

PRACTICAL BOATER

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The BoatU.S. anchoring guide

*Your comprehensive guide for how to
enjoy time on the hook and safely hold fast*

Many boaters spend their best hours anchored rather than underway. There are few absolutes, but let's look at some smart, effective anchoring techniques and ways to keep your time at anchor comfortable and safe, whether you're anchoring a smaller boat for short periods or a larger boat overnight.

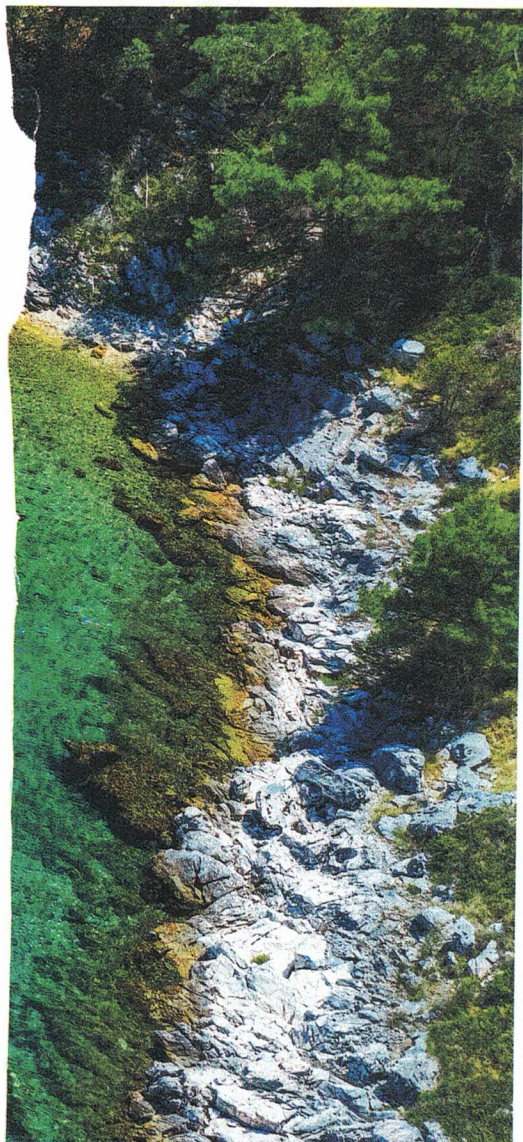
PART 1. WHERE TO ANCHOR, plus anchoring etiquette

PART 2. HOW TO ANCHOR, step-by-step, including
how to rig a snubber, and more

PART 3. HOW TO WEIGH ANCHOR and freeing a
stuck anchor

YOUR GUIDE TO PROJECTS, SKILL BUILDING + WHAT'S NEW

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PART 4. WHICH ANCHOR? A close look at all the types and differences, plus takeaways from real field tests
PART 5. GROUND TACKLE MAINTENANCE, plus how to keep your anchoring system in top shape

MORE Visit [BoatUS.com/Anchoring](https://www.boatus.com/Anchoring) to read even more anchoring-related articles as well as a link to our "Boat Anchors & Anchoring" video playlist.

PART 1

Where to anchor

Much of the skill of anchoring comes down to assessing conditions. Here's advice on choosing an anchorage for peaceful nights aboard, or for a day idling on the hook

BY BOB ADRIANCE AND MARK CORKE

Before you arrive at an anchorage, study the chart to gain valuable information on depth, the type of bottom, and any navigational hazards. Pilot and guidebooks often carry additional info on anchorages, sometimes with photographs – aerial photos are especially useful. Many are written by cruisers and boaters who know the area well and have local knowledge.

Before dropping anchor in a new area, check your chart to make sure that the bottom offers something your anchor can grab and is clear of obstructions such as rocks, coral heads, or sea grass. Most charts have abbreviations that identify the type of bottom and any characteristics, such as kelp, mud, or rock. If the chart says the bottom is "hard," your mud anchor may not set. The meanings of the abbreviations are usually shown in a legend box on the chart.

When you arrive

Check how many boats, if any, are already anchored. Will there be room for you, too, while allowing safe 360-degree swinging room for your boat and those around you? Seeing other boats already anchored may be a good indicator that

the anchorage is safe, but not always. The prudent skipper must make his or her own decisions. If the anchorage looks crowded when you arrive, it may be best to find an alternative.

Choose an anchor spot like you'd circle a parking lot in your car, looking for just the right space. This will ensure that you've assessed the real depth all around your potential swinging radius. This is the frame of mind you should be in when anchoring. But don't circle too close to other boats or so close that you could run over their anchor rode.

Good manners dictate that you don't want to anchor too close to other boats. You need to consider that boats will swing as the tide changes or wind shifts, so you need to be far enough away that, when you all swing, you won't bump into other boats in the middle of the night. Remember, some boats react differently to wind and current and thus swing differently. Boats typically oscillate to the wind every 1 to 5 minutes and not at the same time, which means the entire anchorage might look different every few minutes. So take your time to select your spot.

It's a great idea to ask other boats in the anchorage for advice. Call them

on the radio or, if crew are on deck and there's space, go slowly by and ask if there's any reason for not dropping the hook in the spot you've picked. They could be locals and have useful knowledge to share.

Wind and weather

As wind speed doubles, its force quadruples, so ideally you want the wind coming off the land, to give you protection. This way, not only will the fetch (length of water wind blows without obstruction) be minimized, but the boat will blow away from shore, minimizing waves. Avoid anchoring in a location where the wind is blowing onto shore, called a "lee shore," a potentially dangerous situation as waves could be larger and the boat could be blown onto the beach should the anchor let go or drag.

When selecting an anchoring spot, listen to the weather forecast. A dramatic wind shift could make what seems like a quiet cove into an uncomfortable night at best and a potential trap for the boat. Listen to detailed weather forecasts, and ask yourself if you can get out of the anchorage if wind and weather change. Also consider that you and other boats may need to let out more scope if the weather turns bad.

Take tidal range into account

Some anchorages look inviting at high tide, but when the tide recedes, dangerous rocks or the seabed may be exposed, leaving you high and dry.

Consult tide tables to figure out if the tide is going in or out and what the range is. Then prepare for the extreme of the range if you plan to be anchored for a few hours or overnight. Otherwise, you may end up aground as the tide goes out.

This is one area where electronic charts can be your friend. Navionics charts and others can give the tidal range where you are, whether the tide is rising or falling, and how long it will be to low or high tide.

