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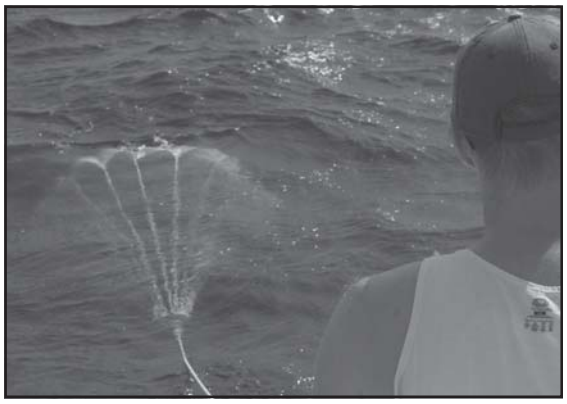

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Human Resources

A few weeks back a friend called and invited me to his "hull turning party." Readers who are acquainted with one-off boat construction won't find that to be such an awkward phrase. It might even prompt a small wave of nostalgia.

My friend is midway through building a 25-foot wooden lobster boat. A boatbuilder by trade, he's doing this project on the side, for himself. Rest assured, he's also a sailor.

It didn't surprise me at all to show up and see a line of parked cars leading all the way down the street from the little creekside hovel that's affectionately referred to as "the boatyard." Turning a hull—so that construction can begin on the interior, deck, and cabinhouse—is an honored tradition among boat enthusiasts, wooden or otherwise. The few times I've attended or participated in boat turnings, the atmosphere has always been warm, jovial, and celebratory. This occasion was no different.

There were probably 150 folks there that afternoon, but only 30 or so of us could fit into the tight quarters of the shed to lift his precious project. Standing shoulder-to-shoulder, we bent our knees and backs to the task. For a fleeting moment, I was concerned that mere manpower wouldn't be a fitting match for all that wood and epoxy, estimated by my friend to be about 1,500 pounds.

To my silent relief, the upside-down hull fairly soared off its chocks and we collectively inched it through the shed doorway and into the sunlight without incident. Afterward, with equal ease, we rolled the vessel upright.

The things that are possible to achieve through collaborative effort can astound you, and witnessing such synergistic feats can be truly inspiring. Here at *PS* headquarters, we've had the opportunity lately to glean something of the potential that exists in this realm. After placing a modest ad in our December and January issues, asking for parties interested in contributing to the publication, we've been innundated with responses. It seems that an overwhelming number of readers want to be involved in influencing the content of this magazine; something we regard as a good sign.

To date, 50-plus applicants have registered their interest, and the missives haven't stopped arriving yet. We've heard from "retired government scientists," "career naval officers," veteran sailors with over "200,000 sea miles" under their keels, and "passionate weekend sailors." Among them are PhDs, MDs, JDs, MBAs, and EdDs, as well as those educated at the school of hard knocks. The dispatches we've seen range from a single sentence e-mail to a 10-page resume, and all of them resound with sincerity.

Any publication's greatest asset is its readership, and *PS* is indeed fortunate to have committed, passionate readers whose interests and skills span a broad spectrum. Witness the variety of letters in this issue's "Mailport" section and you'll understand what I mean. This magazine is tremendously enriched by the fact that its readers care enough to interact actively via letters to the editor. Now, we're hoping that we can take that richness a step further by engaging a few of those readers as occasional contributors.

Of course this is by no means an original idea; we've done it before fairly often. Yet it seems to have an especially appropriate application with a publication like *PS*. We're looking forward to the synergy that will result from our little ad, as I'm sure you're looking forward to the progressive material that will be the ultimate outcome. But first there's a bit of HR work to be done.

—Dan Dickison

Practical Sailor

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ATN TopClimber

I purchased an ATN TopClimber after reading your review [*PS* Jan. 15, '01]. I'm highly impressed with it and have been up and down my 50-foot mast many times now. (I'm an unfit 52 years old with dodgy knees.) I really like the way I'm not dependent upon anyone to help.

I was, however, not impressed to be almost at the top one day only to find one of the shackle pins on an ascender was almost completely unscrewed. I tightened it up with a shackle key and kept an eye on it and the same thing happened again some time later. I tried mousing it with monel wire, but the climbing action effectively scissored the wire in no time.

I e-mailed ATN and got a prompt reply from Etienne, the proprietor, suggesting I invert the shackle. This I did (to both) and so far it's been fine. It may be worth mentioning to your readers.

Patrick Randall
Port Charlotte, FL

Standardized Plumbing

I would like to see someone address the lack of standardization in marine plumbing. Barb fittings currently are available in white plastic, grey plastic, black plastic, and bronze. Each has a different diameter it seems, and none of them will fit the hose one is trying to use. Then hose comes as clear plastic, white plastic, various black rubbers, wire-reinforced, and so on. This results in many trips to the various supply stores. The industry needs to be given some incentive to standardize on diameters so we can finish a plumbing job the same year we start.

Jerry Haller
Punta Gorda, FL

PS *is working on a story about snap-on marine plumbing fixtures, and we intend to discuss the issue of standardization within that article. Of course, this won't resolve your problems, but it should provide incentive for marine manufacturers to move toward standardization.*

...WHERE CREDIT IS DUE

To Globalstar USA: "My wife Olga and I had the misfortune of choosing Grenada as our safe haven for the hurricane season last year. That would have been a good decision every year since 1955, but not in 2004. Hurricane Ivan passed directly over the south coast of Grenada with winds reported to exceed 145 mph. The cruising fleet was badly damaged and the island devastated. All utilities were interrupted, including telephone service.

"We carry aboard a Globalstar Satellite telephone, which, by the way, can indeed be extremely frustrating due to dropped connections, but is far and away better than whatever occupies second place. Prior to the hurricane, we had used the Globalstar phone to get six-hour updates directly from NOAA, so we were well-informed and consequently well-prepared for the storm. After the storm, we used the satellite telephone to get information to families and friends desperate to know the status of both boat crews and Grenada residents.

"In the first four days after the storm, our Globalstar telephone transmitted or received over 300 e-mails. There were also a few voice calls. We placed no restriction on the use of this link to the outside. The hurricane occurred near the end of our billing cycle, so these calls were in excess of our plan minutes. When the emergency had passed, I called Globalstar USA and informed them of the circumstances. The company immediately issued a credit for all call charges. Corporate good citizenship merits public recognition. Thanks Globalstar."

— Don Casey, Via e-mail

To Epifanes: "I first read about Epifanes Clear Varnish in your review ("Varnish Exposure Finale," *PS* Oct. 15, '02). I bought their product and started using it on my J/92. I ran into a problem and I called the company. They were more than helpful. They were fantastic. The owner, Doug, immediately got on the phone and solved my problem. They not only have a great product, they have a great owner and customer support."

— Dr. Randall Winchell, Mission Viejo, CA

To Simrad: "As a facilites director, I know the importance of good customer service. Sometimes, it's difficult to find.

"I purchased a Simrad HT-50 handheld VHF a few years ago and have used it since as a backup to the fixed-mount VHF on my boat, but only rarely. Recently, I had to meet a friend in Newport, RI, who was bringing his boat in, so I took my handheld with me. At the end of the day, I noticed my volume button was missing, so I called Simrad to order a new rubber button.

"Their representative told me it would cost $170. Needless to say, I wasn't happy. I asked to speak with someone in charge, and I was transferred to the president of Simrad USA, Brian Staton. I told him my problem and he said he would look into it and get back to me.

"He called me back a few days later and told me that the rubber button was part of a bigger piece, which is why it costs so much. They had never heard of this happening before, but he said they had found a demo unit and had taken the part from that and were sending it to me. It arrived a few days later, along with a note saying 'with our compliments.' You can't get better service than that. Simrad not only stood behind their product, but went out of their way to provide superior customer service. I will continue to spend a little more to get this kind of service and a quality product!"

— Steve LaFever, Springfield, MA

Knocking Networked Systems

[Re: "Networked Systems, Furuno vs. Garmin," *PS* Dec. '04] I am a professional yacht captain and an electronics installer with some comments about networked systems. My field experience with integrated systems is mixed, and I think it would serve your readers well if you consider the pros and cons of the network trend.

As a geek, I love to play with these systems and get caught up in what they can do. As a seaman and navigator, I dislike them. Furuno, in particular, is awesome and complicated. For those of us that are in the business and exposed to these products daily, they are reasonable to use. Conversely, most of my customers have a terrible time remembering the ins and outs of how to use them. I make enough waterproof cheat sheets and answer enough long-distance calls from the islands to know it is just a bit much.

In real life navigation situations, I find experienced boaters jabbing at a display trying to find the piece of information they need and slowly losing track of what is going on around them. The Coast Guard uses the term "RADAR assisted collisions" for this. I think we can add "Plotter assisted groundings as well: '*I don't know what happened, I was looking at the plotter when we hit and it said we were in the channel.*'"

For this reason, I prefer dedicated independent displays. One glance at the console gives the full impression. It is easy to focus in on any one piece of information without letting go of the wheel or taking your attention away from what is happening around you. It's interesting to note that most race car drivers still use analog gauges even though the engines are computerized.

The other critical issue is failure. When one part of the system goes, it all goes. Would you rather come into Bimini, or Cuttyhunk without a sounder or without everything? When a networked system glitches, hangs, loses power, suffers water damage, or a power surge, you suddenly lose every electronic aid at once. And let's not kid ourselves, these systems are normally installed as a package without stand-alone backups.

A cardinal rule of navigation is, whenever possible, do not rely on a single source for your information, but when depth, position, track, heading, relative position (radar), and speed are all coming from one source, or funneled through one source, the navigator is at risk.

I think the networked trend is dangerous and has hidden costs, both financial and safety. It is sad to see a million-dollar boat tied to the dock because they skipper is waiting for the factory rep to arrive and troubleshoot a software issue. It happens daily. Dedicated equipment is easier to use and is more dependable. Yes, you can now watch a DVD on your 10" Furuno daylight display, but why would you want to? Really.

Capt. Carl Damm
Stuart, FL

Tape Correction

[Re: "Tale of the Tape," *PS* December '04] Thank you for mentioning Henkel Consumer Adhesives in your article. We were disappointed so see our brand name "Duck" misspelled as "Duct."

I also want to clarify that in your reference to electrical tape you mentioned Manco. Henkel bought Manco in 1998, and our new legal name is Henkel Consumer Adhesives. You can find more of our products online at www.duckproducts.com.

Jose M. Martinez
Henkel Consumer Adhesives

Music On Board

We love to have music on-board (we cruise the West Indies yearly), but have been thwarted by three problems. First, the so-called "marinized" CD players have proven to have short lives. We have gone through three decks in eight years; all have had partial failures in their first seasons. I don't think the CD playback mechanism takes well to the cruising life.

Second, we find it to be a hassle to carry a large library of CDs back and forth from Trinidad to Alaska each fall and spring. Finally, we are starting to find some of our CDs physically deteriorating, presumably from the salt air. Next time you evaluate musical components, could you please address two issues: (1) what are the outer limits of satellite radio reception in the Bahamas/Caribbean (either XM or Sirus) and (2) what is the availability of MP3 players for marine use?

Alternatively, could you publish this in your letters section to elicit feedback from other cruisers?

