 feet with colored markers. You can identify the amount of rode played out by this color scheme:

- Blue = 50 feet
- Green = 100 feet
- Red = 150 and 300 feet
- Yellow = 200 feet
- White = 250 feet

An easy way to remember the colors is that they follow the the alphabet: B, G, R, Y, W (R)

The Danforth stern anchor is secured to the stern pulpit. It contains 50 feet of chain and 200 feet of nylon rode. It is operated by hand.

We will focus on deploying the bow anchor in this lesson.

7.3 Dropping the Anchor

Survey the anchorage. Check your chart for depth and indication of whether bottom is mud, sand, rock or coral. Double check with boat's depth sounder. Celtic Song's shoal keel is 5 feet 2 inches. The depth sounder records the distance below the keel. Make sure there's enough room for the boat to swing.

Make allowances for tidal variation, current and wind in your calculations.

For mild conditions and short stays, start with a scope that has a 5 to 1 ratio. That means for every foot of maximum depth (including high tide) run out 5 feet of chain. Don't forget to include the distance from where the anchor is secured to the bow to the water — about 5 feet. So if the water depth is 15 feet, add 5 more feet for height of anchor on the bow. That's 20 feet times 5 or 100 feet of chain to let out — until you see the green marker.

For more difficult conditions, use a scope with a 7 to 1 ratio.

Talk through the anchoring plan with the crew and assign roles. Make sure everyone is familiar with the anchoring hand signals (see the illustrations above).

When you are inside the anchor area, release the securing line, remove the pin from the anchor, open the ↓ windlass pedal cover and ease out the anchor so it is just above the water line — ready to deploy once you're over your anchoring spot. Close the ↓ cover.

The crew member stationed forward of the beam will control the procedure using hand signals.

Position the vessel so it is into the wind or current, whichever is stronger.

Center the helm.

Once at the location where you want the anchor to drop, crew opens the ↓ windlass pedal cover, signals for reverse idle and lowers the anchor.

Windlass covers should ONLY be open while lowering or raising the anchor. Keep hands, feet, hair and clothing away from the windlass as it lowers and raises the chain and anchor.

Remain in reverse idle as the anchor rode plays out.

When you have played out sufficient rode about a 4 to 1 ratio, crew signals power to reverse to make the first bite of the anchor. Helm acknowledges this as well as all anchoring signals.

Helm takes engine to 1,000 rpm for this first bite of the anchor. If the chain chatters or bounces, the anchor is not holding. Crew signals reverse idle and lets out at least 50 feet more chain.

Crew again signals reverse power.

If anchor bites, crew indicates more reverse power. Helm takes engine to 1,500 rpm.

Helm takes bearings to make sure anchor is holding.

If it is, crew signals helm to take rpm to 2,000 for one minute.

Once convinced anchor is set, helm logs in GPS coordinates. Crew signals neutral.

Helm responds to neutral command and turns off engine.

Attach the snubber (located in the cockpit locker) bridled to large cleats on port and starboard sides of the foredeck, ensuring a catenary curve in the chain. This eases tension off the windlass, transferring majority of load onto the vessel. A catenary curve is a natural curve caused by gravity when each of its ends is secured. In this case, the snubber is the lower fastening; the windlass is the upper.

Keep watch for 15 minutes, checking your bearings.

7.4 Raising the anchor

Helm communicates plan to crew and assigns roles.

Helm turns on the engine.

Crew removes snubber and stores.

Center the helm.

Crew signals forward idle; as always, helm verbally acknowledges the command.

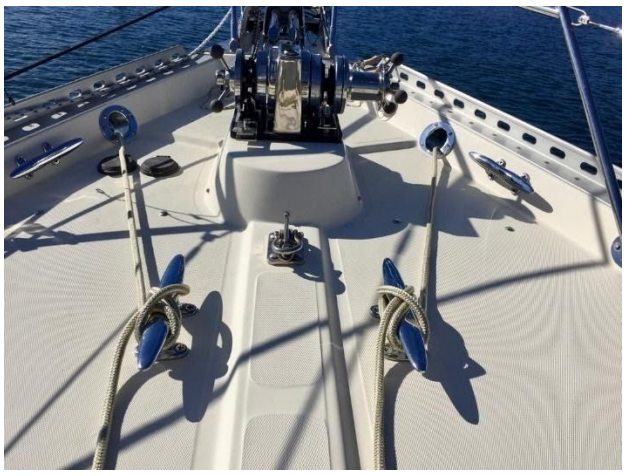
Crew uncovers ↑ windlass switch and begins to take in the chain. Note that the windlass is not hauling up the anchor, just retrieving chain. The crew raising chain needs to periodically decastle the chain as it piles up in the chain locker. This can be easily done by momentarily stopping raising the chain, reaching underneath the windlass where it enters the deck, pulling it out a few inches and letting it drop back down.

Position the boat so bow is directly above the anchor. Crew gives neutral signal, taps his bottom as final signal and raises the remaining chain and anchor. Be mindful that the anchor does not swing against the bow.

If the anchor is stuck, slowly move the boat forward using the boat's engine to free the anchor.

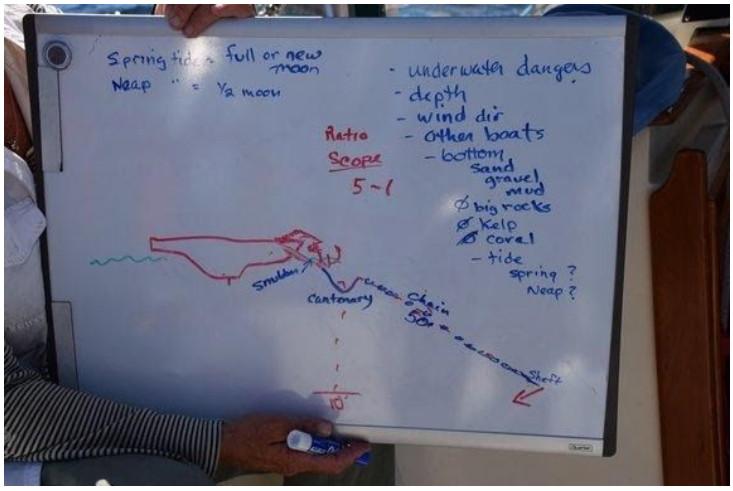
Secure the anchor in its mount with a pin resting in front — not into — the latch. Tie down the shank with the nearby line.

Do NOT pull the boat up to the anchor with the windlass or use it to pull out an anchor stuck in the mud. Instead always use the engine and the motion of the boat.



Snubber lines are led through the chocks and secured to large cleats. This takes the load off of the windlass and onto the boat.

Note that the end of the snubber line attached to the chain has been lowered slightly under water. When the other ends are secured to deck cleats, a slight natural curve forms in the chain taking the load off the windlass.



Always prepare and explain your anchoring plan before you drop the hook