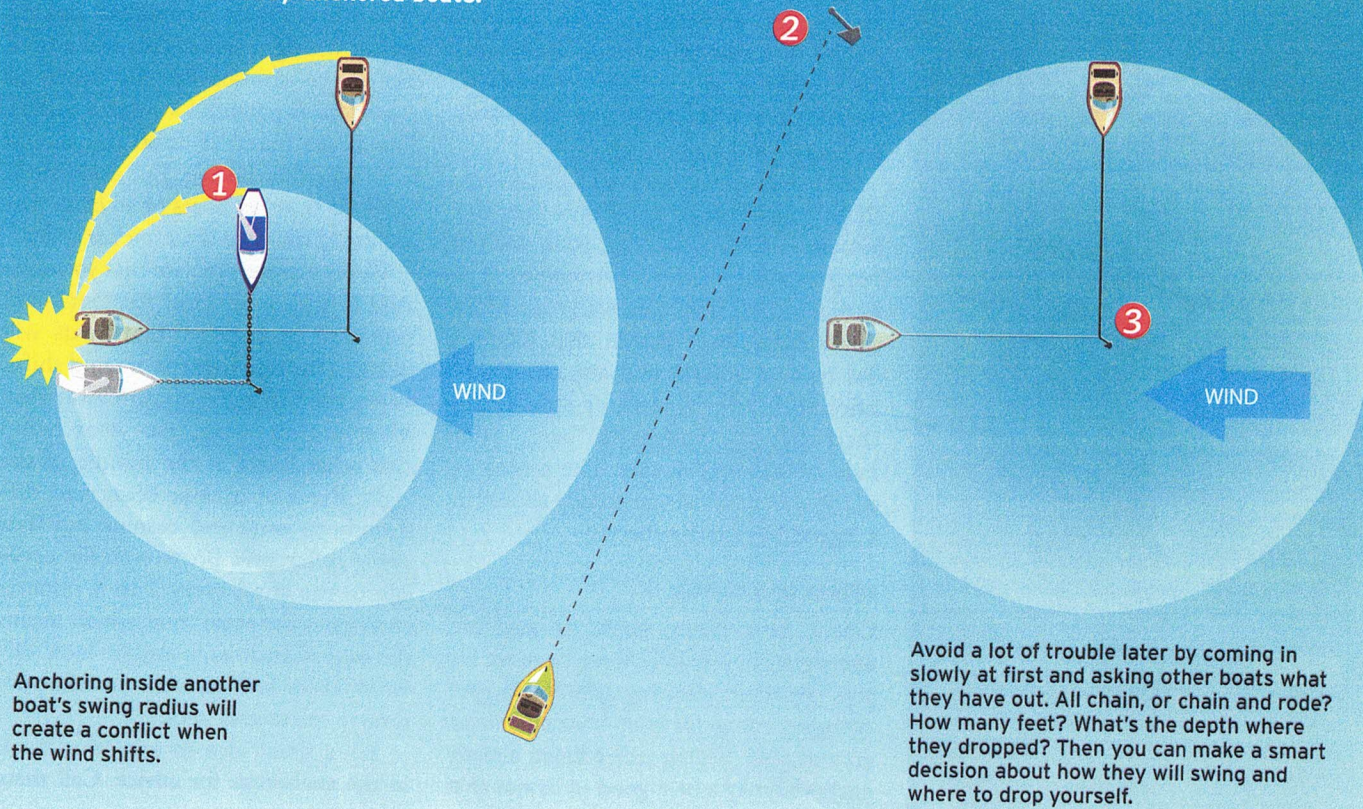
The farther north you go, the greater the tidal range, with places like Maine's Bay of Fundy on the East Coast and many parts of the Pacific Northwest experiencing wide changes – in excess of 14 feet in some places! Other areas, such as the South Carolina, Georgia, and north Florida coastal indentation also experience ranges of from approximately 6 to 8 feet, while other areas experience little range.



Visit BoatUS.com/Smarter-Anchoring for additional information on choosing an anchorage.

HOW TO HANDLE A FEW TYPICAL ANCHORAGE SCENARIOS

① The different lengths of the all-chain rode on the white sailboat on the left and the longer nylon rode on the nearby tan powerboat will result in the boats overlapping and **BUMPING** when the wind shifts. ② The boat approaching the anchorage should anchor well clear of other boats, if possible, and always drop the hook at least a few boat lengths **BEHIND** and well off another boat's quarter, so when all the boats swing in a wind shift, they won't bump each other. In the case of the two boats already anchored too close to each other, a safe location for the new boat to drop would be at the "2" location. ③ However, the smartest choice of all would be for the incoming boat to drop the hook at location "3," well clear of already-anchored boats.



Always anchor from the bow

Our GEICO insurance files reveal sinkings of small boats that were anchored from the stern, something usually done for convenience while fishing. It's a bad idea. In most cases, the boats filled with water from waves or a wake coming over the already low transom of an outboard-powered boat and the boat capsized. The bow is the strongest part of a boat, most able to withstand and ride up and over waves. It should be the only place an anchor is tied on a small boat.

Parts of an anchor

1. BILL - Tip of a fluke

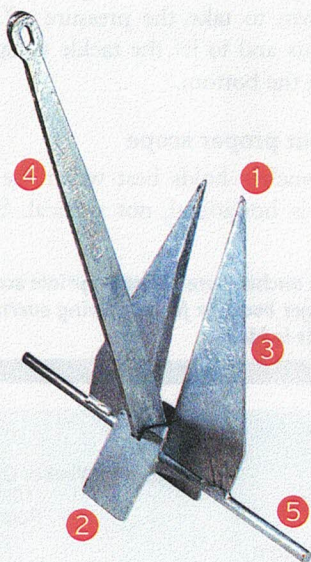
2. CROWN - Bottom of the stem on an anchor

3. FLUKE - The shovel-shaped part of an anchor that digs into the ground

4. SHANK - Main anchor stem.

Anchor cable connects at the top.

5. STOCK - Bar situated to force the anchor into position for maximum holding power



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and click "Resources" for exclusive discount codes.

ANCHORING ETIQUETTE

1. Come in VERY slowly. Wakes are a no-no in any anchorage. Don't make one.
2. Pass BEHIND anchored boats when you're weaving your way through an anchorage. It's nerve-wracking to see someone passing right over where you know your anchor line is.
3. Avoid blinding fellow boaters at night with a million-watt spotlight. Keep your light aimed low, proceed slowly, have all your own running lights on, and keep voices low and clear.
4. First boat sets the precedent. Anchoring is on a first-come, first-served basis. Boats that come in later need to respect the space needs and 360-degree swinging room (with rode stretched out) of all the other boats there. If there's simply no room, don't try to squeeze in; find another anchorage. The opposite also holds true: If there's plenty of room in an anchorage, don't anchor close to another boat; give them privacy and peace.
5. Use a minimum of 5-to-1 scope, unless more is needed. Check in with those nearby. If they've used 5-to-1 scope, and for safety overnight you need to use more, discuss it with boats already anchored near you. Otherwise, when the wind shifts, you may swing over and be on top of them, likely hitting them. Ideally, an anchorage of boats should swing around together if they have similar bottom and windage characteristics. But you can't rely on this.
6. Once the hook is down, don't hop in the dinghy. Nothing screams "inexperienced" louder than leaving the boat before it has settled back and really set its hook. If you're ashore with a poorly set anchor, you'll likely be responsible for the slow-motion pinball game that ensues.
7. Sound carries farther on the water. Dogs barking, generators running, and TVs and music blaring are obvious no-nos. But water can transmit even quieter sounds, especially after dark. Cellphone conversations in the cockpit, loud talking and laughing late into the night, and amorous encounters can all be heard by a sizable part of the anchorage. If you must run a genset, anchor near boats similarly equipped, and select a time of day when most folks are ashore, never during cocktail hour or quiet evening time.
8. Scent carries. Perhaps the worst thing a boater can do is pump the head overboard in an anchorage. Not only is it usually illegal, it smells and is a safety hazard for swimmers, even many hours later. Use the pumpouts. — CHARLES FORT

