

# **Sailing Skipper's Pre-Sail Guidebook**



**Captain John Jamieson**

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# Introduction

Do you remember the last time you stepped aboard a small sailboat to go out for a day sail? You may remember the skipper and crew coming aboard with anticipation of a great day under sail.

Off comes the sail cover, on comes the engine, and away you go down the channel. This practice goes against the grain of sailing seamanship in a big way!

## ***And here's why...***

Without a presail inspection, how do you know the integrity of your anchor gear, sheets, and sail tracks?

Are there any chafed sailing rope spots, broken pins, worn blocks, frozen seacocks, sticking traveler cars, loose shackle pins, or bent turnbuckle sleeves that could fail when you least expect it?

Have you made a basic, “works-every-time” 5-point engine inspection that could save you thousands of dollars in the long run—before you push that starter button?

A thorough inspection on any cruising or racing sailboat takes just 15-20 minutes tops. What do you gain? Confidence and peace-of-mind that you will avoid those unexpected mishaps that tend to plague other boats like we talked about earlier. Now you can set sail for a worry-free, fun-filled day on the water.

Use the inspections you find in this book as a *base foundation* to build upon. Add to it so that it becomes custom tailored to your own small sailboat. Just make sure that each of the inspections described in this eBook get done every time for sailing safety. Remember, they are the *base foundation* of all pre-sail inspections.

Turn the page to learn what it takes to become the true master and commander aboard your small cruising sailboat. Enjoy the read and stay safe out there!

Captain John Jamieson  
Vero Beach, Florida

# 1 – It All Begins with Ground Tackle

Do you know the weakest link on the umbilical cord that holds your boat to the seabed? Have you used the secret of “end-for-end” to extend the life of your expensive rope anchor line?

Boat brake, insurance policy, or lifesaver. Call it what you wish, but not many sailboat components are as ignored or forgotten about as your anchor, anchor line, anchor chain, anchor shackles, and anchor thimbles.

Forget the paper insurance that covers your boat hull and components. Paper never held a boat in a storm, enabled you to pull yourself off of a sandbar, or saved you from disaster inside a crowded, busy marina when your engine conked out.

Begin your inspection at the bow. This golden rule applies to any sail or power boat of any size. Make this 7-step ground tackle component inspection each time before you cast off on a daysail, cruise, or voyage.

## 1. Determine Your Anchor Shank Integrity

Check the long arm--or shank--of your anchor for bends, distortion, or cracks. You can only trust a straight shank. Replace your anchor right away if it shows signs of these defects because it will be unable to hold your small cruising boat at all angles.

## 2. Inspect Rope Rode for Chafe

If you are getting underway for just the day or weekend, determine the longest scope you will use. Pull that amount from the anchor locker onto the deck. For longer cruises, remove all of the rode. Check every inch of the line for chafe or broken fibers. Minor surface wear should not affect the integrity, but mark that area with tape or a permanent ink pen.

Make a comment in your log or check off sheet and re-check the area often. Coil the line neatly back down into the locker. Now you know your anchor rode will pay out without knots or jams when you are ready to drop the hook.

## 3. Use Chain Length Equal to LWL

Most small cruising boats carry a combination of rope and chain anchor rode. Attach a length of chain to the bottom of the rode, at least as long as your boat's waterline length (LWL). This chain acts as a "chafe-guard" to protect the rope part of your rode from sharp rocks, coral heads, shells, or other obstructions.

#### 4. Wrap Chafing Gear at Contact Points

Use split garden or fire hose, squares of canvas, or rags to protect the anchor rode where it passes through the boat chocks. This protects the line as it moves and stretches inside the chock.

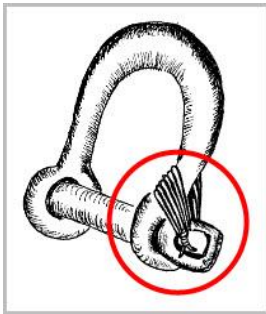
Wrap the chafing gear several inches past the chock on each side. Lash it in place with heavy duty waxed sail twine or small diameter line. Check it often and readjust the chafing gear to provide good protection.