Jerry & Nancy Wertzbaugher
Via e-mail

PS *tested marine stereos several years ago and we reported on that in our April 1, 2001 issue. Of the seven units tested, only five included CD players. Among those, two obtained a strong rating for seaworthiness (Standard Horizon's MST660 and Jensen's MCD9424RC). Still, none was waterproof. The good news is that consumer products in the music industry have evolved tremendously in the last several years. MP3 players like the Apple iPod show great promise, as does satellite radio. In our June 1, 2003 report on satellite radio, we noted coverage areas, which we expect will continue to expand.*

Scully Sail

[Re: Scully Rig and Propulsion Rudder," *PS* December '04] Thanks for the getting the word out about our sail rigs. Out of the box, it does take 25 to 30 minutes to rig, but from then on, as the sail furls around the spars, it takes only minutes to be sailing. Many of our customers leave the bow clamp on the boat all the time as it is not in the way and provides a handhold and a point for securing gear. This makes stepping the mast and notching in the dagger a snap.

I don't blame you folks at *PS* for not fully exploring the potential of maneuvering with the Propulsion Rudder. A sculling propulsion rud-

der takes a little getting used to, but it's still much easier than rowing. I've seen a 5-year-old step into a boat and start sculling without instruction. With the stock of the propulsion rudder set at the lowest setting, it is even possible to pivot the fin around under the boat and scull in reverse, ideal for crowded dinghy docks. Or you can keep turning the fin around and the boat will turn around 360 degrees in it's own length.

I'll make better reference to these and other functions in the new generation of instructions provided with the products, which are now available through West Marine.

Jeff A. Jelten
SCULLY fin™

More Outboard Locks

[Re: "Outboard Motor Locks," *PS* Aug. 1, '04] In July of this year we purchased the "Master Lock Outboard Motor Lock". In late August we noticed the vinyl peeling on the bar with rust under it. So, we went to unlock, remove, clean and spray the bar and lock with an anti corrosion spray. We found it difficult to insert the key in the lock, so after getting it off I also applied graphite to the lock. It then worked well, so I put it back on the engine.

On November 16th, in preparation for an offshore trip, I attempted to remove the lock so I could put the outboard on the deck of the boat. I found that I could not insert the key in the lock. I dutifully applied PC Buster, but to no avail. Finally, I sawed through the shackle down to the top of the bar with a standard hacksaw. Then gave the remainder of the shackle two whacks with a hammer and screwdriver and broke the shackle. I found that one end of the shackle lifted up and out. Two whacks with a hammer and Phillips screwdriver on the remaining side and the lock dropped out the bottom.

Based on my experience, I suspect I could repeat the process in about 5 minutes, but instead will purchase the Smartlock and hope that I can open it when I need to take the outboard off the dinghy.

Alan Brown
Via e-mail

After reading your article, I bought a Master Lock Outboard Motor Lock. After fewer than six uses, while anchored in Banderas Bay, Mexico, the lock mechanism broke so that the key would not go in. It took about five minutes with an old hacksaw to make two cuts in the shackle and tear it off with Vicegrips. The padlock came right out of the bar and we motored to shore that evening for dinner. West Marine gave me a full refund.

Roy Verdery
Sausalito, CA

Cabin Heater Complaint

[Re: "Portable Cabin Heaters," *PS* Jan. 15, '05] I strongly disagree with your selection of the Caframo Model 9200 High Performance Heater as the "winner" of your electric heater test. The unit is cheaply built, makes annoying vibrating noises when in operation, and has an unreliable and poorly designed thermostat. If not for luck, that same heater could easily have cost me my boat (and perhaps an entire marina full of boats) when its components failed and the heater caught fire.

I have maintained the temperature in my C&C 35 at 10°C over the past 20 winters in our mild, but damp, BC coastal climate. I have gone through a series of heaters in doing so, the first being a Braun, which featured a design very similar to the Caframo and the comparable West Marine model. No heater has ever been able to touch the quality of the Braun, but with constant use, even the best wear out.

Next I went to a similar styled unit from West Marine. It was supplied by a company that I believe was called SouPac. While its quality could not match the Braun, it performed yeoman service for a number of years before finally packing it in recently.

I waffled between the newest West Marine model and the Caframo, with neither giving me much confidence in terms of their apparent quality. It's disheartening that so many products deteriorate with each new generation as manufacturers cut back until they're making items that aren't much better than garbage.

In this instance, I happened to be on the boat and turned the thermostat up from its low setting. Suddenly the entire heating element glowed cherry red and smoke began pouring out. I don't know how much damage would have resulted had I not been present, but I consider myself lucky. Now, I must find a new heater with little confidence in any brand that I see on the market.

Gord Persson
Via e-mail

Dangerous Practice

I was surprised to see in the photograph on the front page of the November 15th edition of *Practical Sailor*, in which the crew member using the hoist had the line wrapped around his hand. I have always understood this to be an unsafe practice in that, if the load becomes suddenly too great—such as a halyard or a sheet releasing from a winch or cleat—it may not be possible to release the line quickly. This could result in severe injury to the hand, or at least a rope burn. Knowing your dedication to safe sailing, you may wish to draw this to the attention of your readers.

Thank you for the most useful of all sailing magazines.

John Dewey
Victoria, BC, Canada

The crew member shown in that photo is a seasoned waterman and well experienced with a wide range of marine hardware and boating equipment. He knew his load, and the extra turn around his hand was for the sake of the pendant editor. Nevertheless, we don't dispute that the safest practice is indeed to keep a line that's under tension in one's palm with one's fingers wrapped around it and not vice versa. ■

Sea Anchor Match-up

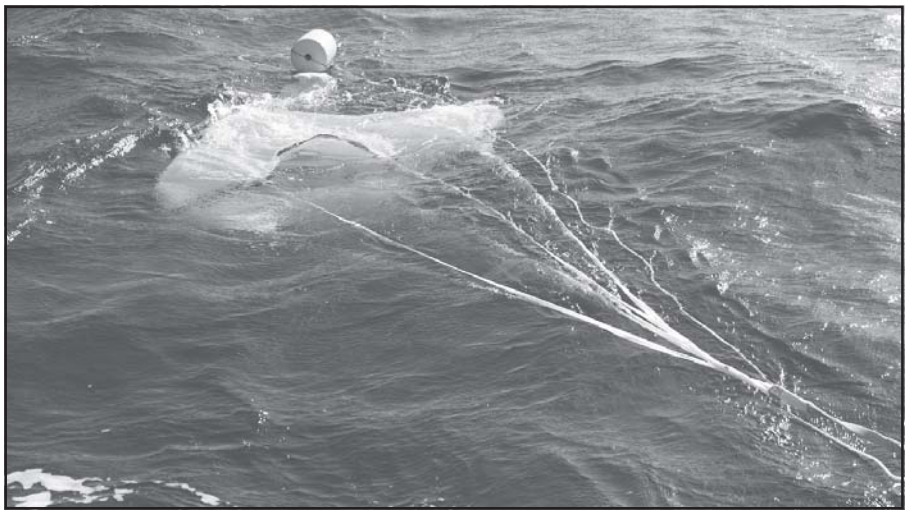
Sea anchors have evolved to become a vital component of the serious sailor's arsenal in heavy weather. We tested models from Para-Tech and Fiorentino, and favor Fiorentino's for their rugged construction.

According to Earl Hinz, a veteran cruiser and a recognized expert on contending with heavy weather at sea, the concept of sea anchors can be traced back as far as 1200 AD when Polynesian mariners used stone ground anchors and lines fashioned from coconut fibers for the purpose of keeping their double-hulled canoes into the wind while at sea. (We extracted that nugget from *Heavy Weather Tactics Using Sea Anchors and Drogues*, Paradise Cay Publications 2000, one of several books Hinz has written.)

Hinz identifies the advent of parachute-style sea anchors as some time around World War II. It's commonly understood that these devices began to gain favor among offshore sailors in the late '70s and early '80s. Since then, they have been refined and are now commercially available from several sources.

When properly deployed, a well-designed and well-built sea anchor can be an excellent tool to control vessel drift under a variety of conditions. If things go badly, and your vessel is adrift without power or a rig, a sea anchor can hold the vessel's bow into a seaway, substantially improving the boat's ability to safely ride out the weather. And if the need arose, a sea anchor could even keep a vessel in distress off a lee shore. For these reasons, many knowledgeable blue-water cruisers consider sea anchors manadatory safety gear.

Before continuing, it's important to note that sea anchors are distinct from drogues. Hinz defines the former as "a large drag device deployed over the bow of a boat to hold the bow into the wind and the waves...A proper sea anchor will hold the backward drift to under 1 or 2 knots maximum...A sea anchor is used when the boat is disabled or the crew no longer wishes to sail, but would simply like to hold a relatively safe position and attitude with respect to the seas."



One of the three sea anchors we deployed—Para-Tech's 9-foot model, above—took about 30 seconds to fully open. Thereafter, it quickly brought the bow of our test boat into line.

A drogue, wrote Hinz: "is a smaller drag-producing device that is deployed over the stern of a boat to slow its forward progress when running downwind and, to some extent, to hold the stern to the seas..." It would be folly for any mariner to confuse the two or their respective applications.

We recently reviewed a group of six sea anchors, deploying three of them in actual tests conducted in 5- to 8-foot waves.

What We Tested

Fiorentino and Para-Tech, manufacturers well known for their high-quality, parachute-style sea anchors, provided a number of samples for testing and review. (Both companies manufacture sea anchors in various sizes up to 40 feet.) California-based Fiorentino has two lines of sea anchors and sent samples of each. The Coast-9 is a 9-foot diameter anchor designed, as the name implies, for coastal operations. The FPA-9, also 9 feet in diameter, is a heavier duty sea anchor designated as the offshore model. Fiorentino also sent a Coast-16 and FPA-18.

Colorado-based Para-Tech sent one anchor—its 15-footer. Our test boat—a 25-foot center console powerboat weighing 3,100 lbs.—was already equipped with a 9-foot model from Para-Tech.

How We Tested

The 9-foot sea anchor kept aboard our test boat is set up with a 20-foot rode of half-inch, three-strand nylon, a primary float, and 50 feet of half-inch polypropylene trip line. (It's actually a

drift-fishing setup for use when the waves don't exceed five feet.) We used this setup as the first stage of our test for the 9-foot sea anchors.

We also tested each by adding 300 feet of 1/2", three-strand nylon line to the sea anchor to mimic the rode length that one might use during heavy weather conditions in an emergency. Fiorentino provided floats and a trip line for its 9-foot sea anchors, and we deployed both with that provided gear. This same rode was used for all the sea anchors we deployed. As each test was completed, we switched the rode over to the next anchor using a large shackle to secure it to the parachute thimble.

Strong east winds blowing for several days prior to our test produced wave heights of 5 to 8 feet during our deployment testing. In addition to the consideration given for in-water testing, the 9-foot sea anchors were also reviewed for price, construction quality, and warranty.

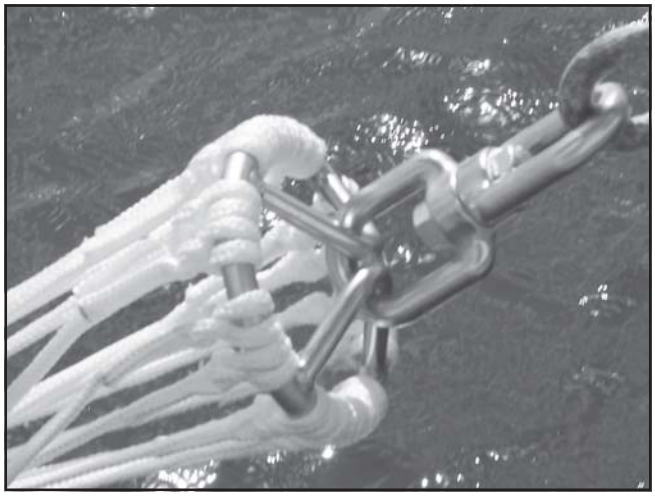
The larger sea anchors were not suitable for in-water deployment with our test boat; but we did review their specifications, construction quality, pricing, and warranties.