PART 2**How to anchor**

Take your time, don't overdo the engine, and let nature do most of the work

BY TIM MURPHY,
BOATU.S. CONTRIBUTING WRITER

In the previous article, we discussed how to select a safe, secure place to anchor. Now, let's go through the steps for how to drop the hook and make sure your anchor holds

Prepare for anchoring

Before the anchor goes over the bow, make sure you have plenty of rode and that it's free of tangles and ready to run. Anchor rode that you've already marked with the length helps you determine how much to put out. A length of chain helps weigh the rode down at the anchor, ensuring better holding. When you're ready to set, the boat



Visit this article at BoatUS.com/Expert-Advice to watch a video on how to avoid the biggest mistake when anchoring.



In advance, work out silent communications between the spotter at the bow, and the helmsperson: When the spotter wants slow RPM, she raises one finger. More RPM, hand in circular motion. Neutral, hand up. Less RPM, hand palm down. Kill engine, fist. Develop your own hand signals, review them with crew, and stick to them.

should be motionless, or drifting very slowly astern. Any forward motion may knock the anchor against the boat's stem. This is especially true on boats with a plumb (vertical) bow. Forward motion can also cause the boat to run over the rode, possibly setting the anchor in the wrong direction and also fouling keel, rudder, and prop.

Drop the hook

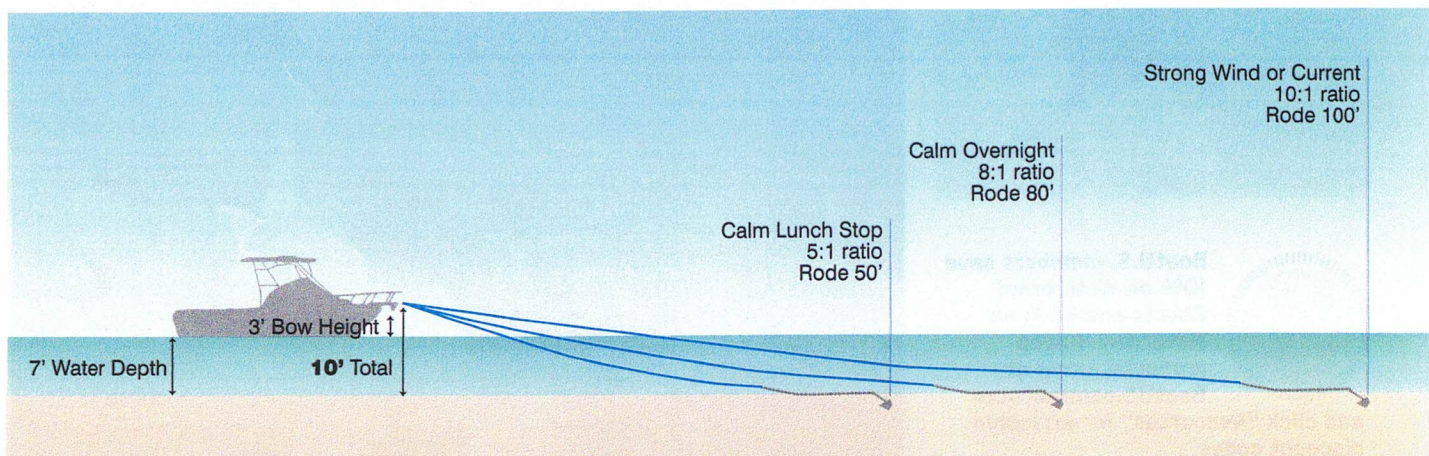
Pick a spot to drop anchor, keeping in mind where you want the boat to end up and that the anchor will drag a short distance before it sets. As the boat drifts

back, lower the anchor to the bottom, then gently pay out the rode. This will prevent the chain from piling up in a heap. If the anchor and rode all pay out in one line, free of tangles, everything should be ready to set it securely in the bottom. Take a turn around a cleat, if using a rode, and snub it off every now and then to take the pressure off your windlass and to let the tackle straighten out on the bottom.

Pay out proper scope

Your anchor holds best when the load on it is horizontal, not vertical. So let

Depending on the wind strength and length of time at anchor here are appropriate scope recommendations for a mixed rope/chain rode. For larger boats or for anchoring overnight, two to four boat lengths of chain attached to your rode is ideal.



TIP

Most adult arm spans are between 5 and 6 feet across, so you can quickly pay out a 5:1 scope by counting the same number of arm spans of anchor rode as the water depth plus your bow height.

scope once it's fully in. If it's windy or you might go ashore for a bit, pay out at least a 7-to-1 scope. If you're spending the night on the hook, pay out an 8-to-1 scope. **NOTE:** When you calculate scope, don't include the chain at the anchor end of the rode unless there's more than 6 feet or so; the chain's job is simply to weigh down the anchor.

So, for example, if you're anchoring in water that's 10 feet deep and your bow is 5 feet above the waterline, water depth (10) + bow height (5) = 15 feet, which means that for a lunch hook you should put out 75 feet of rode (15 feet x 5).

For an overnight stop in the same location, put out 120 feet (15 feet x 8), and so on. Some circumstances such as bottom type or expectation of a storm may call for more rode. But always make sure to stay clear of any boat or obstruction down wind or current.

Set the hook

Once you've let out ample scope, let the boat settle back on the anchor to straighten out the rode. A gentle breeze or a mild current may be sufficient for this step. If not, use the engine with just a touch of reverse. Pause and take a good look around, especially abeam (opposite the boat's middle), and note your position relative to other fixed objects.

