

The background of the book cover is a photograph of a coastal scene. A white sailboat with a blue cover is anchored in a body of water. In the foreground, there is a sandy beach with some greenery and a small tree on the left. The background features rolling hills and a clear sky.

NINE OF CUPS

Guide to

Anchors and Anchoring

Second Edition

by David Lynn

Nine of Cups Publications
Nineofcups1@yahoo.com

Nine of Cups Guide to Anchors and Anchoring

Second Edition

by David Lynn

Please don't give this digital book away or share it. This is one of the ways we support our cruising kitty and our liveaboard lifestyle. We've priced it inexpensively - think of it as buying us a beer. Thanks!

Copyright 2014 by Marcie Connelly Lynn and David Lynn
All rights reserved

Cover Photo: Marcie Connelly Lynn, Golfo de Caracas, Venezuela

Table of Contents

Introduction.....	5
Anchors.....	7
Traditional Types.....	8
Fixed Plow Type Anchors.....	8
Hinged Plow.....	9
Claw.....	10
Steel Fluke Anchors.....	11
Aluminum Fluke Anchors.....	12
Stockless.....	13
Fisherman.....	14
Grapnel.....	15
New Generation Designs.....	16
Wasi Bügel	16
Spade.....	17
Rocna	18
Manson Supreme.....	19
Super Sarca, Sarca Excel.....	20
Kobra and Kobra II.....	21
Manson Boss.....	22
Selecting the Right Anchor.....	23
A Word About Copies and Counterfeits.....	23
Anchor Size.....	25
Anchor Rode.....	26
Catenary Effect.....	27
Rope rode.....	28
All Chain Rode.....	28
Combination Rope and Chain Rode.....	29
Rode Size.....	30
Marking the Anchor Rode.....	32
A Note About The Bitter End	36
Anchoring Basics.....	37
Communicating with Hand Signals.....	37
Selecting the Anchorage.....	39
Anchor Scope.....	41
Dropping and Setting the Anchor.....	41
Anchor Alarms.....	42

<u>Anchoring in a Crowd.....</u>	<u>44</u>
<u>Using a Trip Line.....</u>	<u>47</u>
<u>Raising Anchor.....</u>	<u>47</u>
<u>Snubbers.....</u>	<u>48</u>
<u>Chums, Kellets, Angels and Buddies.....</u>	<u>51</u>
<u>Chafe Avoidance.....</u>	<u>53</u>
<u>Anchor Lights.....</u>	<u>55</u>
<u>Anchorage Etiquette.....</u>	<u>55</u>
<u>Anchoring Techniques.....</u>	<u>58</u>
<u>Single Anchor.....</u>	<u>58</u>
<u>Double Bow Anchor – Bahamian Style.....</u>	<u>58</u>
<u>Bow and Stern Anchor.....</u>	<u>60</u>
<u>Anchors in Series.....</u>	<u>64</u>
<u>Mediterranean Moor.....</u>	<u>66</u>
<u>Lines Ashore.....</u>	<u>67</u>
<u>Floating an Anchor Rode.....</u>	<u>68</u>
<u>Anchoring in Bad Weather.....</u>	<u>70</u>
<u>Storm Checklist.....</u>	<u>73</u>
<u>Acknowledgments.....</u>	<u>75</u>
<u>About the author.....</u>	<u>76</u>

Introduction

How well your anchor holds depends on a number of factors: the size and type of anchor, the bottom type, the displacement and windage of your vessel, the type and amount of anchor rode deployed, the amount and direction of wind and current in the anchorage, your technique in setting the anchor, and sometimes, just plain luck.

What you choose for ground tackle is a function of where and how you plan to cruise. Your needs will be different if you only day sail or only leave the marina for weekends in good weather. Even so, you should prepare for the worst conditions Neptune may send your way – that thunderstorm in the Florida Keys or the afternoon squall in the Chesapeake.

We have anchored in a variety of exotic places, from the coral atolls of the South Pacific to the kelp-bottomed anchorages of Tierra del Fuego, to the muddy rivers of the Darien Jungle. For the kind of cruising we do, our philosophy on anchors and ground tackle is simple. Find the best all-around anchor available, preferably one that will set in most bottom types, then buy the biggest one that will fit the bow roller. This will probably be a couple of sizes bigger than the size recommended by the manufacturer for your boat. Adding an extra 30-50 pounds (14kg – 23kg) to the anchor makes very little difference in the overall weight of the anchor and rode, but the larger size makes a huge difference in how well the anchor sets and holds. Call this your primary anchor.

Attach the primary anchor with at least 300 feet (90m) of chain, then add 200 feet (60m) of rope rode to the end of the chain. Find a good anchor to use as a stern anchor, then add another couple reliable anchors to use as either backup anchors in the event the primary anchor is lost or has to be left behind, or to use in series with the primary anchor. Add a reliable windlass that will hoist all this ground tackle, and make up a couple of snubbers suitable for the job.

We carry five different anchors, all of which have been used for different situations. We also carry a lot of anchor rode – one with 300 feet (90m) of chain and 200 feet (60m) of rope for our primary, one with 50 feet (15m) of chain and 250 feet (75m) of rope rode for the stern anchor, and a third with 15 feet (4.6m) of chain and 200 feet (60m) of rope as a spare. We also carry two 300 foot (90m) lengths of polypropylene line and several 15 foot (4.6m) lengths of chain for the occasions we need to run lines ashore.

Whew – that's an embarrassing amount of ground tackle – but we have managed to weather some nasty storms in many different types of anchorages. On the other hand, even with our conservative approach to ground tackle, we have certainly not been immune to dragging our anchor. We've been fortunate in not having suffered or caused any damage, but we know of any number of other vessels that haven't been so lucky. We have also been in a few near misses when other boats, including a rather large ship in Fiji one windy night, nearly dragged onto us.

There have been times when our anchor became fouled and wouldn't break loose. A few examples: our anchor got caught under an old ship's anchor chain in St. Kitts, under a steel cable in Arica, Chile, and wedged in the rocks in the Chatham Islands east of New Zealand. Usually this is just an inconvenience,

readily handled by donning a wetsuit and snorkel. Sometimes, like the time in the Chathams, the anchorage had become a lee shore and when the combers started washing in, the situation quickly became quite dangerous. We were on the verge of abandoning our primary anchor when it finally came loose from the rocks below. Without a doubt, however, we prefer this type of problem over not feeling secure and worrying about dragging when the wind pipes up at 3 a.m.

We have also been in places where, despite our variety of ground tackle, it still took half a dozen attempts to set an anchor. On rare occasions, we have been totally unsuccessful at getting any anchor to set. In fourteen years of cruising, the latter situation has only happened a few times. When it does, and the weather forecast is benign, we sometimes choose to put our heaviest anchor down or perhaps two in series and keep an anchor watch overnight, but usually we'd prefer to depart and either find an alternative anchorage, keep going or heave-to well offshore.

We, in no way, profess to know everything there is to know about anchors and anchoring techniques. When we first started cruising in 2000, we were very inexperienced and naive. We learned from books, other cruisers, and our own experiences, and thanks to the good graces of Neptune and a lot of luck, most of our mistakes only resulted in a bit of embarrassment and some learned lessons. Since then, we have anchored in a wide variety of anchorages in all conditions, and perhaps even more importantly, we have learned a great deal from many of the truly great voyagers we have met and come to know in our travels. We hope to share our knowledge and experience in this book, and hope that you find something of value in it no matter what your experience level.

David

Anchors

There is no one anchor that will perform flawlessly in all bottom types. Some do well in mud and soft sand, others do well in grass and hard sand and a few are good for a rock bottom. Some designs hold quite well in varied bottom types, and others were developed to suit the particular local conditions. For example, in South Australia, probably 75% of both the fishing boats and the private vessels use local adaptations of the old admiralty anchor for penetrating the thick grass with the very hard sand underneath that is so prevalent there. Likewise, in some of the rocky coastal areas we've visited, the anchor of choice for the locals was a type of grapnel hook which would grab onto any small fissure or gap in the rocks – and wasn't that expensive to replace when it got wedged into place and couldn't be retrieved.

When we started cruising full time in 2000, I read all the anchor reviews and the testing done on various anchor types, reviewed the books written by all those famous sailors of the previous generation, and talked to a lot of knowledgeable cruisers. We wanted the best all-around anchor we could find, and at the time, the Bruce claw-type anchor seemed to be the best choice for most bottom types. It set and reset quickly and held better than many other anchor types in most bottom types. This became our primary anchor.

Nine of Cups had a Danforth anchor aboard when we bought her, which is also a good anchor for many conditions. We kept it as our secondary anchor, and it has served as our stern anchor on many occasions. More than once, it kept us off the rocks when a sudden unexpected wind change occurred in a tight anchorage.

In our anchor inventory, we also have a smaller CQR anchor aboard. It is too small by itself to hold Cups securely, but works well when we use two anchors in series. In addition, we have a large aluminum Fortress anchor stowed below our aft bunk. It is lightweight, and since it dismantles into several pieces, it is easy to stow. The Fortress has amazing holding power in sand and mud once it is set, and we keep it as a backup in case we ever have to abandon our primary anchor.

Since we bought our Bruce in 2000, there have been a number of new designs in anchors. The manufacturers of these anchors claim that they set more quickly and have significantly more holding power than the older designs, and the testing we've seen seems to bear this out. When we were cruising the South Australia coast in the austral summer of 2013-2014, we were concerned about whether our Bruce would hold in the grassy/hard sand anchorages there, so we began looking for an alternative anchor that would not only do well there, but be a good all-purpose anchor as well. After a lot of research, we bought a Manson Boss anchor, which is a scoop-type anchor that has a very sharp point on the business end and very large flukes. It performed reasonably well in South Australia, and was our anchor of preference while there. We haven't been able to try it in all bottom types, but it may very well replace our big trusty Bruce as our primary anchor.

The following sections describe the various anchor types and their strengths and weaknesses. The first section deals with the traditional anchor types and the next section gives an overview of the new generation designs.

Traditional Types

Some of these designs have been around for hundreds of years, and are still used extensively. Others were introduced 20 to 80 years ago and are still quite popular.

Fixed Plow Type Anchors



Typical brands: Lewmar Delta, Maxwell Maxset, Kingston Quickset, Anchorlift Shark

Used for: Mud, sand, rock, weeds

While fixed plow-type anchors have been around for considerably longer, the Delta anchor was developed in the 1980s by Gordon Lyall and two colleagues at Simpson Lawrence (which subsequently joined with and became Lewmar). This type anchor gets its name from its similarity in appearance to a farmer's plow. It has a ballasted tip and sharper point than its predecessors (and many of its copies), which helps it set in hard bottoms, but its biggest innovation is the self-righting shank, which is used by the Spade and several other anchor designs. As can be seen from the list of similar anchors, it is frequently copied.

Hinged Plow



Typical brands: Lewmar CQR, Manson Plough, Suncor Plowmaster

Used for: Mud, sand, rock, weeds

The CQR (originally pronounced “secure”, but now pretty much just called a “C-Q-R”) was the favorite of the last generation of great voyagers – the Hiscocks, the Roths, and Bernard Moitessier, to name a few. It was designed and patented in 1933. Advocates say the CQR is a good all-around anchor that sets well in most bottoms. The hinged shank makes it more tolerant of wind and current shifts and it is quicker to reset when it does break out. Critics say it takes longer to dig in and only has moderate holding power for its weight, therefore requiring a larger size for a given boat size. Yet others have commented that while it is acceptable in most bottoms, it isn't great in any.

The patent has long since expired and there are now several other companies that make their own versions of the original CQR.

Claw



Typical brands: Bruce, Lewmar Claw, Manson Ray, Simpson-Lawrence Claw, Plastimo Manta

Used for: Sand, rock, mud

The Bruce anchor, which is a claw-shaped anchor, was designed and patented in the 1970s by Peter Bruce for use in securing oil rigs in the North Sea. In the late 1990s and early 2000s, a number of anchor tests were performed on anchors, and the claw type anchor rated quite highly. It has a better holding power by weight than the traditional plow type anchors, and sets more quickly. In addition, it has a tendency to rotate in the seabed and reset when the wind shifts rather than break out.

We first started cruising in 2000, and at the time, I thought it to be the best all-around anchor. We bought a large, oversized claw, and it served us quite well for 14 years. We have since used it in a lot of different seabed types, and only had difficulty setting it in deep kelp or grass bottoms, and on smooth rock. We also found that in soft mud, while it did set quickly and wouldn't break free from the bottom, it would drag very slowly in strong winds – something like 10-20 feet (3-6 meters) per day. I suspect this is also true of plow-type anchors.

The original Bruce is no longer available for sailboats, and when the patent expired, a number of imitations appeared. Some of these were poor copies. In the last few years, a number of other manufacturers have introduced their own versions of the claw anchor, however. Most have a sharper, reinforced point on the tip to improve its ability to penetrate grass and hard bottoms, and several have modified the original claw shape in an attempt to improve the holding ability in soft mud.

Steel Fluke Anchors



Typical brands: Danforth, Danforth Hi-Tensile, West Marine Performance2

Used for: Sand, Mud

Richard Danforth invented this anchor for use by landing craft in World War II. In sand and mud, it digs in well and has tremendous holding power for its weight. It has difficulty digging into deep grass, kelp, and hard bottoms, although choosing a much heavier-than-recommended size will help offset this shortcoming. Its biggest issue is that it often must be set slowly or it may skip over the bottom and not bite into the seabed. This can be a problem when the wind shifts and picks up, causing the anchor to break out and then not set again.

We have a Danforth that we use as a stern anchor, and I feel it is perfect for this application. It is fairly lightweight for its holding power, so it can be deployed and retrieved by hand from the stern or from the dinghy. When using a bow and stern anchor, the vessel does not swing around, so the pull on the stern anchor is pretty much consistent from the same direction. Once the Danforth is set, it holds extremely well, and since the vessel doesn't swing, the anchor is unlikely to break out of the bottom. Our Danforth has saved our bacon on more than one occasion. I talk more about stern anchors and my fondness for the Danforth in a later section.

Aluminum Fluke Anchors

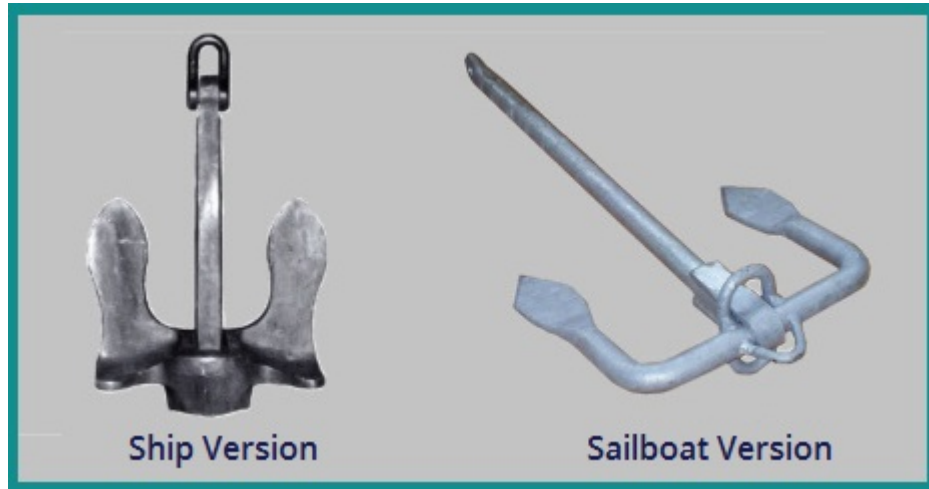


Typical brands: Fortress, Guardian

Used for: Sand, Mud

The original Fortress was introduced in the late 1980s. Aluminum fluke anchors are very similar in design to the steel fluke anchors and share many of the same pros and cons. They have tremendous holding power for their weight. Since they are made of aluminum, they are much lighter than a comparably sized steel fluke anchor and, of course, they don't rust. A big advantage is that they can be dismantled into several pieces, which makes them easier to stow. The Fortress is unusual in having the ability to alter the fluke to shank angle from 45 degrees for mud and soft sand, to 32 degrees for harder substrates.

Stockless



Typical Brands: Marsh, Dawson, Higwood

Used for: Grassy/Hard sand bottoms

This is the type of anchor you see on big ships, primarily because it can be deployed and stowed in a hawsepipe. In the U.S., it is rarely seen on sailboats, but in other parts of the world, it is somewhat more common. On the south coast of Australia, for example, it is, by far, the most common anchor used, primarily because its pointed flukes set and hold well in the deep grass and hard sand bottoms that are prevalent there. It doesn't have great holding power for its weight because of the small fluke size, so unless it is seriously oversized, it doesn't hold well in softer bottoms like sand and mud.

Another shortcoming is that it is somewhat difficult and awkward to stow.

Fisherman



Typical Brands: Hereshoff, Luke, Yachtsman

Used for: Deep kelp/grass, hard sand, rock

Like the admiralty anchor, the fisherman anchor isn't seen too much on modern U.S. sailboats, but we've seen them frequently on older boats and on vessels in the high latitudes. While we were cruising in Tierra del Fuego, many of the serious sailboats heading to South Georgia Island and Antarctica carried a huge fisherman anchor as a storm anchor, and we saw a number used in the South Australia waters in the deep grass and hard sand bottoms so common there. It can be broken down into three parts which makes it somewhat easier to stow. The fluke size is small compared to other anchors, so, as is the case with the admiralty, unless it is oversized, it won't hold well in softer bottoms like sand and mud. Proponents say that it will hold when other anchors won't set, and once it does set, it holds tenaciously.

Grapnel



Used for: Rock and coral

We've seen these used by fishermen around the world in rocky areas. They will grab onto any small crevice or hook under a rock and hold better than any other type of anchor in a rocky bottom. Many are homemade out of steel rod or re-bar. One big advantage is that they are usually inexpensive, so it doesn't hurt so much to leave a grapnel behind when it gets wedged under a rock.

New Generation Designs

I think enough testing has now been done on the new generation anchors to see a definite trend. While which of the new generation anchors outperforms the others seems to vary depending on the particular test, it is quite apparent that, pound for pound, they all seem to perform better and have better holding power than the traditional anchors.

Wasi Bügel



Used for: Mud, sand, rock, weeds

The first of the new generation of anchor designs was the Bügel, now manufactured by the German company Wasi under license from its inventor, Rolf Kaczirek. It is a simple triangular shaped anchor with a sharp tip that enables it to penetrate hard sea bottoms and has a curved roll bar to make it self-righting. Interestingly, the curved roll bar was first patented by Peter Bruce, but never used on his Bruce claw type anchor. The Bügel has a large following in the Mediterranean.

Spade



Used for: Mud, sand, rock, weeds

The Spade has a concave triangular shape and uses a heavily weighted tip to encourage the anchor to quickly right itself and dig in. The weight on the bottom of the anchor combined with the sharp tip makes it quite good at digging into hard bottom types and getting past thick kelp and grass. Critics claim there are two disadvantages. One is that the cost is quite high, probably one of the most expensive anchors on the market. To address this issue, Spade has introduced two models without the weighted tips, the Océane and the Sword, and are pricing them less expensively. The original Spade consistently shows good test results, but the two new models don't always perform as well in the testing I've seen. The other disadvantage is that the weight on the bottom of the anchor is lead, which means it can't easily be re-galvanized. The company markets an epoxy coating that can be used in lieu of having it re-galvanized.

