

Links You Can Rely On

When you make the switch to an all-chain rode, strength and weight are key considerations



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I never really gave all-chain anchor rode much thought until the first time I anchored my last boat, a heavy displacement Union 36 cutter sporting a 45-pound plow anchor. Struggling to get the anchor, rope rode, and 60-odd feet of chain back on board, I made a deal with my back: Help me get this behemoth on deck without blowing a disc, and I'll move "install anchor windlass" to the top of my to-do list.

As I began my windlass search, I decided to go with an all-chain primary rode. I liked the security an all-chain rode offered and its greater resistance to chafe. I also liked the idea that the weight of an all-chain rode makes it sag. That sag, called catenary, acts as a shock absorber, while giving the rode an effective horizontal lead to the anchor. But the final selling point for an all-chain rode was simplicity and safety. Coupled with my new windlass, an all-chain rode would

make anchoring a one-man, push-button operation, allowing me to easily anchor and even re-anchor if needed.

There were some downsides, however: the first of which was weight. My new windlass and chain rode would add about 375 pounds to the bow. Too much weight forward can affect a boat's handling characteristics, particularly in heavy weather. Though my heavy displacement monohull could manage the extra weight, this could be an issue with lighter displace-

ment vessels – particularly multihulls.

Chain can also be a lot dirtier than rope as the links act like little shovels, scooping up bottom mud and making a mess of the deck and anchor locker if you don't wash it off prior to bringing it aboard.

Despite these drawbacks, I decided to go with an all-chain rode. But which chain would suit me best?

Weighing The Options

The three types of chain suitable for anchor rodes are BBB (aka, "triple B"), Grade 30 proof coil, and high test. As to material used to make chain, the most common (and the focus here) is galvanized steel. You can get stainless steel chain, but it has its own negatives – not the least of which is cost.

Some definitions you'll want to know

when shopping for chain:

1. Minimum breaking load is found by placing a test sample of chain on a machine that simply pulls the sample until it breaks.

2. Proof load is determined by placing the chain under tensile loading at some point during manufacturing to test for defects.

3. Working load is the maximum limit at which you can safely use the chain. This is usually 50% of its proof load.

Proof coil and BBB are low-carbon, unheated steel chain, while high-test chain has higher carbon content and is heat-treated for greater strength. Proof coil and BBB are Grade 30 chain (a designation describing the chain's strength), while high-test chain typically used in anchor rodes is Grade 43.

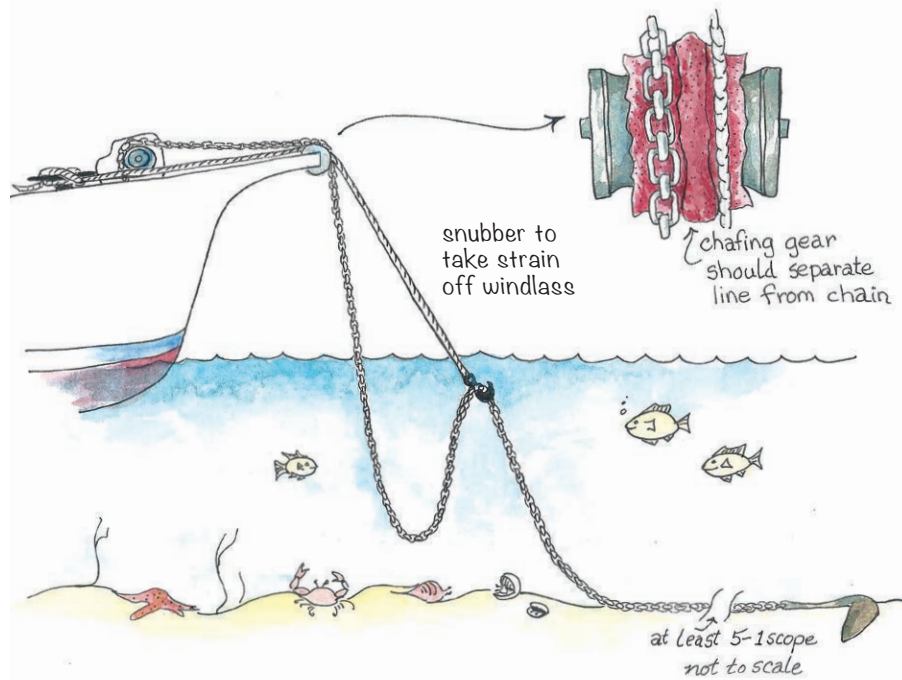
BBB chain can be identified by the “3B” marking cast on each link of all-chain that is at least $\frac{5}{16}$ -inch (the stated size is the diameter, or thickness, of the metal in the link), while Grade 43 high test chain will be marked “G43” or “G4” on each link in sizes $\frac{5}{16}$ inch and greater. Proof coil may be simply marked “G3” for Grade 30.