Now, put the engine in SLOW reverse. You can expect to move slightly astern as the anchor and rode set themselves and stretch out. Soon, though, the boat should settle in a fixed position. If at this stage the boat is still moving astern, your anchor may be dragging; pick it up and

out enough scope to accomplish that. First, add the depth of the water to the height of the bow from the water, then multiply that by 5 and pay out that amount of rode for a "lunch hook" when you'll be aboard, awake, and watching in calm conditions. If the tide is coming in, adjust for it so you rest at 5-to-1

How to rig a snubber

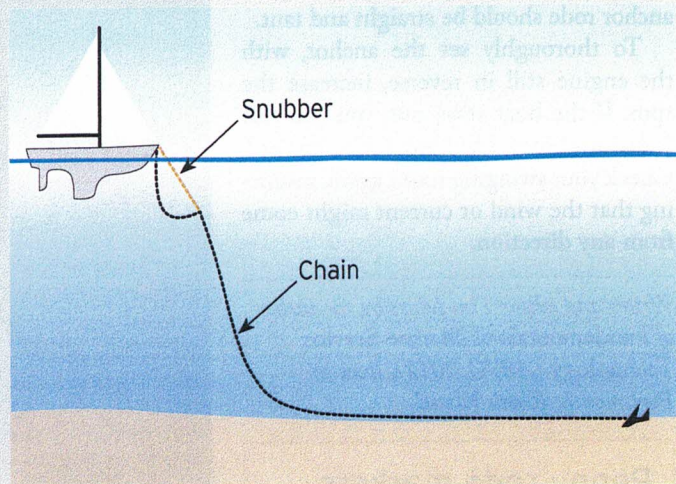
An anchor snubber, or snubbing line, performs two important functions for boats using all-chain rode: absorbing shock loads to an anchor rode and preventing the anchor windlass from taking all the strain as the boat swings at anchor and rises and falls with waves.

The simplest way to rig a snubber is, after setting the hook, attach a 20-foot length of nylon line (ideal because it stretches) to the chain or rode using a rolling hitch, before you deploy the final length of chain. (Lengths may vary depending on your circumstances.) Attach the other end of the snubbing line to a strong bow cleat, then feed out more anchor chain/rode until it hangs loosely between the rolling hitch and the windlass or other point where it attaches to the boat.

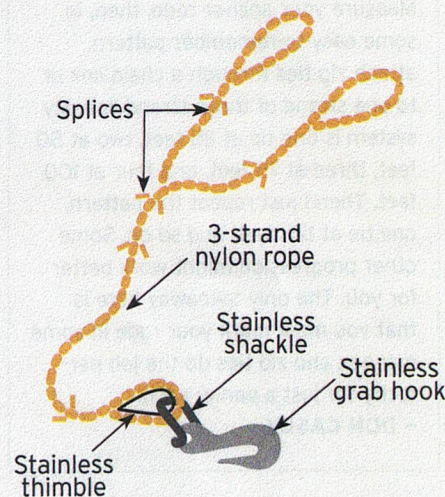
When rigged correctly, all the weight is taken by the snubbing line, not the windlass. Also, letting your chain loop down between the rolling hitch and cleat will add additional weight, thus producing more catenary effect which may improve the holding power of the anchor and give additional shock absorption to the rode.

To make rigging a snubber even quicker, many boaters with all-chain rode invest in a snubbing hook or chain hook. Both come in different sizes to suit the size of your chain and can be permanently spliced into the end of a suitable snubbing line. Once you're successfully anchored, slip the specially shaped hook over a chain link, attach the other end of the snubber to the boat, then let out a bit more chain until the snubber is taut.

Many boaters favor bridles. A snubbing hook is spliced into the center of a length of line. Each end of the bridle may then be attached to separate cleats on either side of the bow spreading the load between two points while simultaneously allowing the boat to be centered over the chain. A bridle is essential for successful anchoring with a catamaran where the bows are spaced far apart. — MARK CORKE



Notice how all the strain is taken by the snubbing line. The anchor chain is slack between where the snubber attaches and the windlass.



ONLINE EXTRA

Visit BoatUS.com/Rolling-Hitch to learn how to tie a rolling hitch.

drop it again, perhaps in a different spot. If the boat's position is fixed, you should see prop wash alongside aft, and your anchor rode should be straight and taut.

To thoroughly set the anchor, with the engine still in reverse, increase the rpm. If the boat stays put, you can rest (relatively) easy, knowing you're hooked. Check your swinging room again, assuming that the wind or current might come from any direction.

Writer and editor Tim Murphy, co-author of Fundamentals of Marine Service Technology (ABYC, 2012), lives in Portsmouth, Rhode Island.

Penny rode markers

Measure your anchor rode, then, in some easy-to-remember pattern, attach zip ties through a chain link or to one strand of three-strand line. My system is one tie at 25 feet, two at 50 feet, three at 75 feet, and four at 100 feet. Then I just repeat the pattern, one tie at 125 feet, and so on. Some other progression might work better for you. The only takeaway here is that you must mark your rode in some manner, and zip ties do the job perfectly for just a penny each.

— **DON CASEY**

Chain rode vs. line

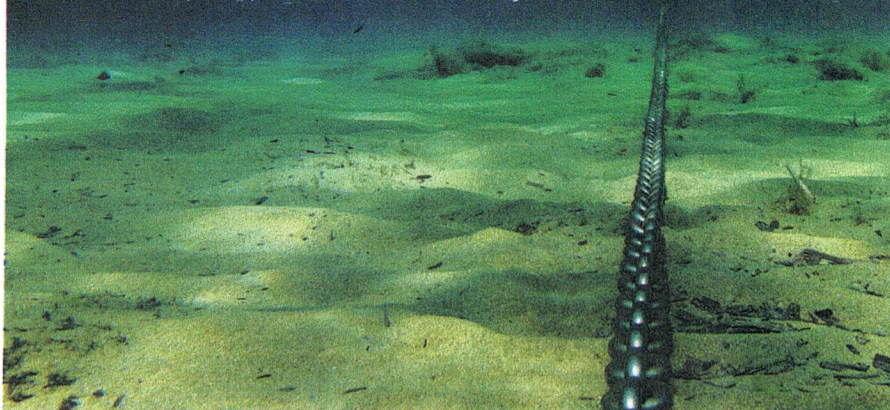
Chain is far more durable if you happen to anchor in bits of coral, rock, or debris. Also, chain will dig into mud or soft sand, helping the anchor. It forms a catenary, or curve, in the rode helping to keep the pull on the anchor horizontal so it digs in when under tension. An all-chain rode has some catenary in all but the strongest (i.e., hurricane) winds.

Catenary comes from weight, but unfortunately, weight is often the last thing you want aboard, and too much of it in the bow can adversely affect a boat's handling. Unless you have a larger boat, or you're going cruising, an optimal rode is composed of a length of relatively heavy chafe-resistant chain attached to the anchor, then a lightweight, strong, stretchy line attached to the chain – the best of both worlds.

Nylon line gets its shock-absorbing properties from stretch rather than through catenary action, and it's this property, along with its lighter weight and strength, that makes it a good rode. Three-strand nylon line has the most stretch. Polyester line is about 15% stronger and more resistant to chafe but doesn't absorb shock as well. Avoid using polypropylene line for this reason.

One to two boat lengths of chain is sufficient for most purposes, although more is always better. Be aware that with a rope/chain rode, only certain windlasses can bring in rope and chain on the same gypsy. Those that can will require that you use a rope-to-chain splice, which can be more vulnerable to chafe when not maintained/checked seasonally.