Rocna



Used for: Mud, sand, rock, weeds

The Rocna is somewhat of a combination of the Bügel and the Spade. It combines the concave triangular shape of the Spade, with the roll bar of the Bügel. While it has a reinforced tip, it does not have the same ballast as the Spade, relying on the roll bar to make it self-righting. We have seen and talked to a great number of cruisers that use the Rocna and swear by it.

There were issues with some anchors after manufacturing was transferred from NZ to China. These production issues were resolved and since the large chain company, CMP, acquired Rocna, there have been no reports, at all, of any quality issues.

Manson Supreme



Used for: Mud, sand, rock, weeds

The Supreme is almost identical to the Rocna. It has a larger roll bar, and it also has two attachment points – one at the end of the shank and one at the end of a long groove in the shank. By attaching the rode to the groove, the anchor becomes easier to trip and pull free from the bottom when retrieving it, especially if it becomes wedged or fouled. Detractors claim using the groove makes it unsafe, as it may trip and pull free unintentionally if the wind shifts. I'm not convinced this is true. It seems to me that unless the anchor rode was shortened to almost 1:1 scope, the shackle would almost never slide up the shank and break the anchor out. It is far more likely to pivot the anchor around, but even if it did slide along the shank, the anchor would still be inclined to rotate as opposed to sliding along the bottom backwards. In any event, if you feel uncomfortable about this feature, the anchor still has the other, more traditional attachment point. There have been a number of tests comparing the Supreme with the Rocna, as well as a number of other anchors, and it usually performs quite well.

Super Sarca, Sarca Excel



Used for: Mud, sand, rock, weeds

Sarcas are manufactured in Australia. Both styles are basically plow-shaped anchors that have been redesigned with a sharper reinforced point and wings on the plow that increase the holding power. The Super Sarca has larger flukes and a roll bar to make it self-righting. The Excel has smaller flukes and a weighted tip. Both have a good following in Australia. Distribution is limited in other parts of the world, but the manufacturer is willing to discount the price enough to cover the shipping costs.

Kobra and Kobra II



Used for: Mud, sand, rock, weeds

The Kobra is a plow type anchor manufactured by Plastimo. It looks very similar to the Delta, complete with a ballasted tip and sharper point, but with larger wings. In the testing I've seen, the Kobra consistently outperforms the Delta. It has a much greater holding capacity than the Delta, and so I have included it in the section devoted to the new generation anchors. It has another advantage in that the anchor can be folded, making it easier to stow. The Kobra II is the newer, larger version of the original Kobra, and requires removal of a lock nut before the anchor can be folded.

Manson Boss



Used for: Mud, sand, rock, weeds

The Boss is something like a cross between a Manson Supreme/Rocna and a claw-type anchor. It is scoop-shaped with a sharp reinforced point, and no roll bar. The flukes are large and swept up like a claw, making it self-righting. The addition of vertical flanges or wings should increase holding power in soft mud. Like its cousin the Manson Supreme, it has a groove along the shank that is intended to make it easier to trip and pull free when retrieving it. By moving a nut and bolt along the groove, the feature can be disabled, if desired.

After looking at several different anchor designs, listening to different opinions and looking at reviews, we decided to give this one a try. We bought one in Adelaide, South Australia to evaluate while cruising the region. As of the writing of this book, our experience with it is limited to the hard sand and deep grass of South Australia. I'd have to give it only a satisfactory rating based on what we've experienced so far. While we did, in all cases, eventually get it to set, it often took several attempts. We dragged a short distance one night in an anchorage at Kangaroo Island, but it reset on its own just as the anchor alarm went off. On the other hand, on the few occasions we found some softer sand, it set immediately and held well. We will continue using it in other bottom types as we find them, and may yet find that it is an excellent all around anchor, but the jury is still out.

Selecting the Right Anchor

So, how do you go about choosing the right type of anchor for your boat? The first step is to evaluate your cruising area. Will you be spending the foreseeable future sailing in the Chesapeake or Narragansett Bay? The Bahamas and the Caribbean? Starting out on a circumnavigation? Heading for Cape Horn? Depending on your cruising plans, you may only need an anchor that is good for sand or mud, or maybe you will need several anchors that will serve you well in a variety of conditions and bottom types.

The next step is to take a look at the anchor reviews and testing to see which anchor performs best for the conditions under which you will be using it. Be a little skeptical of anchor tests and reviews, however. Even the best designed tests have a number of uncontrolled variables when attempting to compare a number of anchors. The same anchor that is dropped in two different spots 50 feet (15m) apart might exhibit totally different holding power just because of differences in the sea bottom. Some anchors require different techniques to set them properly. If two anchors are dropped and tested in exactly the same place, the first one might disrupt the bottom enough to affect the performance of the second. Sometimes a heavier anchor of a particular design might perform quite well, while its lighter counterpart simply skips over the bottom without setting at all – and, since some reviews are done with light anchors, the testing may not necessarily reflect a particular anchor's real world performance. I can think of a host of reasons why even the most unbiased anchor reviews often result in different conclusions about the anchors being tested.

Given all these caveats, while the testing process may not be perfect, the information provided is far better than no information at all. Before making a decision based on test results, carefully evaluate how, where and by whom the testing was done, and look at the results of several tests. Weight the test results for the type of anchoring you will be doing. If you will only be anchoring in sand, you want an anchor that consistently performs well by the reviewers in sand. Likewise, if you are setting out to go around the world, find the anchor that rates highly by all the reviewers in a variety of bottom types.

A Word About Copies and Counterfeits

Before describing the various anchors available, I want to say a little about copies, imitations and outright counterfeits. Almost all the popular anchors are available as the genuine article or as a copy. In many instances, the original patent has expired and anyone is free to copy the design. In other cases, another manufacturer has made a few minor modifications to the design, barely avoiding a patent infringement. Then there are the outright knock-offs, typically by offshore companies, that are clones of the design in complete disregard for any patents.

There are a couple of reasons to be wary of copies and imitations. The most obvious reason is that with the original version, you have some assurance that the manufacturer stands behind his product – that he has gone to some trouble to test his design, choose the right metals and control his manufacturing process, so that the finished product is reliable and meets his specifications. With a copy, you have no idea whether the manufacturer cut corners or used inferior metals to produce a product that looks like the original, but is inferior in strength and performance

The second reason is a moral, as well as a common sense issue. It takes money and time to develop a new anchor. New design concepts must be developed and analyzed; prototypes have to be fabricated and tested; modifications and improvements made. Then, the entire cycle is repeated until the end result is a superior product. We reward the developer and manufacturer by buying his product. If, instead, we buy a knock-off, not only do we risk getting an inferior product, but we discourage the developer and manufacturer from developing the next great new advance in anchor technology.

Anchor Size

The anchor size that is correct for a boat depends not only on the boat's length, but its displacement as well. Nine of Cups is 45' (13.8m), and the design specs show she has a displacement of 18 tons. The last time we were on a Travelift®, however, she weighed in at just over 20 tons. All those anchors and chain haven't helped her figure at all. Our philosophy has always been to buy the largest anchor our bow roller will accommodate. The extra 20 or 30 pounds (9kg-14k) of a larger anchor will make very little difference compared to the 600 or so pounds (272kg) of chain we carry.

The charts below show the recommended anchor size for several of the traditional and newer anchors for both light displacement, as well as heavy displacement vessels. If your cruising plans call for day sailing in San Diego Harbor with an occasional lunch stop, it's probably okay to skimp on the anchor. If you will be cruising and anchoring anywhere that the wind might pipe up, think of these tables as the absolute minimum size and notch up a size or two if you can. If you will be cruising the high latitudes or anywhere prone to hurricanes or cyclones, get the biggest anchor your bow roller can handle.

Many production boats have rather anemic windlasses designed, apparently, for the lightest acceptable ground tackle. If you are upgrading your ground tackle for an upcoming world cruise, it makes sense to take a look at your windlass and whether it will be up to the job of hoisting all that new chain and an oversized anchor.

Light Displacement Boats

	20'-25'	26'-30'	31'-35'	36'-40'	41'-45'	46'-50'	51'-55'	56'-60'
Plow (Lb/Kg)	14/6	14/6	22/10	22/10	35/16	35/16	44/20	44/20
Hinged Plow (Lb/Kg)	25/11	25/11	35/16	35/16	35/16	44/20	44/20	60/27
Claw (Lb/Kg)	16.5/8	16.5/8	22/10	33/15	44/20	66/30	66/30	66/30
Steel Fluke (Lb/Kg)	9/4	14/6	18/8	25/11	40/18	65/30	65/30	85/38
Aluminum Fluke(Lb/Kg)	4/2	7/3	10/4	15/7	15/7	21/10	32/15	47/21
Admiralty (Lb/Kg)	18/8	26/12	35/16	48/22	66/30	66/30	88/40	88/40
Fisherman (Lb/Kg)	15/7	25/11	35/16	50/23	65/30	75/34	100/45	100/45
Grapnel (Lb/Kg)	18/8	26/12	35/16	48/22	66/30	66/30	88/40	88/40
Bügel (Lb/Kg)	20/9	24/11	30/14	40/18	40/18	55/25	55/25	55/25
Spade (Lb)	21/10	33/15	33/15	33/15	44/20	44/20	55/25	55/25
Rocna (Lb/Kg)	13/6	22/10	22/10	33/15	44/20	55/25	73/33	73/33
Supreme (Lb/Kg)	15/7	25/11	25/11	35/16	45/20	60/27	60/27	80/36
Kobra (Lb/Kg)	9/4	14/6	18/8	22/10	26/12	31/14	35/16	44/20
Boss (Lb/Kg)	15/7	25/11	25/11	35/16	45/20	60/27	60/27	80/36
Sarca (Lb/Kg)	26/12	26/12	37/16	37/16	47/21	47/21	65/30	80/36

Heavy Displacement Boats

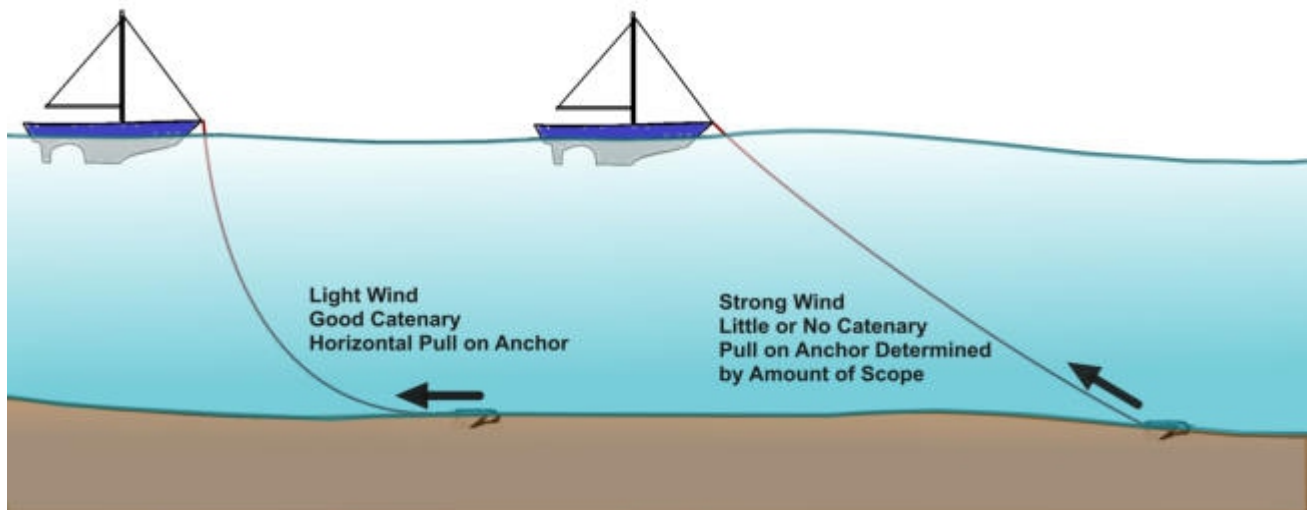
	20'-25'	26'-30'	31'-35'	36'-40'	41'-45'	46'-50'	51'-55'	56'-60'
Plow (Lb/Kg)	22/10	22/10	35/16	35/16	44/20	55/25	55/25	55/25
Hinged Plow (Lb/Kg)	25/11	35/16	44/20	44/20	60/27	60/27	75/34	75/34
Claw (Lb/Kg)	22/10	33/15	44/20	44/20	55/25	55/25	66/30	66/30
Steel Fluke (Lb/Kg)	14/6	18/8	25/11	40/18	65/30	65/30	85/39	85/39
Aluminum Fluke(Lb/Kg)	7/3	10/4.5	15/7	15/7	21/10	32/15	47/22	47/22
Admiralty (Lb/Kg)	26/12	35/16	48/22	66/30	66/30	88/40	88/40	110/50
Fisherman (Lb/Kg)	25/11	35/16	50/23	65/30	75/32	85/39	100/45	100/45
Grapnel (Lb/Kg)	26/12	35/16	48/22	66/30	66/30	88/40	88/40	110/50
Bügel (Lb/Kg)	24/11	30/14	40/18	40/18	66/30	66/30	92/42	92/42
Spade (Lb/Kg)	33/15	33/15	33/15	44/20	66/30	66/30	77/35	77/35
Rocna (Lb/Kg)	22/10	33/15	55/25	73/33	73/33	88/40	121/55	121/55
Supreme (Lb/Kg)	25/11	25/11	35/16	45/20	60/27	80/36	100/45	120/55
Kobra (Lb/Kg)	18/8	22/10	27/12	31/14	35/16	44/20	55/25	55/25
Boss (Lb/Kg)	25/11	25/11	35/16	45/20	60/27	80/36	100/45	125/56
Sarca (Lb/Kg)	26/12	37/18	45/20	65/30	80/36	80/36	88/40	110/50

Anchor Rode

There are basically three types of anchor rode: all rope rode, a combination of chain and rope, and all chain rode. Like your choices of anchors and anchor sizes, the type and size of your anchor rode depends a great deal on, not only your boat type and size, but the conditions in which you will be anchoring. Before we discuss the advantages and disadvantages of each type of rode, however, we should talk about the catenary effect.

Catenary Effect

An anchor has its maximum holding power when the rode pulls on it in a horizontal direction. The closer to horizontal, the better it will hold. That's why the amount of scope (the ratio of the length of rode deployed to the depth of the anchorage) is such an important factor in how well an anchor holds.



The catenary effect created by the weight of the rode also causes the pull on the anchor to be more horizontal. If you look at the arc of the anchor rode in the illustration, you can see that in light winds, the end of the rode nearest the anchor lies on the seabed. As the wind increases, the catenary effect lessens. Eventually, if the wind becomes strong enough, the rode will form a straight line between the bow and the anchor.

The weight of the rode and size of the boat determines how much wind is required to overcome the catenary effect. If the rode is all rope, it takes very little wind to pull the line taut. For example, if Nine of Cups, a 45 foot (13.8m) boat, was anchored in 20 feet (6m) with 100 feet (30m) of rope rode deployed, it would take less than 10 knots of wind to overcome the catenary of an all rope rode. If the rode was 3/8" (10mm) chain, it would require almost 25 knots of wind before the chain became taut.

The catenary effect can be increased by adding weight to the rode. This can be accomplished by letting out more chain, and/or attaching a weight to the rode. These weights are referred to by a number of different names – chums, buddies, angels, and kelleys to name a few. The technique for adding weights to the anchor rode is discussed in a [later section](#).

Rope rode

All rope rode is typically 3-strand nylon rope, which, by its nature, is very stretchy. Stretch is a good thing in mooring lines and anchor rode, as it adds a lot of elasticity between the boat and the anchor. As the wind gusts and shears, the elasticity of the rope helps prevent the anchor from being jerked out of the seabed. Rope also weighs considerably less than chain, putting less weight forward and making it easier to haul than chain. If your boat and anchor size is small, you may not need a windlass.

An all rope rode has a few drawbacks, however. One is that it has very little chafe resistance, so as the boat swings, the rope will wear. If you anchor in soft sand or mud, the wear will be gradual, but if the rope encounters a sharp rock or coral head, the rope might well be chafed through in a matter of hours or even minutes. A second drawback is that rope is more likely to get tangled up in the anchor locker, especially after a boisterous sail. Finally, since rope is lightweight, it has very little catenary effect.

All Chain Rode

An all chain rode has a number of advantages. The most obvious one is that it virtually eliminates the possibility of rocks or coral chafing through the rode. Another advantage is the catenary effect that the weight of the chain adds.

An all chain rode is unlikely to tangle up in the chain locker, but it does have the annoying habit of forming a vertical pile, rather than spreading out evenly. We almost always have to knock the pile down 2-3 times as the chain is hauled in, especially if we have a lot of chain out.

One disadvantage with an all chain rode is that chain doesn't stretch. If the wind becomes strong enough to overcome the catenary effect, an all-chain rode will become taut with a sudden jerk. This creates an enormous stress on the chain, anchor, shackles, bow roller and windlass. It is important to add some elasticity to the chain to prevent it from breaking the anchor loose from the bottom and to reduce the possibility of a catastrophic failure of some component of the ground tackle. Using a nylon line as a snubber will add elasticity to the rode and take the strain off the windlass. Constructing and attaching [snubbers](#) is discussed in a later section.

One other obvious disadvantage of an all chain rode is the weight the chain adds to the bow. Adding 300 feet (90m) of chain can easily add 450 pounds (205kg) forward which sacrifices performance and increases the tendency to pitch, especially in a light displacement boat. The boat will almost surely require a windlass to haul all that chain up, further increasing the weight forward. Our original windlass was not all that reliable, and we found that while it was possible to haul our anchor manually, it was a tremendous amount of work. As a result, when it wasn't functioning, we were often tempted to stay longer than we should in a place with questionable holding, rather than haul the anchor and re-anchor in a better spot. Even if you are a big strong fellow (or woman), it is a slow process to retrieve an all chain rode by hand which can be a problem if you need to leave in a hurry. We were anchored in an

open roadstead off Tristan da Cunha, a tiny island in the South Atlantic. The depth of the anchorage was 75 feet (23m) and we had all 300 feet (90m) of chain out. We spent a couple of glorious days there, but on the third day, the wind started backing and then increased, putting us on a lee shore. That, of course, was the moment the windlass decided to give it up for good, and by the time I managed to haul all 300 feet (90m) of chain and the 110 pound (50kg) anchor by hand, the waves were breaking over the bow (and me) and Marcie was working the engine hard to keep Cups off the rocks. When we were finally clear and the adrenaline had subsided a bit, I was definitely ready for a hot cuppa, a couple of ibuprofen tablets ... and a new windlass.

Combination Rope and Chain Rode

A reasonable compromise is to use chain for part of the rode and rope for the remainder. The chain is shackled to the anchor and then 3-strand nylon rope is spliced to the end of the chain. The end of the rope, the bitter end, is secured to a cleat or other strong point on the boat. The chain takes care of most of the chafe issues without adding as much weight as an all-chain rode. If you have a small boat and anchor, you might not need a windlass, but if you do, the gypsy needs to match both the chain size and the diameter of the nylon rope.