Fiorentino

Fiorentino uses similar construction techniques on both its 9-foot sea anchors. The offshore-designated FPA-9 and the lighter-duty Coast-9 use a multi-section canopy fashioned from 8 oz. nylon, with 2" nylon webbing sewn onto the skirt and 1" nylon webbing on the vent hole opening. Shroud lines are multi-braid nylon line rated at 2,500 lbs. breaking strength. To make a solid connection to the canopy, each shroud line is sewn directly to the canopy over a total length of 14".

The bitter end of each shroud line is double-looped over the Para-Ring® (see photo above) and locked in place by back-sewing two inches of the line together. The Para-Ring® is approximately 6" in diameter with two U-shaped brackets welded to the ring, which secure a large swivel. All Para-Ring® components are stainless steel. The swivel serves as the attachment point for the sea anchor rode. Additional multi-braid nylon lines attached around the vent hole of the canopy serve as the tripline attachment point.

Both Fiorentino's 9-footers have 2 pounds of lead weights sewn into the canopy skirt on one side to stabilize the chute in the water and to encourage it to sink beneath the surface. A stowage bag is included with the purchase of any Fiorentino Coast or Offshore sea anchor, along with an instructional DVD or video.



Fiorentino's Para-Ring®, above, is a stainless steel fabrication that comes in different sizes depending upon the size of the sea anchor. It's intended to spread out the shroud lines, thus preventing chafe and enabling the swivel to work without restriction.

Here are the differences between the two 9-footers: The more heavily built FPA-9 uses 16 sections in the canopy construction, whereas the Coast-9 uses only eight. It also has twice the number of shroud lines; again 16 for the FPA-9 and eight for the Coast-9. The Para-Ring® and swivel are also a size larger on the offshore sea anchor and the nylon panels have a higher thread count. At the tripline attachment point, the inshore model uses four lines while the offshore one uses eight. And the FPA-9 weighs 19 lbs., whereas the Coast-9 weighs just 13 lbs.

Both Fiorentino 9-footers performed well in the moderate sea conditions present during our testing. When we tested each with the short fishing rode, there was significant reversing in rode pressure from taut to slack as waves and troughs alternately rolled under the boat. This is to be expected when using such a short lead under these sea conditions. Once the rode was lengthened to 300 feet, the boat settled smoothly into the waves, maintaining a course within 20 degrees of directly into the seas. Whenever a series of larger waves rolled through, the boat centered up and headed dead into the waves.

We deployed one of the 9-footers using an optional Fiorentino deployment bag. The other went straight in the water without a bag. Both deployed properly without any tangling, which is a critical issue when deploying sea anchors.

The two larger Fiorentino sea anchors we examined, the Coast-16 and the FPA-18, are constructed in a like fashion, using the same materials as the smaller chutes. Each is beefed up to provide the needed additional strength to support the strain that largers vessels would put on these devices.

The Coast-16 canopy is constructed in 12 sections using the same number of shroud lines run to a Para-Ring® the same size as the one on the offshore FPA-9. The slightly larger and more heavily built FPA-18 has a canopy with 28 sections and the same number of shroud lines fitted to a heavy-duty Para-Ring®.

At Fiorentino's website we found the Coast-9 priced at $396 and the offshore FPA-9 for $677. The price includes free freight within the U.S. The warranty on all Fiorentino sea anchors is five years. Optional rig-

Spec Sheet: Sea Anchors

Maker	Fiorentino	Para-Tech	Fiorentino	Para-Tech
Model	Coast-9	Model 9	FPA-9	Model 15
Deployed Size (canopy diameter)	9 feet	9 feet	9 feet	15 feet
Weight (pounds)	13	9	19	20
Recommended Vessel LOA	under 40 feet	under 25 feet	under 40 feet	30 to 40 feet
Vessel Displacement (pounds)	20,000 or less	8,000 or less	20,000 or less	12,000 to 25,000
Material weight used in panels	8 oz.	4 oz.	8 oz.	4 oz.
Number of Shroud Lines	8	8	16	16
Shroud line breaking strength	2,500 lbs.	2,000 lbs.	2,500 lbs.	2,000 lbs.
Warranty Period (years)	5	5	5	5
Package Includes	Chute, Bag, Swivel, and Para-Ring	Chute, Bag, Shackle, Float Line	Chute, Bag, Swivel, and Para-Ring	Chute, Bag, Shackle, and Float Line
Price	$396	$349	$677	$859
Source	paraanchor.com	seaanchor.com	paraanchor.com	seaanchor.com

ging gear available from Fiorentino includes floats, trip lines, and of course, an anchor rode.

Bottom Line: These are top-of-the-line sea anchors, well built, using high-grade, 8 oz. nylon panels and stainless-steel hardware.

Para-Tech

The 9-foot Para-Tech sea anchor uses eight sections of 4 oz. nylon to form the canopy. The seams in the canopy, the canopy skirt, and vent opening are all reinforced with nylon webbing. On the seams, 1/2" webbing is used with 1" webbing strengthening the other areas. Heavy-duty 1/2" webbing is used for the vent hole shroud lines while a heavier webbing strap serves as the float line attachment point.

The main shroud lines, made from 9/16" tubular nylon webbing, are sewn onto the bottom five inches of the canopy at section seams. Additional webbing serves to connect the reinforced skirt to each of the eight shroud lines. Shroud lines terminate into a pair of 22"-long straps made from 1"-wide, heavy-duty nylon webbing shaped to hold the anchor rode attachment shackle.

Para-Tech products are "failure tolerant," meaning if the whole system is over-stressed, the sea anchor is designed to blow a panel, but will still keep a boat's bow into the seas though the rate of drift will increase slightly.

A 10-foot section of float line, made of the same material as the main shroud lines, is attached to both the chute and a storage bag that comes standard with the Para-Tech sea anchor. When stored, the 9-footer fits in a bag that measures about 8 inches in diameter and 10 inches high.

We rigged our sea anchor with 50 feet of additional tripline by attaching it directly to the short section of factory installed tripline. The anchor rode for fishing is only 20 feet long; it attaches to the parachute shackle on one end while the other end gets looped over the bow cleat. We used a long line float and clip to attach the float for deployment.

The trip line is secured to the bow cleat; that way we can quickly and easily collapse the sea anchor by hand without powering forward with the boat. This setup makes pulling the anchor quickly quite easy.

Unlike the Fiorentino sea anchors, the Para-Tech products carry no added weight in the canopy. Para-Tech sea anchors don't rotate, say company representatives, because of the unique pattern of the canopy seams. We detected no rotation with Para-Tech's 9-foot model while deployed.

The performance of the Para-Tech 9-footer was identical to the pair of Fiorentino sea anchors, both on the short fishing rode and on the long rode. The anchor was deployed directly from its storage bag (included with the Para-Tech); it did require a couple of tugs on the main rode to get the anchor out of the bag. Once out, it deployed cleanly with no tangling.

The Para-Tech 15 is a 9-footer on steroids. It uses the same canopy material, but is made in 16 sections and uses 16 main shroud lines. These terminate into four, 36" x 2" sections of nylon webbing that form a hole for a large shackle. When packed in its stowage bag, the 15-footer measures 11" in diameter and 15" high.

We priced the Para-Tech anchors on the company's website. The 9-footer is $349 while the larger 15-footer is priced at $859. All Para-Tech sea anchors carry a five-year warranty and come with a stowage bag, float line, heavy duty shackle and instruction manual. Available accessories include anchor rodes and a choice of stainless, galvanized or titanium hardware.

Bottom Line: The Para-Tech 9-footer is a well made product. It differs from the Fiorentino in a few key ways, particularly that its panels are made of lighter nylon material and its shroud lines are made from nylon webbing instead of line, and rated for 2,000 lbs. breaking strength instead of 2,500 lbs.

A Word to the Wise

In his aforementioned book, Earl Hinz spends almost 30 pages discussing the proper use of sea anchors. There's an important reason for this. Improperly deployed sea anchors can lead to disastrous consequences.

Determining the size and length of the rode you use in conjunction with a sea anchor are important

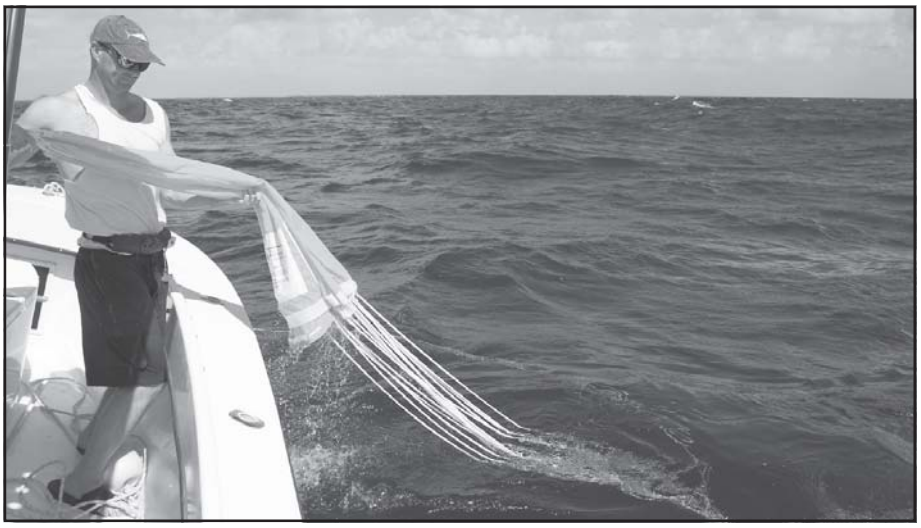
Fiorentino Coast-16	Fiorentino FPA-18
16 feet	18 feet
22	38
under 50 feet	under 50 feet
40,000 or less	46,000 or less
8 oz.	8 oz.
12	28
2,500 lbs.	2,500 lbs.
5	5
Chute, Bag, Swivel, and Para-Ring	Chute, Bag, Swivel, and Para-Ring
$783	$1,521
paraanchor.com	paraanchor.com

considerations. "It is essential," wrote Hinz in his tome, "that the length of the sea anchor rode be matched to the wave length of the sea..." He recommends setting the length of the rode so that both the boat and the canopy ride on the crests of immediately adjacent waves. That way, "they experience the same orbital motions of the surface water and hence move in harmony with each other."

The diameter and strength of the rode should be determined with a number of factors in mind. "The rode," explained Hinz, "...must have elasticity to absorb surge loads. For this reason, nylon rope is the best choice." He favors braided line over three-strand despite the loss of elasticity.

For the serious offshore sailor and novice alike, Hinz's book can be an important resource for selecting a sea anchor and rode. (See *PS* Aug. 1, '00 for advice on sizing a sea anchor.)

The Fiorentino FPA-9, above, fully deployed with its 16 shroud lines showing prominently. The theory here is that more shroud lines make the canopy less prone to inversion when the waves really kick up. This sea anchor is rated by the company for boats under 40 feet and under 20,000 lbs.



Retrieving a sea anchor, above, can be tricky. The key is to use the tripline to empty the device, pull it to the vessel, and then grab the top of the chute and quickly pull it aboard. Here, one of our testers pulls the Fiorentino FPA-9 out of the water.

Conclusions

All of the sea anchors we looked at are of good quality and should last for years considering how rarely they're used. There are also others on the market that we didn't test, including those from Dan Shewmon, Cal-June, and W.A. Coppins in New Zealand.

The 9-footers that we tested in the water performed properly. They are well constructed and carry substantial warranties. If not for the difference in the weight of the cloth used to fabricate each companies' product, and the rated breaking strength of the shrouds, we'd be left with little but price to pick a winner. But that's not the case.