To create an effective rode, use good quality shackles to tie the system together, and mouse the pin to prevent it from unscrewing at a bad time. — **BOB ADRIANCE**



GETTY IMAGES/GVM61

Which one is best? Results of a head-to-head anchor test

Several years ago, Fortress Marine Anchors sponsored an in-water test of 11 different anchors to determine the holding power of each in a typical

soft mud bottom. The test vessel was a position-stabilized research vessel from the University of Maryland Center for Environmental Science. Here are test takeaways:

- » The anchors that set the quickest and hardest were usually the ones with the sharpest flukes.
- » Few anchors

exceeded 700 pounds of holding power, the American Boat and Yacht Council's calculated load in high winds for a 30-foot boat; 5 of the 11 anchors only reached 700 pounds once.

- » The Danforth and Fortress with their long, wide flukes outperformed the claw and plow anchors

in holding power in soft mud.

- » "New generation" anchors performed no better than older designs.

» Mantus and ULTRA were the only new-gen anchors that exceeded 700 pounds of tension on three of five sets.

- » The Fortress FX-37 at the 45-degree fluke

angle was the overall holding power winner with three sets holding over 1,000 pounds and two sets exceeding 2,000 pounds.

- » Like real life, most anchors had one good set that far exceeded the rest. Almost all had one trial where the anchor didn't seem to engage the bottom

at all, reinforcing the need to take your time when anchoring, letting the anchor settle before backing down on it.

- » It took between 10 and 20 feet of dragging for most anchors to reach 300 pounds of holding power, a bare minimum to consider for an anchor of this size.

— **CHARLES FORT**

PART 3

How to weigh anchor

You've successfully anchored. Now here's how to free your hook so you can head to your next port

BY FRANK LANIER,
BOATU.S. CONTRIBUTING EDITOR

When it comes time to move on, you'll need to apply a vertical load to your anchor rode to break the anchor free. Move forward slowly and gently using the engine (never use only the windlass). If you don't have a windlass, gather aboard as much rode as you can by hand. Make sure to keep the rode out of the propeller and rudder. A person at the bow should communicate with the person on the helm by continually pointing at the position of the rode and anchor, so the helmsman can steer toward the anchor location. (See the photo caption on page 82.) Once the rode is directly below the bow of the boat, take a turn on a cleat. Then signal the helmsperson to put the engine in SLOW forward. The anchor should break free. If it doesn't, apply a little more throttle. Once the anchor is free, go back to neutral, bring the anchor and rode aboard, rinse off any mud, and coil and stow the rode.

We're stuck!

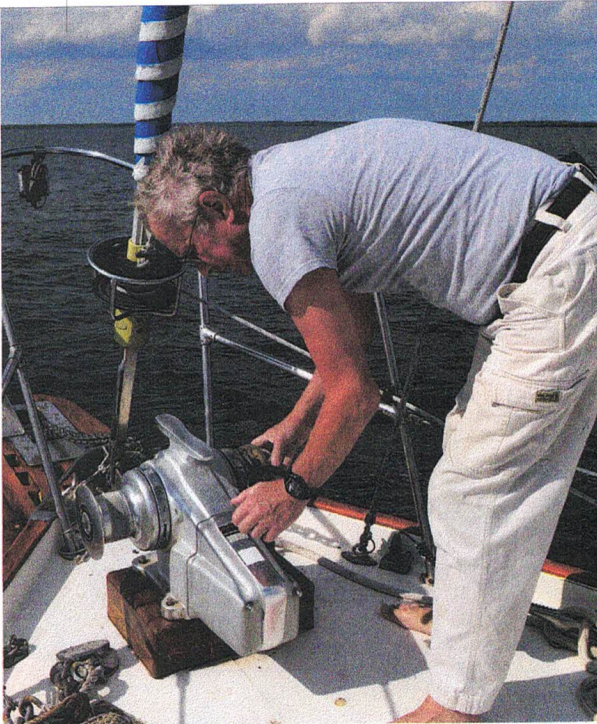
Once in awhile, the anchor won't break free. First, try to use the vessel's own buoyancy and whatever wave action there is to help out. Position the boat so the rode is vertical, then snub it up as tight as you can with each successive dip of the bow in the waves, letting the pumping action of the vessel work the anchor free. If this doesn't work, let out a little scope (2:1) and slowly motor forward in an

effort to back the hook out. Circling the anchor while keeping the rode tight may work as well, but always keep your prop, rudder, and keel free of the rode.

If Davy Jones just won't let go and the water's clear and the weather is nice (and it's safe to do this), grab your snorkel or diving gear and check things out. You might see that your rode is around a rock or other obstruction. Alternatively, use a "look-down" bucket (a 5-gallon bucket with a clear Plexiglas bottom).

If neither is an option, check the chart to figure out what you could be hung on. If you think a cable or old anchor chain is the culprit, utilizing an anchor rider or chaser may work. Shackle a short length of chain together to form a loop around the anchor rode, then lower it down to the anchor shank using a messenger line of double-braided nylon ($\frac{3}{8}$ -inch minimum). Double-braided line has less stretch than three-strand and won't snap back if it breaks or when the anchor comes free. Once you've worked the chaser over the anchor's shank (keeping the rode somewhat tight and vertical will make this easier) and down to the main body of the anchor, use the messenger to pull the anchor backward and hopefully free from the obstruction.

In extreme cases, buoy the rode, cast it off, then try backing out the anchor with the messenger by pulling 180 degrees from where you were originally anchored. If an old anchor chain or cable is the



Left: Chez Nous slowly moves forward as Tom Neale raises the anchor chain. When the boat is over the anchor, he stops the windlass, secures the chain, and lets the waves and a gentle forward RPM pull the anchor free of the bottom. Below: This anchor had been well set in a muddy clay bottom, took some power to release its grip, and came to the surface ready for rinsing.



MEL NEALE (2)

culprit, try to fish for it with a grapnel to lift it up and free your anchor. Be sure to attach a trip line to the grapnel's crown to aid in retrieval in case it gets stuck, too!

Capt. Frank Lanier is a 28-year U.S. Coast Guard veteran and SAMS Accredited Marine Surveyor with more than 40 years of experience in the marine and diving industries. He holds a 100GT masters license and is an FCC licensed electronics technician and PADI Master SCUBA Diver Trainer. He's an author, public speaker, and multiple-award-winning journalist whose articles on seamanship, marine electronics, vessel maintenance, and consumer reports appear regularly in BoatU.S. Magazine, where he is a contributing editor.

PART 4

Which anchor is right for you?