So how much chain should you use? The answer is – it depends. If there is too little chain, especially in deeper anchorages, a portion of the rope will lie on the bottom, exposing it to whatever rocks or coral are within swinging range. As you increase the length of chain, you have many of the same benefits of an all chain rode – with the same disadvantages. A good rule of thumb is to use a length of chain equal to your boat length. A slightly more conservative compromise for most cruisers is to use 70 to 100 feet (22m-30m) of chain. If you are heading for the deep anchorages of the South Pacific with all those coral heads, you will want 250 to 300 feet (75m-90m) of chain. Add to this enough 3-strand nylon line to ensure you have sufficient rode to give you a 6:1 scope in the deepest anchorage you are likely to encounter and you will be well-prepared. On Nine of Cups, our primary anchor has 300 feet (90m) of chain and another 200 feet (60m) of nylon rode.

Splicing the 3-strand line to the end of the chain is a fairly easy splice and maintains about 90% of the breaking strength of the original line. With a little practice you will have a connection that is compatible with the chain gypsy and small enough to pass through the chain pipe.

Rode Size

If you are using rope rode, selecting the right size for your boat is pretty straightforward. The tables below provide the minimum recommended size for 3-strand nylon rode. If you will be doing some extended cruising, especially in the higher latitudes, you might want to use a size or two larger.

If you are using chain rode, determining the type and size of chain for your boat gets confusing. Should you get G3, G4, G43, BBB, HT, 316 stainless, G7 or G8 chain? Part of the decision will depend on the size of your chain gypsy. Unless you are willing to buy a new gypsy or are replacing your windlass, your options are limited. G3, which is replacing BBB chain in the U.S., is inexpensive, common and easy to get almost anywhere in the world. If you are planning an extended cruise away from the U.S., this might be a good choice - if you ever have to replace your chain, it will probably be easier to find new chain that will fit your windlass.

The tables below provide the minimum recommended size of G3 chain for various boat sizes. If you are contemplating a different type of chain, make sure the chain you are considering has a Minimum Breaking Strength (MBS) (aka Minimum Breaking Load), the same or greater than the MBS of the size G3 shown in the tables.

Unfortunately, most chain suppliers only provide the Safe Working Load (SWL) (aka Working Load Limit and Normal Working Load) in their chain specifications. For reasons that aren't clear to me, the formulae used to calculate SWL vary depending on the type of chain – sometimes it is 25% of the MBS, sometimes it is 33%. It is safer and more consistent to use the Minimum Breaking Strength when comparing chain strength.

The numeric nomenclature now used to denote chain strength, G30 or G3, G43 and G70 or G7 refers to the MBS of the wire or rod from which the chain is made. These strengths are in a simple ratio of 30:43:70. For example, 3/8" (10mm) BBB chain (now G3 or G30 chain) has an MBS of 10,600 lbs (47.2kN), while 3/8" G43 chain has an MBS of 16,200 lbs (72kN) and 3/8" G70 chain has an MBS of 26400 lbs (117.4kN).

If you look at these numbers, it is apparent that some chain, like G7 and G8, have twice the MBS of G3 chain. You could conceivably use a smaller size chain while maintaining the same strength, which would reduce the weight in the bow considerably. It will cost about 50% more and will be harder to find when it is time to replace, but it is something to consider.

Light Displacement and Low Windage Vessels

	20'-25'	26'-30'	31'-35'	36'-40'	41'-45'	46'-50'	51'-55'	56'-60'
3-Strand Nylon	3/8" 10mm	3/8" 10mm	7/16" 11mm	1/2" 12mm	9/16" 14mm	5/8" 16mm	3/4" 19mm	3/4" 19mm
G3 Chain	3/16" 5mm	3/16" 5mm	1/4" 6mm	1/4" 6mm	5/16" 8mm	5/16" 8mm	3/8" 10mm	3/8" 10mm

Medium Displacement Vessels

	20'-25'	26'-30'	31'-35'	36'-40'	41'-45'	46'-50'	51'-55'	56'-60'
3-Strand Nylon	3/8" 10mm	7/16" 11mm	1/2" 12mm	1/2" 12mm	9/16" 14mm	5/8" 16mm	3/4" 19mm	3/4" 19mm
G3 Chain	3/16" 5mm	1/4" 6mm	1/4" 6mm	1/4" 6mm	5/16" 8mm	5/16" 8mm	3/8" 10mm	3/8" 10mm

Heavy Displacement and High Windage Vessels

	20'-25'	26'-30'	31'-35'	36'-40'	41'-45'	46'-50'	51'-55'	56'-60'
3-Strand Nylon	3/8" 10mm	1/2" 12mm	9/16" 14mm	5/8" 16mm	3/4" 19mm	7/8" 22mm	7/8" 22mm	1" 25mm
G3 Chain	3/16" 5mm	1/4" 6mm	5/16" 8mm	5/16" 8mm	3/8" 10mm	1/2" 12mm	1/2" 12mm	1/2" 12mm

North American chain sizes, BBB, G30, G43, and G70 are all made to slightly different size standards, so a 5/16th" BBB might not fit a gypsy intended for 5/16" G43 chain (and vice versa). If you are changing chain strength, BBB/G30 to G43 or G70, then check that your gypsy is compatible with the new chain - before you buy. On the other hand, G30, G40, and G70 metric chain are all made to the same size standard, so a gypsy meant for 10mm G30 should work with 10mm G70, but it is still worth checking.

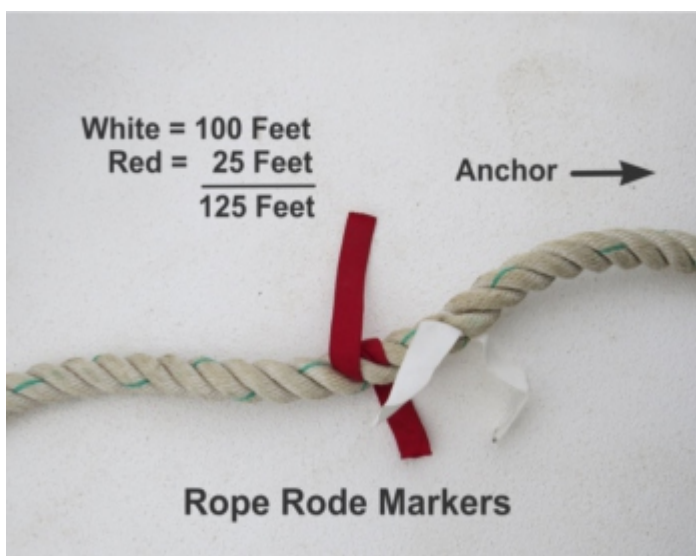
North American chain sizes are often converted to metric sizes, but they are not always interchangeable. 5/16" chain is similar to 8mm metric, but the link sizes can be very different. Many 5/16" chain types have a wire size closer to 9mm than 8mm! This difference may not seem like much, but may well cause the chain to jam in the gypsy.

If you need to buy new chain, be aware that metric chains can be more expensive in America, than say Europe, and North American chain sizes are more expensive in, say, Australia. In fact, North American or metric chain might be unavailable - or you will need to pay the freight from wherever it can be best sourced. Often it is cheaper to buy a new gypsy than to pay the added cost for an exact replacement of the old chain.

Marking the Anchor Rode

Whether you have all rope, all chain, or a combination rope/chain, you need to know how much anchor rode has been deployed to ensure you have the correct scope. Some cruisers keep track by counting the seconds as the rode goes out or the rotations of the windlass, but this is a rough approximation at best. Nine of Cups has a chain counter with a digital display that keeps track of how much chain or rope is out – and sometimes it works. Our backup method, which is much more reliable and almost foolproof, is to mark the rode in some fashion, so that the amount of anchor rode deployed is easily determined visually.

Marking Rope Rode



Marking rope rode is easy. For less than \$10, you can buy a set of pre-marked strips of nylon. Each strip of nylon is labeled with the number of feet, usually in some convenient increment – 25 feet, 30 feet or 10m. You stretch the line out and weave each nylon strip into the 3-strand rope at the appropriate length.

Alternatively, you can cut your own nylon strips in different colors from rolls of ribbon and use a color code to determine the length of rode. We use red, white, and blue nylon to mark the number of 25-foot (7.5m) lengths that have been deployed. If you use meters instead of feet, it is simpler to use a color code based on multiples of 10m.

Note: Since the following section only applies to the color coding we use for the number of feet deployed, I've omitted the metric conversions. Use a similar system for determining the number of meters deployed.

The first strip indicates how many hundred feet are deployed. If it is red, there is less than 100 feet; if white, there is between 100 and 199 feet; and if the first strip is blue, there is between 200 and 299 feet. The second strip indicates how many multiples of 25 feet are deployed. A red strip means 25 feet, a white strip means 50 feet, and a blue strip indicates 75 feet. To determine how many feet of rope are out, we look at the first strip to determine how many hundreds of feet are out, then add the number of 25 foot intervals indicated by the second strip. A few examples: a single white strip would indicate that we had 100 feet of rope deployed; a blue strip followed by a red strip would indicate 225 feet, and a red strip followed by a blue would mean we had 75 feet out. This method works reasonably well for us. It is not entirely foolproof, however. There is always the possibility that a marker might come loose, or that a muddy bottom might make it difficult to discern the colors the next time it is used. Sometimes the arithmetic required to calculate how much rope is out is a stretch for our addled minds after a rough passage. Generally, however, we have a pretty good idea how much rope has been deployed.

Marking Chain Rope

We have tried several methods for marking chain. We once used different color cable ties. We found that if we didn't cut the tails off the cable ties after securing them to the chain, they sometimes got jammed in the windlass. If we shortened the tails, the rough cut edge would sometimes chafe the snubber. If we cut the tails flush, there wasn't enough cable tie to discern the color in less than bright sunlight, and it still had a tendency to chafe the snubber.

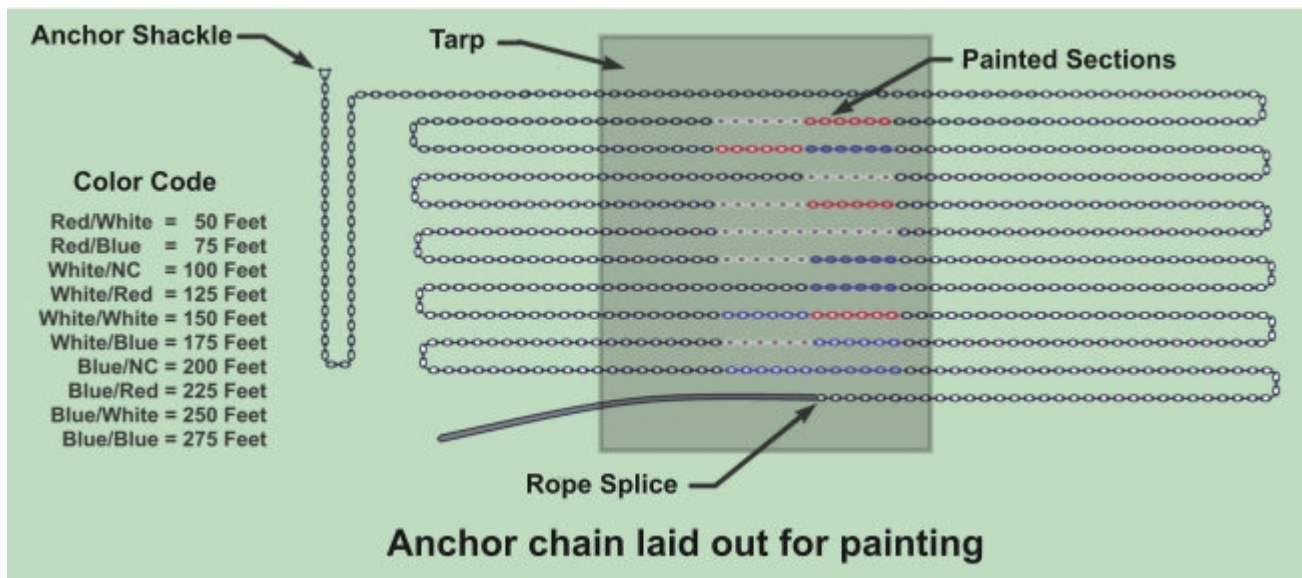
We have also painted sections of the chain in different colors, using a color coding system similar to the one we use for rope rope. This works quite well and lasts a long time, but only if done properly. Normal alkyd and oil-based paints won't adhere well to galvanized chain. Most spray paints are in this category. Most acrylic latex based paints, on the other hand, do adhere to galvanized surfaces. Krylon H2O spray paint is the only acrylic latex top coat paint I know of that comes in a spray can, but is somewhat difficult to find. The alternative is to prime the area to be painted first with a latex-based primer such as Kilz 2 or Zinsser Bullseye 1-2-3. Both are water-based primers that can be over-painted with alkyd or oil-based paints, and the Zinsser product is even available in spray cans.

Note: As before, since the following section only applies to the color coding we use for the number of feet deployed, I've omitted the metric conversions. Use a similar system for determining the number of meters deployed.

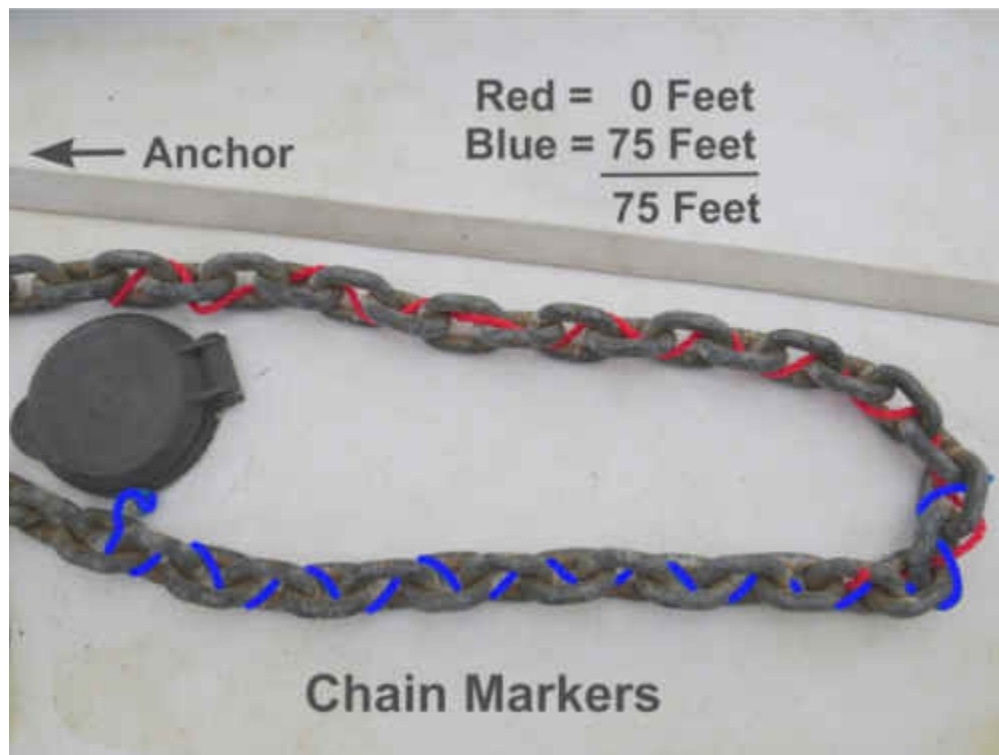
We like to have a mark every 25 feet, starting at 50 feet. We paint a 1-1/2 foot section of chain for each color. A single white section would indicate 100 feet of chain, a blue section followed by a white section would indicate 250 feet, and a red section followed by a blue section would indicate 75 feet.

There is a little prep work that must be done before painting. This is the process we use to get the longest lasting results:

1. We stretch the chain out on the dock or in an appropriate place in the boatyard in loops, so that each of the 25 foot lengths are alongside each other. It is easier if the sections to be painted are in the middle rather than at the ends of each loop (see figure). Once this is done, the chain must be degreased and cleaned whether it is fresh from the galvanizer or has been used for a few years. We start with a bucket of degreaser and a deck brush and go over each section that will be painted. We rinse it well, then use a general purpose cleaner to remove any dirt (or sea life if the chain was previously used). We rinse well one more time and let it dry – usually overnight.
2. Next we tape a painter's plastic drop cloth or a tarp underneath the section that will be painted. We prefer to use cans of spray paint rather than trying to paint the chain with brushes. Whether we are priming first or using an acrylic latex topcoat, the process is the same. We paint one side of the chain, wait the re-coat time, then spray on a second coat. Since the rows of chain are usually quite close together, we use a section of cardboard to shield the chain lying next to the one being painted. After the re-coat time, we roll the chain over and apply two coats to the other side of the chain. If we are priming the chain, we repeat the process with the topcoat paint.
3. We let the paint dry thoroughly before feeding it back into the chain locker.



When we last had our chain re-galvanized, the paint we had previously applied was removed, of course, and we used a different method for marking the chain. We bought 18 feet (5.5m) of ¼ inch (6mm) line in the three basic colors and cut each into 3 foot (.9m) lengths. Our preference is polypropylene line as it is inexpensive, can be found in bright colors, and is less likely to become discolored from a muddy bottom, but any type line will work. At each 25 foot segment of the chain, we wove the appropriate line segments through the chain links. We staggered the starting point of each line so we could tell which color was the first digit and which was the second. We initially thought we might have to whip the ends of each line to the chain to keep them from unraveling from the chain, but this has proved unnecessary. We've been using the method for two years, and it is now our preferred method.



Marking a Combination Chain/Rope Rode

On Nine of Cups, we have 300 feet (90m) of chain attached to another 200 feet (60m) of rope rode. We marked the chain at 25 foot (7.5m) intervals up to 275 feet (82.5m) and know that when we reach the end of the chain we have 300 feet (90m) out. The rope rode color coding starts from zero again, so when we see a red followed by a blue marker, we know we have 300 feet (90m) of chain, plus 75 feet (22.5m) of rope rode deployed.

If the length of either the chain or the rope rode was ever more than 300 feet (90m), we would repeat the color code. There is little likelihood of confusion - if the color combination white/red appeared, it should be obvious whether the amount of chain/rope deployed was 125 feet (37.5m) or 425 feet (127.5m).

One key component of using the color-coded visual method is to make sure we have a written record of the color codes used. With our failing memories, we find that after we've been away from Cups or sitting in a marina for awhile, we can't remember if red/blue is 75' (22.5m) or 175' (52.5m) ... which definitely makes a big difference when deploying the right amount of scope.

A Note About The Bitter End

One of our favorite movies is the 1990s vintage film, *Captain Ron*. It requires no small amount of "suspension of disbelief" to enjoy it, but once beyond that, we find it quite funny. In one scene, Kurt Russell throws a tiny fisherman's anchor over the side to anchor a 40 something foot (12m) sailboat. As all 25 feet (7.5m) or so of rope rode runs out, he watches the bitter end go into the drink. No one thought to check whether the anchor rode was actually attached to the boat – not that their tiny anchor and 1:1 scope would have actually held the boat in more than 2-3 knots of wind anyway.

In real life, it's unlikely that anyone would forget to attach the bitter end of the anchor rode to the boat, and I'm sure you haven't committed such an embarrassing oversight. (Wanna check - just to make sure?)