Yes, the 9-foot sea anchor from Para-Tech is less expensive than its counterparts from Fiorentino, particularly the FPA-9. However, Para-Tech doesn't include a swivel, which would add $40 to $60 to the price, and shipping isn't included either. But sea anchors are products intended for use in emergency situations, and at those times, we'd feel more comfortable relying on something that's overbuilt. Because of that, we'd gladly pay the additional money for Fiorentino's products because we feel their more rugged construction will enable them to endure Neptune's savage moods longer than those from Para-Tech. ■

Fiorentino, *800/777-0732, www.paraanchor.com*
Para-Tech, *800/594-0011, www.seaanchor.com*

More Practical Websites

Our last compilation of useful Internet resources for sailors included 26 websites; here now are two dozen more that we like.

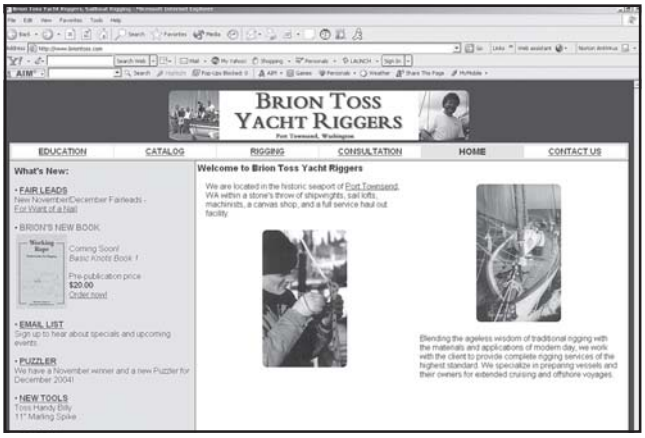
We at *Practical Sailor* can remember a time when those in the know would speak in hushed tones about the "World Wide Web." This was at a time when the Internet was embodied in services such as WAIS, Gopher, and FTP. Today, "Web" is used interchangeably with "Internet," the qualifier "World Wide" being dropped long ago.

Indeed, we are struck by just how local and specialized the Web has become, with content addressing every niche and interest. The continuing trend toward more local and specialized content on the Web makes it difficult for us to give the definitive list of the most practical websites for hands-on sailboat owners. Nevertheless, here are sites—some general, some specialized—that we find particularly practical.

General Reference

Google (www.google.com) never ceases to amaze, both in the power of its core search engine service, and in the innovation in related services the company develops. The first *Practical Sailor* list of practical websites (see *PS* November 1, 2001) included Google, but the site has developed so much that it deserves mention again. The Google search engine has an uncanny knack at retrieving web pages that are relevant to your queries, and now allows you to search for images as well.

At an associated site: **Google Answers** (www.answers.google.com) you can register and ask any question you fancy. You put a dollar value (from $2 to $200) on having an answer and submit the question. One of a group of registered researchers may attempt to answer your question, using Google to search the Web for the required information. If you are satisfied with the answer, you get billed, the researcher gets the fee you set, and Google takes a small cut. Questions relating to boating are somewhat rare, and sailing questions rarer still, but those that we've seen appear to be competently answered. A good source, but don't overlook *PS* Advisor.



Rigger Brion Toss offers useful tips and interaction on his website: www.briontoss.com

Another Google entity we like, **Google Catalogs** (www.catalogs.google.com) allows you to browse the catalogs of hundreds of retailers. Google scans the printed catalogs to create full-page facsimiles on this website that you can browse, with the powerful addition of full text search over all contents. There are sixty-three retailers represented in the Marine and Water Sports category, including APS, Clark Craft, Davis, Defender, Edson, Landfall Navigation, Layline, Sailrite, and West Marine.

And then there's **Google Local** (www.local.google.com), which helps you find businesses and services in a specific geographic area. Type "boat covers" and "Morehead City, NC" (or enter a zip code) and Google Local returns a list of canvas makers within 45 miles of the location, with phone numbers, addresses, maps and driving directions. Google Local compiles the search results from the billions of web pages that Google indexes, plus Yellow Pages listings.

Weather

A website called **Poletopole.org** (www.poletopole.org) gives you real-time and recent weather observations from thousands of weather stations around the globe in a nice graphical format. Wind direction and strength, for instance, are displayed in a compass rose, while atmospheric pressure and other data are plotted on charts. The site only provides observations, not forecasts, and the data comes mostly from airports. Still, we like it for its ease of use as an alternative to sticking one's head out the door. We keep Poletopole.org on our Favorites list, and we check it before heading down to the boat.

Unisys Weather (http://weather.unisys.com) is a good site for someone wanting in-depth weather data and forecasts or the bigger picture behind a local marine forecast. The site has all the data that a professional meteorologist would be comfortable with, but also features clear explanations, legends, and keys for the layperson. This site has radar and satellite images, forecasts maps, upper air data, and weather model output. We also like that it's well organized, with a clear navigation scheme. Unisys Weather covers the continental U.S. only, and does not have marine forecasts. Interestingly, the site archives over one hundred years of hurricane tracks. For marine forecasts and weath-

er charts, including high seas forecasts, see the list of National Weather Service and NOAA sites in the May 15, 2004 issue of *PS*.

An alternate source of marine forecasts is **Weather Underground**, (www.wunderground.com/MAR), but beware, it subjects you to those darned pop-up ads.

Buy and Sell

You have to hand it to the people behind the website **Yachtworld.com** (www.yachtworld.com) and it's companion website **Boats.com** (www.boats.com). They have built two very impressive online classified and online boat brokerage sites, respectively. Individuals may create a listing on Boats.com for $50 per month, while on YachtWorld.com, subscribing brokers create the listings. Many of the boats for sale through a brokerage appear to be cross-listed between the two sites, so start with Boats.com to ensure you cast the widest net. The search functions on the two sites help you narrow down thousands of listings to those that match the kind of boat that interests you, your budget, or your location. Individual listings include photos where available, as much description as the vendor cares to supply, and contact information for the vendor.

Renown among collectors and yard sale regulars **eBay** (www.ebay,com) is being discovered by sailors, too. For boats for sale on eBay, go to www.motors.ebay.com and follow the links to Sailboats. However, we found that the quality of the boats listed for sale on eBay can be a bit spotty. There are many other sites for boat listings, so don't spend too much time finding your next vessel here unless you're looking for a 35-footer with hurricane damage or a Sunfish without sails, spars, or rigging. You can find good deals for sailing hardware on the site. Go to eBay Motors and surf through the categories under Parts & Accessories to arrive at electronics and sailing hardware. Many chandleries use eBay to move their old inventory, while individual sailors use the site to clear out their lockers. We recently came across an auction for five years' worth of back-issues of *Practical Sailor*, and were pleased to see active bidding for that item.

Mapping

On the website **MarinePlanner.com** (www.marineplanner.com) you can view nautical charts online. Some of the site's content is free, while much of it requires a subscription. We have used the free chart viewer as a study guide to familiarize ourselves with new anchorages. You can download electronic charts for a fee, in a format that is compatible with common navigation software packages for PCs. Online nautical calculators are an additional free feature of the site, for calculating the distance to the horizon from a known height of eye. Like much of the free content on MarinePlanner.com (we have not taken out a subscription), the nautical calculators are not likely to be of help when you are on the water, but they do make a handy online reference.

The website of the **NOAA Office of the Coast Survey** (http://nauticalcharts.noaa.gov) is a massive source of information on NOAA nautical charts. The site has the full chart catalog, and lists critical chart updates. The site has a database of wrecks and obstructions, and allows you to view historic charts dating to the Civil War.

Reference and Education

Brion Toss, a well-known rigger and author, promotes his services and books on his site (www.briontoss.com), but it also has articles, newsletters, a monthly brain-teaser, and an online forum for discussing rigging with Brion and other experts who frequent the site.

Grog's Animated Knots (www.grogono.com/knot) is a superb example of practical content on the web. The site is well organized and written, easy to understand, and fulfills a single purpose elegantly. Visit the site to watch 12 common sailors' knots being tied. Follow the text that describes each step in synch with the animation; control the speed of animation; vary the perspective to rotate or invert the knot; read the discussion of the uses, variations, strengths, weaknesses, and alternatives to the 12 knots. It's a good site, though most of these knots will be familiar to *Practical Sailor* readers. We also think the editor's approach to turning a cleat is a bit extravagant.

We like the thoughtful answers that cruisers get when submitting questions at **North Sails Cruising Sails Q&A** (http://na.northsails.com/QA.htm). Dan Neri, the product manager for North's cruising sails, gives clear and detailed answers to questions relating to sails, rig configuration, and sail-handling systems. Yes he's predisposed to North's products, but also frank about the pros and cons of North's premium offerings.

Here are some suggestions for further reading on topics of interest to sailors, without much commentary from us. For cruising first aid, go to www.riparia.org and find the link to the **Cruising Medical Kit**. Look for free excerpts on international and inland rules of the road from **Reeds Nautical Almanac** on Boats.com and for the complete **Bowditch** compendium on piloting and navigation on Marineplanner.com. Head to the Galley on **SeaRoom** (www.searoom.com) for cruising recipes.

Cruising Guides

We simply can't cover all sailing areas, but if we were to pick out one example, we would suggest **The Usual Suspects - Caribbean Sailing Adventures** (www.usual-suspects-sailing.com). Click on "The Experiences" for descriptions of the Grenadines, the Abacos, and other Caribbean cruising grounds as detailed as any cruising guide found in bookstores. Be sure to check out the pages listing the vendors who sell ice and other commodities out of open boats in Caribbean anchorages. The site is yet another example of a highly localized content, created by a dedicated individual for the enjoyment of all.

Noonsite (www.noonsite.com) focuses on providing essential informa-

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Headings

Designers' Conference

We interviewed five leading designers of recreational and cruising boats to better understand the way they view the market and what considerations reside behind the designs they produce.

Beyond the text and photos contained in a sailboat manufacturing company's brochures, and the words of a dealer or salesperson, and absent an understanding of yacht design, discerning the actual capabilities of today's production boats is a major task. Gone are the days of Herreschoff et. al., when the conventional wisdom held that a long, deep keel was the best method of producing good tracking, displacement produced a seakindly ride, and performance (straightforward speed) was a simple matter of adding sail area. Prior to the age of fiberglass, most yachts used similar raw materials (wood and metal), and construction methods, so those variables were not generally a consideration.

Three decades ago, the playing field changed with the introduction of fiberglass, along with other material changes, which produced lighter structures that allowed manufacturers to re-examine their approach to design. Lighter structures translated to reduced ballast; thinner, deeper keels produced improvements in stability and weather performance; and, dacron sail fabrics added another dimension to the mix.

Those days aren't that far astern, though it may be hard to believe that only 21 years have elapsed since the Aussies surprised the world with a winged keel. A seemingly unquenchable thirst for more boat speed (primarily attributable to pressure from grand-prix racers) is still producing new materials. A byproduct of this technology is an environment in which tinkering with raw materials allows designers to further push the edge of the design envelope, even at the mass-production level.

Bob Perry (inset) has over 30 designs to his credit, among them the oceangoing Valiant 40 above.

In the same way that benefits from the NASA space program and the world of professional automobile racing trickle down to consumers, the recreational sailor also enjoys the fruits of the racing sailor's labor. Today's production boats are, for the most part, capable of better performance than their predecessors, better built, and—surprisingly—more affordable than they were, based on 1980s prices.

Nonetheless, the challenge for the potential buyer remains the same: sorting through the hyperbole to find the real nature of a particular boat without needing a degree in naval architecture, or having to hire a naval architect to evaluate a design. In this case, you readers are not alone; we at *PS* are continually challenged to engage in critical evaluations of boats and gear in our ongoing attempt to uncover substance, as opposed to

form.