There are a plethora of types and brands to choose from. Here's a guide to help you select the best one for your needs

BY FRANK LANIER

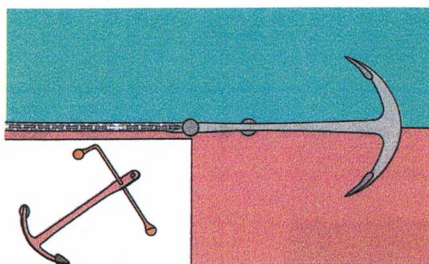
ILLUSTRATIONS BY PAUL ESTERLE

All anchors are designed to hold your boat in place by using the weight of the anchor, hooking the bottom, burying into the bottom, or a combination of all three. That said, choosing the right one relies on a number of considerations, from the style and size of your boat to the type of bottom you'll be anchoring in (e.g., mud, grass, sand, rock), as well as wind and water conditions you expect to encounter.

While an anchor's weight is important, even more so is its holding power. A modern, well-designed lightweight anchor can provide significantly more holding power than a heavy, older model that relies more on weight than design. Here's a list of common anchor types, uses, and pros and cons.



Visit this article at BoatUS.com/Expert-Advice to watch a video on how to attach line to chain and mouse the shackle.



Fisherman

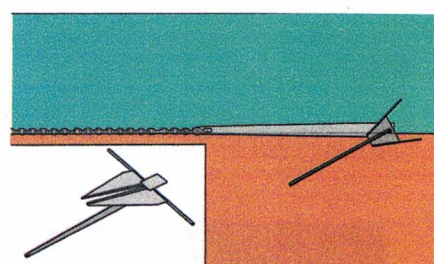
Narrow fluke, hook-type anchor relying on weight as much as how deep the flukes dig in. The traditional or fisherman's anchor (also called yachtman anchor) is a good example.

>> PROS

- Versatile choice for a wide variety of bottoms depending on the width of its flukes: Narrow flukes best for rock, coral, grass, hard sand. Wider flukes (often called Herreshoff anchors) better in medium to hard sand and clay bottoms

>> CONS

- Doesn't perform well in soft sand or mud
- Awkward to stow, though modern take-apart versions make stowage easier
- Can trip with current/wind reversal
- The "lazy" fluke can foul the rode during tide or current shifts



Fluke

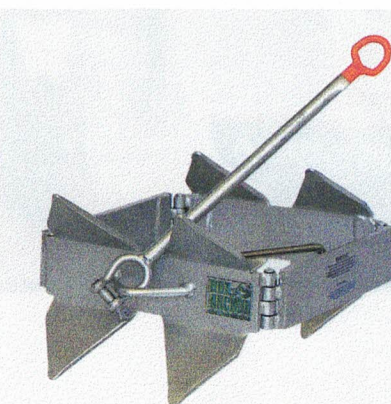
Burying-style anchor relying on broad flukes rather than weight for holding power. Traditional Danforth anchors and newer Fortress Marine anchors are popular examples.

>> PROS

- Large flukes hold well in clay, mud, sand
- A pipe-like stock keeps anchor from twisting and pulling out as boat shifts
- Lighter design is attractive. Popular choice for boats with dedicated anchor locker (bow riders, midsize and larger fishing boats), or those with ample on-deck storage or bow roller

>> CONS

- Less effective in rock and grass
- Can be difficult to retrieve once fully buried
- If direction of pull goes past 180 degrees, it likely will break free (and usually reset itself in the new direction)
- Awkward to stow on deck with lots of angles to snag lines and toes



Box

With its shape-derived name, the box anchor is a square unit with eight angled flukes (four per side, two each at front and back) providing holding power by maximizing surface area

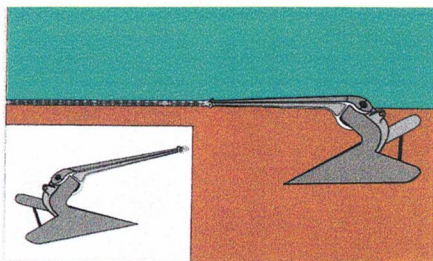
contact with the bottom. Once deployed, the anchor's scoop design allows the narrow panels to set cookie cutter-like into muddy bottoms.

>> PROS

- Popular with pontoon owners, it requires no chain, sets quickly, retrieves easily, folds flat for storage
- Easier to use than many other anchor styles when deployed. Harder to handle and stow onboard

>> CONS

- Not good for long-term anchoring. When anchoring in areas subject to strong current, high wind, or waves, it can tip forward releasing the back "teeth," reducing holding power.



Plow

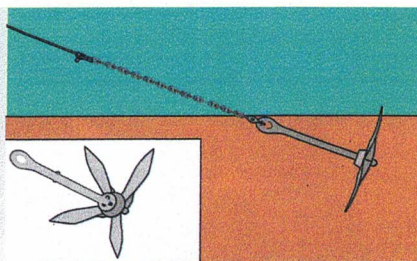
A stockless, single-point anchor named after its shape, which resembles a farming plow. Either a hinged or solid shank. Popular examples: CQR (a name derived from "secure"), Rocna, Delta, and Manson Supreme

>> PROS

- Performs well in sand, stiff mud, shell, mud/gray clay
- Many consider it the ideal overall anchor for vessels larger than 30 feet. Not the best in any one type of bottom, holds well in all
- Easiest to stow and deploy on boats with bow roller and dedicated anchor locker

>> CONS

- Holding can be marginal in bottoms with moderate to heavy grass.



Grapnel

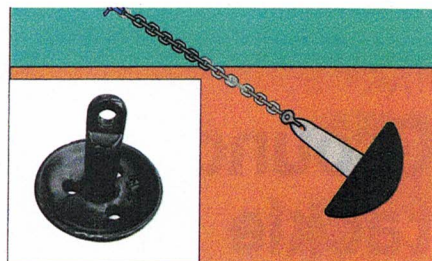
Similar to those nifty clawed hooks ninjas use to climb palace walls in the dead of night, grapnel anchors typically have at least four large arms or flukes. Spike or "grabber" anchors (a variation of the grapnel) typically have five or more shorter, fixed spikes or prongs attached to a centrally weighed shaft or base.

>> PROS

- Popular choice for smaller craft (e.g., dinghies, kayaks, PWCs.) due to light weight and ease of stowing. Most have folding arms and can be tucked away
- Works best on rocky or weedy bottoms where arms have something to hook
- Particularly useful in heavy vegetation where one or more flukes can penetrate the bottom while the outside ones hook into the vegetation

>> CONS

- Poor performer in sand and mud
- Considered only a temporary anchoring solution



Mushroom

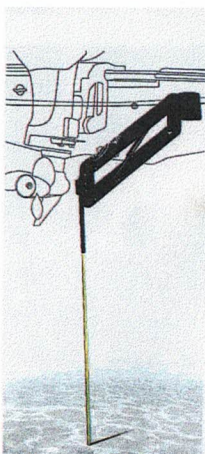
Named for its shape, resembling an upside-down mushroom, the holding power comes from the weight and the bottom suction generated once buried. Often used as mooring anchors. Models designed as boat anchors (vice moorings) will have holes or slits in the circular bowl or "cap" area to help release this suction and make retrieval easier.