There have been a couple occasions when there was a real possibility of having to leave our primary anchor behind, however, and to do so, we would have needed to either disconnect the bitter end or cut the anchor rode. The bitter end of our anchor rode is secured down in the chain locker and is difficult to get to, which left us with the alternative of cutting the anchor rode. With an all rope rode or a combination of chain and rope, it is easy enough to cut the rode if there is a knife handy. If the boat has an all chain rode, it is important that the bitter end is accessible or that there is enough rope spliced to the end of the chain to enable it to be cut loose in an emergency. We also keep a small float handy with 50 feet of line attached which we can tie to the end of the chain. That way, if we do have to leave the anchor behind, we may be able to locate and retrieve it when conditions are better.

Anchoring Basics

Now that you have your anchor and ground tackle figured out, it is time to discuss how best to deploy it. Proper anchoring involves more than Captain Ron throwing the anchor over the bow. It involves planning, teamwork, and careful thought.

Communicating with Hand Signals

When we first started cruising, one of the things we discovered was that there was a frequent need to communicate with each other at a distance. This happened most frequently when we were dropping or raising the anchor, but also occurred when I went up the mast or when one of us was positioned at the bow trying to direct the person at the helm through a narrow channel, or around hazards.

The typical procedure for raising anchor, for example, was for Marcie to go forward to the bow and operate the windlass while I maneuvered Nine of Cups. It takes a little teamwork to get the anchor up, especially when we are in a crowded anchorage and the wind is blowing, and Marcie and I need to communicate quite a bit of information. She needs to tell me when to motor forward, how fast and in what direction. She needs to tell me when to stop, when the anchor has broken free, and when it is in view. If we are dropping the hook, she needs to let me know when the chain is taut.

Our initial method of communicating was by shouting at each other. When the wind was blowing, the engine was on, and Marcie was facing away from me, she needed to shout REALLY LOUDLY for me to hear her. Even then, I didn't always hear what she said, so I would have to yell into the wind as LOUDLY as I could, asking her to repeat what she said. There are a whole number of reasons why this wasn't ideal. The number one reason is that when we were yelling at each other, even when we started out with the best of intentions, we both got irritated and then angry. Even when things did go well, we spent the next few hours being snippy with each other. The next biggest reason was that voices really carry over the water. While one of us couldn't understand what the other was saying, everyone else within a half mile could hear us yelling at each other. Sometimes, this would be a source of amusement for the other yachties, but more often I'm sure it was quite irritating, especially when we were trying to leave quietly at the break of dawn.

We thought about getting small portable radios or one of the wireless intercom systems. But in the end, we devised our own system of hand signals for communicating with each other. We needed to be able to communicate each command using only one hand, and each signal must be clearly discernible to the other at a fair distance. These are the hand signals we use:



We have a few other hand signals we use occasionally that aren't actually documented. They translate roughly to the following:

“Uh – sweetie, I think you may not have recognized my last six signals and you will be amused to know that you have just run over the mooring ball ...”

or, “Actually honey, I did see your last six hand signals, and while I found your last hand gesture quite endearing, you may not have noticed that the wind has piped up just a skosh ...”

and my favorite, “That was quite a humorous response, love. While pondering it, I thought of a new storage location for the boat hook I'm holding...”

Selecting the Anchorage

There are a host of criteria that determine whether an anchorage will be safe and, slightly less importantly, whether it will be comfortable. At the very least, the anchorage should provide shelter from the waves and swell, and it would be nice if the boat wasn't rolling gunwale to gunwale all night.

To begin with, we make sure we have an adequate chart for the area. A great deal of information can also be gleaned from local cruising guides, pilots and sailing guides. Before sailing to a new area, we seek out any cruisers who have been there. Local fishermen, while probably not willing to share information about the best fishing spots, are usually happy to provide information about anchorages.

Many anchorages can be delightful in some weather conditions and untenable in others, so it is important to know what the weather will be doing. Should we expect a wind shift, either because of the diurnal land effect or because of a change in weather? How much wind can we expect?

Once we have tentatively decided on an anchorage, there are a number of other things to consider:

- What are the depths? Too shallow for our draft? Too deep, requiring more scope than there is swinging room, and thus, requiring a second anchor or lines ashore?
- What are the depth contours like? Does the anchorage shallow gradually or steeply? Will we be anchoring on the edge of a shelf that drops off sharply?
- What hazards exist, both on the approach and in the anchorage? Will we need to track our inbound route, in case we need to leave in the middle of the night? Is it even feasible to exit in the dark or pouring rain with little or no visibility?
- How is the holding? How close are the hazards if we drag? Will we be up all night standing an anchor watch?
- How is the approach if the wind shifts and the seas build? Some anchorages are near impossible to get in and out of when the surge and waves begin breaking across the entrance.
- How crowded is the anchorage? A crowded anchorage often means the other boats are using short scope. If the wind direction changes and/or increases, boats may quite likely drag or swing

into each other.

- How much tidal swing can we expect, and at what stage will the tide be when we drop the hook. If there are large tides, we need enough scope to keep us secure at high tide, but at the same time, we need to assess whether we will be in danger of swinging into a hazard or going aground at low tide.
- Are there tidal or other currents? A strong current may put the boat broadside to the wind and/or waves, making for a very rolly night.
- How does the swell enter the anchorage? What seems like a protected spot may see waves that hook around headlands or wave reflections that will make the anchorage very uncomfortable.
- If the wind shifts, will we be on a lee shore? Will we swing into any hazards?
- If the wind shifts, how much fetch will we be exposed to?

Once we make the decision to drop the hook in a particular anchorage and start making our way in, if there is any doubt about being able to navigate back out in the dark, we track our route on our chart plotter. On more than one occasion, the winds did not do what they were predicted to do and we found ourselves on a nasty lee shore with the wind blowing at gale force accompanied by sheets of rain. A hasty departure in the middle of the night with very little visibility was necessary. We may or may not have been able to extricate ourselves through the rocks and reefs without the chart plotter track, but having it as an aid greatly reduced the stress of the situation.

Anchor Scope

The scope is the ratio of anchor rode deployed to the depth of the water. When calculating scope, it is very important to add the height of the bow roller above the water to the depth of the water. For example, if we are anchored in 10 feet (3m) of water, our bow roller is 5 feet (1.5m) above the water surface, and we have 45 feet (14m) of chain out, our scope is: $45/(10+5) = 3$. In this example, if someone asked us what our scope was, our response would be “3 to 1”, not “3”.

It is also important to consider the state of the tide when calculating the scope. If there is any significant tidal swing, we always adjust the depth for the highest tide we will see. For the previous example, if we are anchored in 10 feet (3m) of water at low tide, and we expect a 5 foot (1.5m) tidal swing, then we should use 15 feet (4.6m) as our depth. Adding the height of our bow roller, in order to maintain a scope of 3:1, we would need to deploy $3*(15+5)$ or 60 feet (18m) of rode.

An anchor has its maximum holding power when the rode pulls on it in a horizontal direction. The closer to horizontal, the better it will hold. That's why the amount of scope is such an important factor in how well an anchor holds. When the wind picks up and the anchor rode is straight out, with a 3:1 scope, the angle of pull on the anchor is 19.5°; at 5:1 the angle is 11.5°; and at 7:1, the angle is 8.2°. At a scope of 10:1, the angle decreases to 3.8°, which is pretty close to horizontal.

In good conditions and with plenty of swinging room, we always try to have a minimum of 5:1 scope. If we are expecting a blow, we increase this to 7:1. And, if it is forecast to get really bad, we sometimes use a 10:1 scope. When asked how much chain he put out in bad weather, an old fisherman told us, “All of it- It don't do ya any good in the chain locker”. Good advice.

Sometimes, either because there isn't much swinging room in an anchorage or the anchorage is quite crowded, we just can't deploy that much rode. If possible, we still use a scope of 5:1 while setting the anchor, then we bring in rode until the scope is reduced sufficiently. We rarely consider using a scope of less than 3:1. If any weather is expected when using reduced scope, we will keep an anchor watch.

When anchoring with reduced scope, adding weight to the anchor rode in the form of a chum (aka a buddy, kellet, or angel) will increase the catenary of the rode, which in turn, increases the anchor's holding ability – up to a point. If the wind increases enough, it will eventually overcome the catenary effect introduced by the added weight ... usually when it is most needed. When this happens, the shorter the scope, the more likely the anchor will break out. A [later section](#) of this book discusses chums in more detail.

Dropping and Setting the Anchor

We use a couple of different techniques for dropping and setting the anchor depending on wind conditions and bottom type. Under normal conditions and when the holding is good, I motor slowly into the wind to the spot I want to drop the hook. Marcie is at the bow providing directions, if necessary. Her visibility is better from that vantage point, especially if we are looking for a sand patch amidst all the coral or kelp or grass. Once we reach the right spot, I stop the boat. If there is wind or current, I let it push us backwards, otherwise I put the engine in reverse and slowly back up. As soon as

we begin to move backwards, I signal Marcie to start dropping the anchor, and she continues to deploy the anchor rode until the correct amount is in the water. Marcie locks the chain in the chain stopper, and I continue dropping back until she gives me the signal that the rode is taut. Then I put the transmission in reverse, if it isn't already, and slowly apply more throttle until the engine is at $\frac{3}{4}$ of max rpm. Once I am sure we are holding position, I return the throttle to the idle position, put the engine in neutral, and attach the snubber. Then the engine is shut off. (If you do not use a chain stopper, it is best to attach the snubber before backing down on the anchor).

If the anchor doesn't set after a couple of tries, or we know the bottom is difficult to set in, we use a different technique. Once the rode has been deployed and before backing down on the anchor, we tidy up the lines, put the sail cover on and perhaps have a cup of coffee for 20-30 minutes to give the anchor some time to dig in. Then we start the engine to see if it will hold while backing down on it. If not, we try again, perhaps in a different spot.

Some anchor types set better using a shorter scope, while others set better with a larger scope. Fortress anchors, for example, set better in mud using a short scope. When trying to set it with a large scope, the weight of the chain may cause the shank to dig into the mud, causing the flukes to skip over the bottom. If the anchor doesn't set after a couple of attempts, we try setting it with a shorter and/or larger scope. If we can get it to set using a short scope, we then deploy the normal amount of scope.

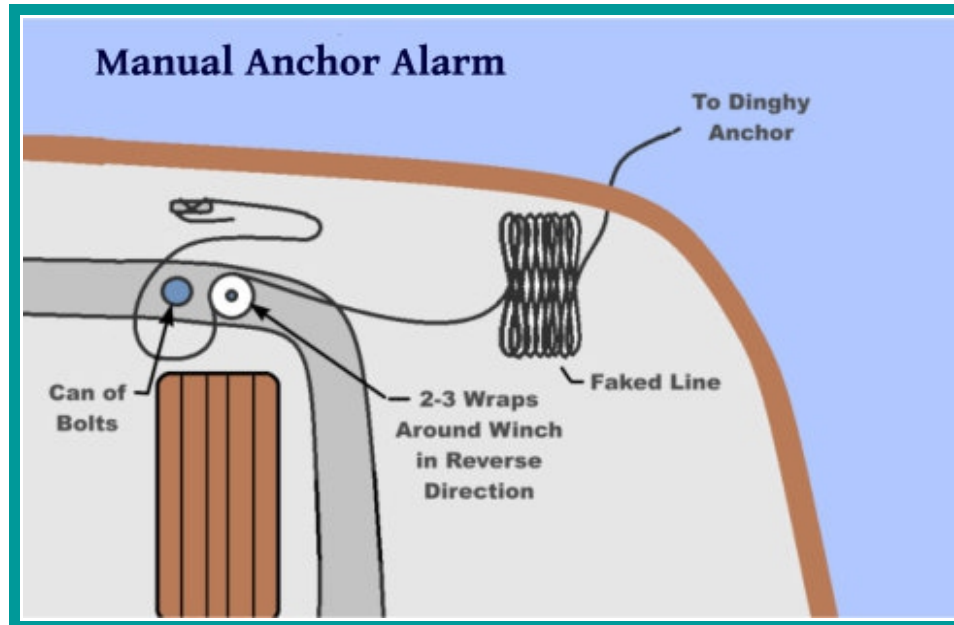
If it still won't hold, we have several options. We can try another spot, try anchoring with two anchors in series, leave the anchorage and head out to sea, or plan on doing an anchor watch all night.

Anchor Alarms

We routinely use an anchor alarm when we are on the hook. This is an alarm that goes off if we drift too far from our current position, warning us that we are either dragging our anchor, or that the wind has shifted significantly. It is an especially good tool to employ when we are anchored in an anchorage with less than optimal holding, in a small anchorage that has rocks or other hazards within swinging range of our anchor, or if there is bad weather in the forecast. It's also a good thing to have when the holding is good, the anchorage has plenty of swinging room and the forecast is benign – because you just never know.

Early in our cruising career, GPSs were more expensive, less accurate and real power hogs, and they certainly didn't make the best anchor alarms. We learned from an old salt how to make a manual anchor alarm that worked reasonably well. We would start with a small dinghy anchor with about 200 feet (60m) of small, non-floating line attached. Once we were anchored and settled in, we would drop the dinghy anchor over the stern and attach the bitter end to a cleat. Then we would wrap the line 2-3 times around a winch in the reverse direction, leaving about 6' (2m) of slack between the bitter end and the winch, and fake the remaining line on the aft deck. By wrapping it in the reverse direction, when the line is pulled in the direction of the anchor, the winch turns, making the clicking noise. If the primary anchor dragged or if the wind shifted and the boat drifted more than the length of the line, the dinghy anchor would stay put until all the slack was played out, then the winch would turn until the extra line between the winch and the cleat was taut. The clicking noise of the winch usually wasn't enough to wake us from a sound sleep, especially if the wind was howling, but if we used something that would

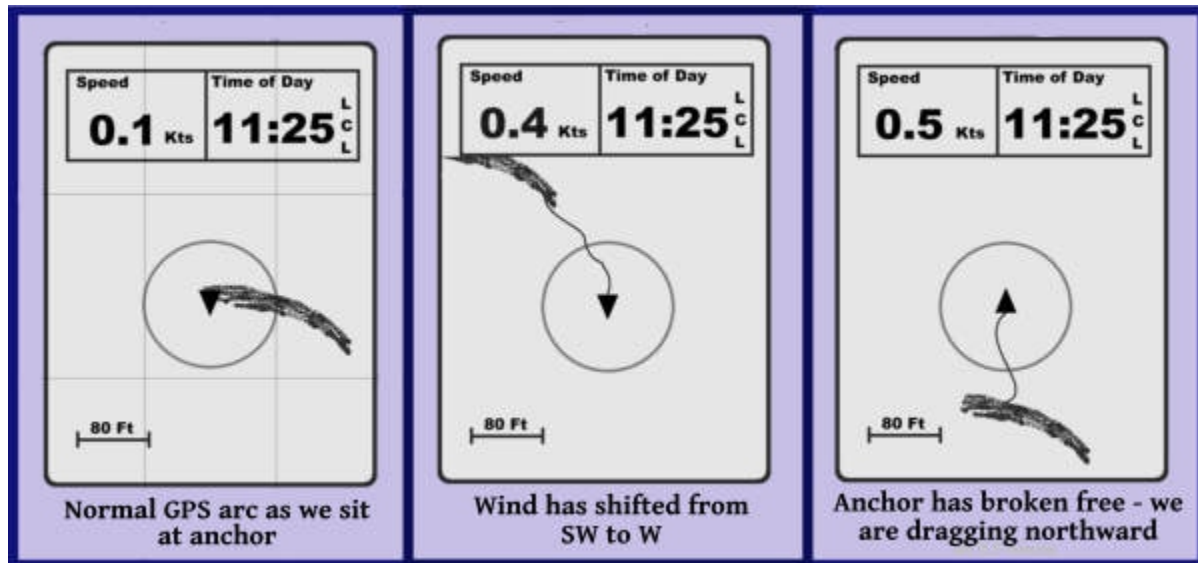
make a racket if it got knocked over, like a can of bolts, and rigged the slack in the line, so that it would knock the can over when it went taut, we were sure to wake up if we were dragging. We had a lot of false alarms, but it always let us know if we were dragging or if the wind shifted and we were in danger of running aground.



Now, of course, we have several GPSs aboard that have automatic anchor alarm features built in, and the accuracy has gone from a few hundred feet to something like 6 feet, so we no longer need to use the manual system. We have a couple of anchor alarm apps for our tablet as well. They are quite sophisticated, with lots of bells and whistles, and are quite fun to set up and play with. I'm not quite ready to trust them yet, however. Our iPad often loses its GPS fix below deck. Sometimes, it gets preoccupied and forgets to update its position. Sometimes it gets a bad fix and suddenly thinks we are somewhere else for a short period, setting off the alarm. Also, since it uses considerably more power when using the GPS feature and it must be left on continuously, it needs to be plugged in. I really like our tablet, but I still think of it as a backup system and I am a bit wary of depending on it entirely.

Instead, we keep one of our hand-held GPSs plugged in by our berth and set the alarm every night we are at anchor. The newer versions seem to have no problem maintaining a fix below deck. If the anchorage is large with no hazards to worry about and the holding is good, we set the allowable distance quite large. If there is limited swinging room or there are any hazards downwind, we set the leash quite small. This makes for more false alarms, but false alarms are a reasonable trade-off for increased reaction time if there should be a problem. By having the GPS at the bedside, not only are we assured of hearing the alarm, but a quick glance at the display will quickly tell us if we have an actual problem or whether the alarm is due to a small, benign wind shift.

We set the GPS to display our position graphically, then zoom in so that the page resolution is 200 feet (60m) or so and turn the tracking on. After a few hours, the display should show a nice arc as the boat swings at anchor. The graphic display will clearly show a large wind shift or if we are dragging. Each morning, if we are staying another day, we clear the tracking history, which clears the old track and starts a new one.



There are several other alternatives as well. Some people use the cockpit or nav station GPS/chart plotter as the anchor alarm. To ensure the alarm is loud enough to wake the crew, an external speaker or piezo alarm can be mounted near the berth. Many sailors also mount a compass near the berth, enabling them to check the boat's heading anytime a change is sensed.

Anchoring in a Crowd

Once we have picked out an anchorage, the next decision is where in the anchorage is the best place to drop the hook. If the anchorage is large with few other boats and no hazards, any number of places may be just fine, but sometimes it takes some thought to find an acceptable spot, especially in a crowded anchorage.

