VOL 38 NO 7

JULY 2012
$7.50 (US)

Practical Sailor™

Polar Testing

Gear that made the grade on a nonstop sail around the Americas.

PAGE 26

PAGE 7

PAGE 14

PAGE 20

ALSO IN THIS ISSUE

Around the Americas in a Vega

The story of Matt Rutherford's non-stop solo circumnavigation of the Americas almost did not make it into this magazine. Clearly, this was not for lack of interest or admiration.

Rutherford, who took 309 days to sail the 27,000-mile route in a 36-year-old, 27-foot Albin Vega, braved icebergs in the Northwest Passage, freezing winds in the Bering Straits, and relentless gales near Cape Horn. His was a tale of great adventure, the kind that sailors love to hear and tell.

But as a magazine that advocates safe practices at sea, we can't condone such adventures without reservation. Although Rutherford never required rescue, lives have been lost saving people like him, who knowingly put themselves at great risk.

But doesn't every voyage entail risk? How much precaution is enough? There is no simple answer, but the safety requirements set for offshore races like the Newport-Bermuda Race offer a good guide for cruisers as well.

A more clear-cut matter is that of watchkeeping. Like the recent string of teens who sought to become the youngest solo circumnavigator, Rutherford couldn't maintain a constant watch, which in turn put others at risk.

Many singlehanders, close friends included, will argue this point. They'll remind me that Rutherford spent most of his time in trackless ocean occupied only by whales and albatross; that any ship coursing the waters would have picked him up on radar, or been unharmed in a collision. They will also explain that many singlehanders keep more rigorous watches than short-handed cruisers.

I certainly don't think that we should try to contain the urge to go to sea alone. We can't. Like hunger or thirst, the impulse to test our limits is part of the human condition.

In his study of world mythology "The Hero With a Thousand Faces," Joseph Campbell describes this endeavour of casting off the bounds of society, undergoing great trials, and returning transformed. It is a practice, he writes, that has been, and will continue to be, an important part of every culture.

From Odysseus to Harry Potter, the hero has a thousand faces, and one of them is our own.

As Rutherford found, for a young person with relatively little money, a small-boat voyage offers a tempting route to initiation. The boat provides the means to escape, and the waiting sea delivers the physical, emotional, and spiritual trials that can be life-changing—or as some might say, "character-building."

I was several years younger than Rutherford when I stepped on an Albin Vega myself, gauging its potential for a voyage to the South Pacific. (Judging it too tiny for my tastes, I ultimately opted for a much older, but bigger boat.) And Technical Editor Ralph Naranjo fondly recalls his own experience setting out to Hawaii in an Excalibur 26. Like Rutherford, we could not afford boats or gear that would increase the margin of safety, but we went anyway. The call to adventure, it seems, has an affinity for people with empty pockets.

I sincerely hope Rutherford's example inspires others to dream of adventures at sea, even if they are young, broke, and novice sailors. But they should remember that the hero's journey involves incremental tests, each one leading to the next. Rutherford had the good sense to build upon his experiences—first in the Intracoastal Waterway, later in the North Atlantic—before setting out on his voyage around the Americas.

I look forward Rutherford's next adventure, but I hope he invites a friend along—and not only to help keep watch. A steady companion is good for the soul, and it is one of the surest way to stay off the rocks.

Cover photo: Matt Rutherford's Albin Vega St. Brendan *returns home. (Photo courtesy of Mark Duehmig)*

Practical Sailor

July 2012 • Vol 38 No 7

EDITOR
DARRELL NICHOLSON

CREATIVE DIRECTOR
JUDI CROUSE

MANAGING EDITOR
ANN KEY

TECHNICAL EDITOR
RALPH J. NARANJO

EDITORS AT LARGE
DAN DICKISON, NICK NICHOLSON, DOUG LOGAN, DAN SPURR

CONTRIBUTING EDITORS
SKIP ALLAN, KEN DELAVIGNE, DREW FRYE, DAVID GILL, ERIK KLOCKARS, FRANK LANIER, JOE MINICK, THERESA NICHOLSON, GENE SMITH

PUBLISHER
TIMOTHY H. COLE

EDITORIAL OFFICES
7820 Holiday Drive South, Suite 315
Sarasota, FL 34231
practicalsailor@belvoirpubs.com