>> PROS

- Works best in silt or muddy bottoms
- Ideal for canoes, jon boats, other small craft

>> CONS

- Not good for bottoms where it will have trouble burying itself (rock, weeds, hard sand)



Anchor pole

This flexible "spike" lets you silently "spud down" over your favorite shallow-water anchorage (8 feet or less). It's deployed via a folding hydraulic arm. One anchor pole can hold you in place, but installing two allows you to temporarily position the boat regardless of prevailing wind and current directions.

>> PROS

- Typically found on bass boats. Can be installed on most any fishing boat anchoring in shallow waters

>> CONS

- Not suitable for extreme or long-term anchoring. Should be used short-term under moderate conditions only



Claw

While similar to the plow, instead of single-point penetration, claw anchors have a scoop design. Bruce and Lewmar are good examples.

>> PROS

- Performs well in varied bottoms (sand, mud, light grass, etc.)

>> CONS

- Not ideal for rocky bottoms
- Due to size and weight, claws are more easily stowed and deployed on boats with bow roller and dedicated anchor locker

River



Derived from the mushroom anchor and similar in shape, it has broad flukes rather than a simple bowl-shaped mushroom cap.

These flukes (with rounded, rather than pointed ends) allow the anchor to grab, hold, and penetrate the bottom better than regular mushrooms.

>> PROS

- Works well in soft bottoms, but in a pinch can give decent service on rougher bottoms (e.g., weeds, rock)
- Like the mushroom, good for use aboard canoes, jon boats, similar small craft

>> CONS

- Not suitable for larger boats
- Not suitable for extreme or long-term anchoring. Should only be used for short-term anchoring under moderate conditions

PART 5**Ground tackle upkeep**

Anchoring out is fun if you have confidence that your anchor will hold. Regular inspection of your ground tackle helps you rest easy

ARTICLE & PHOTOS BY FRANK LANIER

Your ground tackle is only as strong as its weakest link, literally, and inspections should cover not only the anchor and rode, but also bitts, chocks, cleats, and any gear that's part of the system used to keep your boat securely anchored.

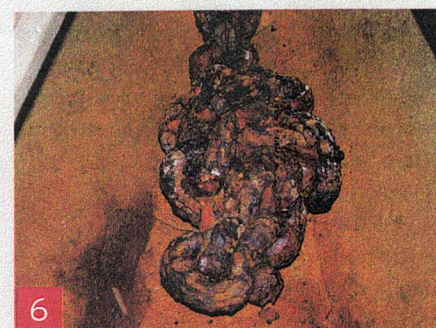
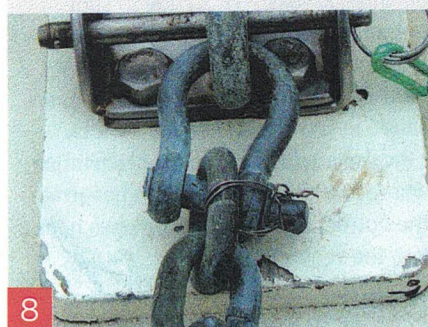
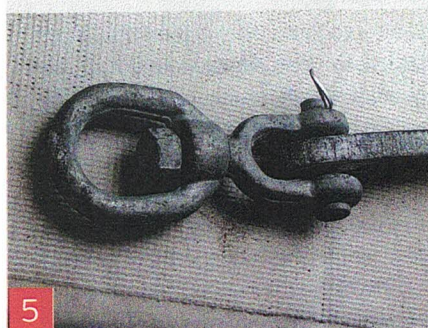
Let's start with the anchor itself

Are there bent flukes, shanks, or other such damage? If galvanized, is the coating in good shape, or are there areas of rust and corrosion? Consider the anchor's type and size. Is it physically large enough for your boat and suitable for the type of bottom likely to be encountered?

One problem I often see while surveying boats without an anchor windless is ground tackle that's selected based on what the owner can physically manage rather than what the boat actually requires. At a minimum, carry a primary (working) anchor and a secondary anchor that is a different style than the primary to give additional options when anchoring in various bottom types.



Visit this article at **BoatUS.com/Expert-Advice** for a link to a video on how to add an eye splice to three-strand line.

**Anchor rode basics**

Annually, pull your rode and lay it out for a thorough examination. Your anchor rode will be either all chain or a combination rode of nylon rope and chain. If a combination rode, how is it attached to the anchor? You can bend (attach) a rope rode directly to the anchor, but it's not recommended. Adding a length of chain protects a rope rode from chafe from a rough seabed while adding weight, which increases the catenary of the rode

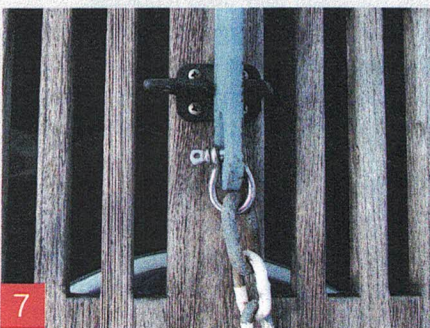
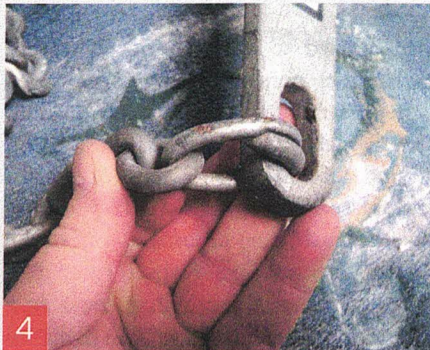
(for improved shock absorption) and horizontal pull, both of which help the anchor to remain set. Avoid using plastic or vinyl-coated chain. It may be easier on your deck finish, but it can hide corrosion, particularly in saltwater.

As for the rope portion of the rode, the most common type used is three-strand nylon. It's strong and (compared to braided line) provides more elasticity to absorb the sudden loads of a boat surging around at anchor. It's more easily spliced



Welcome to Frank's sea chest of horrors he's discovered conducting hundreds of marine surveys:

1. Zero faith in this damaged anchor stock
2. Broken chock will damage rode
3. Corroded junction will fail
4. Bad split repair link will pull open
5. Backward anchor swivel installation
6. Rusted chain ball
7. Shackle way too delicate for the job
8. Bad mouse job; weak & dangerous
9. Yikes! Chain-to-anchor follies
10. Bent CQR can't hold straight; will pull out
11. Rope-to-chain splice unravelling
12. Serious corrosion of a coated chain
13. Loose eye won't hold or protect rode
14. Desperately needs a swivel!