#### 5. Check for Weak Links

Your sailboat anchor rode is only as good as the weakest links--marine shackles. Grasp the screw pin on each shackle with pliers and make sure you can open and close it. Use light machine oil to open frozen (corroded) shackles.

Clean the corrosion inside the pin threads with a wire brush or replace the shackle. Keep your shackles in prime shape to give your system powerful integrity.

#### 6. Mouse Screw-Pin Shackles



Use nylon wire ties or stainless seizing wire to mouse (join) each screw pin to the shackle body. This prevents the screw pin from backing out of the shackle.

In the illustration, stainless seizing wire has been wrapped through the pin and over the shackle body to secure the pin in place. Replace the seizing wire once a year as part of your routine maintenance.

#### 7. Replace Rusted Galvanized Thimbles

Wet anchor rode often gets stowed in anchor lockers with poor ventilation. It's best to dry synthetic line first. Wet rode causes rope thimbles to rust, corrode, and break apart. These thimbles protect your rope from chafe, so replace corroded thimbles as soon as you notice these signs.

**Captain John's Pre-Sail Tip:**

*Once each year, end-for-end your anchor line. Untie the end attached to the boat. Make an eye, insert a thimble, and attach the anchor chain to this end. Cut off the other end and attach it to your boat. This adds 50% to the life of your anchor line.*

Now that you know the simple 7-steps to keep your anchor ground tackle strong and secure, you are ready to move forward. In Chapter two, you will discover how to combat the three deadliest enemies of your costly furling line, Genoa sheets, and running rigging. This secret can save you big \$\$\$s in replacement and repair costs.

## 2 – Drums, Sheets, and Lines

Did you know that the most popular sailing gear in the world has the worst record of failure? Or that the control lines on your Genoa sheet can become brittle and hardened when exposed to its deadliest enemy--sunlight?

Three super strong enemies congregate on your small sailboat to wreak havoc upon every expose piece of rope—or line—aboard.

Harmful ultraviolet (UV) sunlight, abrasive salt and dirt crystals, and deadly chafe can cause catastrophic failure.

Lines snap, halyards part, anchor rope fails, and furling drums jam. What can you do to cut these bandits off at the pass?

Follow these steps to protect your costly furling gear, Genoa sheets, and running rigging lines from the ravages they face each day.

### **Delicate Drums and Furling Lines**

World famous ocean voyaging couple Lin and Larry Pardey add money to their “cruising kitty” by delivering yachts. And what single piece of sailing gear has failed time and again on these deliveries? The roller furler!

Nice as it may be to pull on a string and have a sail unroll like a window-shade, roller furling drums and lines are super complex machines with lots of moving parts. So how can you keep yours from failure?

Look inside the drum at the line spool. Check for worn or thread bare furling line. Note whether the exit line comes off the spool in an even manner or has jammed onto one side of the plates.

Follow the furling line aft. Check for chafe along the line and pay particular attention to the line at each fairlead block. Replace the furling line at the first sign of wear to prevent failure of the furler to roll up or unfurl your Genoa headsail.

## **Genoa Sheet Saviness**

Why treat Genoa sheets as a separate inspection? Unlike any other sail aboard, your furling Genoa allows its sheets to remain exposed to sunlight. UV rays break down nylon and Dacron down faster than any other environmental element!

Then, your sheets get sucker-punched by salt crystals from the humid salt air. These meanies imbed themselves beneath your Genoa sheets braided cover, along with dirt and dust.

Add in the high loads and vibration that your sheets experience while you are out sailing, and you have a potent “wear ‘n tear cocktail” that can shorten the life of your costly Genoa sheets in a heartbeat!

Check the bowlines (if you use bowline knots) for wear and the bitter ends for chafe. Whip or tape the bitter ends to prevent failures.