To that end, we engaged five prominent American yacht designers and invited them to respond to a *PS*-prepared questionnaire aimed at providing us with a snapshot of the philosophical, technical, and marketing issues they consider when designing boats for John Q. Sailor. Our forum included (in alphabetical order) Glenn Henderson, Tim Jackett, Bob Perry, Tony Smith, and Jim Taylor, all of whom have designed production and custom boats.

Not surprisingly, their candor produced an informative, and interesting, result. They agree on many issues, but in some cases have divergent opinions about the methods used to achieve a result.

The popular Gemini catamarans, like this one, are the brainchild of Tony Smith, (inset).

The Crew

As the general mManager of Fairport Marine (since 1997), **Tim Jackett** has guided the company through the reintroduction of the Tartan and C&C product lines, both of which were defunct in the mid '90s. An indication of his talent lies in the versatility of these vessels: Tartans are typically more cruisy, while C&C sailboats are decidedly more performance-oriented.

Prior to assuming the mantle of director of engineering for Hunter Marine in 1999, **Glenn Henderson** was known for fashioning high-performance shapes for race boats. He "studied abroad" while cruising for six years, and in the process completed the degree requirements from the Westlawn School of Yacht Design. Henderson entered the boatbuilding business with the introduction of a 17-foot dinghy, followed by a 21-foot MORC racer, and the SR Max, a 21-footer that put his fledgling company on the map. Since joining Hunter, he has fashioned lines for the 356 (which became the Hunter 36), recently introduced the Hunter 38, and designed 41 and 44 footers, as well as the Excite 10 and the Hunter 216.

Bob Perry studied engineering at Seattle University, and was a professor of yacht design at Evergreen State College prior to opening his own design studio in 1974. In addition to maintaining an active clientele, as part of his daily affairs he now mentors interns from the University of Southampton and the Landing School. In 1989 he was among the first 15 industry professionals inducted into Cruising World magazine's Hall of Fame. His series-built designs include the Tayana, Valiant; Espirit 37; Nordic; Cheoy Lee 35, 44, 48; Islander and Islander Freeport 36; Passport; and Saga 43 and 48.

An expatriate British subject and the only multihull designer in our mix, **Tony Smith** built his first multihull in a shed in England; that boat later finished fourth in the first 2,100-mile Round Britain Race in 1966. In 1967, he was among the first to research and develop foam-sandwich construction and fiberglass molding techniques, resulting in production of the 26-foot Telstar folding trimaran. In 1980 he and his wife Sue moved production of the Telstar to America. Eventually he designed the Gemini catamaran, the boat that has proven to be the most popular cruising catamaran sold in this country.

Known for the designs of custom one-offs and many of the Sabre sloops, **Jim Taylor** apprenticed for five years with Ted Hood, and in 1977 was responsible for the upgrade of America's Cup winner *Courageous*. He formed Jim Taylor Yacht Design in 1978, and has since designed, built, and campaigned Mini-IOR/MORC/PHRF racers and America's Cup designs. He also is responsible for the lines of the Sabre 362, 402, and 452, and Colgate 26. A champion of small boats, he designed several for Precision Yachts, including an 18-foot performance dinghy and 23-foot cruiser.

Outlook

Though all five designers share the common denominator of having been commissioned to produce racing and cruising yachts, the first task each faces in developing a new model is having a clear understanding of a boat's intended market and use, prior to putting pencil to paper.

Most of Perry's designs, excepting flat-out racers like *ICON*, for example, "are targeted to experienced cruisers, people who spend extended periods on board," the Valiant 40 being a primary example.

Hunter's clients, according to Henderson, are mostly families. "We are designing boats that have predicable reactions so novice sailors don't have to guess about how they will respond in various conditions." In his words, "That means tight turning radiuses, and a light helm, among other charac-

Jim Taylor (inset) rendered the lines and the rig for the Sabre 402, above.

teristics." He believes that those traits "enhance the experience for the veteran owner."

Taylor says: "The overarching premise is a recognition that the designer has a very narrow focus on the precise details that a client wants to see," whether it's a Sabre production boat, a Precision 23, or custom one-off. His charge from Sabre is "to produce mainstream yachts that combine good sailing characteristics with comfortable accommodations. Historically, designers and builders compensated for heavy displacement and spacious accommodations by adding more sail area through extending the rig and increasing the size of the foretriangle. With modern boats, we accomplish the same thing by building a lighter structure."

As the designer of both Tartan and C&C models, Jackett's challenge is twofold. "The general use of Tartans has moved towards the performance cruiser definition, particularly in the larger boats," he explained. "Our smaller models see some club level weekend racing." In each case, however, he is targeting a market of experienced sailors.

At the other end of the spectrum, he says, "The new C&C models have been developed as exciting racer/cruisers. Club level race boat performance is important. C&C owners in general have been a bit younger, more families, who do their racing as a family activity, and when not racing, use their boat for weekend or two-week-long cruising."

Of the quintet, Smith may have the most laser-like focus. His perception of the primary buying public for multihulls is "aging couples, two-thirds of whom use their boats for short and extended cruising, the balance being daysailors," he said.

From a designer's perspective, offered Smith, "First, it's important to understand the different roles of the catamaran and monohull." Of the Gemini 105MC, a 33' 6" catamaran, said Smith, "A potential buyer would have to purchase a 38- or 39-foot monohull to have comparable accommodations, and the boat would have to come close to the 10 knots of boat speed that the catamaran typically generates on a reach in 15 knots of true wind."

Hunter Marine's top designer Glenn Henderson (inset conducting 'research' in fluid dynamics), is responsible for the Hunter 216, below, as well as other models that define the company's new performance-leaning ethos.

Design

Ask a dealer to describe the primary performance attributes of a boat he is selling and odds are the response will fall in one or more of the following categories: "She's fast. She's beamy and stiff. She's narrow and slippery, and stiff. She has a light displacement. Her heavy displacement means she's comfortable at sea. She has a masthead rig, so... She has a fractional rig, so...."

It's no surprise that the market is

filled with repeat buyers. From a defensive standpoint, it is usually safer to expect similar performance, comfort and construction methods from a manufacturer with whom you have experience, rather than taking a risk, perhaps at the expense of missing an opportunity to improve your enjoyment of the sport. In fact, though all designers are working with the same physical variables, (target LOA, LOD, volume, draft, displacement, etc.) different results are produced with different methods.

We asked our experts how they approach the design of this era's new boats, which are typically characterized as "performance-cruisers." Not surprisingly, they agree on many points and differ on others.

Henderson, who is leading a drive at Hunter to improve the performance capability of every new model, said, "We discovered that the market has changed from the time when interiors sold boats, to a baby boomer generation that comprises more performance-oriented buyers. But performance is not measured entirely by speed. It is a combination of speed, motion, stability, the boat's reaction to conditions, and maneuverability when docking. Bow entry angle, hull form, beam, and displacement all integrate to achieve performance.

"We have to build in hull-dampening characteristics that will not compromise the ability of a boat to get up to hull speed quickly."

Computer programs allow designers to predict a boat's performance at sea, including measuring the movement of the center of gravity and center of rotation when underway. By duplicating wave action on a computer, a boat's tendency to hobby-horse, for example, can be eliminated. "Comfort is still important, but we're equalizing all of the contributing factors," Henderson explained.

For Taylor, the design parameters of the Sabre line of big boats, and of the Precision line of small boats, are all "very consistent, and are all chosen to provide the optimum mix of speed, comfort, and convenience, true all-around performance," he stated. "We expect boats to sail well in 6 knots of wind, and not need a reef until the windspeed reaches 20 knots. Target ratios are an SA/D of 20 to 22; D/L of 175 to 195; and L/B of 2.63 to 2.86, all of which fall in the fast cruiser range, based on historical performance."

The able C&C 99, above, is a product of Tim Jackett (inset) and his CAD system.

On that point, Taylor and Perry think alike. "Moderate cruising boats built with less than state-of-the-art, high-tech materials will generally have to be targeted around a D/L of 180 to 200," explained Perry. "Tankage and machinery will determine the displacement. I have a preference for keeping the boat as narrow as I can with L/B usually in the middle to upper 3.00s. SA/D will be determined by the client's sailing style or the overall personality of the boat, but I like to keep SA/D between 18.5 and 22. In general, clients want too much sail area because they do not appreciate the problems associated with towering rigs," he offered.

"Comfort is achieved through hull volume and freeboard. Obviously you want as low a freeboard as you can get, but this has to be balanced against the need for volume and aesthetics. Beam aft is also driven often by the need for volume aft and deck plan requirements."

Though Jackett acknowledges that the buyers of his boats may have differing demographics, his approach for both C&C and Tartan models is similar.

"Performance is always first," he said. "However, it must be understood that the performance metric is different for different purposes. Obviously, the simplest measure of performance relates to the age old boat show question, 'How fast will your boat go?' The fastest monohull sailboats today are *very* fast relative to their predecessors; however, that does not make them the perfect solution to every requirement of performance for every customer and every use," Jackett told us. "Performance measures that are important for different purposes include stability, maintaining a balanced helm throughout a wide range of conditions, the ability to maintain good performance at various loaded conditions, the ability to maintain good performance with limited crew, while still providing cruising amenities; a boat that rewards its crew with response to sail trim and adjustments, while still delivering dockside comforts.

"The same holds true for C&C. However, added to the equation is the ability to go out on the weekend

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Mainsail Track Hardware

The systems used to attach a mainsail to its mast have come a long way since the time of hoops and parrels, and the variety of options now available for retrofitting plays to the advantage of the consumer.

The three S's of mainsail handling get a lot of attention. Rightfully so, too. Whether it's a small family sloop or a flat-out ocean racer, there are few troubles for a sailor that are worse than having difficulty *setting*, *shortening*, and *striking* the mainsail. To make it four S's, you might also throw in *stowing*.

On an old square-rigger, the majority of control lines were devoted to the three S's. The myriad lines on those vessels far exceeded the piles of "spaghetti" seen on modern race boats whose crews often appear to think that disorder is cool. It's not. It's dangerous.

Aboard big sailing ships, carefully stowed on belaying pins, there were the usual halyards and sheets for the clews and braces for the yard arms. There were lots of very sturdy pin racks at the base of the masts and pinrails along the bulwarks. In an emergency, any line could be released by simply pulling out its pin, and hoping the line didn't run foul.

Other control lines had colorful names that are now long gone from common usage. There were throat halyards, laskets (sewn-in loops of small line used to set bonnets and drablers*), gaff peak vangs, crossjack lifts, and whip tackles.

Every sail had brailing pendants, which, when the sail had to be doused in a hurry, were quickly hauled in to the mast via a single line with five or six whips, a sail's peak, clew cringles and leech. It was sort of like a crowfoot without a euphroe**.

Most noteworthy among the rigging terms that have survived is "buntline." The word escaped death by disuse only because it's a superb hitch, easy to tie, and very secure. It was used to adjust lines attached to the foot or middle (the bunt) of a square sail through buntline thimbles. Hauling on the buntlines from on deck dumped the air out of a sail, and may have saved the mast from time to time. But we digress.

DASHEW OFFSHORE PHOTO

Full-battened mainsails, like the one on the 78-foot Beowolf, *require the right hardware to work with the compression loading of the battens. There are a lot of options available, both for refits and for new sail inventories.*

On a modern sailboat, handling the mainsail quickly and surely is equally important, both as a safety measure and as a matter of convenience. Thanks to a lot of thoughtful engineering—beginning with the replacement of laminated, steam-bent, copper-riveted oak hoops (they also came with brass machine screws to dismantle and slip on an already stepped mast) or iron rings with parrels—with good mast hardware, it's less complicated, too.