Combination rode inspections

Inspect the rope-to-chain connection, which should be made via a rope-to-chain splice or by utilizing an eye splice and thimble (which in turn should attach to the chain portion via an anchor shackle). Eye splices are bulkier than a direct rope-to-chain splice, but are simple and reliable. They should have a minimum of six full tucks and be seized at each end while the eye is under tension (to prevent the thimble from falling out should the eye stretch when placed under load).

Verify that all shackles are properly sized and that their screw pins are secured or "moused" with stainless steel wire to prevent them from unscrewing (also a requirement for all-chain rode).

Open ended teardrop-shaped galvanized thimbles are commonly used in anchor eye splices, however oval or closed ear thimbles are a better choice. Teardrop thimbles can work under extreme loading but potentially allow the sharp edges of the open end to chafe the rode.

Continue your inspection while looking for problems such as wear, cut strands, aging, discoloration, or hard spots caused by heat-generated friction when a kinked line is placed under load. Chafe is a rope rode's worst enemy, so in addition to inspecting the rode itself, check hawseholes, chocks, cleats, and windlass drums for burrs, sharp edges, and protruding hardware – anything that could damage the rode.

Although synthetic rope fibers are resistant to most chemicals, avoid exposure to harsh chemicals such as acids and alkalis. All fibers will degrade over time due to UV light, so rope stored on deck should be covered or, better yet, stored belowdecks.

Chain rode inspections

While chain may be tougher than rope, it's not maintenance-free. Start by storing your chain clean and keeping it as dry as possible (especially off-season when the boat is on the hard). This both reduces

and less expensive.

An all-chain rode can be attached directly to your anchor using an anchor shackle, which is more bell or "C" shaped than a standard shackle, to provide greater freedom of movement and prevent binding. If there's a chance the vessel will shear or swing in circles (particularly when laying to a single anchor), consider installing an anchor swivel to prevent twisting.

Anchor swivels should be drop forged

(not screwed, riveted or welded together) and the largest size that fits the chain link without binding. Ensure the jaw fitting of the swivel is attached to the chain and that the swivel eye is attached to the anchor shank using an anchor shackle. Some boaters don't like swivels, viewing them as a potential weak link. Any moving part can fail under load if not properly designed and constructed, so if you install a swivel, buy the best quality you can find.



Visit this article at BoatUS.com/Expert-Advice to learn more about how to maintain your windlass.

corrosion and helps keep the unhygienic smell of Davy Jones' gym locker from your vessel's interior. Giving both locker and chain an occasional freshwater washdown helps with the above, while also letting you verify that the locker drains properly.

Avoid exposing your chain to preventable chafe, such as can occur while pulling it along that concrete dock when laying it out for inspection. Dragging your chain over abrasive surfaces removes the galvanized coating and leads to rusting.

Chain should be swapped end for end annually to promote even wear of the galvanized coating. It should be regvanized once significant rust begins to appear. However, the general consensus is this should be done only twice, after which the chain should be replaced. Chain manufacturers don't recommend regalvanizing, and while this may seem a bit self-serving, the process of removing rust and prepping the chain does weaken it to a degree, which is where the "only do it twice" admonition comes in.

If your chain rode contains a splice, the three most common are the riveted joining link, the double-jaw mid-link, and the quick-connect link. Never splice sections of chain using bolts or spikes to join links. The riveted link is a permanent splice that looks and functions like any other link in the chain if sized and installed properly. The double-jaw mid-link is roughly the same size as a normal link, but unlike the riveted link, it's removable and can be used for both temporary and permanent splices.

Quick-connect links should be viewed only as a temporary splice. They can be used in a pinch but should be replaced with a riveted link or double-jaw mid-link as soon as possible. They're also harder for your windlass to handle as they're roughly 60% larger than the links of the chain for which they're sized.

Chain shackles are another option used to join shots or lengths of chain. True chain shackles are U-shaped (allowing them to act more like a chain link), as opposed to the bell-shaped anchor shackles mentioned earlier.

Chain rode should be pulled and laid out for full inspection annually but also after exposure to severe loading. The

load applied to a chain rode isn't very high under normal conditions, however, damage can occur under moderate loading as well, such as when the chain is wrapped around an object (e.g., rock or wreck) and placed under tension. If you find your chain slipping or jumping out of the windlass wildcat (chain wheel) more than it typically has in the past, it could be a sign some of the links have been damaged and the chain may need replacing.

Finally, don't forget that an all-chain rode requires the use of an elastic bridle or nylon snubber when deployed, to act as a shock absorber between anchor and vessel.

Bitter-end attachment

Why is the end of your anchor rode called the bitter end? Because you'll be mighty bitter if it goes overboard! Verify that it is attached to the vessel. This attachment point isn't meant to bear the load of anchoring, but rather to prevent accidental loss of the anchor and rode.

A combination rode can be tied directly to your boat, typically at some point in the anchor locker. The bitter end of an all-chain rode can be secured with a small-diameter line or, better yet, multiple turns of tarred nylon lashing, which can easily be cut if you need to slip anchor or add more rode. For both, make sure the line is long enough to reach past the deck hawse-hole for ease of access while on deck.

Inspecting anchoring deck hardware

Check anything that comes in contact with the anchor rode such as cleats, bits, chocks, and fairleads for broken or damaged parts, looseness, or any other issues that could damage rodes or fail under anchoring loads. Access and inspect mounting hardware for leaks (which can lead to deck deterioration and loss of strength), corrosion, improperly sized or missing backing plates/washers, and damaged or missing components. **A**

Show your windlass a little love

If you have an anchor windlass, it should be viewed as an important part of your ground-tackle system. Start your inspection by checking for corrosion or physical damage. Inspect mounting hardware for looseness, movement, corrosion, and leaks into the vessel interior. Leaks are often caused by a broken bedding seal, typically the result of a windlass being overstressed.

Inspect electrical connections for corrosion or charring as a result of arcing. Disassemble and clean corroded connections (after securing power) with a wire brush and electrical cleaner (vinegar works well in a pinch). Terminals and post connections should be clean and tight. Coating them with dielectric grease and installing insulating rubber boots will protect against corrosion and accidental shorting.

For units with the motor and gearbox located belowdecks, check the casing regularly for rust. Most are constructed of painted steel and will readily corrode in the damp environment of the anchor locker. Address such corrosion immediately to prevent it from worsening.



Corroded windlass motor

Inspect foredeck footswitches for damage and proper operation. Ensure the hinged covers are in place (to prevent accidental operation), and that the covers themselves operate easily

and have a good seal when closed. Check the rubber diaphragms for cracks, tears, or deterioration; spraying them regularly with a UV shield (such as 303 Aerospace Protectant) will extend their service life.

It's also a good idea to keep the windlass covered when not in use to protect it from salt, corrosion, and UV exposure. Finally, use the windlass regularly to keep all internal gears lubricated. Grease and lube oil tend to settle at the bottom of the gearbox, resulting in a dry section of gears that could be prone to rust. If at the dock or hauled, crank the windlass over a few turns every couple of weeks. — **F.L.**