CUSTOMER SERVICE, WEB, BACK ISSUES, or FAX SERVICE
PO Box 5656
Norwalk, CT 06856-5656
800/424-7887
customer_service@belvoir.com

SUBSCRIPTION DEPARTMENT
800/829-9087
www.practical-sailor.com/customer_service/
Box 8535
Big Sandy, TX 75755-8535
For Canada: Box 7820 STN Main, London, Ontario N5Y 5W1

Belvoir

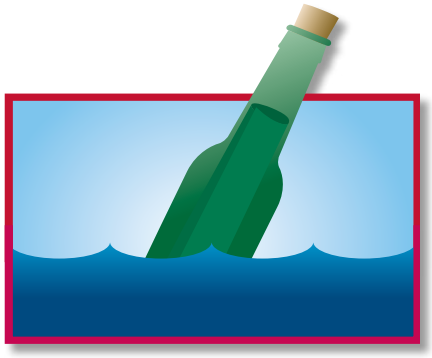
Practical Sailor (ISSN #0161-8059) is published monthly by Belvoir Publications Inc., 800 Connecticut Ave, Norwalk, CT 06854-1631. Robert Englander, Chairman and CEO; Timothy H. Cole, Executive Vice President, Editorial Director; Philip L. Penny, Chief Operating Officer; Greg King, Executive Vice President, Marketing Director; Ron Goldberg, Chief Financial Officer; Tom Canfield, Vice President, Circulation. Periodicals. Postage paid at Norwalk, CT, and at additional mailing offices.

Subscriptions: $84 annually. Single copies, $7.50 (U.S.). Bulk rate subscriptions for organizations and educational institutions are available upon request.

Postmaster: send address corrections to PO Box 8535, Big Sandy, TX 75755-8535. Practical Sailor, P.O. Box 39, Norwich ON, N0J 1P0 Canada. WDS return address in Canada: Station A, P.O. Box 54, Windsor, Ontario N9A 6J5.

REPRINTS FOR PUBLICATION AND WEB POSTING AVAILABLE
Contact Jennifer Jimolka, Belvoir Media, 203/857-3144

PRACTICAL SAILOR ACCEPTS NO COMMERCIAL ADVERTISING



DINGHY LAUNCHER

I thought you might like to know of a dinghy-wheel manufacturer that I came across that wasn't included in your last evaluation (*PS*, October 2011). Beachmaster boat wheels (*www.beachmaster.co.nz*) appear to be very well designed and tuck in nicely behind the transom when in the retracted position, eliminating the windage issue of some other designs.

Jack Reid
Gabriola Island, B.C.

IPAD GLARE

In regard to your iPad apps article in the March 2012 issue: We love our iPad, but when I take it outside, it has the most terrible screen for outdoor viewing I've ever seen. (Yes, I've got it landscaped.) We even added an antiglare film! What am I missing here?

From what I see, this thing is unacceptable for outside viewing.

Roy Warner
Via email

We had the same issue—apparently so did many people, and Apple took notice. The company's newest iterations—the iPad 3 and the upcoming iPad 4—were designed with retina display screens, which are supposed to be easier to read in sunlight.

NOFLEX = NO FUNK

In reference to your February 2012 article on holding tank additives: We had previously used Odorlos on another boat with good effect, but in our new-to-us boat, persistent odors continued to emanate, even with regular use of Odorlos and frequent flushing of the tank. In spring 2010, we began using NoFlex Digestor to tackle the problem. After 1½ years of regular application, it has greatly improved the "health"of the tank and reduced odors that had lingered. It also does a good job of cleaning the bowl and hoses. The company is based in Burlington, Ontario; the product page on the website is: *http://www.jetvac.ca/category/noflex-digestor.html*. We found it locally at Steveston Marine in Vancouver, B.C.

Kirsty Henderson
Canty, Catalina 34 Mark II
Vancouver, B.C.

We've added the NoFlex to the followup test roster.

RACOR

I have a Racor fuel/water separator Model S3240 mounted on my RIB dinghy. The problem is that the bowl sticks to the filter. I tried coating the filter threads with grease, TefGel, and silicone, and nothing seemed to prevent the seizing. Tired of purchasing a new bowl every time I changed the filter, I contacted Racor. It seems they are aware of the problem and are in the process of designing a new filter. In the meantime, they offered to send me a new filter and bowl at

Photo courtesy of Bill Whitney

A FLEET OF FRIENDSHIPS: *The Friendship Sloop Society's 52nd annual Homecoming Rendezvous and Regatta will be held this month in Rockland, Maine. The event, set for July 19 through July 21, will feature races, demonstrations, and visits aboard historic Friendship sloops. For more information, visit* www.fss.org.