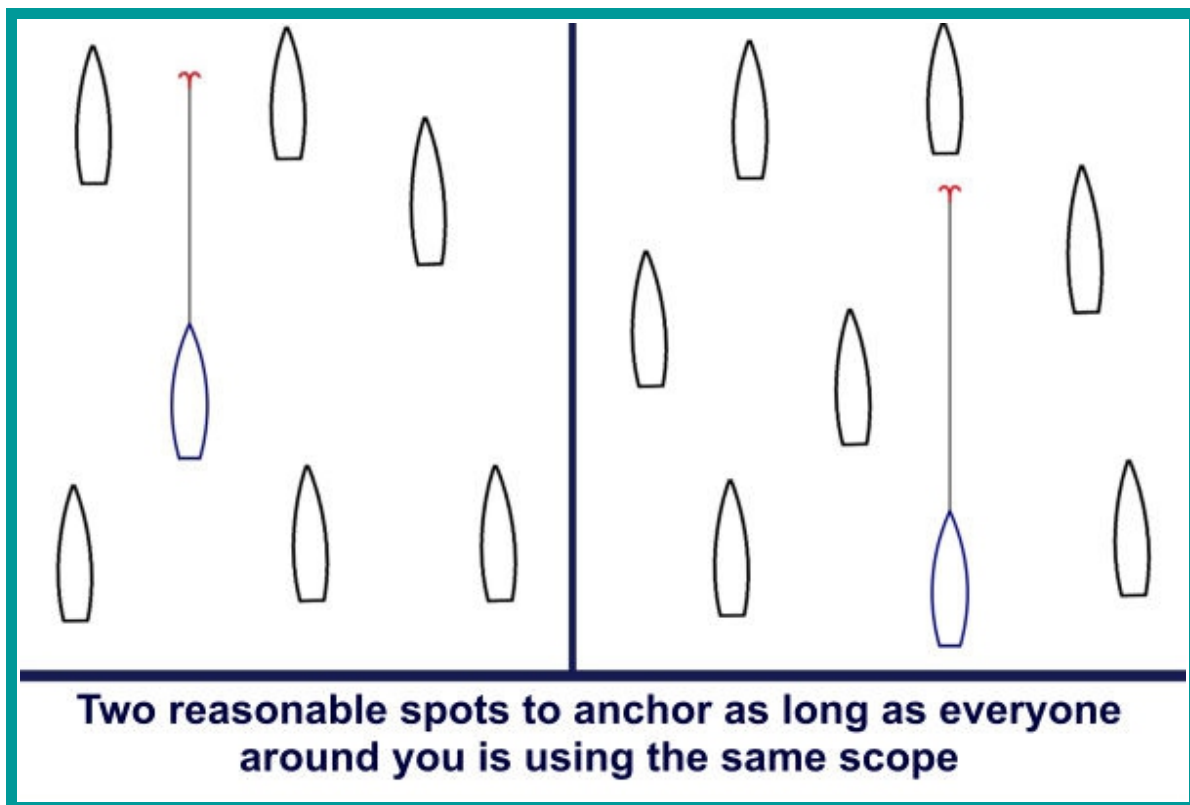
Before we decide where to anchor in a crowd, we first motor slowly through the anchorage to see how the other boats are anchored. Quite often, boats anchored in a crowded anchorage use less scope than usual, and we want to use the same scope as the other vessels around us – within reason. With our all chain rode, we never use a scope of less than 3:1. If we were using a nylon rode, the minimum scope we would use would be 4:1. We have no qualms about motoring up to nearby boats and asking them how much rode they have out as we reconnoiter an anchorage. We can also get an idea of how much scope the other vessels have deployed by estimating the distance between boats.

It is also important to use the same anchoring arrangement as the other boats. If everyone is using two anchors, we follow suit – otherwise, our swinging circle will be much different than the other boats.

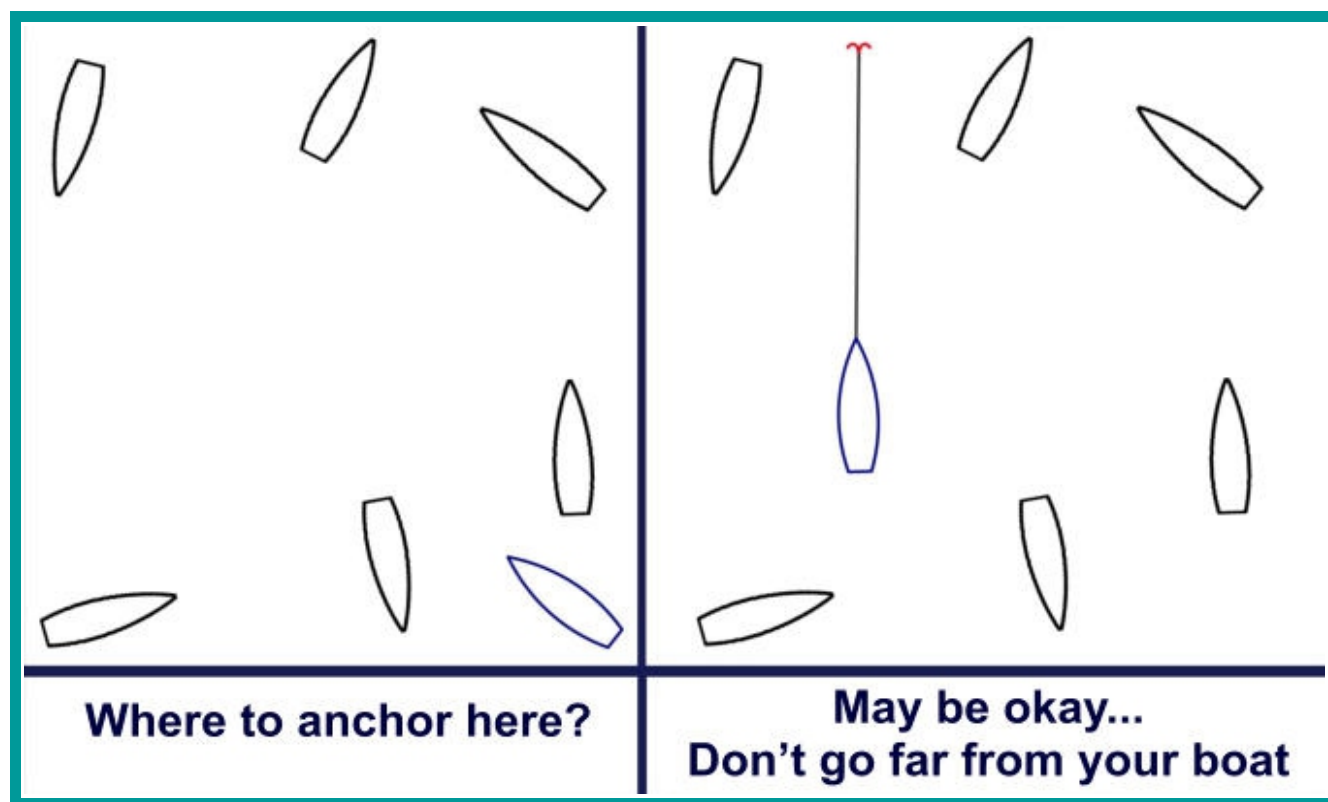
If the wind or the current is strong enough to stretch out the anchor rodes of the other vessels, finding a spot is somewhat easier. To locate the right place to drop the anchor, we first find the place we want Nine of Cups to lie and check the depth. Then, we calculate how much chain we will need to obtain the desired scope, add 20 feet or so to allow some room for the anchor to set, and motor forward that distance. When we reach the right spot, we stop the boat and begin lowering the anchor as we fall back. Ideally, this spot will be right behind or just alongside the vessel in front of us. Then we deploy and set the anchor normally. If I've miscalculated, and we don't end up in the right spot, we don't hesitate to haul the anchor and try again.

For example, let's say the spot we want to end up at is in 25 feet (7.5m) of water in an area of negligible tidal swing. The bow roller on Nine of Cups is 5 feet (1.5m) above the water. If we want a scope of 4:1, we will need $(25+5)*4$ or 120 feet (37m) of chain out. Adding 20 feet (6m) means we need to motor forward about 140 feet (43m), or just over 3 boat lengths for our 45' (14m) boat.

The illustrations below show a couple of crowded anchorages and where we would have chosen to drop the anchor.



If the anchorage is calm and the other boats are lying in all directions in a crowded anchorage, finding the right spot is much more difficult. If possible, we will often anchor further out, with the thought that we will move in closer when the wind picks up. When anchoring further out is not possible, we make our best guess as to the right spot, and stay close to the boat until we are sure we won't be banging into someone. As the most recent arrival, it is our obligation to move if we are too close to another vessel.



Here are some other considerations when selecting a spot to drop the anchor:

Like vessels – Light displacement, heavy displacement, shallow draft, and deep-keeled vessels all react to wind and current differently while at anchor. If you have a choice, try to anchor near boats similar to yours.

Moored boats – Vessels attached to permanent moorings usually have considerably less scope than anchored vessels. If we are anchoring near a moored boat, we give it more space as we will need more swinging room.

Unoccupied areas – If we find a large, unoccupied area in an otherwise crowded anchorage, there is usually a good reason. Maybe we lucked out and several boats just left, but more likely, there is a shallow spot or hazard there that the local boats know about. If the charts don't show anything, we do a careful and slow exploration of the area before dropping the hook. And again, we're not shy about soliciting information from boats already anchored.

Large expensive yachts – If we have a choice, we will avoid anchoring near a large expensive motor yacht. They are more likely to have and use jet skis and other water toys, fly past us several times a day in their large, high speed tenders, and will probably be running their generator(s) all night. It really spoils the moment when we find ourselves downwind of a diesel generator while trying to enjoy an otherwise perfect sunset.

Using a Trip Line

Most anchors have a ring or hole located on or above the flukes that can be used to attach a trip line. If the anchor becomes fouled, pulling vertically on the trip line will usually enable the anchor to be pulled free.

There are two methods for attaching a trip line. The first method is one we have used on a few occasions. The trip line is attached to a float and is made long enough to reach the surface, taking the tide into account. It shouldn't be a lot longer than necessary as this will result in an increased chance of getting it fouled in someones prop.

To deploy the trip line, we attach one end to the anchor using a bowline. We use 5/16" (8mm) line which has more than enough strength to lift our anchor. We tie the other end to a small fender with our boat name clearly written on it. Just before dropping anchor, we give it a toss overboard. When raising anchor, as soon as there is enough slack in the trip line to bring the float aboard, we hook it with the boat hook and bring it on deck. As the anchor is raised, we continue to bring in the excess line. If the trip line has wrapped around the anchor rode, it needs to be unwrapped before getting fouled in the bow roller or windlass.

We have only used this method a few times when the anchorage was known to be foul or had a very rocky bottom. On more than one occasion, another boat has mistaken our float for a mooring or an escaped fender and tried to pick it up. More often than not, the trip line has become wrapped around the anchor rode, making it difficult to raise anchor or to use it for its intended purpose. And not once when it was deployed, did we ever actually have need to employ it to free the anchor.

Another method of using a trip line is to rig a 3'-6' (1-2m) loop to the anchor. Either use polypropylene, which floats, or attach a small float to the loop. Then deploy the anchor normally. The trip line will be well below the surface, posing no risk of fouling in anyone's prop or being mistaken for a mooring. If the anchor becomes fouled, it is necessary to dive down and attach another line to the loop, but this is considerably easier than diving all the way to the anchor and fishing a line through the anchor's trip point.

Raising Anchor

In most cases, raising anchor is quite straightforward. I motor slowly forward, taking the tension off the rode while Marcie uses the windlass to bring the rode in. Alternatively, we bring in a few feet of rode, wait until the catenary of the rode pulls the boat forward, then bring in another few feet of rode. When

the boat is over the anchor, sometimes it takes a little patience to break it free if it was stuck well. Rather than fighting it with the windlass, I sometimes motor forward beyond the anchor, or sometimes let the wave action slowly break the anchor free. Once it breaks free, I try to hold position until the anchor is near the surface to prevent snagging or hooking it on something – like a rock, a shallow spot or someone else's anchor rode.

On maybe half a dozen occasions, our anchor has become fouled on something – a rock, a coral head, an old anchor chain or cable – and wouldn't break free. Our first ploy was to motor in circles, first in one direction then the other, in the hope that pulling on the anchor from different angles would break it free. This usually worked, but if it was still fouled, we launched the dinghy and used a dive mask to peer into the water. If the water was somewhat clear and the anchor wasn't too deep, we could usually see the problem. On a couple of occasions, the person in the dinghy was able to direct the helmsman in whatever direction it took to free the anchor. Once, in St. Kitts, the anchor was freed by free diving on it. In a number of anchorages, the water was too deep or too cold, or the swell and current too dangerous to risk diving, and had we not been able to free the anchor, we would have had no choice, but to cut the rode and abandon the anchor. If there was any chance of returning and salvaging it later, we would have attached a float to the rode and recorded the GPS location.

Snubbers

When we were first learning how to sail, we took a “bareboat chartering” class in San Diego. It was a fun class, and we got to live aboard our classroom, a 36' Hunter, for the three days of the class to give us a taste of what was to come. On completion, we were supposedly qualified to charter a boat on our own. We were taught such things as checking the engine oil, the basics of anchoring and maneuvering a sailboat.

The sailboat we were on had an anchor with a short section of chain, and then a hundred feet or so of rope rode. Our instructor, who had sailed a bit in the Pacific, told us that this was fine for the San Diego area. Once we were in rocky or coral strewn areas, however, we would probably use all chain rode, and that the anchoring technique with chain was different than rope rode. We would use something called a “snubber”.

Well, it turns out that he was right. Cups has all chain rode, and we never anchor without using a snubber, a stretchy nylon line attached between a strong point on the boat and the anchor chain. In normal conditions, the snubber takes the tension off the chain stopper and windlass. In strong winds, the anchor chain will stretch out almost straight, and as the wind and waves cause the boat to buck and jerk, there is no give in the chain, causing tremendous stress on the boat - not a good thing. Even worse, the sudden jerks on the anchor can cause it to break free from the bottom – even less of a good thing. The elasticity of the rope snubber reduces the sudden tugs on the anchor, as well as the stress on the windlass and chain stopper.

Over the years we've gone through dozens of snubbers. We tried smaller diameter line, but found that these would snap when the weather got rough. We tried heavier line, but this didn't have enough stretch. For Cups, the perfect size is 5/8”3-strand line. Now, we have two snubbers. One is about 25 feet (7.7m) long, and we use it in most conditions. The other is 60 feet (18.5m) long, and it is our heavy

duty snubber for the “batten down the hatches, lash everything, take the seasick medicine” kind of weather.

Another alternative, recommended by cruising friends, is to make the snubber from old rock climbing ropes. Climbing rope is usually 11mm in diameter and is designed to be 'stretchy' to lessen the shock at the end of a fall. Retired climbing rope may no longer be safe for rock climbing, but may still be perfectly suitable for duty as a snubber, and can usually be obtained at a very reasonable price.

To employ a snubber, I attach one end of the snubber to a forward cleat and the other end to the anchor chain, and let out enough extra chain so that the snubber is taking the load. Then, I let out more chain until it hangs loosely at least 3-4 feet below the taut snubber. The goal is to make sure there is always slack in the chain no matter how much the nylon snubber stretches.



To attach the snubber to the cleat, I take a couple of turns around the cleat, then secure it with two half hitches. That way, if I need to adjust the amount of snubber that is deployed or release it entirely, all that needs to be done is undo the half hitches. If a spliced eye is used, the chain must be brought in enough to take the tension off the snubber, or the snubber must be cut before it can be released. In addition, if we are anchored and the wind is blowing a gale, I like to go forward periodically and let out a few more inches of snubber if there is any chance the snubber might be chafing, something that cannot be done if the snubber is attached with a spliced eye.

A big learning experience for us was how to attach the snubber to the anchor chain. We tried regular hooks, but occasionally they would fall off the chain. We tried a hook with a special retainer that was supposed to hold it in place. It worked well until one particularly bad night. In the morning, when we tried to raise anchor, the retainer had become jammed and it took half an hour with a hammer and pry bar to get it loose. We tried a rolling hitch, but sometimes after a bad blow, it would jam, and then take several minutes with a screwdriver to get it free.

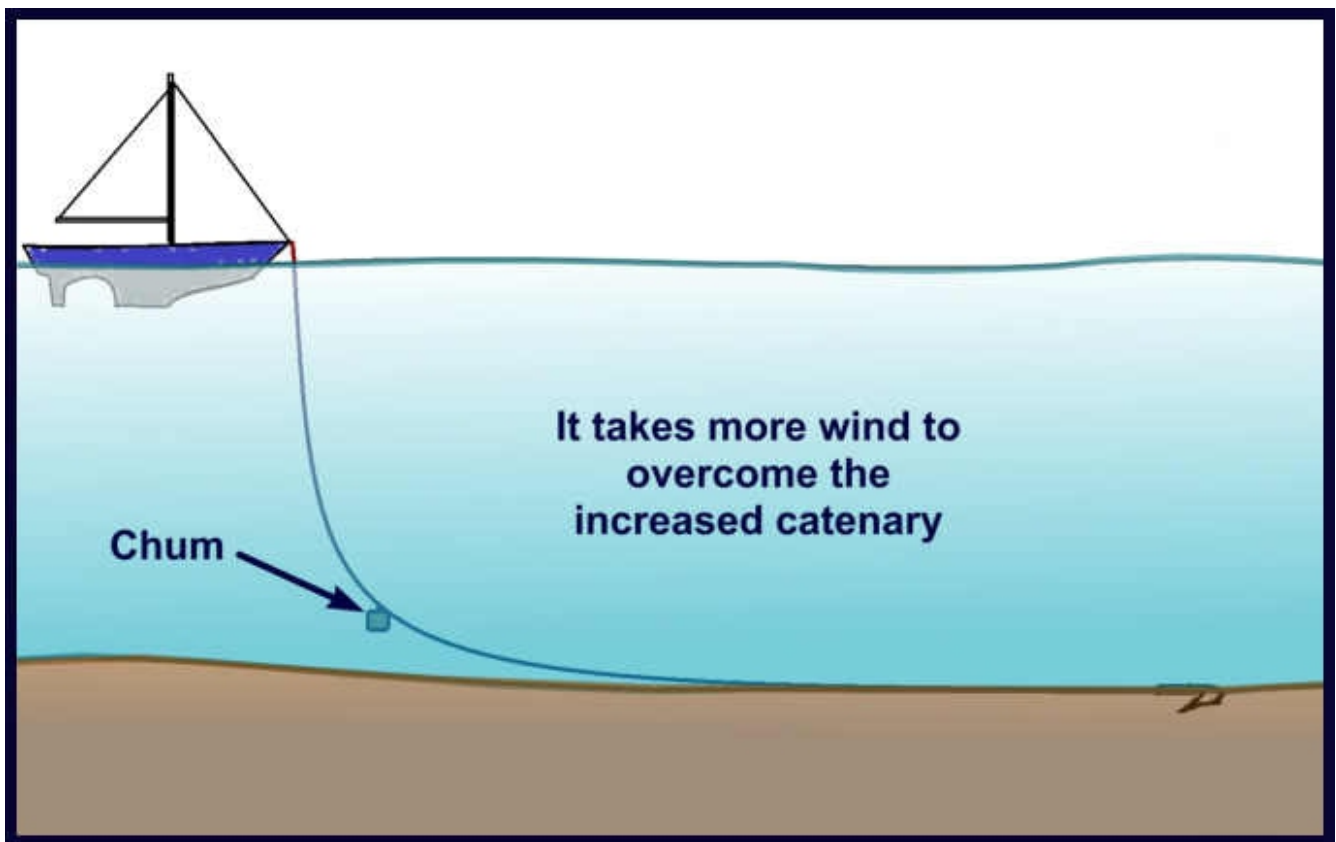
Then my old friend, Clifford Ashley, came to the rescue. I discovered another version of the rolling hitch in *The Ashley Book of Knots*. It's his knot #1735, and it's never failed us.



Variation on a Rolling Hitch

Chums, Kellets, Angels and Buddies

The catenary effect, which was discussed in an [earlier section](#), can be increased by adding weight to the rode. This can be accomplished by letting out more chain, and/or attaching a weight to the rode. These weights are referred to by a number of different names – chums, buddies, angels, anchor riders and kellets, to name a few.