Grab a Genoa sheet and walk aft—check the line as you go for chafe or wear. Repeat this test with the opposite sheet. Replace or repair worn Genoa sheets.

## **Lines Need Lots of Care**

Give your running rigging control lines lots of attention. Keep in mind those three enemies are at work even when you are away from your boat. Make these quick but vital inspections next:

### *Halyards*

Inspect external halyards for wear and chafe. Sight up the mast against the sky and try to locate signs of wear and tear. Check the integrity of the splice or eye tied to the halyard shackle. Most halyards fail at the shackle splice.

My personal preference would be to tie a bowline knot or buntline hitch instead of a splice to any halyard. That way, you can freshen the nip (untie the knot and retie it an inch or so further up the line) to save wear.

### *Block and Line Sets*

Think of all the rigging that uses blocks and lines aboard...

- mainsheet
- traveler control lines
- fairlead blocks (that lead halyards, reefing lines, or other lines aft)
- mast exit blocks
- boom vang
- running backstays

Check each line that passes over a block for wear and chafe. Move the line in and out of the block a bit so that you can check that part hidden beneath a block or inside of a cam cleat (such as those found on mainsheets and boom vang).

**Captain John's Pre-Sail Tip:**

*Running rigging often fails where the line attaches to the becket (strap) of the block. Splice new eyes onto each block becket once a year to extend the life of your costly running rigging.*

Now you know the most effective ways to combat the enemies of UV sunlight, salt and dirt, and chafe to extend the life of your running rigging. In Chapter 3, learn a fast technique to protect your sailing crew from serious cuts and infection. This razor-sharp damage can lie undetected unless you know how to find it!

# 3- Lifeline Weak Spots and Dangers

Would you trust your lifelines to keep you aboard your boat when heeled over or when a squall or heavy weather arrives at your boat? How can increase the integrity of these lifesaving devices for sailing safety?

Follow these easy steps in the order shown:

## Bow-to-Bow Tape-as-you-go Inspection

Grab a roll of bright colored tape. Start at the bow and work your way aft. Check the upper and lower lifelines from the bow pulpit to the stern pulpit. Look for worn covers or seeping rust stains on insulated lifelines.

These signs could indicate water penetration or broken wires. Mark the spots you see with bright colored tape. When you get to the cockpit, move to the opposite side and continue the inspection—this time toward the bow. Again, as you come across any spot as described above, tape the spot. After you get to the bow, go to the next section.

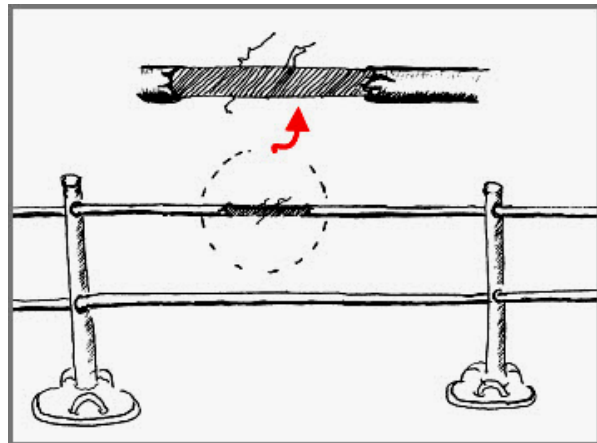
## Look for Harmful Hooks

Go to each taped spot and conduct a close-up inspection of the problem area. Look for broken wires that protrude out of the insulation core or lifeline wire.

These are called "meathooks", caused by wire fatigue and strand failure. Cut off meathooks close to the wire. Then file them down.

Use waterproof rigging tape or duct tape to cover the meathook as a temporary repair.

Replace the entire lifeline wire as soon as possible. This will maintain your lifeline integrity.



Meathooks can injure your sailing crew. Cut them off, file them down, and tape over them until you can make more permanent repairs.