Perhaps the simplest way ever devised to join a mainsail to a mast was the two-layer sleeved sail. A few sails still are sleeved, which makes a very efficient sail, but they're seen mostly on small one-design boats like the Laser.

Cruising boats with unstayed masts, like the Nonsuch (which has a fierce following) and early Freedom Yachts, flirted briefly with sleeved (or wrap-around) sails, but reefing and stowing them proved to

* drablers—drablers and bonnets were strips of canvas laced to sails to add area.

** euphroe—A crowfoot was a big flat board with multiple holes for hanging an awning, and a euphroe was an oblong block with holes that gathered, supported, and helped organize and adjust the crowfoot's lines; neither word has survived in modern nautical terminology.

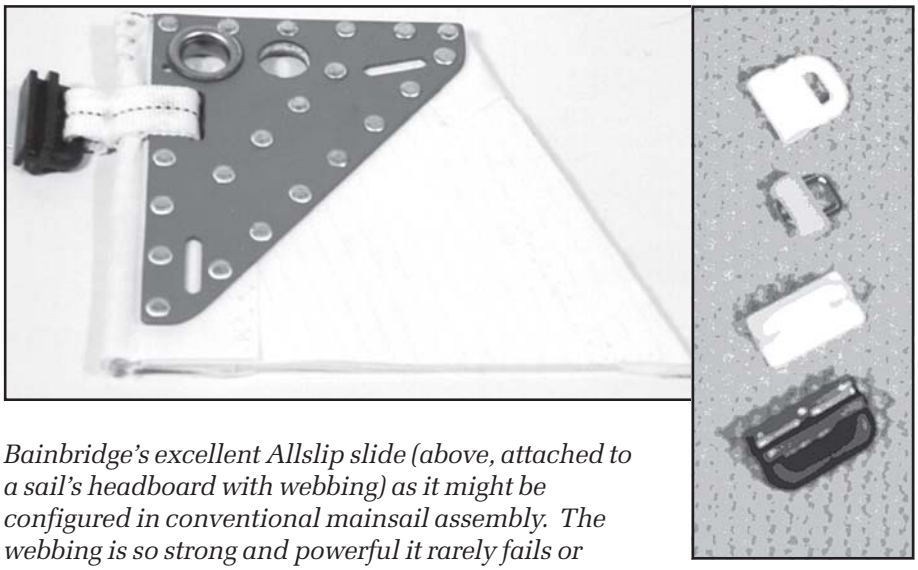
be too difficult.

Most often seen up to three-score years ago, on either wood or aluminum masts, was the external bronze or stainless steel track on which rode metal slides lashed or shackled to the sail. Modern versions have bits of clear plastic to protect the sail from chafe. This is still a near-perfect system, which has enough flexibility to make the sail easy to hoist, reef, or strike and stow. (The shackled-on slides are easy to replace; the newer webbed versions require some marlinespike skill.)

Still, sailhandling efficiency took a step forward when the boltrope luff and slotted mast system came into the mainstream some years later. This system presents a nice shape to the wind and eliminates the gap between sail and mast. It remains the current choice for conventional race boats, but is not much favored by club racers and cruising sailors. A boltrope sail can be difficult to hoist, a mess to lower and, in a mounting breeze, requires at least two crewmen to reef.

An attempt to overcome the boltrope sail's shortcomings arrived with nylon slugs—plastic extrusions, lashed or webbed to the sail—that fit in a circular mast groove. Like metal slides on a metal track, the slugs stay in the groove and pile up when the sail is struck or reefed. In early versions, the slugs were too weak. When one broke, the load on its neighbors quadrupled, and soon the luff went like the buttons on a fat man's vest. Today's best slides are made of UHMW (ultra high molecular weight) plastic, which is tough, hard, and slippery—ideal properties for sail slides.

As the metals industry became more and more adept at squirting liquids out of precision-made dies, the next development was an extruded aluminum mainsail track with an internal shape needed to accept plastic or metal slides. This facilitated a host of refinements. A sail being lowered tends to fold on both sides of the boom, which twists and racks the slides, and tends to bind or break them. Aluminum slides, hardened by anodizing, are excellent, but here again, the UHMW plastics are tending to prevail. There have been extensive and successful efforts to improve slides (and slugs) and some of which are depicted here in photographs.



Bainbridge's excellent Allslip slide (above, attached to a sail's headboard with webbing) as it might be configured in conventional mainsail assembly. The webbing is so strong and powerful it rarely fails or wears out. At right are four plastic slides of different sizes and configurations. At the top is a 3/8-inch internal slug (20¢) made of a material called Nylon 66. Second from the top is a 1/2-inch nylon slug (69¢) with a molded-in stainless bail. Second from the bottom is an 8 mm internal flat slide (27¢) that in bronze would cost about $4. At the bottom is a Bainbridge 5/8-inch Allslip slide ($2.90) made of a low-friction nylon alloy with a shoulder that makes it run straight and true in the mast track.

Then battens came along to complicate the issue. You can now get battens in almost any size and most shapes. Bainbridge—one of the main suppliers to sailmakers of sailcloth and mast hardware—offers 15 batten shapes in its latest catalog.

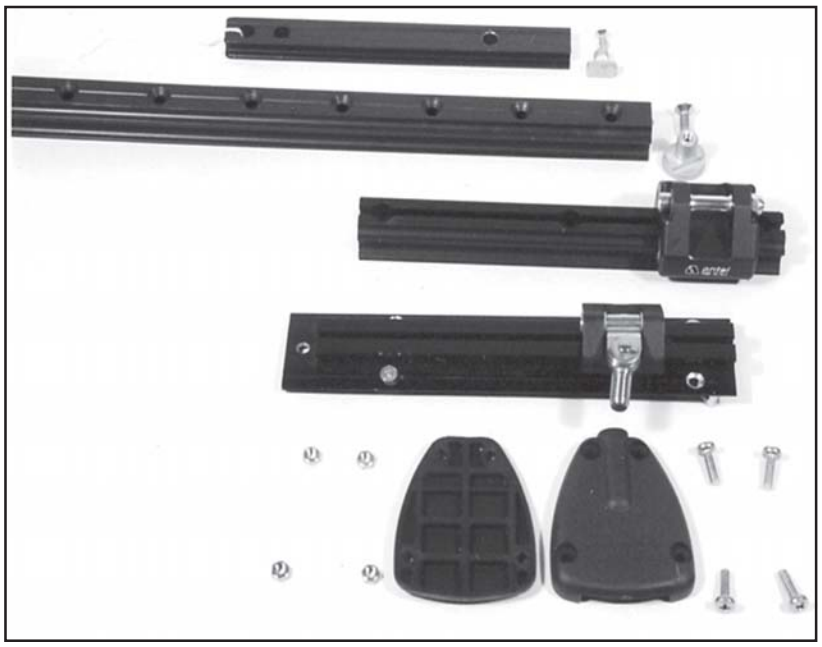
There's also an ever-growing need for specialized kinds of track. Some hardware makers now have proprietary track for use only with their hardware. The Harken catalog, for instance, contains dozens of kinds of track, from Micro CB low-profile, to midrange track, to high or low-beam (as Harken calls it) small boat track, to mini-maxi, maxi, and stainless steel track, not all of it for masts, of course. Harken is a big track player.

Working in the other direction, which seems equally if not more sound, Antal (available in the U.S. via Euro Marine Trading) recently introduced track that can be easily and securely mounted in any spar's existing round luff groove. It uses a half-round slug and a clever fastener (see photo pg. 18). With this approach, there's no need to drill and tap holes in the mast, but Antal's track can only be used with the company's own hardware—low-friction plastic slides mounted inside an aluminum car.

Because a boat owner who wants a new sail-handling system often cannot afford to buy a new mast, other manufacturers have also tooled up to make other adaptor tracks in a similar fashion, like Dutchman, Facnor, and Selden.

Finally, not too many years ago, sailmakers fell upon an idea that Chinese mariners discovered so long ago that its origin isn't known—fully-battened mainsails. However, unlike the Chinese, modern sailmakers have made it quite complicated and, of course, equipment-rich.

Full-battened sails are *de rigueur* for most multihulls and sport boats. These sails aren't yet as common



At left are but four of today's many varieties of extruded aluminum mast track. These are made by Antal Marine and can cost up to $22.50 a foot. The two top samples show Antal's clever mounting slugs—the small one for round mast slots, the larger one for flat mast grooves. The adapter slugs are mounted with special screws set in Loctite. Third from the top is a standard Antal track with a simple slider, which will be webbed to a sail. The bottom track is a smaller track mounted on a wide base that can be attached with rivets or glued to the mast. Below it is a dismantled batt receptacle. Instead of ball bearings (like Harken and Fredericksen), Antal sliders have low-friction composite fiber inserts that require no maintenance and are shorter, which minimizes stacking height.

with all cruising sailors, but they're rapidly gaining acceptance.

A knowledgable observer of the retrofit market, Tim Robinson, vice-president of Euro Marine Trading, told us: "There are more and more full-battened systems. They're growing all the time. We now install up to 300 systems a year. They're expensive, no doubt, but good."

Tom Braisted, the service manager of the Hood Sails loft in Middletown, RI, gave us an example of the cost. "We quoted a sailor with a Bristol 38.8 for a full-batten main, but the cost—around $8,000 to $10,000—set him thinking.....A full batten system for, say, a Tartan 30, would cost an extra 15 or 20 percent," said Braisted, comparing that to one with partial battens. "And, if you want Harken hardware, the cost of a replacement mainsail might double."

Despite the increased cost of full battened sails, Dolph Gabeler, the service manager at North Sails, in Portsmouth, RI, is quick to cite the advantages of these mainsails. He's been a sailmaker for 30 of his 42 years and said that about 85 percent of mains from his company are now fitted with full battens.

"They're more efficient, not only by permitting more roach, but also by making it easier to reef, flake, and shape the main," he said. "Especially important to the cruising sailor, there's a lot less movement—luffing, flapping and fluttering—of the material and that drastically cuts wear."

Despite the occasionally heard view that a full-batten system is favored mostly because it makes flaking and reefing easier and is only a "faster" sail because the battens support more roach, Gabeler said: "You get more power and speed because the shape can be more precisely controlled. Once thought to be only for boats, say 40 feet or more, you're seeing full-batten mains on lots of small boats, down to about 25 feet."

"The worst [arrangement] is a full-battened main on slugs in a slot," said Aaron Jasper, of Jasper & Bailey, a small, traditional sailmaker based in Newport, RI.

There have been lots of bumps in the development of the modern full-battened mainsail. The forward pressure exerted by the batten on the mast has taxed some very inventive minds to come up with better slides and cars (with ball bearings, wheels, or special inserts). Because of the growing popularity of full-battened mains, the competition has been intense, and *Practical Sailor* has kept abreast of this.

Over a six-month period in 1996 to '97, we published reviews of Fredericken's expensive yet versatile ($2,000) Ballslide track system, Harken's much-admired Battcar approach ($1,400), the Tides Marine Strong system ($750), Sailpower System's Battslide ($300), Martin van Breems' Dutchman ($200) and Antal's HS system.

Those are 1996 prices quoted for a midsize cruising mainsail, which, alas, no longer apply. (A headboard with slots for triple webbing and a double slider for Antal's small Size 40 system retail for $70 and $170, respectively. That's $240 for just the head of the sail. For a big racing boat, a "race headboard" goes for $373 and the "race quad carriage" for $1,390, which means you could easily have close to a couple of grand waving around up there.)

And now we can add to those systems mentioned above others from Facnor, Rutgerson, Sailman, Schaefer, and Selden. Such low-friction systems designed and built to handle the loads generated by full-battens under pressure fall into two basic categories: those that use a dedicated track attached to the mast, and those that utilize a slide or car fitted for the existing groove in the spar.