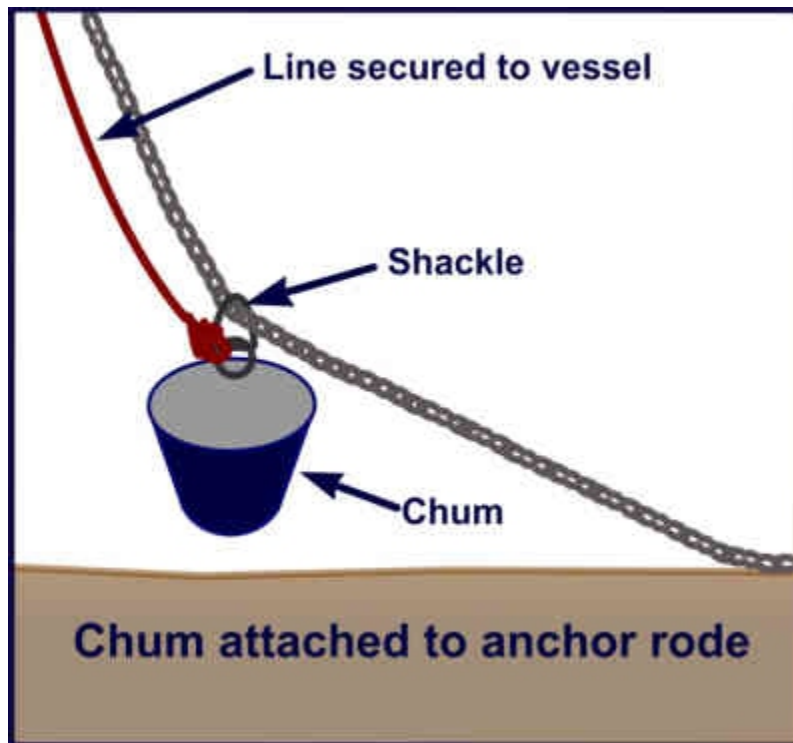
We've always called these weights 'chums', and there are quite a number of very experienced voyagers who firmly believe in their use. We know a few who will use a chum every time they anchor, but most only use one when the wind begins to pick up or when they're in a tight anchorage. A chum will reduce the amount of swinging a boat does when the wind is light to moderate, and will increase the catenary of the anchor rode when it is necessary to use reduced scope, as is often the case when there are a number of other boats anchored close by. No matter how big the chum, however, if the wind gets strong enough, it will eventually overcome the catenary effect, and the angle of pull on the anchor will depend totally on the scope.

There are a few purpose-made chums available. One that is especially easy to use is the Anchor Buddy, made in New Zealand. (It is marketed in the U.S. by Quickline USA). Once you get the hang of using it, it can be attached and detached in a minute or two.

You can also make one quite easily. To make a 30 lb (13.6kg) chum, you will need a 1.5 gallon or larger container – a 2 gallon plastic ice cream container would be perfect if you can find one, or a 5-gallon paint bucket will do. You will also need a half bag of concrete, and a large galvanized eye hook. After you and your friends eat the ice cream, mix the concrete and pour it into the container. Before the concrete sets, push the hook down into the concrete until just the eye protrudes. Allow it to set and cure for a week or so.



To deploy it, you will need a very large shackle and 50-100 feet (15m-30m) of line. Tie one end of the line to the eye hook. After the anchor is set, use the shackle to attach the chum to the anchor rode. Do NOT shackle the chum to a link of chain if you're using chain rode. You want the shackle to be able to slide up and down the rode easily. Next, let out enough line so that the chum will be just above the bottom at low tide and secure the line to a cleat.



When it is time to retrieve the chum, it is easy to pull the chum back up the rode if there is tension on the anchor rode. If the wind isn't blowing hard enough to tension the rode, put the boat in slow reverse until the rode is taut, then pull the chum up the rode. Undo the shackle and stow the chum.

We don't carry a chum aboard – either purchased or homemade. Instead, on the occasions when we want to deploy one, we use one of our smaller spare anchors. We have a 35lb (16kg) CQR anchor we use for the purpose. By attaching an oversized shackle to the anchor, and a line to the shackle, it can be deployed and retrieved in the same manner as a homemade chum.

Chafe Avoidance

A nylon anchor rode, snubber or mooring line will last a long time, maybe a decade or longer, if it is cared for and chafe can be avoided. Put it under tension and allow it to rub on something sharp – a rock, a deck protuberance or a concrete piling - and it can chafe through in a matter of minutes. Some of the other varieties of line, like Spectra®, Amsteel® and polypropylene, exhibit more resistance to chafing than nylon, but they have very little stretch – and stretch is a desirable attribute in an anchor rode, snubber or mooring line. It may take an hour or two instead of ten minutes, but even the most chafe-resistant line will chafe through under the right conditions. Here are some of the things we do to prevent our lines from chafing.

(If you started reading this chapter thinking it was about the pros and cons of jockey shorts versus boxer shorts, sorry - this isn't about that kind of chafing).

- Short hose sections. We keep short sections of our old, large diameter hoses to use as chafe guards. We also occasionally come across sections of discarded fire hose, which work very well. These short lengths are used to protect a line from chafe as it goes around a corner. For example, our snubber is secured to the anchor chain, then goes through our port bow roller and is attached to the port bow cleat. If the wind is kicking up and Nine of Cups is pitching and yawing, there are two points at which the snubber is susceptible to chafe. I have two short sections of hose I can slide along the snubber and secure in place, which protects it at those points. If necessary, I drill holes in the ends of the hose and use small line to attach the chafe guard either to the snubber or to the chafe point to keep it from sliding out of place. We also have a few short hose sections that are slit end to end. I can slide these sections into place on the line quickly, without having to untie it.
- Long hose sections. We keep several six foot (2m) sections of hose to protect our lines from chafing on wharves and pilings. A case in point was when we were moored at a commercial wharf in Hobart, Tasmania, and our spring lines were chafing against the barnacle-encrusted pilings, especially at low tide. We protected them using long sections of hose. As with the short sections, we prevented the chafe guards from sliding out of place with small line attached to either end of the hose and tied to the springlines.
- Shackles. We keep spare galvanized shackles in several sizes aboard. These are used when we need to tie a line to a corroded eye ring or shackle. Often, for example, we want to pick up a mooring with nothing but a corroded eye ring to tie up to. Assuming it isn't so corroded as to be untrustworthy, we will attach our new shackle to the eye ring, then tie our mooring line to the shackle.
- Short sections of chain. We have about six short sections of chain, ranging in length from 3 feet (1m) to 15 feet (4.6m). We frequently use these chain sections to prevent chafe of a dock line or a line ashore. Anytime we are tied up to a finger pier or wharf that has corroded cleats, concrete edges or anything else that can chafe our lines, we attach a length of chain to the cleat using a shackle. Then we attach the dock line to the chain using another shackle. Likewise, when we are running a line ashore, it is often necessary to secure it to a rock. We wrap a chain section around the rock, shackle the ends, and attach the line to the shackle.
- Thimbles. When we are in an area where we will frequently be shackling our lines to chain sections, we will often splice thimbles in the ends of our lines. When we were in Patagonia and Tierra del Fuego where we ran lines ashore almost nightly, we added thimbles to the ends of our shore lines. This made it less likely that the end of the line would chafe on the shackle. A quick temporary alternative is to slide a short section of hose onto the end of the line, then form it into a tight loop using a bowline.
- Storms. Storms and gales, whether at anchor or while moored, put a great deal more stress on the lines than settled conditions do. If we have any warning of impending heavy weather, we do what we can we can to prepare, then keep an extra watchful eye out for potential problems. The [last section](#) of this book is devoted to preparing for storms at anchor.
- Anchor rode. Some bottom types are very hard on nylon anchor rode. We highly recommend having chain for at least part of the anchor rode. When we first started cruising, we were in

areas that had sand or mud bottoms, and having chain for the first 50 feet (15m) of our rode was perfectly adequate. In rocky or coral areas, the amount of chain increased to 300 feet (90m). This [link](#) will take you back to the chapter devoted to chain versus rope anchor rode.

- **Vigilance.** Keeping an eye on things is probably the most important aspect of preventing chafe. Check the lines every morning when the wind pipes up, when the wind dies down, when the wind direction changes, at high tide, at low tide ... anytime conditions change. Fixed piers and wharves usually require more vigilance than floating docks, especially in areas where the tidal swings are large. Often, the lines will be fine until a particular combination of conditions occur, e.g. low tide and a southeast wind causes the aft springline to chafe on a piling. Address and correct an issue at the first indication of a problem.

Anchor Lights

When anchored at night, you should have an anchor light that is visible to at least 2 nm. Most sailboats use a white light at the top of the mast. While this meets the legal requirements for an anchor light, we have found that this often isn't enough. Usually the crew of a boat making its way through an anchorage at night is peering straight ahead looking for obstacles and not 60 feet (18m) in the air where the anchor light is located. Nine of Cups, as well as the boats of several of our friends, have been run into at night, despite the fact that all were using masthead anchor lights. We now augment our anchor light with another light mounted above the cockpit. Since the lights are LEDs, there is very little extra power required, and so far we haven't been rammed since we began using it.

Don't be tempted to use the small solar-charged garden lights as anchor lights. They are probably reasonable to provide a little ambient lighting for the deck or cockpit in the evenings, but are totally unsuitable to use as an anchor light. Their visible range is nowhere near 2 nm. What's worse is that even when new, they begin to lose power and start to dim before dawn. After a few months of use, they won't come close to lasting through the entire night.

Anchorage Etiquette

As we approach a new anchorage, drop the hook and set up housekeeping, we try to do our best to be a good neighbor. Beyond the basic safety issues – where to drop the hook, how to set the anchor, how much scope to use, etc., there are a number of things that will annoy everyone else in the anchorage that we avoid doing. Some of these are just common sense and some we learned by observing other boats.

Hopefully, I won't sound too much like a grumpy, old curmudgeon as I list the “Nine of Cups Rules of Proper Anchoring Etiquette” for your consideration:

- First boat in sets the rules. The first boat to anchor is the one that sets the rules and has the “right of way”. If you arrive in an anchorage and the other boat or boats are using two bow anchors, you should follow suit. If a boat anchored nearby thinks you are too close, you are obligated to move. If you are the first boat in, think about this as you anchor. Using a scope of 10:1 is probably overkill, and will certainly be a problem if the anchorage fills up. While technically you have the right to do this, you will most certainly have issues trying to get the next 10 boats to anchor far enough away to provide that much swinging room.
- Anchoring near other boats. I don't know how many times we have been anchored in an idyllic spot all by ourselves, only to watch a boat approach and drop their anchor a boat length or less away, despite the fact there was miles of open beach on either side of us. Maybe they think we hunted around for hours looking for just the right spot and, therefore, this is the only place that is safe. If the anchorage is small or crowded, you may not have a choice, but if there is space, always try to anchor a reasonable distance away from the boat or boats already there.
- Generators. A lot of larger sailboats and most power boats have generators. If you have a generator and will be running it, try to anchor near like boats who will also be running theirs. Avoid anchoring directly upwind of another boat. If possible, try to limit the hours you will be running your generator to mid-morning or afternoon when the noise will be least annoying to others in the anchorage. If you will be running your generator all night to power your air conditioning, try to anchor as far away as possible from those of us who prefer a quiet, peaceful anchorage.
- Power tools. Remember the old definition that cruising is repairing your boat in exotic places? Most of us will find ourselves needing to run a power tool from time to time while anchored. As with a generator, try to be considerate when running it. If possible, anchor well away from the other boats, and limit the usage to the less annoying times. If you will be generating dust or debris, don't anchor upwind of another boat. Don't begin work at sunrise.
- Partying. Most of us enjoy getting together with other cruisers. Having potluck dinners and enjoying sundowners with new and old friends are activities part and parcel of the cruising life. Unless you are inviting all the neighboring boats, however, be considerate, both in the amount of noise and how late you intend to “party on”. Sound carries very well over the water, and not everyone shares your taste in music or finds a joke from a loud, inebriated sailor enjoyable (though that's hard to believe).
- Dumping. Rules vary around the world regarding the use of holding tanks and pumping waste water overboard. Make sure you know and follow the local ordinances. Beyond the laws, however, common courtesy suggests that if people are swimming in the anchorage, you should avoid dumping raw waste into the water. Biodegradable garbage should be held until going to shore or heading offshore. Those banana skins, egg shells and potato peels will more than likely wash up on the beach or against your neighbor's hull.
- Wakes. As you meander through the anchorage, whether in the mothership or the tender, keep your speed low enough to avoid making a wake. You won't make any friends if you knock over their sundowners.
- Toys. Many boats carry water toys aboard – kayaks, jet skis, water skis, sailing dinghies, sail boards. The wind and human-powered toys are usually quiet and unobtrusive. Others, like jet skis and the fast tenders pulling water skiers, are quite annoying, both because of the wake

generated and the noise pollution. Don't think for a second that anyone else in the anchorage will enjoy watching at close hand your water skiing skills. Slowly motor your toy far away from the other boats, then have a ball.

- **Voices.** Voices carry remarkably well over the water. Be assured that everyone within a half mile will be privy to the argument you are having with your spouse or the loud cell phone conversation you are having with your stockbroker. Keep your voice down. Use the hand signals you learned in an [earlier chapter](#) when dropping and raising the anchor. Sometimes, listening to loud conversations on other boats is entertaining and amusing, but more often it is just annoying.
- **Anchor lights.** Don't overdo it. If you like lighting your boat up like a cruise ship, either anchor well away from the rest of the fleet or tone it down at bedtime.
- **Spotlights.** Spotlights and high intensity LED flashlights are great for finding your way through a crowded anchorage at night, but be considerate. Use them to pick out obstacles in the water – mooring balls, anchor rode, markers, etc. Don't use them to illuminate the other boats as you approach. If you are worried about a vessel approaching your anchored boat at night, don't shine the light at the oncoming boat. Shining a light in the eyes of the approaching crew will most likely blind them for a few minutes, making matters worse. Instead, turn your spreader lights on and shine your spotlight on your own hull which will make you more visible.
- **Dogs.** A lot of cruisers we've met have dogs. Most are well-behaved, friendly pets that provide companionship to the owners and security for the boat. Some, however, bark – a lot. Some bark whenever the crew goes ashore without them. Some bark the entire night through or whenever there is anyone in sight on the boats anchored nearby. If you have one of these dogs, do the rest of us a favor. Either get one of those collars that teach it not to bark or anchor somewhere far from the rest of us – maybe next to the guy who is running his generator, air conditioning, 60 inch TV/Home Theater and 20,000,000 candlepower deck lights all night.

So what do we do if we are following the “Nine of Cups Rules of Proper Anchoring Etiquette” and trying to be a good neighbor, but a boat anchored next to us isn't? Many times people just don't realize that something they are doing is unpleasant for the rest of us, like starting their generator at 6 a.m. or just as everyone is enjoying the sunset, and a tactful suggestion is all it takes. Sometimes, the other people could care less about annoying everyone else in the anchorage, like the weekenders who like to have a party aboard that lasts all night, complete with blaring music and high speed tenders going to and from shore, with 15-20 of their closest, loudest friends. While we have often hoped they would drag anchor out to sea or have considered cutting their anchor rode, in the end, all we can do is either grin and bear it or move. We've done both.

Anchoring Techniques

There are several different techniques for anchoring, and no one method is best for all conditions. While our preferred method for most situations is to drop one anchor from the bow roller, there have been many times when another method was called for. In Patagonia and Tierra del Fuego, the rocky, small anchorages of Fiordland in New Zealand and Stewart Island, off New Zealand's South Island, we often used two anchors in series, usually supplemented with lines ashore. In the rivers of the Darien Jungle and Tasmania, we often deployed bow and stern anchors to keep us close to the bank of the river where the current was less and out of the path of the occasional log floating downstream. A stern anchor also saved us from grief in a few anchorages with limited swinging room when the winds unexpectedly changed directions. This section discusses several anchoring techniques and when you might need them.

Single Anchor

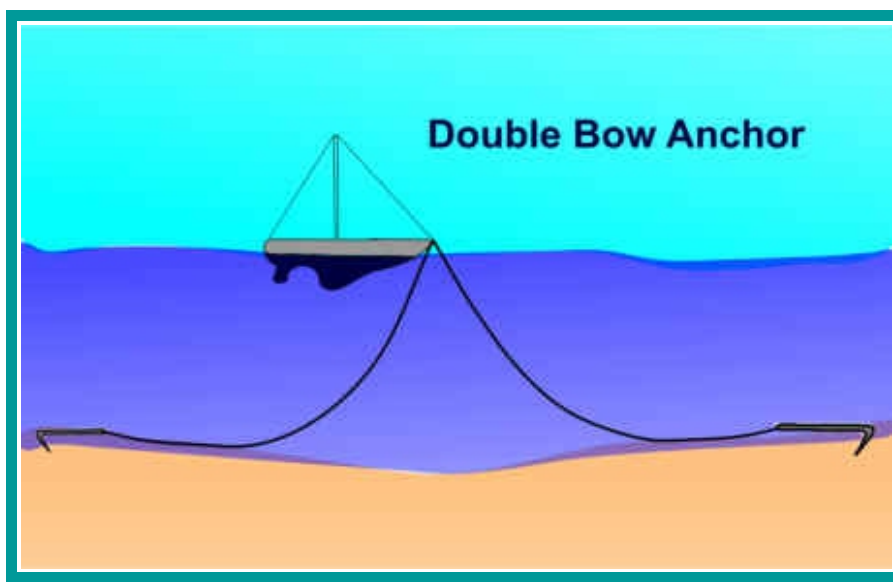
This is the most common method of anchoring – one anchor deployed from the bow roller. This was discussed in the section [*Dropping and Setting the Anchor*](#).

Double Bow Anchor – Bahamian Style

This is, as the name suggests, a common technique for anchoring used in the Bahamas and other parts of the Caribbean. Two anchors are dropped off the bow, sometimes one in front of the boat and one behind the boat, and sometimes at a 90 degree angle. This method has two advantages over a single anchor: the anchor does not break out and reset every time the wind and/or current shifts, and the swinging area of the boat is greatly reduced. If you come into a crowded anchorage and the other boats are anchored Bahamian style, it is important that you do the same or it is quite likely that you will bang into your neighbors when the wind shifts.

The biggest disadvantage of this technique is that the two anchor rodes will twist around each other each time the current or wind shifts. After a few days and several twists later, it takes a bit of time to get them unwound. When it is time to leave, we either motor in circles until the rodes are untwisted, or detach one rode, unwind it, and then haul it in. Neither method for untwisting the rodes is difficult in benign conditions when you are in no hurry. If the wind shifts and picks up, putting us on a lee shore, we can be sure there will be complications. A better solution, of course, is to spend a few minutes each day unwrapping the twists.

We know a few cruisers that have had success at preventing the rodes twisting by attaching one of the anchor rodes to the port side of the bow and the other to the starboard side of the bow, then tensioning both rodes until there is no slack. This has not worked well for us. If we take all the slack out of the two rodes, one or the other is constantly rubbing on our bottom. While this may keep it clean, it quickly removes the anti-fouling. Keeping the rodes taut also eliminates any catenary in the rode. Finally, since the rode under tension is never right at the bow, as the wind picks up, Nine of Cups has a tendency to pitch and yaw more.