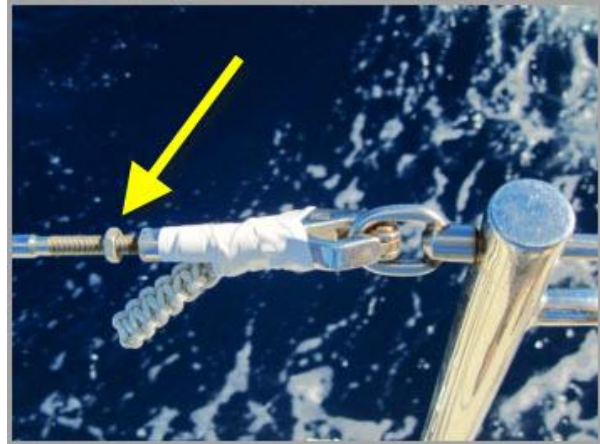
## Keep Pelican Bills Shut for Safety

Lifeline gates are openings in lifelines that provide an easy method to get to and from the pier.

Pelican hook bales can pop open from vibration or failure. As soon as you cast off, tape over pelican hook bales with rigging or waterproof electrical tape.

Look for the lock nut on the threaded ended behind the pelican hook bale. Lock nuts can become loose when the boat pitches or pounds in a seaway.

Use a crescent wrench to screw and tighten the locknut against the base of the swaged pelican hook fitting.



Tape over pelican hooks in lifeline gates. Note how this lock nut has backed off of the end of the swage fitting. Check lock nuts often to help prevent lifeline distortion.

### **Captain John's Pre-Sail Tip:**

*Add extra security to lifelines when coastal or offshore sailing. Veteran offshore sailors rig an extra set of chest-high rope lifelines. Use shroud cleats to anchor the lifeline between the bow and stern.*

Now you know three secrets to check your vital lifelines aboard your small cruising or racing sailboat. In Chapter 4, you will discover how to use a small fitting that costs less than \$1 that will insure that your mast stays up on your boat and your shrouds, stays, and running rigging maintains strong integrity.

## 4 - Stay, Shroud, and Rigging Integrity

Did you know that a tiny piece of rigging the same size and shape as a bobby pin works as hard as the mythical Atlas to hold up your mast and rigging? But it also demands a lot of care.

These tiny rigging warriors pin your rigging parts together, just like the nuts and bolts in an automobile. They are under constant load to deal with the stress, strain, and vibration imposed on your rigging as you sail. So who are these champions of your sailboats rigging?

Often overlooked—sometimes with catastrophic results--the common cotter pin leads the pack as the single most important part of your standing rigging. These fasteners can be bought for less than \$1 at any nautical hardware store.

Cotter pins come in two varieties—cotter rings and cotter pins. Banish the “key ring” shaped cotter rings from your sailboat rigging for good. They have a nasty reputation of backing out of a fitting from vibration or stress. Carry and install “bobby-pin” shaped cotter pins for strength, durability, and super sailing security.

Follow this fast, easy inspection to check the most vital parts of your standing and running rigging.

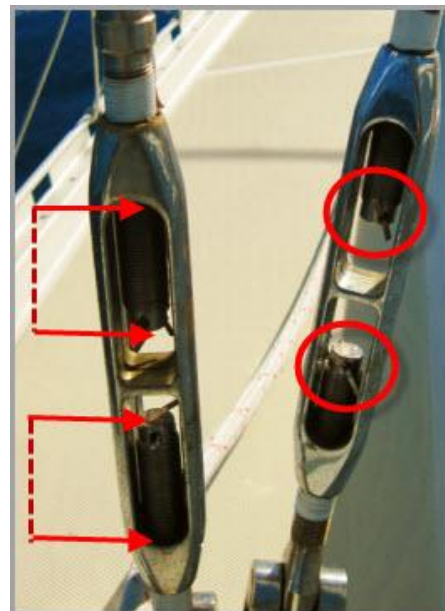
### Turnbuckles, Swages, and Cotters

Check the turnbuckles and cotter pin integrity on each stay and shroud first. Start at the bow with the headstay.