WWW.PRACTICAL-SAILOR.COM

Summer Sun and Seasonal Storms

Summer is in full swing, and that means more time spent under sail and under the sun. Does your sunscreen offer adequate protection from the sun's damaging UV rays? To find out, read our most recent test of sunscreens on *www.practical-sailor.com*.

Summer also heralds the tropical storm and hurricane season, which runs June 1 through Nov. 1. We've dusted off a few articles from the archives to help you prepare your boat ahead of summer storms. Find "Lines, Snubbers, and Other Gear for Battening Down Ahead of Storms" and "How to Help Your Boat Survive a Storm" on *www.practical-sailor.com*.

Be sure to sign up for our e-letter, *Waypoints*, which delivers *PS*'s latest happenings and tips directly to your inbox. Sign up at *www.practical-sailor.com*.

A frustrating bottom-painting job sparked reader Richard Paden's suggestion that PS *offer hands-on how-to workshops.*

Photo courtesy of Richard Paden

no charge.

Perhaps some of your readers are experiencing the same problem, and they should know that they can contact Racor about it.

John Schaefer
Permanent Vacation, Morgan OI 51

Anyone experiencing a similar issue can contact Racor, a division of Parker Hannifin Corp., at 216/896-3000, 800/272-7537, or *www.parker.com*.

SCHOOL OF HARD KNOCKS

I am writing to encourage *Practical Sailor* to consider sponsoring a series of workshops on topics such as painting, engine maintenance, and electrical wiring—I am sure many *PS* readers would greatly appreciate attending. Many of us have proficiencies in areas other than boat building, electronics, diesel engine systems, and weather forecasting. I am also confident that we all do not learn from just reading and that many of us learn best from hands-on, instructor-led training.

After carefully reading Interlux's boat painting guides (*www.yachtpaint.com*) and watching application videos, I worked all weekend, preparing and painting the bottom of my boat. The end result? I am very disappointed. I have far less than the nice, smooth bottom I was striving for.

I am sure lots of boaters have had the same frustrating experience and would welcome the opportunity to attend a *PS* hands-on workshop.

Richard Paden
Via email

Unfortunately, we're net set up for that sort of thing. However, *PS* editors sometimes lead non-*PS* sponsored seminars on a variety of topics, including Technical Editor Ralph Naranjo's seminar on safety at sea. Groups interested in hosting one of these can email practicalsailor@belvoirpubs.com. In regard to your bottom paint: Smooth bottoms are a result of painstaking prep work. Check out the February 2012 *PS* Advisor for some tested advice.

DIVING ANCHORS

I would like to congratulate you on your article on anchor rode tensions (*PS*, March 2012), which uncovered new findings relative to loads at different scopes. Snatch loads have been a part of Creative Marine's protection scheme for years, but they have never been proven in tests before.

Until now, they have been theoretical as determined by author and sailor Earl Hinz, and his work depended on momentum caused by the displacement of the vessel. His theory was that at the "snatch," the strain on the anchor rode would double over the strain on the rode, if the snatch did not occur. Hence, the call for snubbers or an all-nylon rode, which through its stretching would obviate any snatch.

It was also good of you to recognize that the new anchors "dive," whereas older, traditional anchors "plow" the bottom when overstressed. However, you failed to mention the Max and Super Max anchors in your listing of diving anchors. The Max and Super Max anchors, which we sell at Creative Marine, were the first penetrating anchors available and the first to have a concave fluke. They have the largest fluke area, so when they penetrate a bottom, their holding is obviously greater than those pointy, concave anchors with smaller fluke areas.

Andrew Peabody
Creative Marine
www.creativemarine.com
601/442-1630

Practical Sailor *tested the Super Max rigid (left) and pivoting anchors in our evaluation of anchors for soft mud. Check out the April 2006 and October 2006 issues for the full report, or find the articles online at* www.practical-sailor.com.