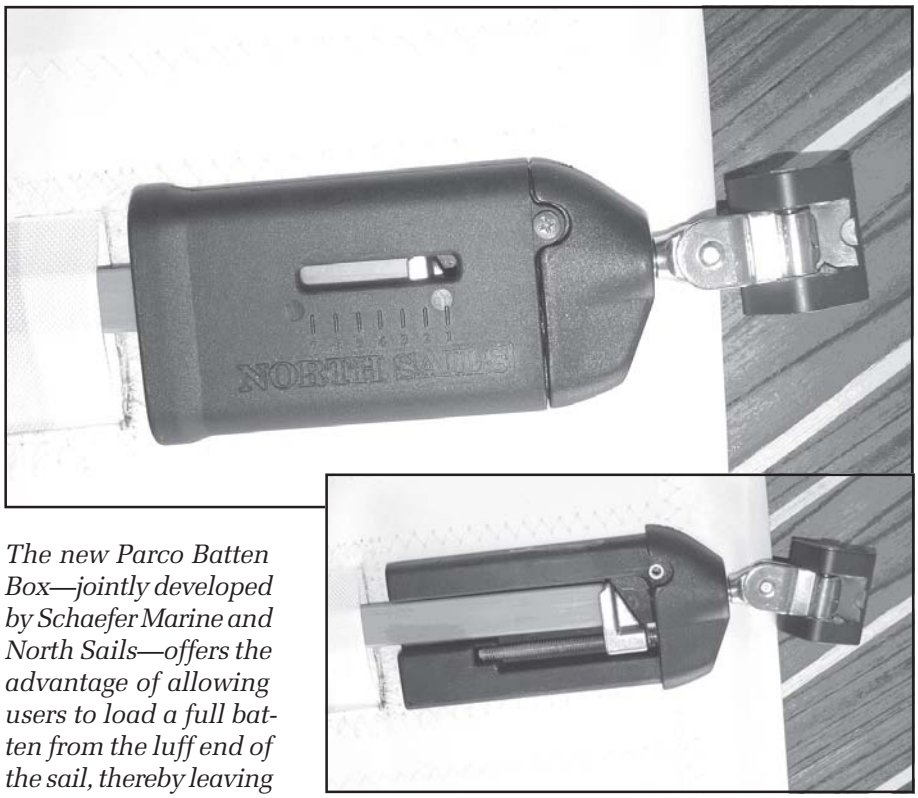
It's evident that there's intense research going on in this area, and new developments intended to enhance the use of full-battened mainsails debut on the market with regularity. Most recently, Schaefer Marine and North Sails collaborated to create a new batten box they're calling the Parco Batten Box (see photo at right). The principal advantage of

this product is that it allows battens to be loaded from the luff end of the pocket, thus enabling the sailmaker to permanently close the batten pockets on the leech end. The Parco Batten Box has a sliding cover that opens with just one fastener, and offers a range of adjustment up to 50 mm; longer than any other comparable batten box on the market. (*PS* has yet to test this new device.)

The other mainsail handling area that has undergone a lot of development in the last few years, is reefing. Point reefing (as well as slab and jiffy reefing) remains the simplest, most reliable, and cheapest approach to shortening sail. It can be fancied up with single-line controls and blocks of various kinds, but it's simply an extra set or two of tack and clew cringles and a line or two in the sail. Ease the sail down (the halyard can be marked to match clew and tack selections), secure the tack (on a horn or with the tackle), adjust the clew reef line and outhaul, rehoist, and tie in the reef pendants. Sounds simple, but it does take time, and a little practice.

Of course there are other systems. In its earliest versions, boom reefing (inside or around) often was a disaster. The Cal 20, for instance, had a spring-loaded boom that was intended to be pulled aft and then rolled in order to take up sail area. The problem was that the spring engineered to lock the ratchet teeth in place so that no further rotation occurred, was not strong enough. The main usually just unrolled itself when wind pressure was applied, which made a frightful noise. And, need we add that any around-the-boom system nullifies the use of a normal vang?

Sailmakers are familiar with the half dozen manufacturers of in-boom furlers, all of which remain very expensive. Aaron Jasper, told us: "They are fussy work for a sailmaker. Owners need careful instructions on how to handle them. And some have electric winches that can tear things up in a hurry."



The new Parco Batten Box—jointly developed by Schaefer Marine and North Sails—offers the advantage of allowing users to load a full batten from the luff end of the sail, thereby leaving the leech end of the batten pocket closed. Batten tension can be adjusted over a range of 50mm. The window in the cover is fitted with a scale for judging the tension applied. Another advantage is that the cover can be removed with a single screw (inset) that threads into a brass insert (there are no nuts to lose).

In the mid-1970s, Ted Hood introduced an interesting idea. Hood had a lot of them. This one he called the Stoway mast. Eventually, after considerable development, it proved a slick but terribly expensive way to manage the main. Of course this led to imitations, including versions that were mounted just aft of the mast. But due to their complication and expense, we at *PS* feel that these products must be regarded as big-boat gear.

Besides the expense, the most frequent criticism of in-mast furling is that the mast becomes heavy and the mainsail cannot have horizontal battens, though new systems with vertical battens are now emerging.

Tom Braisted offered this ultimate warning: "None of these fancy furlers are as reliable as you might like….or expect, considering the cost." ■

***Antal (EuroMarine Trading)**, 401/849-0060, www.eurmarinetrading.com*
***Dutchman**, 203/838-0375, www.mvpinfo.com*
***Facnor**, 704/597-1502, www.facnor.com*
***Fredericksen**, 727/545 1911, www.ronstan.com*
***Harken**, 262/691-3320, www.harken.com*
***Rutgerson (Challenge Sailcloth)**, 860/871-8030, www.rutgerson.se*
***Sailman (Bainbridge International)**, 781/821-2600, www.bainbridgeint.com*
***Schaefer Marine**, 508/995-9511, www.schaefermarine.com*
***Selden, Inc.**, 843/760-6278, www.seldenmast.com*
***Tides Marine**, 800/420-0949, www.tidesmarine.com*

Practical Websites

(*continued from page 11*)

tion for bluewater cruisers. The site covers hundreds of cruising areas and ports, with information on clearance, customs and immigration regulations, local events and services, and more. The content for Noonsite is taken from the *World Cruising Handbook*, by Jimmy Cornell. Updates and corrections for the printed guide are published on the site. Noonsite is not overly designed, and has an even more pared-down text-only version, which will be appreciated by sailors in far-flung cruising destinations, for whom the only Web access is a dial-up connection at a rustic Internet café.

Owners' Groups Associations

Class association or owners' group websites are of pirmary interest to those who own the boats in question. We bring up the example of the **C&C Photo Album and Resource Site** (www.cncphotoalbum.com) not as the best class or owner's association website out there—there's no such thing—but as an example of what a class or association website can be. The site has a home-spun, friendly, do-it-yourself tone. The contents include descriptions of various boat improvement and maintenance projects, schematics and manuals, and a database of owners by model and year.

Chartering

Sailonline.com (www.sailonline.com) is an information resource for everything relating to chartering and its industry. The site's well-written content includes information on what to expect in common chartering areas, including weather conditions, and popular anchorages. Other articles cover choosing a chartering company, the pros and cons of cruising catamarans, important sailing skills, and many other topics. The editor draws on firsthand experience with charter yacht ownership to give an independent and objective assessment of the pros and cons of this side of the business. The site charges a small fee (usually under $20) for some content.

Online Communities

We remember when sailors looking to participate in Internet discussions would turn to the rec.boats newsgroups. The newsgroups have largely fallen into disuse, while the availability of free software allows any web site operator to add a threaded discussion board to a site. With so many web discussion boards competing for attention, the challenge is to find one that has an active community. One site we like is **The Cruisers Forum** (www.cruisersforum.com), a web board that has had success in fostering a vibrant online community.

Other Practical Sites

Webshots (www.webshots.com) is a free online photo album. Once registered, you can upload digital photos to virtual photo albums and invite others to view them.

The Official U.S. Time (www.time.gov) is a service jointly offered by the National Institute of Standards and Technology (NIST), a Department of Commerce agency, and the U. S. Naval Observatory (USNO).

If you are in a boat partnership and need to coordinate work parties or sign the boat out for the weekend, consider using **Localendar.com** (www.localendar.com) to create an online schedule. This free service allows you to create a private, password-protected calendar, add and edit events to it, and share it with others.

TinyURL.com (www.tinyurl.com) is a handy tool for those who want to email a link to a friend. Increasingly, web content on large sites is stored in databases and retrieved through long and complex coding in web links. TinyURL.com is a service that shortens a long web address into something more manageable. Copy-and-paste the web address of your choice into TinyURL.com, and it creates a permanent short-cut on the Web (e.g., http://tinyurl.com/47eg5), which you in turn can copy-and-paste into an email, with full confidence that the link will not get fractured by being line-wrapped in the e-mail message. ■

Standard Horizon CP1000C

A new player enters the crowded and competitive field of color chartplotters; that's welcome news for consumers.

With its big screen, soft keys, and alphanumeric keypad, the CP1000C covers all critical areas and is a user-friendly, intuitive chartplotter. We particularLy liked its viewability—both during the day and at night—and the fact that it carries a three-year warranty.

Standard Horizon stormed into the GPS chartplotting arena in 2001 with the introduction of its monochrome CP150. At the time, it was the least expensive fixed-mount unit capable of using cartography-on-a-card technology. Standard Horizon's new CP1000C is a large-screen colorized version of that original. Measuring just over 13-1/2" wide by nearly 9" high, the CP1000C is equipped with a 10.4" color screen with 640 x 480 resolution.

We mounted the demo unit to our test stand using the metal mounting bracket shipped with the unit. We found the supplied bracket a little wobbly, and the knobs that secure the unit difficult to tighten firmly.

We rated the screen Excellent for day viewability. Its screen brightness and sunlight color palette helped achieve this rating. It is viewable to a 60-degree angle when not wearing polarized glasses. With them on, the screen darkens slightly, but is still viewable to about a 45-degree angle, though it blanks at 60 degrees.

We rated nighttime viewability Excellent. Exceptional control is possible with the use of the unit's six varying levels of brightness in combination with its 21 levels of contrast. Panel lights are preset at the factory to one level.

Our previous experience operating the original CP150 proved valuable on the CP1000C as the software, menus, and operation are similar. With 25 pushbuttons and a joystick, operating the CP1000C is a breeze.

The real interface advantage of the larger unit over the original is the addition of an alphanumeric keypad and five soft keys. The keypad makes manual data entry far easier. However, any large list of waypoints or routes would still be much easier to transfer from a home computer.

The CP1000C is compatible with C-Map PC planner software. This software is supplied with a card reader that allows data from a computer to be transferred to a blank memory card then inserted into the CP1000C for download. The system also operates in reverse, allowing data transfer from the CP1000C to a home computer for trip planning or simply to back up your list to another device.

The five soft keys are set by factory default in the Home mode to select various pages available, like Chart, Navigation, Highway, or Video. In other modes, the soft keys

Specifications

Price	$1,899*
Brightness Levels	6
Contrast Levels	21
Pushbutton Controls	25
Alpha. Key Pad	Yes
Soft Keys	5
Joy Stick	Yes
Video Inputs	2
Screen Orientation	Landscape
Screen WxH	13.6" x 8.8"
Screen Dia.	10.4"
Screen Resolution	640 x 480
Split Screen	No
Waterproof	Yes
Warranty Years	3
Cartography	(2) C-Map NT
Waypoints	3000
Routes	50
Waypoint Symbols	16
Waypoint Characters	10
Waypoint Colors	8
Plotter Interface	Good
Day View	Excellent
Night View	Excellent
Installation	Good

* source: www.boatersworld.com

change function to suit the mode. Each soft key function is also user customizable. Chart redraw speed was fast, normally taking less than a second to fully redraw the chart after a map range change.