Work your way down the side to the upper and lower shrouds, then to the backstay, over to the other side, then forward to the bow.

Look for dishing, or distortion of the turnbuckle barrel or the stay or shroud end fitting. Once a barrel or end fitting has distorted, it cannot be bent back into place without weakening the damaged area. Do not set sail unless all fittings appear straight and true.

Pay particular attention to the top of each stay or shroud turnbuckle where the end fitting enters the turnbuckle barrel. This area can trap water and develop hairline fractures over time.



Make sure you can see at least ½” of thread inside the turnbuckle body \*left). Check for cotter pins on the end of threaded end fittings (right).

Make sure that you can see at least ½” of threaded end fitting on the upper and lower part of each turnbuckle. Each shroud or stay needs at least that much threaded end so that you can replace the cotter pins or tune the rigging.

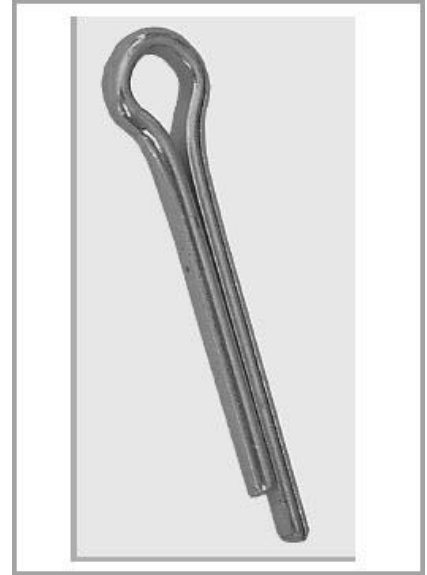
### How to Size and Shape a Cotter Pin

Check that each cotter pin has been sized to the hole of each individual fitting, and shaped in the correct way.

You need to be able to pull the cotter pin out for replacement, or in an emergency. Follow this easy process:

#### *How to Size a Cotter Pin*

1. Use a cotter pin that fits snug in the fitting hole.
2. Push the pin into the hole as far as possible.
3. Shorten the legs to 1½ times the fitting diameter.
4. Spread the legs 25 degrees (maximum).
5. Leave the cotter pins un-taped for instant inspection.



### Other sailing rigging fittings with cotters

Make sure you check these common sailing running rigging fittings. Replace all missing or distorted cotter pins. Your sailboat will have additional components not included here. Add to this list as you go through your inspections:

Furling drums, swivels, and fittings  
Lifeline turnbuckles  
Boom vang  
Mainsheets  
Traveler control blocks  
Running backstays

#### **Captain John’s Pre-Sail Tip:**

*Worried about sharp cotter legs snagging sails, sheets, or shins? Clean the end of the cotter legs with rubbing alcohol. Dab a bead of silicone sealant onto each end. This protects sails and legs and allows inspection at a glance.*

Now you know how to inspect your standing rigging and size, shape, and install cotter pins for worry-free sailing. In Chapter 5, you will learn a simple technique that can make your lines run easier and smoother through any block. And, you will discover how to keep your sail tracks in “like new” condition!

## 5 – Catch Chafe to Save a Fortune

How can you keep your costly sailing rope—or line—strong, supple, and protected? No other sailing equipment comes under strain, stress, or attack from the elements as much as the lines aboard—whether they be docking lines, anchor lines, halyards, sheets, preventers, and controls.

Here are the vital components on your sailboat you need to check each time before you set sail. Catch chafe early on and you'll save a fortune—later on!

### Chafe Checks and Action Steps

Chafe wins the award hands down as the #1 rope-killing enemy of each line aboard your boat. Any line that passes over, through, or under a block, ring, pad-eye, cleat, eye-strap, shackle, piling, bollard, or Samson post can chafe.

Lines rub and grind against fittings as your small sailboat pumps, vibrates, pitches, yaws, or rolls at anchor, in a slip, alongside a dock, or under sail.