REDUCING FRICTION

Regarding the *PS* blog post on small boats with full-batten mainsails and friction: The friction problem with many small boat mainsails is greatly aggravated by the track style on the mast. Tracks that take a barrel-shaped slide are the worst for jamming! These are actually designed to take a bolt rope, not slides, but they have become ubiquitous on smaller spars. I find that the best, and least expensive, solution is to use all plastic slides and plenty of dry Teflon lubricant.

Bainbridge sells a very strong, slippery slide called an Allslip slide (No. A118 for ½-inch groove). We use these at the front of the full battens. Between the battens, on mainsails 150

BEP MARINE

I'd like to thank the folks at BEP Marine (*www.bepmarine.com*) for their outstanding customer service. Recently, our TS1 tank sender failed. (See reviews in *PS* May 2008 and July 2009.) An email to BEP was rewarded with a quick response that a new sender was on the way. Even though it came from New Zealand, the new TS1 was in our hands within three days. No questions asked; we simply returned the defective unit for analysis. I really appreciate this level of support and certainly enjoy the way the TS1 integrated into our tank-monitoring system.

BEP TS1 Tank Sender

Cary Stotland
C-Lover
Via email

SPARCRAFT /TYLASKA

I live on San Juan Island in Puget Sound, Wash. I am "bringing back" an old IOR two-tonner, an Islander-Peterson 40 named *Sabra*. I had changed the rope/wire halyards to the high-tech stuff, but had hoped to retain the older Sparcraft (now Tylaska) snap shackles. I needed to replace the spring mechanisms and contacted Tylaska (*www.tylaska.com*) about it. Not only did they agree to supply the parts free of charge and shipping, but also offered to electro-polish the Sparcraft units if I wished to send them in.

It is comforting to know that I can still service old, but very dependable gear, and Tylaska deserves a thumbs-up for customer care and service. They are a quality outfit.

John Miller
Sabra, Islander-Peterson 40
San Juan Island, Wash.

BALMAR

When I suspected my 10-year-old Balmar ARS-III external regulator was malfunctioning (turned out to be a ground wiring problem), I purchased a replacement Balmar ARS-5 unit. After several frustrating trials, I discovered that the new regulator was not functioning. During this whole time, Balmar's technical support (*www.balmar.net)* was fast and very helpful. They offered to test the regulator at no charge and discovered that it was indeed not working, and that it apparently had been sitting on the seller's shelf for several years. Despite the age of the unit, the internal hour meter indicated very low usage hours and Balmar elected to replace the unit under warranty.

I had been very impressed with the performance of my Balmar alternator and regulator for many years, and now I have yet another reason to remain a satisfied Balmar customer.

Duane Ising
Via email

HUNTER MARINE

We recently purchased a 1997 Hunter 376 and needed the owner's manual. I emailed Hunter Marine service department (*www.huntermarine.com*), and to my surprise, they emailed the manual and said that if I needed any help, to let them know. Thank you Hunter Marine for great service!

Gary McKinney
Val's Diamond, Hunter 376
Marina Del Ray, Calif.

square feet or less, we use the Bainbridge No. A018 slides. In any case, plenty of dry Teflon lube will help.

Aaron Jasper
Jasper & Bailey Sailmakers
www.jasperandbailey.com

CHAFE GEAR FEEDBACK

In reference to the reader letter on chafe protection that was published in the June 2012 Mailport: This is one reason the boat yard we use (Burr Brothers Boats) offers stainless-steel pendants in addition to the generous-sized regular pendants during hurricane season. During Hurricane Irene in 2011, Burr Brothers lost no boats, where other mooring fields did have boats break free.

After the hurricane, we noticed some varnish wore through under the chock on the side of our boat with the nylon pendant (and made a minor cut in the pendant), but there was no damage on the side with the stainless pendant (it's very stiff and stands out from the chock). Great service from the boat yard!

Paul Seeberg
Via *www.practical-sailor.com*

STEARNS PFD WOES

When I heard of an unfortunate happening during an evening race on Long Island Sound where a crew member who was not wearing a PFD was knocked overboard in the dark and almost did not survive, I decided to check my inflatable PFDs to be sure they were working properly.

I have one inflatable "SOS" (Sospenders brand, model B718CS-60) PFD that I keep on board as a spare, and I check the CO_2 cartridge at the beginning of each season. It is then stored in a plastic bag to be used as a spare. When I checked it this time, I found that the cartridge had fired. I was about to replace the cartridge when the thought occurred to me, "Why hadn't the unit inflated?"