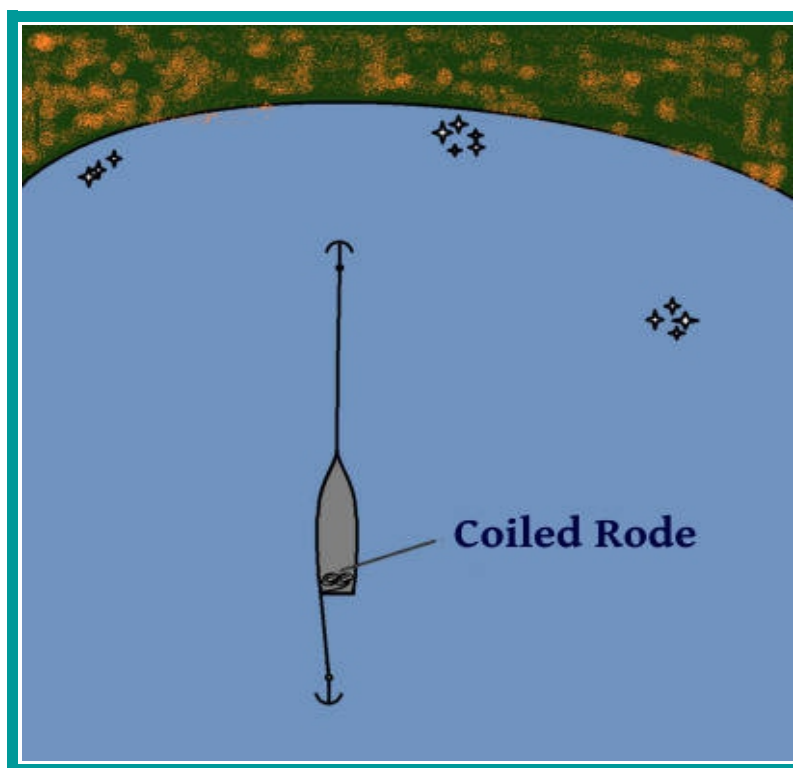


Our technique for deploying two bow anchors Bahamian style is to drop the primary anchor in the usual fashion (see [Dropping and Setting the Anchor](#)). Once it is set, we back up or drift downwind until we have about double the desired scope, plus about 30 feet of rode deployed, then drop the second anchor. Next, we motor back towards the first anchor, retrieving the forward rode and deploying the secondary rode as we go, until we are in the desired spot. We secure the secondary rode and continue motoring forward until the rode goes taut and the boat begins to swing around. If the wind and current are not too strong, we can back down on the secondary anchor until we are sure it is well set. If the wind and current are too strong to back down on the second anchor, we continue to motor slowly forward against it to set the second anchor. Once we are sure both anchors are set, we bring in the excess slack on the aft rode. We want to make sure, however, that enough slack remains, so that there is no chance of the rode rubbing on the bottom or fouling the rudder or prop.

To retrieve the anchors, we first remove the twists, if any, in the two rodes using one of the methods described above. Then we drop back downwind, retrieving the slack rode as we go, and retrieve the downwind anchor. Finally, we retrieve the primary anchor in the usual fashion.

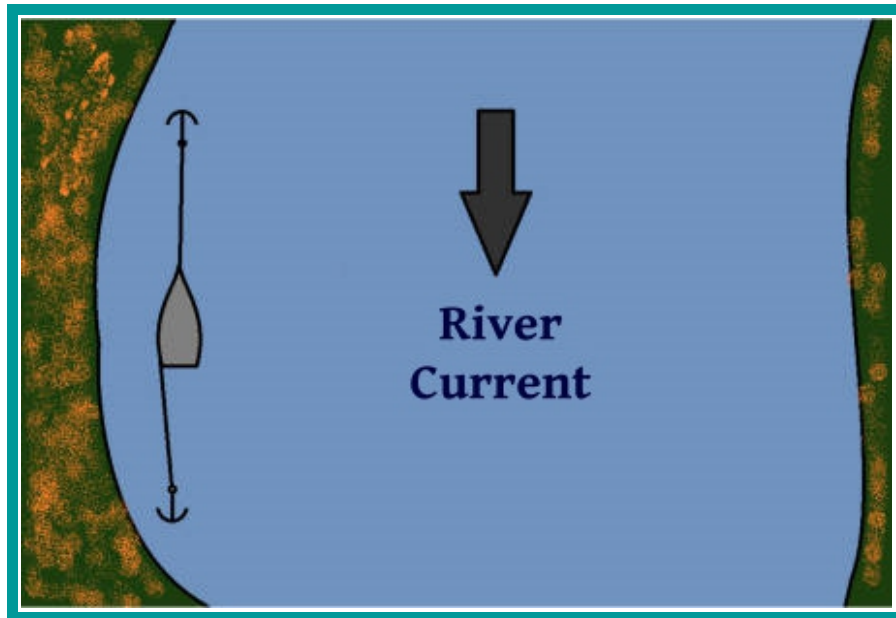
Bow and Stern Anchor

We have deployed a stern anchor on many occasions and for several different reasons. We use it most often when, because of the depth of the anchorage or the particular geography, we have found it necessary to anchor close to shore in the lee of an island. Despite what weather is forecast or what the prevailing winds usually do, there is always the possibility of a wind shift, which could very well cause us to swing around and go aground. A stern anchor will keep the vessel from harm, and using one has saved our bacon more than once. In the San Blas Islands off Panama, we were anchored in a small, protected cove, surrounded by reefs without much swinging room. We deployed our Bruce off the bow. The prevailing wind in that area is from the east, but in the unlikely event it shifted to the north or the west, we would be on the rocks, so we also deployed the Danforth off the stern – just in case. Sure enough, about 2 a.m., the wind shifted and blew 50+ knots from the west with torrential rain. There was no way we could navigate out of that tight anchorage with those winds and rain in the dark, so for the next several hours we stood a very intense anchor watch. Our Danforth held us securely off the rocks. The next day we visited the small Kuna village nearby and learned that several of their thatched homes had either been badly damaged or totally destroyed by what they called the “hurricano”, and they had been worried about Cups going on the rocks.

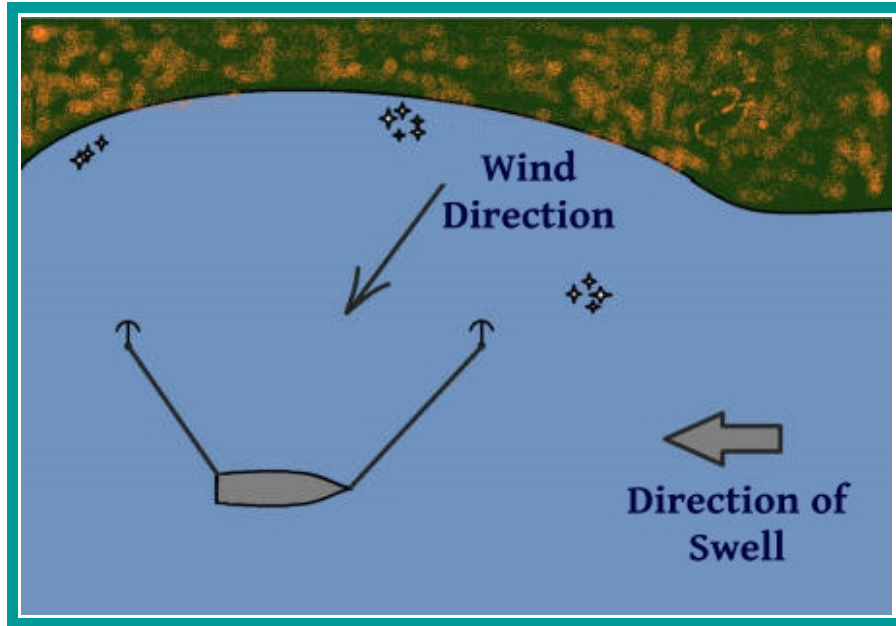


In these cases, when it is unlikely, but not impossible for the wind to shift, we find a bow and stern anchor arrangement preferable to a double bow anchor. Ninety-nine percent of the time, it isn't needed, but since it can be quickly deployed and retrieved, it is good insurance against that one time out of a hundred when the wind does shift.

Another reason for using a stern anchor is to limit the amount of swinging Cups can do while at anchor. Sometimes we find a small, well protected cove to anchor in, but with limited swinging room. Instead of running lines ashore, we will often deploy the stern anchor to keep our stern where we want it. We have also explored a number of rivers, and because of the depth of the river, the strength of the current, and/or the amount of debris floating down the river, it was often not a good idea to try to anchor in the middle. By dropping the stern anchor, we could anchor quite closely to the riverbank and out of the current without the risk of swinging into the shallows or getting fouled on a tree limb.



A third reason to deploy a stern anchor is to keep the boat pointed in a particular direction. We have been in many anchorages where the wind would blow from one direction, while the ocean swell came from another. The boat would lie facing the wind and would roll gunwale to gunwale from the swell on the beam, making for a very unpleasant evening. By deploying a stern anchor, it was possible to point Cups into the swell. We might not be totally comfortable, but at least we weren't getting tossed out of our bunk.



We use a 40 lb (18kg) Danforth anchor as our stern anchor. The Danforth has tremendous holding power for its weight and sets in most bottoms. Its biggest drawback is that it doesn't always reset well if the boat swings around and breaks it free, but this isn't a problem when we are using it as a stern anchor. In most cases, we use 15 feet (4.5m) of chain shackled to the anchor and 200 feet (60m) of line attached to the chain. If we are anchoring in coral, we sometimes increase the chain to 50 feet (15m). The combination of the anchor and chain gets heavy, however, and since the anchor will probably be hauled up by hand, we try to limit the amount of extra chain.

To deploy the anchor, we first set the bow anchor, and then use one of three methods to set the stern anchor. If the purpose of the anchor is to keep us off the rocks if the wind changes, we let out another 30-40 feet (9m-12m) of anchor rode and back away from the bow anchor. When the bow rode is taut, we toss the Danforth anchor over the stern and let out only enough rode to allow the anchor to reach the bottom. Then we motor forward while letting out more stern rode until the desired scope is reached. The stern rode is tied off, we set the Danforth and retrieve the excess bow rode. If there is any chance of tangling or chafing the stern anchor rode on rocks or coral, after Cups settles back downwind, we fake any slack in the stern rode on deck, leaving it free to deploy if the wind shifts.

If the purpose of the stern anchor is to prevent Nine of Cups from swinging too much, the method of deploying the anchor is different. We figure out how much scope we need on the stern anchor, add 30-40 feet (9m-12m) to this and, if possible, back Cups up this distance while letting out additional rode on the bow anchor. If we can get Cups in the right position, we drop the Danforth, motor forward to set it, then take in the bow anchor rode until both anchors are almost taut. Often, because the bow anchor rode is not long enough, or because of an adverse wind or current or because the place we want to drop the stern anchor is too shallow or too close to hazards, it isn't possible to back Cups up into the right position. In this case, we use the dinghy to position and drop the anchor. The anchor will usually drag several feet before setting, which is why we start with an extra 30-40 feet (9m-12m) of rode.

If the objective is to point Cups into the swell, the process is the same except we place the anchor well off to the side of the vessel, so that the angle of the boat on the wind can be adjusted. Pointing into the swell may put Cups broadside to the wind, putting extra strain on the ground tackle. If the wind picks up, we keep an anchor watch and slack off on the stern anchor, if necessary.

To retrieve the stern anchor, we try to position the boat over the anchor if possible. If the rode is vertical, the Danforth usually breaks free and can be hauled in by hand. On occasion, it has been stuck so well that we needed the windlass to break it free, in which case we routed the stern anchor rode to the bow.

If we can't get Cups positioned over the anchor, we have to resort to using the dinghy. We position the dinghy over the anchor and take in all the slack in the rode. If we can't break the Danforth free by hand, the rode is secured to the dinghy and we motor around in circles until it works its way free.

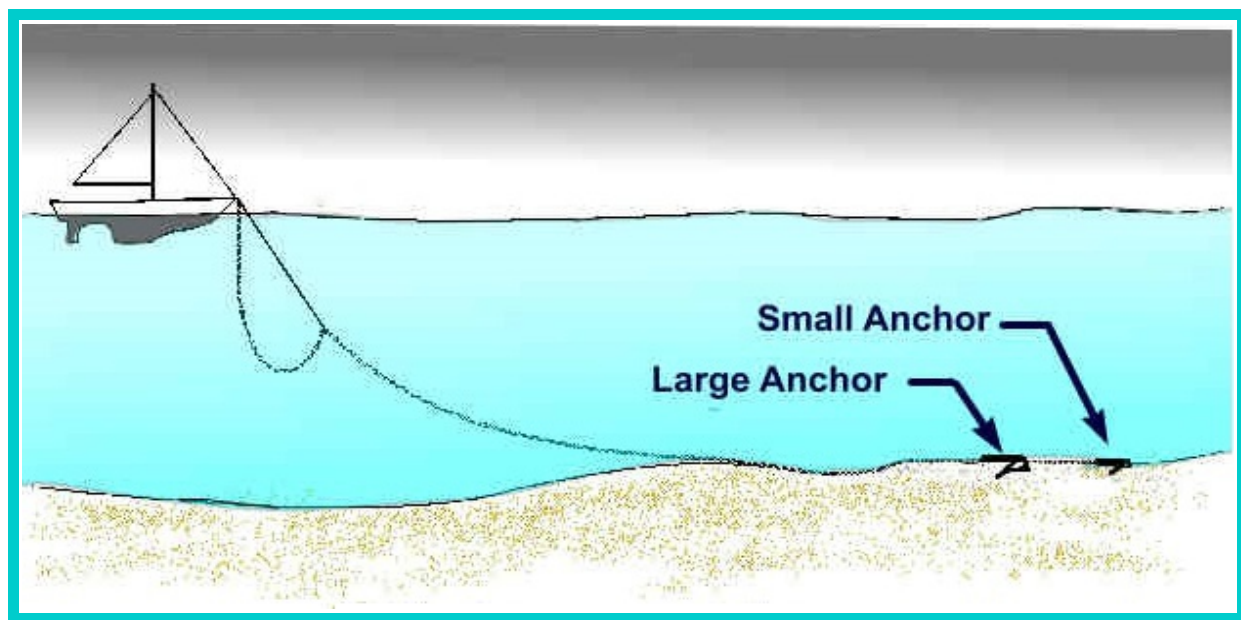


When not in use, the anchor is lashed in its place. We keep our Danforth lashed to the mast pulpit. Then the rode is faked in a figure-eight pattern, secured with small line, and stowed.

Anchors in Series

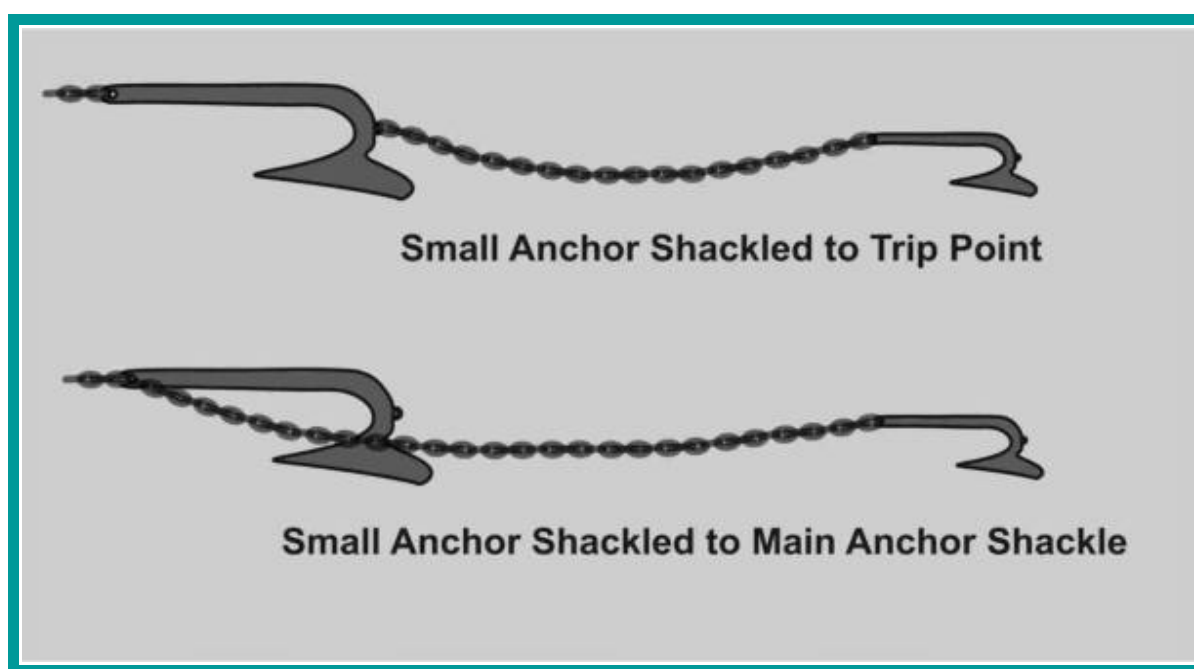
There are two philosophies regarding the placement of anchors in series. Some feel that it is best to put the heaviest anchor down first and shackle the second, smaller anchor to the anchor chain 20 feet (6m) or so closer to the boat. The second anchor acts more like a weight or chum on the chain and greatly increases the holding power of the primary anchor. The second philosophy is to attach the small anchor to the primary anchor with 20 feet (6m) or so of chain, so that it extends beyond the primary anchor and sets first. The primary anchor is still the main holding force, while the second anchor adds to its holding power. We use either a 40 pound (18kg) Danforth or 35 pound (16kg) CQR as our secondary anchor. We have tried both methods and have not had issues with dragging using either method. We prefer the latter method however, and have used it many more times.

Many sailors feel a much longer chain, 50'-75' (15m-23m), between the two anchors will increase the holding power. This may be true, but it is much more difficult to retrieve both anchors when using the extra chain. When we were using series anchors routinely in Patagonia and Tierra del Fuego, we became quite efficient at deploying and retrieving the two anchors with a shorter chain between the two, and never had holding problems. If ever we need to weather a hurricane or cyclone, we will probably resort to using a longer connecting chain.



To deploy the anchors, we start with the primary anchor in the bow roller and the smaller anchor on the foredeck. We shackle the 20 feet (6m) of chain to the light anchor, then lead the chain over the lifelines and to the primary anchor.

There are two options for shackling the small anchor to the primary anchor. Some anchor designs, the Rocna and Sarca Excel, for example, have a shackle point on the front of the anchor for use in series anchoring. Others like the claw, CQR and Delta have small shackle connections on the front or top of the anchor that are intended to be used for tripping the anchor. Unless the anchor is greatly oversized, these trip points are usually not strong enough to be used for series connections. The second option is to attach the secondary anchor chain to the primary anchor shackle.



Once the vessel is in position, the small anchor is lifted over the lifelines and lowered into the water. Then we use the wind or the engine to begin slowly backing up as the primary anchor is lowered. We set the two anchors normally.

To raise anchor, the primary anchor is hoisted in the normal fashion. If there is only a short length of chain between the two, in most cases the second anchor will break free on its own and can be hauled in by hand and lifted over the lifelines into the foredeck. If a longer chain between the two anchors is used, the chain will need to be pulled in by hand and secured until the second anchor breaks free. Then the anchor and remaining chain can be hauled in by hand and stowed on deck.