Make each inspection a hunt for enemy #1 and you will be able to put preventative rope-life saving measures into play—right away. Start at the bow and work aft. Check these major points:

#### *Docking lines:*

Look for chafe where each docking line exits the hull. Inspect lines at pier or seawall corners. When the tide rises or falls, these points can cause lots of harmful docking line wear 'n tear!

Sand down sharp corners on your bow chocks with super fine-grit sandpaper. Add chafing gear to lines inside the chocks, where the line wraps around a piling, or contact points at pier or seawall corners.

What makes great chafing gear? Use 12" to 18" pieces of old split garden hose, fire hose, PVC tubing, canvas strips lashed into place, or—in a pinch—duct tape. Center the chafing gear on the contact point (chock, pier corner, seawall corner).

#### *Anchor lines:*

As described in Chapter 1, your anchor rode must pass the strictest inspection. That's because it serves as your lifeline if any other onboard system fails, or you are adrift without sail or auxiliary power.

For day sailing, pull the first fifty feet of rode from your anchor locker. Check it foot-by-foot for wear. Inspect the thimble for rust weeping. Cut off corroded or cracked thimbles. Splice a new eye and insert a fresh thimble.

For cruising or voyaging, pull out all of the line from the locker and conduct the same foot-by-foot inspection. Do not use any anchor line that shows more than an occasional spot of light surface wear.

Replace the old anchor line with new line. Carry the old, worn anchor line to make extra docking lines, towing line, or tie-down your dinghy or Liferaft.

*Roller furling line:*

Follow the line back to the cockpit. Look on each side of the lead blocks for chafe.

Replace the entire spool (not just a piece of worn line) if you see any serious chafe spots.

*Genoa sheet lines:*

Look for chafe where each sheet rubs against stays or shrouds.

Once a season, reverse the bitter ends—or “end-for-end” the line. Tie the old bitter ends from the cockpit onto the Genoa clews. Lead the old Genoa clew bitter ends aft. This secret--used for centuries aboard square-rigged ships-- can add several extra sailing seasons to your costly Genoa sheet lines.

*Halyard, Reefing, and Control Lines:*

\* External halyards:

Check for chafe all along the line. Pay particular attention to wear near or at the shackle and at the mast cleat.

\* Internal halyards:

Check for chafe at the exit block near the base of the mast.

Cut off or untie halyards that show wear near the shackle.



Inspect exit blocks near the base of a mast for chafe near the block where the line leads aft to the cockpit.

Tie a bowline or buntline hitch 3” to 6” up the line in a fresh unworn spot. This simple action can save you a trip to the masthead from a parted halyard!

*Sheet Blocks and Tackles:*

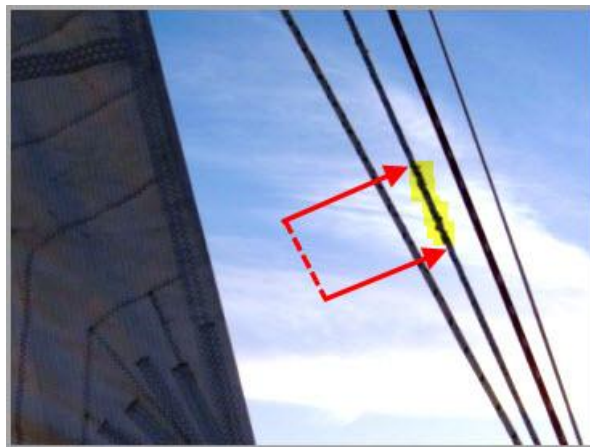
Check these controls for chafe where they pass over any block used for sheets, boom vang, mainsheets, traveler controls, or running backstays. Inspect the line at those points where they exit the block: cam-action cleats, clam-cleats, or jam-cleats.

Cut off or untie sheets or lines where they attach to block becket (straps) when the line just begins to show signs of wear. Thread the line through the block becket to a point 3” to 6” up from the worn point. Tie a bowline knot at the new point.