The Velcro used to keep it folded

During a recent inspection, reader Mark Lasser noticed that his spare inflatable PFD, an older Sospenders (Stearns) model, had a manufacturing defect that prohibited it from inflating properly. Practical Sailor *inspected it as well, and it seemed clear that the oral inflation tube had never been attached to the bladder.*

was still in the sealed position. I unfolded it and tried to inflate the PFD by blowing into the manual oral inflation tube, but the PFD's bladder never filled. Upon inspection, I discovered that the inflation tube had never been fastened to the bladder. I took the PFD to a local plastics design engineer to confirm my observation. He said the tube did not show any evidence of ever having been cemented or heat-sealed to the bladder.

Since Sospenders was acquired by Stearns in 2004, a subsidiary of parent company The Outdoor Co., I contacted Stearns to report the problem and request a replacement. I was told that since the PFD was made prior to the acquisition and was now out of warranty, Stearns would sell me a PFD for the list price minus 20 percent. Their offer was not acceptable, in my opinion. If I was looking for a bargain, I could go online and buy a PFD for less than their offer. Yes, the PFD is many years past the warranty period — however — since the PFD was never used and the defect is not due to age or use, but due to an obvious manufacturing defect, I felt I had the right to expect it to work.

Stearns also informed me that the PFDs should be returned to the company every two or three years for re-certification (if they are USCG certified). I have not been able to find notice of this in any instruction manual, and I doubt any other *PS* readers are aware of this.

It is fortunate that this PFD was never needed in an emergency, or the results could have been tragic. I wanted to share my experience and to urge other owners of inflatable PFDs to test them using the oral inflation tube.

Mark Lasser
Via email

Your experience is another great reminder that inflatable PFDs should be inspected frequently and regularly. Some makers recommend inspecting them each time you leave the dock. Users should check that the CO_2 cartridge, bobbin, and hydrostatic release are in order and that the life jacket can be manually and orally inflated.

BOAT FINANCING

In regards to the reader letter on getting U.S. Coast Guard documentation for a potential new boat in the June 2012 issue, I just wanted to add that when purchasing a pre-owned boat (or getting one financed through a lender), you should always order an abstract of title through the National Vessel Documentation Center (800/799-8362), even if the boat is not currently U.S. Coast Guard documented.

The abstract provides ownership history and any outstanding liens or loans against the vessel. Those liens or loans should be satisfied prior to or at the time of purchase, and proper releases or satisfactions should be filed. This is a step that sometimes is overlooked but very important.

Peggy Bodenreider
National Marine Bankers Association, Director
www.marinebankers.org

CANTING KEEL ENGINEERING

The *Rambler 100* article (*PS*, May 2012) and US Sailing report state that the boat's canting keel fell off. Keels are not supposed to fall off. Since it did, and it doesn't look like the keel struck anything, something was wrong with the boat design. I would have liked to have seen a discussion on the engineering causes of the keel failure and recommendations on preventing it.

Learning how to react to such an incident is important, but it would be far more useful in learning how to prevent the incident in the first place.

Chris Migdal
Silverheels, Beneteau First 44.7
San Francisco, Calif.

The keel failure's cause is still under investigation, and at press time, the official report had not yet been released. However, a *Practical Sailor* article on keel design, in general, is in the works. Stay tuned.

CAPTION CLARIFICATION

The June 2012 issue of *Practical Sailor* has a photo of the Coast Guard bark *Eagle* and a cargo plane, incorrectly called a C-130. The airplane in the photo is a twin turboprop, whereas a C-130 has four engines. (I spent many hours on them as a Flight Surgeon in the U.S. Air Force.) I believe the aircraft in the picture is an HC-144A Ocean Sentry.

Ronald Knight, MD
Via e-mail

Practical Sailor welcomes reader letters. Send e-mail to practicalsailor@belvoirpubs.com; be sure to include your name, homeport, boat type, and boat name. Send Gear Graveyard entries and snail mail to *PS* at 7820 Holiday Dr. S., Suite 315, Sarasota, FL 34231.

Testers put seven top-of-the-line VHFs through bench testing to determine which ones offer the most value for sailors.

Photos by Frank Lanier

Feature Loaded High-end VHFs

Fixed marine radios priced at $300-plus offer plenty of extras.