Proof coil is the least expensive of the three types. It's comparable in weight and strength to BBB but has fewer links per foot, making it less expensive.

Probably the most commonly quoted downside to proof coil is that its longer links are more prone to deforming under load. Although the risk of overloading proof coil to the point of link elongation is unlikely, my view is that as you should always use a shock-absorbing nylon snubber or a bridle with an all-chain rode.

BBB has been the chain of choice for marine use for years; however, it has recently been losing ground to proof coil, which is more economical and has a wider range of industrial uses. BBB chain is popular because its slightly greater weight creates more catenary and its compact links better resist deformation.

BBB chain is also less likely to form “castles” – mounds of chain that can pile up in the anchor locker and topple over, making it hard to deploy the anchor later.



Top: Snubber setup. Middle: A split repair link is a poor choice for joining chain because it has less strength than an anchor shackle and can easily fail when placed under load. Above: This shackle is undersized and should be replaced with a proper sized anchor shackle, the screw pin of which should be moused (secured) with stainless steel wire.

Anchor lockers designed with all-chain rodes in mind will be deep and narrow to prevent castles. The downsides to BBB are that it's less flexible than proof coil and it tends to bind in the windlass.

High-test chain, the most expensive of

the three types, is also the strongest and lightest size for size (up to 150% stronger and nearly 50% lighter than BBB or proof coil). High-test chain is also more resistant to wear (due to increased hardness), however, its primary advantage is that higher strength-to-weight ratio allows you to keep the weight of an all-chain rode to a minimum. On the flip side, this lighter weight means you'll have to lay out more chain to achieve the same amount of shock-absorbing catenary that you would get in a heavier chain, although use of a kelleet can help in this regard.

If you have a light displacement boat and are worried about the added weight of an all-chain rode, there are other options besides paying a premium price for high-test chain. One is to carry a minimal length of heavier proof coil chain forward in the anchor locker and an extra length aft (low and toward the middle of the vessel) to add on to the rode for deeper anchorages.

Chain Care & Maintenance

While chain may be tougher than rope, it's not maintenance-free. Storing your chain clean and keeping it as dry as possible will go a long way toward reducing corrosion, while at the same time keeping your anchor locker (and the rest of your vessel) from smelling like Davy Jones' gym locker. Giving both chain and locker an occasional freshwater washdown



BE SURE TO USE

an appropriately sized nylon bridle or snubber with an all-chain rode, ensuring the snubber is securely fastened to a suitable cleat or attachment point. Never allow your anchor windlass to bear the load of anchoring. A windlass is only intended to raise the anchor, not secure the rode or pull the boat up to the anchor's location.

Chain should be swapped end for end annually to promote even wear of the galvanized coating and should be regalvanized once rust begins to appear. Chain is typically galvanized by running it through a bath of molten zinc or via an electroplating process, however the zinc bath method provides a thicker coating and, thus, more protection.

The consensus is that chain should be regalvanized no more than twice, after which it should be replaced. In fact, most chain manufacturers don't recommend regalvanizing at all. This may seem a bit self-serving, however, the process of removing rust and prepping the chain does weaken it to a degree (which is where the only-do-it-twice thing comes in).

Pull and inspect your chain at regular intervals – annually at a minimum – and especially after exposure to severe loading.

The loading on a chain rode isn't very high under normal conditions. Where damage typically occurs is when the chain is wrapped around an object (e.g., rock, wreck) and placed under tension. If you find your chain slipping or jumping out of your windlass wildcat (the slotted wheel that mates with the chain) more than usual, it could be a sign that some of the links have been damaged, and the chain may need replacing.

Remove any twists, kinks, or knots before using a chain, and never try to modify chain length by using bolts or spikes to join links. If you have to splice chains together, the three most common

helps, too, and also reminds you to check that the locker is draining properly.

Avoid exposing your chain to preventable chafe, such as dragging it along a concrete dock while laying it out for inspection. Doing so removes the galvanized coating, which eventually leads to rusting.

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Riveted link



Double-jaw mid-link



Chain that's not dried out and regularly cared for will rust and form a ball in your anchor locker.

methods are the riveted joining link, the double-jaw mid-link, and the quick-connect link.

» 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 of a normal link as well but, unlike the riveted link, is removable and can be used for both temporary and permanent splices.



» The **quick-connect link** (above) should be regarded as a temporary splice only, which was clearly not the case here. They're more vulnerable to failure and a bit harder for your windlass to digest, as they're roughly 60% larger than normal links.

You can also use **chain shackles** (right) to join lengths or “shots” of



REMEMBER TO SECURE the “bitter end” of your anchor rode to the vessel or risk learning how the name came about! This attachment point isn't meant to bear the load of anchoring, but rather to prevent accidental loss of the rode. The bitter end of an all-chain rode can be secured with small line or multiple turns of tarred nylon lashing, which can be easily cut if you need to slip anchor or add more rode. Ensure this line is long enough to reach past the deck hawsehole for ease of access.