### **Track Slides and Stops**

Run mainsheet cars out to the far end of the traveler track on each side. Perform the same test with Genoa lead blocks. Pull the plunger or screw-pin track stops. They should lift or unscrew without hesitation.

Apply a light coat of Lanolin lubricant or soft bee’s wax to make tracks slippery. Spray a waterproof lubricant onto track stops to loosen corrosion.



### **Captain John’s Pre-Sail Tip:**

*Double check luff and clew reefing lines for chafe after hoisting the mainsail. Against a lighter sky, chafe becomes much more apparent (photo above). Note the severe chafe on this 2<sup>nd</sup> clew reefing line. It was hidden when the mainsail was flaked onto the boom. Against a light background, it becomes visible.*

Now you know the best ways to deal with sailing public enemy #1—chafe-- fast and easy to save money and extend the life of your costly sailing rope. Turn the page for Chapter 6, where you will discover the most overlooked “hidden” sailing gear. Fail to check this equipment at your peril! Learn four easy 1-minute inspections to keep your sailboat safe and secure.

## 6 – Check Hidden Equipment with Care

Do you know the four vital parts of your boat that need a “look-over” each time before you set sail? Did you realize that in just minutes, you will know more about the integrity of your steering, batteries, propane tank, or vital thru-hull valves than most sailors on the water today? Follow these four inspection guides for peace-of-mind—every time.

### Wheel Quadrants and Cables

Open the round or square inspection port near the sailboat wheel pedestal in your cockpit to check your wheel quadrant wires and gearing. As you look down into the compartment, grab the sailboat wheel and turn it an inch or two at a time from stop to stop.

Watch the wires as they slide over the pulleys. Look for distortion, bends, meat-hooks (see Chapter 3), or chafed “burn” spots that look like compression. These factors cause wire fatigue and the wire could snap when you least expect it. When that happens, you lose steering.

Next, test each wire for slack. Press on the wire cable with moderate tension. Those wires should not have more than a fraction of an inch of slack. Otherwise, the wire could jump the pulley and again, cause a loss of steering.

You don’t want that to happen when sailing, docking a boat, or maneuvering in tight quarters around other boats. Keep the quadrant cables clean, distortion free, and lubricated to extend their service life and prevent failure.

### Batteries, Boxes, and Tie-downs

Batteries are potential bombs that release hydrogen gas, so you need to make sure that they are kept safe and secured for sea in a well ventilated locker. Remove the cover of each battery. Open the cell covers and check to make sure they are filled. If not, top them off with distilled water. Replace the covers.

Tighten the battery terminals. Battery terminals loosen with engine vibration or when heeling and pitching while sailing. It just takes a bit of slack between a cable and a terminal and your engine or electronic equipment can fail to start.

Battery covers protect the terminals from dropped tools, which could cause sparks or explosion. Tie-down straps must be secured without slack to a strong platform so that they do not move when heeled, rolling, or pitching.

Check each strap for chafe, just like you check a piece of line. Nylon webbing may be strong, but it also chafes at any edge that passes over a corner. Replace worn battery tie-down straps right away for safety’s sake.

## Do You Know Your Through-Hulls?

Most cruising boats have between 8-12 holes drilled below the waterline to allow sea water into the boat for heads, shower drains, sink drains, cockpit scupper drains, instrument transducers (knot logs or depth sounders), engine intake, and other uses,

Most through-hulls are covered by a valve with a handle that can be opened to allow sea water into the boat or shut to keep sea water out. Sea-cocks are the most important components beneath the waterline and need attention and care to prevent flooding.

Check every handle on every seacock on every through-hull. Surveyors report time and again that they find frozen sea-cock handles on most every boat they inspect. You must be able to close any seacock with minimum effort.

Move the handle from open (parallel to the hose) to closed (perpendicular to the hose) and back to open. This exercises the seacock handle to keep corrosion at bay, and the handle lubricated. Open frozen seacock handles with a light tap from a hammer or mallet.