Mediterranean Moor

A Mediterranean or Med-moor is often used when there is limited dock space. The boat is secured to the dock either stern-to or bow-on, and the vessel is held off the dock by either a mooring or by dropping the anchor.

The process for Med-mooring is straightforward. Let's assume it is a calm day with no current, and we will be dropping the anchor and backing up to the dock. We prepare the stern docking lines, rig fenders on both sides and prep the anchor. Then the boat is maneuvered into position for dropping the anchor far enough from the dock to ensure a reasonable amount of scope, and lined up with the stern pointing at our berthing slot. Marcie begins dropping the anchor as I begin to back up. Because Nine of Cups won't back up straight, I may need to turn the rudder and give us an occasional short burst in forward to realign us with the slot. When we are a few feet from the dock, I stop the boat with a burst in forward, and the lines are attached ashore. Then the anchor is tensioned and the lines are adjusted until the boat is secured a few feet from the dock.

Rarely does it go that smoothly. Even on a calm day, we frequently need to make more than one attempt at backing into the slot. Add in a few complications like an adverse wind and/or current, or no one ashore to take the dock lines and it can become quite tricky. Here are a few suggestions that may help:

- With a cross wind or current, the anchor may need to be set upwind (or up current) to compensate for the diagonal path the boat will take as it backs up. Using the dinghy, the anchor may need to be repositioned later, or a second anchor dropped to keep the bow of the boat in position when the wind or current changes.
- When securing the lines ashore, attach the windward line first. If there are only two people aboard, the person on the bow should secure the anchor rode when enough has been played out and then move to the stern to toss the lines ashore. If there is no one ashore to take the lines, this person will have to climb ashore and the helmsman will have to toss the lines ashore.
- In most places we have been, it was considered acceptable to raft up to the adjoining vessel long enough to get the lines attached. This makes the maneuver considerably easier. If you can get the boat into the slot and tied to the boat next to you, the lines can be secured ashore in a much more leisurely fashion. The anchor can even be deployed by dinghy, if necessary.

Here are a few other general suggestions:

- It is better to use a chain rode. This will ensure the rode stays submerged and thus, is less likely to become fouled by another boat.
- When leaving, loop the shore lines around the cleats and lead them back to the boat. As the boat pulls away, the lines can then be released from the boat and pulled aboard. Pull the lines in quickly, so they don't get fouled in the prop.
- If there is a large tidal swing, it should be taken in account when determining how far off the dock the boat should be positioned. The boat will be closer to the dock at low tide than at high.

Lines Ashore

The procedure for running lines ashore takes a little practice. We first deploy the dinghy and flake the line out on the aft deck. We pass one end through an aft hawsepipe and tie it to the dinghy. Then we drop the anchor and set it, and attempt to back Cups up towards the shore, deploying more chain as needed. When we get as close as we can, I hop into the dinghy and tow the end of the line towards shore while Marcie feeds the line out. I find a place to go ashore and then secure the line to a stout tree or large rock. If there is any chance of chafing the line on the rock, I wrap a length of chain around the rock, shackle the ends together, and attach the line to the chain. The end of the line on the boat is wrapped around a winch, and we use the winch to pull the boat towards shore. Often, we run another line to shore from the other side of the boat. By winching in the lines and letting out more chain, we can get the boat quite close to shore, often in some tiny cove that is completely protected. When we are all set, we attach the snubber.

Fortunately, we were alone in the anchorage the first time we tried this. I've left out the part about how the dinghy nearly drifted away as I tried to clamber up those mossy, slippery rocks, dragging two hundred feet of line and carrying 15 feet (4.6m) of chain wrapped around my neck. It took us well over two hours of sweating and swearing to get everything just right that first time. After a dozen or so times, however, we were completing the task in about 20 minutes ... with hardly any cursing at all.

We use polypropylene line for our shore lines. It is lighter and it floats, making it easier to pull ashore. Since it floats, it is also more likely to be seen by another boat passing between your boat and shore, but if there is any doubt, or you aren't using line that floats, it is a good idea to attach a number of small buoys to the shore lines to make them more visible.

We have used this technique in numerous anchorages, especially in Patagonia, Tierra del Fuego and Fiordland, in southern New Zealand. On occasion, we have run as many as four lines ashore, and sometimes we would be so close to shore we needed to avoid the tree limbs. Marcie always enjoys picking flowers without leaving the boat. Often it seemed that there were more gales and storms than good weather. Even when the weather forecast was for good weather, however, there were frequent katabatic winds called williwaws, often generating hurricane force winds for short periods of time and sounding like a railroad train barreling towards us. Neptune, with his endearing sense of humor, usually saw fit to send these to us around 3a.m. Being securely tied to shore made these williwaws more of an annoyance than a safety issue.

Floating an Anchor Rode

While we were in Patagonia, we spent a pleasant evening with a French sailor we met there. He was going on to Tierra del Fuego, where we had just been, and we were headed out across the Pacific, from whence he had just arrived. These chance meetings are always a great opportunity to go over each others' charts and share information over a glass of wine. We shared with him the unusual anchoring techniques used in the deep, tight anchorages of southern Chile, and he shared with us his anchoring technique for the Pacific atolls that are typically strewn with coral heads, also known as “bommies”

An atoll is usually a ring-shaped coral reef surrounding a lagoon. Sometimes the reef is high enough to form a number of islands. Often there is a passage into the lagoon that is large enough to sail through providing access to the protected waters inside. Getting through one of these passages is often good for an adrenaline rush as they are subject to strong currents, large standing waves and the occasional coral head. Once inside, the waters are calm and pristine, and every bit what you imagined a South Pacific paradise would be like. The lagoons are, however, usually dotted with coral heads that are rarely charted, so navigating and anchoring amongst them can be a challenge.

To anchor, you look for a sandy spot clear of coral heads. You make sure there are no coral heads within the area that the boat will swing that are close enough to the surface to be a threat, and drop the hook. You then let out adequate chain and set the anchor by backing up until you are sure it is well dug in. A prudent sailor will probably attach an anchor snubber, and keep an eye on things for awhile to make sure the swinging room is adequate and that the boat is staying put, but the anchoring task is essentially done.

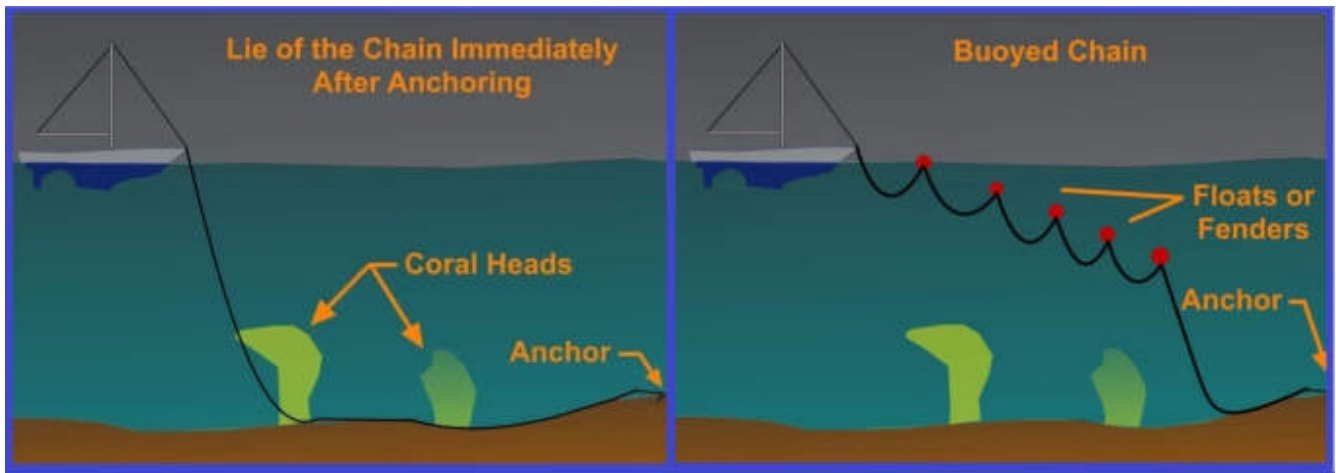
In an atoll, even if there are no coral heads close enough to the surface to hit the boat, there are quite likely a number of them well below the surface. As the wind, tide and current change, your chain will get wrapped around these coral heads. This is bad for a number of reasons.

The first reason is that your chain will damage the coral. If the hundreds or thousands of sailboats that came before you and anchored where you are didn't already kill the coral, you will certainly continue to push it towards its demise. It's also not good on your chain, and if you are using rope rode, the coral will quickly chafe through it.

The second reason is that when it is time to leave, you may need a snorkeler in the water to give directions as you maneuver the boat to unwrap and retrieve the chain. This can take awhile and isn't something you want to worry about if you have to leave in a hurry.

The third reason is that you may wrap so much chain around the bommies that you have no scope left. If there is any wave action at all, the stress on the boat is immense, as there may be no slack at all in the chain.

To prevent this, our friend taught us how to buoy the anchor chain to keep it away from the coral heads. Pearl farming is quite the business in the Pacific, and big plastic floats are used everywhere. These floats are always escaping, and as you voyage through the region, it is not hard to collect a few on deserted beaches. You can also use fenders, empty fuel or water cans, or even gallon milk jugs.



Start by attaching a 3' (1m) line to each float. I use a bowline, and whip the end to the knot to make sure it can't come loose from the float. Gather these on the foredeck when it is time to anchor. As you let the chain out, after the first 50 feet (15m) or so, start attaching a float every 15 to 30 feet (5-10m). I loop the end of the line through a link in the chain and tie another bowline. Make sure the knot is very tight, then tie a stopper knot in the end to help ensure the bowline doesn't work itself loose. (We have lost an occasional float, so I am open to suggestions on a better knot.) The distance apart will depend on the type of float you are using and the weight of your chain. Some experimentation may be needed to get it just right. Using salvaged pearl farm floats and 3/8" (10mm) chain, I find that spacing them about 20' (6m) apart works well for Cups. When you raise anchor, untie each float as it gets close to your bow roller.

When the wind is light, the chain will float above the coral heads. When the wind picks up, the chain will straighten out much like it would without the floats. I usually let out a bit more chain than normal, just to be safe. We've had some pretty good blows, and, knock on wood, haven't had any issues. As we were leaving the area, we donated the floats to local fishermen who gratefully accepted them.

Anchoring in Bad Weather



Before we moved aboard Nine of Cups and were just learning the basics about sailing and cruising, we frequently chartered boats in the Caribbean. We could afford to do it more frequently if we did our chartering off season when the rates were lower. The lowest rates were during hurricane season. We rationalized that the odds of a hurricane occurring where we were during any 10 day period were quite low and worth the risk.

The odds caught up with us one summer while we were chartering a sailboat in the British Virgin Islands. The charter company had us move the boat into a secure marina on Virgin Gorda, and we battened her down and stayed aboard as Hurricane Bertha moved over the area. It was quite the adventure as the wind shrieked, coconuts flew past like cannonballs and trees were uprooted. We saw it as a positive experience. After all, we had the opportunity to experience some of the worst weather mother nature had to offer in a semi-sheltered environment, and even though we did everything we could to look after and protect the boat, it still belonged to someone else. In the end, the boat was just fine and the charter company even gave us a credit towards another bareboat charter.

Now that we live aboard our own boat, we stay well clear of the hurricane/typhoon/cyclone regions when they are in season. We have had some near misses as a few of these cyclonic systems wandered out of their usual areas, but we have, so far, managed to avoid a direct hit.

Storms and gales are a different matter. For every gale or storm we've encountered at sea, we have seen many more while anchored. Two of these actually had hurricane force winds in excess of 64 knots (119 km/hr or 74mph). Just as at sea, it is important to be prepared for a storm while anchored. For us, the preparation starts with knowing what to expect and having the right gear aboard to begin with, followed by the steps we take to prepare Nine of Cups for a blow.



First in importance is what the weather is going to do. Which direction(s) will the wind come from and how strong will it be? Will it be primarily from one direction or will it swing around? If the forecast is wrong, are there contingency plans? Take a look at the local topography. Are there notches in the hills or mountains surrounding the anchorage? These will often funnel the wind and it will be much more intense there. Look at the trees – are they bent in one direction in certain areas? That's a good sign of where the wind will be the strongest. Check the chart. Is it best to anchor in the middle of an anchorage with lots of swinging room or would it be better to find a tight little cove to tuck into? Maybe the anchorage is just too risky, too open, or the holding is not good – it might be better to head out to sea and weather the storm offshore.

Just as important is having the right ground tackle. We have talked a great deal about having the biggest anchor our bow roller will handle, and even with our big anchor, if we are expecting a big blow, we usually add a second anchor in series with our primary for even more holding power. Just as important

is the amount of scope. Using 10:1 scope or more can only help, as long as we have adequate room to swing or lines ashore to prevent excessive swinging.

An important part of the ground tackle is the snubber we use with an all chain anchor rode. It's such an important issue, we dedicated an entire [chapter](#) of this book to the subject. We have a 5/8" (16mm), three-strand, 60 foot (18.5m) long line that we use as our heavy duty snubber. We attach it in any kind of bad weather. When I secure the snubber to the cleat, I leave several feet of line between the bitter end and the cleat. In a storm, the snubber will sometimes start chafing against the bow roller. I check on it frequently, and if it shows any signs of chafe, I let out some of the extra line to prevent the snubber from chafing through.

Once the wind picks up, the boat will begin to pitch and yaw. Depending on the amount of windage, type of boat and keel type, the pitch and yaw can be significant. Nine of Cups, with its cutter rig, high bow and cut away keel, exhibits a lot of boat movement in high winds. Dr. Don Jordan, the man who did extensive research on series drogues, also did considerable research on anchoring in storm conditions. He makes a persuasive argument for mooring stern to the wind. This seems counter to tradition and common sense, but he makes some good points. He performed a number of simulations using various boat types in a wind/wave chamber to support his theory. He also cites the case of a small sailboat that weathered 100 knot winds during Hurricane Ike in 2008. The vessel was anchored stern-to the wind, with two anchors in series. The vessel took on considerable water over the stern, but survived the storm while a number of neighboring boats were lost. We haven't tried this technique, but may consider giving it a try in the future.

Depending on the anchorage, this is often all we need to keep Cups safely anchored. If the anchorage is small and/or there is limited swinging room, we sometimes run lines ashore. We use heavy 3/4" (18mm) line, and carry two, 300' (90m) lengths. Polypropylene is good for this purpose. It floats, so towing it ashore in the dinghy is easier, and it is quite chafe resistant. Since we may be attaching it to rocks ashore, we also have two 15 foot (5m) lengths of chain with shackles on board.

Once we are as securely anchored as we can be, we pull out our checklist and go through the remaining steps to prepare for the blow. Our checklist is shown at the end of this chapter. You will want to review and modify it for your own boat. The checklist has two "plans of action" depending on the expected severity of the storm – one if the winds are not expected to exceed 48 knots (Force 9 winds or less), and one to be used when the winds are expected to be Force 10 or greater.

Once the storm arrives, if we have any question about the anchor holding or the swinging room, or if our confidence in the anchoring skills of the other boats in the anchorage isn't really high, we stand watch in three hour shifts. We have had a number of near misses by other boats dragging, including one rather large ship. Usually by the second day, if everybody seems to be holding their position and all is well, we will rely on the electronic anchor alarm to alert us if we start dragging, and will go back to a normal sleep schedule. There's usually not much sleep to be had during a storm, at anchor or at sea, but knowing we're as prepared and safe as can be goes a long way towards peace of mind.

Storm Checklist

	Wind Forecast in Knots			
√	<48	≥48	Item	Comments
			Sails, Mast	
		X	Remove head sails	
		X	Remove mainsail	
		X	Pad halyard shackles & pull all the way up	Tie a small line to one halyard shackle to be able to pull it back down
		X	Remove masthead gear	
		X	Remove spinnaker pole	
	X		Tie off wind gen	
		X	Remove wind gen	
		X	Lash Boom to boom crutch	
			Topsides	
	X	X	Remove bimini	
		X	Remove dodger	
	X	X	Seal unused chain pipes	
	X		Rotate dorades aft	
		X	Remove and cap dorades	
		X	Remove all deck gear – fuel cans, spare lines, horseshoe/rings	
	X		Move outboard engine and lash down	Move to inboard side of holder and lash
		X	Stow outboard on aft deck	
	X	X	Stow deflated dinghy on deck and lash down	
	X	X	Attach heavy snubber	60'x5/8" 3 strand in forepeak locker
		X	Add chafe guard to snubber	1-1/2"x6' tubing in forepeak locker
	X	X	Check lifelines	

√	<48	≥48	Item	Comments
	X	X	Check jacklines	
	X	X	Remove gear from cockpit	GPS, cushions, VHF
			Below Decks	
	X	X	Stow and secure anything loose	
		X	Lash pans	Use bungees next to pans
	X	X	Secure all hatches and portholes	
	X	X	Install cockpit washboards	
	X	X	Stow or lash laptops and cameras	
	X	X	Check flashlights and batteries	
	X	X	Activate anchor alarm	
	X	X	Activate depth alarm	
	X	X	Check bilge pumps – manual and electric	
	X	X	Check spotlight	
	X	X	Check that rigger's knife, Leatherman tool are in their proper places	Rigger's knife over breaker panel, Leatherman tool over nav station
	X	X	Collect and stow spare lines for emergencies	
			Engine	
	X	X	Top up fuel day tank	
	X	X	Check oil	
	X	X	Check coolant	
	X	X	Visual checks	Hoses, belts, clamps, sump, etc
			Personal	
	X	X	Hang foul weather gear in wet locker	
	X	X	PFDs to wet locker	
	X	X	Harnesses to wet locker	
		X	Prepare storm stew/sandwiches	
		X	Hot water in a thermos?	
		X	Check snorkel and mask	For going forward on deck in heavy rain

Acknowledgments

I want to thank a number of our friends who kindly offered suggestions and pointed out a number of errors. In particular, thanks to Jim and Katie Thomsen (s/v Tanaya) and Stephanie Concelman (s/v Lavita)

And lastly, my companion and shipmate through all our fantastic adventures, Marcie Connelly Lynn, without whose patience, support and 'wordsmithing' talents, this book never would have reached completion.

About the author

David Lynn and his wife, Marcie, have lived aboard their 45-foot 1986 Liberty cutter *Nine of Cups* since 2000. After departing Kemah, Texas, in May 2000, they have sailed more than 73,000 nautical miles and at publication time, were heading across the Indian Ocean to Africa.

Sailing off into the sunset was a dream of David's for as long as he can remember. The idea never occurred to Marcie, but it wasn't a tough sell. They now both enjoy the cruising life immensely and plan to continue as long as it remains fun. They are now more than 14 years into their planned five-year sail around the world. Unless they get sidetracked again, they may actually complete their circumnavigation in 2015 in Cape Town, South Africa.



The name “Nine of Cups” comes from a tarot card and signifies dreams come true. While wandering in Halifax, Nova Scotia, we came across a beautiful bronze gate with seahorses and a trident. We photographed it and later used it as the template for our logo above.

Comments and feedback are always welcome
Contact us at nineofcups1@yahoo.com
Visit our blog at www.justalittlefurther.com
and our website at www.nineofcups.com