Minimum range with a C-Map card installed is approximately a tenth of a mile to an inch of screen space, not the lowest we've seen, yet more than adequate. With no card and only the internal map, the minimum range is two miles. Four preset color palettes are available: normal, classic, night, and sunlight. A celestial page displays tide data from the nearest tide station in both graphical and digital format, moonrise and set, sunrise and set, lat./lon., and current time.

As technology advances, the CP1000C continues to receive software and hardware upgrades. Currently it's shipped with a pair of video inputs. These allow the display of video information from a camera or VCR. A camera placed in an area like the engine room can instantly display activity there.

No split screen capability was available on our test unit, so each source is displayed full-screen. Upgrades will include the capability to add a sounder. Of course, this will require the purchase of the sounder box as well as a firmware upgrade. The new software will be supplied with the sounder at no charge and will upgrade the CP1000C to allow it to work with the sounder.

We found the CP1000C on line for $1,899—comparably priced to

Value Guide Update: ColorChartplotters

This chart represents a brief overview of the 14 chartplotters that were evaluated by *PS* in 2004. We have attempted to update all the pertinent information (prices, warrantees, screen dimensions, and cartography), though rapid evolution in the marine electronics industry means that some elements—particularly prices—may be out of date by the time you read this. Note that some of the prices here include additional features (sounders in some cases, radar in others) as those were included in the units we tested.

Maker/Model	Price	Screen Diameter	Cartography	Warranty (parts only)	Day Viewing	Night Viewing	User Interface	Installation
SH CP1000C	$1,899	10.4"	C-MAP	3 years	Excellent	Excellent	Good	Good
Magellan FX324	$400	5"	Blue Nav	2 years	Poor	Excellent	Good	Good
Furuno GP1900C	$3,499	10.4"	Navionics	2 years	Excellent	N/A	Excellent	Good
Raymarine 631C	$3,886	10.4"	C-MAP NT	2 years	Excellent	N/A	Good	Good
Furuno GP1850 WF	$1,584	7"	Navionics/C-MAP	2 years	Good	Good	Good	Good
Simrad CE 33	$1,564	5.6"	C-MAP	2 years	Fair	Excellent	Good	Good
Garmin 188C	$1,299	5"	BlueChart	1 year	Excellent	Excellent	Fair	Good
Si-Tex ColorMax 6	$719	5.5"	C-MAP	2 years	Excellent	Excellent	Good	Fair
JRC PLOT 500F	$1,186	6.5"	C-MAP NT	2 years	Good	Good	Good	Good
Lowrance LCX-19C	$1,242	6.4"	Navionics	1 year	Fair	Good	Good	Good
Furuno GP-1710C	$1,886	6.5"	Navionics/C-MAP	2 years	Excellent	Good	N/A	N/A
Raymarine RL 70C+	$1,199	6.4"	C-MAP	2 years	Excellent	Good	N/A	N/A
Navman Tracker 5600	$979	6.4"	C-MAP NT	1 year	Fair/Good	Excellent	Good	Good
Furuno 1833C	$4,640*	10.4"	Navionics/C-MAP	2 years	Excellent	Excellent	Good	N/A
Garmin3010C	$2,857	10.4"	Garmin BlueChart	1 year	Excellent	Good	Good	N/A

*price includes 1833C/NT radar

other units with similar capabilities, like the Garmin 2010C or Si-Tex ColorMax 11, both of which we've yet to review.

Bottom Line: Those with less than perfect eyesight will love the large screen and large type capabilities on this screen. With the addition of the FF520 sounder, we expect this Standard Horizon unit to become a real player in the big screen plotter/sounder field.

Update

To most readers and consumers it should be evident that keeping up with chartplotter developments is nearly a full-time occupation. In the past year alone, *PS* has published articles covering no less than 14 separate chartplotters, plotter-sounders, or networked chartplotting devices from nine separate manufacturers. The chart on page 22 is a refresher of those we've evaluated to date, including the CP1000C. We've also included the most important ratings: Day Viewing, Night Viewing, User Interface, and Installation. ■

Standard Horizon, *714/827-7600, www.standardhorizon.com.*

Garmin GPS 60

When we published our most recent review of handheld GPS units (see *PS* Oct. 15, 2004), we didn't include the new GPS 60 from Garmin even though we had tested it for that article. (The company asked that we withhold our findings until that unit was formally introduced to the market this winter.) Now, the GPS 60 is on the shelves and ready for action.

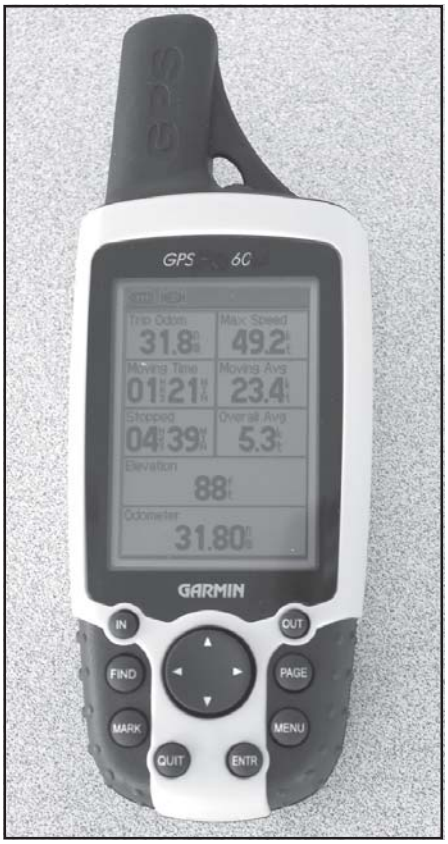
This new unit is a monochrome version of Garmin's recently released 60C. (The unit we tested was actually a prototype 60 in a 60C case.) Its screen occupies the upper two-thirds of the face with eight pushbuttons and a rocker switch below. The buttons on the case front are clearly marked for function. The off/on button resides on the top of the unit adjacent to the antenna. We found it awkward to hold and operate the Garmin 60 with one hand mainly because of the small sized buttons and their location near the bottom of the case.

The GPS 60 utilizes the latest version of Garmin's handheld GPS software and interfaces with the user through five main pages. The Satellite page displays tracked satellite location and signal strength, battery status, and present position. Three navigational pages follow with each press of the Page button. First comes the Trip Computer page displaying either three or eight user-changeable data boxes. Next comes the Map page. You can display a full-page map or add up to four data boxes, again all user-selectable. The last of the navigational pages is the Compass page; half the screen is used by a large compass rose and the other half by either three or four data boxes. The user can select the data to be displayed in the boxes and either degrees or cardinal headings for the compass. The final page in the list is the Menu page, it leads you to one of 16 other lists or submenus including Tracks, Routes, Setup, Calendar, Calculator, and others. Unlike the older Garmin 76, the 60 does not contain any tide tables or buoy data.

The Garmin 60 screen is only slightly smaller than the Garmin 76, measuring 2.6 inches on the diagonal. Resolution is high at 160 by 240 pixels, making the edges of small fonts and circles smooth. We found the night lighting on the Garmin 60 to be the most sophisticated of any handheld unit we've tested. It has five levels of brightness for both the screen and pushbutton backlighting. Daylight viewability was very good as well, achieving an Excellent rating for Display.

Access to the battery compartment, data port, external antenna jack, and USB port is located on the rear of the case.

Bottom Line: An excellent screen, with decent software, but has small pushbuttons in a poor location for singlehand operation. ■



Garmin's GPS 60 measures just 6.1 x 2.4 x 1.3 inches and weighs only 5.4 oz. The unit is WAAS capable and operates on two AA batteries, with an alternative power cable available, but no external antenna. It can connect to a PC via USB or serial ports, and has an 0183 NEMA interface. It has capacity for 500 waypoints, with up to 50 routes and receives on 12 channels. It's also waterproof (up to three feet for 30 minutes), and lists for $193.

Garmin, Inc., *800/800-1020, www.garmin.com*

Practical Sailor

PS ADVISOR

Eyeglass Quandary

Do you have any suggestions for sailing in the rain while wearing eyeglasses? I need my glasses for both distance and reading, so I wear them all the time. When it rains, I am pretty useless at the helm since my vision is clouded with drops on the lenses. Any helpful hints would be appreciated.

Sandy Donaldson
Via e-mail

Several of us at PS *wear eyeglasses on the water as well, and we find that the worst possible scenario is driving rain. Not only do your lenses get spotted with drops, making them almost useless, but depending upon the temperature, they can also fog up, which is worse.*

There's no optimum product solution to this dilemma, so some of us have resorted to wearing contact lenses when on the water. That may not be possible for you. If not, try wearing a baseball type cap or some kind of head gear with a pronounced brim to shield your eyes when it's raining. If you can protect your face (and thus your eyeglasses) from the rain, you can prolong your unafflicted vision. Also, you can try wearing goggles, which is what a number of high-speed racing sailors do offshore.

There is one other approach you can try. If you haven't heard of RainX, it's a product sold for use on windshields to help raindrops bead up and thus fall off more quickly. We've tried with eyeglasses and found marginal success. Good luck. ■

Designers' Conference

(*continued from page 15*)

and do some good, competitive club-level racing. Both brands have owners who use their boats a lot because both tend to attract more experienced sailors. We don't have many first timers, so they know their wants and they know their use plans, which may lead to fewer boats sitting at the dock."

The target ratios for Tartans, he said, "are typically SA/D of 18 to 19 and for C&C 23-plus. The D/L for Tartans is typically 200 to 230, and for C&C, 140 to 160."

For Smith's owners, comfort is a key ingredient. Though a catamaran might appear to be two hulls connected by a bridgedeck that houses living quarters, Smith has redesigned the hulls of the Gemini on three occasions, once following a Trans-Atlantic trip with his son Neil.

"We are producing narrower hulls with a finer bow entry angle, and less draft, which result in less pitching in a seaway. The challenge was designing a bow that, when it hit a wave, would pierce the wave and not push displaced water under the bridge deck. Water flowing under the bridgedeck increases drag and reduces overall performance." In the redesign he also reduced the rocker and draft of the hulls, an approach that is contrary to most catamarans, but one that works.

"However, the Achilles heel of a catamaran, as with a monohull, is that an overloaded boat will still slog through a wave."

Our Take

In the production world of sailboat manufacturing, the companies that employ these designers want you to buy their products. And their challenge is to motivate you to take a second look at their offerings.

As Taylor put it: "It is important that a production boat must positively appeal to a potential buyer the minute he steps aboard;" sufficiently so that the marketers can engage a potential client in conversation.

And, absent an extended daysail, a seller should be capable of articulating a boat's sailing characteristics in varying conditions, not solely in 10-knots of breeze on flat water. The smart shopper may use his current or former boats as a reference, but should also take off the blinders that preclude exploring new products. Using a company's stated objectives, the background of the designer, and the historical ratios as a benchmark, along with an analysis of the boat's polar diagrams, you will likely learn more about that boat than can be gleaned from the text of a brochure.

Next month, we'll continue this designer's forum with a focus on how these professionals produce user friendly, and efficient deck layouts. We'll also ask them to examine the considerations and compromises involved in performance and accommodations as well as contemporary construction methods and market trends. ■

...ON THE HORIZON

2000 Watt Inverters: Out of five of the most popular DC power inverters currently on the market, we determine which ones are the most reliable and best built for the discerning boat owner.