Examine the hoses at the top of each seacock. Replace hardened or cracked hoses right away. They are the #1 cause of through-hull failure. Inspect the stainless clamps on each seacock hose. Replace rusted or corroded clamps.

Insure that a tapered wooden plug gets lashed to the base of the seacock with easy-to-break twine. If a seacock hose fails, you can drive the plug into the seacock hole with a hammer or mallet as a temporary repair.

### **Captain John's Pre-Sail Tip:**

*Carry extra hose and hose clamps on board to replace through-hull hose in an emergency. How do you decide what size to buy? Sink hose and engine intake hoses have the worst record of failure, so make those your #1 priority.*

Sail with confidence now that you know how to find the hidden equipment to inspect aboard—and the steps you need to keep it strong, safe, and secure. In Chapter 7, discover the five most important engine inspections that will keep your engine roaring like a lion, save you \$\$\$s in engine repairs, and reward you with long, faithful service.

# 7 – Make Engine Inspections Simple

Do you want your small sailboat engine to deliver loyal, reliable performance you can count on? If so, you need to make these “fast five” inspections each and every time before you push the start button.

This applies whether tied up in a slip, alongside a dock, to a mooring, or anchored. Follow this simple system and you will be rewarded with longer life, better service, smoother running.

## 1. Open the Raw Water Seacock

Grasp the seacock handle and open and close it two times. This insures that that handle hasn't frozen in the open position. Feel the hose for hardness or cracks. Change out any intake hose that shows these signs of deterioration. Leave the handle in-line with the hose.

## 2. Dip Twice to Check the Oil

Pull the oil dipstick out of the hole. Wipe off the end. Push it back into the hole and make sure it seats all the way down. Pull it out again and hold a rag beneath the stick. Solid black shows normal diesel engine oil.

Any color other than black (unless you just changed the oil), such as light brown or whitish-brown indicate water penetration into your oil. Do not start the engine until you have this problem analyzed and repaired.

Take your fingers, wipe the oil between them, and look for particles. Small granules show oil that's past its prime. Metal particles indicate internal engine problems. Get your engine analyzed and repaired before you use it.

## 3. Finger-test the Coolant Level

Your engine may or may not have an external coolant reservoir. This needs to be kept topped off to the line on the bottle. A better test involved an inspection of the coolant inside the heat exchange tank.

Make sure that the tank has cooled to the point that you can hold your hand on top. Unscrew the pressure cap. Look at the gasket inside the cap. Worn or cracked gaskets could lead to cooling problems. Replace the entire cap and gasket—not just the gasket.

Dip your fingers inside the top of the tank. Coolant should be within 1” of the top of the fill opening.

#### 4. Sniff-test the Transmission Fluid

Unscrew the transmission dipstick. Wipe off the bottom of the stick and screw it back into the transmission fill opening. Unscrew it again, pull it out, and smell the fluid. It should not have a burnt smell, but a sweet-sour odor.

Make sure when you screw the stick back in it doesn't become cross-threaded. The top of the stick needs to make a tight seal to prevent leaks and maintain proper pressure.

#### 5. Look for Hidden Leaks with a Light

Shine a light all around your engine. Look for water, fuel, or oil leaks. Pay particular attention to these areas:

- ✓ shaft packing (1 to 2 drips maximum per minute unless you have a drip-less type)
- ✓ fuel hoses and clamps (bright sheen indicates fuel leaks)
- ✓ covers and seals (bright sheen indicates fuel leaks; black drips indicates oil leaks)
- ✓ engine bed (water, oil, transmission fluid indicate leaks)

**Captain John's Pre-Sail Tip:**

*As soon as you start the engine, look over the stern or quarter to make sure you have exhaust cooling water flow. Shut the engine down right away if cooling water fails to flow within 20 seconds of starting your engine!*

Make these five easy inspections to keep your small sailboat diesel engine in top shape for years to come. You will be rewarded with worry-free service and great performance—wherever in the world you choose to cruise.