The high-end, fixed-mount marine VHF radios that *Practical Sailor* recently tested go way beyond the basic capabilities offered by many of the moderately priced VHF units in our June 2012 review. Standard features for this group include integral high-wattage hailers, multiple remote microphone connections, and the capability to store more Maritime Mobile Service Identity (MMSI) numbers and inbound Digital Selective Calling (DSC) data. Bonus capabilities in these top-of-the-line radios include the ability to act as part of an intercom system, to display vast amounts of navigation data, and to produce automated fog signals at the touch of a button. (See "Features 411" for a glossary of features and functions.)

Taking advantage of all the features found in these top-of-the-line units often requires purchasing additional equipment—navigation data must be supplied by a compatible, onboard GPS/chartplotter; external horns must be installed to use hailer and foghorn options; and so on. The radio itself ends up being the base for building a communications system, and buyers could spend hundreds more to fully capitalize on the capabilities of one of these multifunction marine VHF radios.

Sailors who rarely use the bells-and-whistles may be better served with one of the mid-priced radios we reviewed in the June article, and bluewater cruisers might want to consider buying two budget-friendly VHFs (one to wire to a mast-top antenna and the other to a stern-rail antenna) to add redundancy and a layer of security for about the same price as one of the high-end VHFs. However, if you're in the market for a primary VHF and have the budget for the added features, you will be well served with one of the seven following high-end radios.

WHAT WE TESTED

During our last look at high-end VHFs (*PS*, October 2009), the Standard Horizon GX5500S took Best Choice honors and the company's GX5000S was named Budget Buy. For our 2012 evaluation, we tested seven fixed marine VHFs priced above $300. Testers evaluated one radio from industry leader Standard Horizon, the Matrix AIS+ GX2150, and two (VHF 200 and VHF 300) from Garmin, a worldwide provider of navigation, communication, and information devices. Icom, a global manufacturer of marine and avionics communications products, provided three units for our test: the IC-M424, IC-M504A, and IC-M604A. We also tested the Ray 218 from Raymarine, a world leader in marine electronics for recreational boating.

All of the units in our test group are NMEA 0183 network compatible, and the two Garmin radios are also NMEA 2000 compatible. Each of the test products also featured microphones with various control options (from channel changing to channel scanning); some featured removable primary mics, which can be handy when troubleshoot-

PS VALUE GUIDE HIGH-END FIXED VHF RADIOS

MAKER	GARMIN		ICOM		
MODEL	VHF 200	VHF 300 w/GHS remote handset	IC-M424 ✓	IC-M504A ✓	IC-M604A ★
PRICE	$310	$546	$330	$331	$512
WARRANTY	2 years limited (Americas, Caribbean)	2 years limited (Americas, Caribbean)	3 years	3 years	3 years
NMEA COMPATIBILITY	NMEA 0183 & 2000	NMEA 0183 & 2000	NMEA 0183	NMEA 0183	NMEA 0183
MIC CONTROLS*	1,2,3	1,2,3,4,5,6,7	1,2,6	1,2,6	1,2,6
REMOTE MIC CAPABLE	Yes (3 total)	Yes	Yes	Yes	Yes (2 total)
FOOTPRINT (H x W x D)	4.65 x 7.56 x 6.42 inches	7.09 x 9.75 x 2.5 inches	3.23 x 6.46 x 4.72 inches	4.33 x 6.5 x 4.27 inches	4.34 x 8.65 x 4.31 inches
DISPLAY SIZE (H X W)	2.75 x 1.6 inch	1.63 x 1 inch (mic)	2.75 x 1.38 inch	2.75 x 1.38 inch	2.75 x 1.38 inch
SCRAMBLER	No	No	No	Yes	Yes
HAILER	25 watts	30 watts	10 watts	25 watts	30 watts
AUTO FOG	Yes	Yes	No	Yes	Yes
WATERPROOF	IPX7	IPX7	IPX7	IPX8	IPX7
TEST RESULTS					
AUDIO OUTPUT (@ 3 feet)	97 decibels	83 decibels	88 decibels	84 decibels	97 decibels
TRANSMIT POWER (high/low at 13.8 volts)	24.8 / 1.0 watts	21.8 / .85 watts	22.2 / .81 watts	22 / .80 watts	22.5 / .81 watts
TRANSMIT POWER (high/low at 11.8 volts)	24.2 / 1.0 watts	21.7 / .85 watts	21.5 / .76 watts	21.7 / .80 watts	21 / .80 watts
POWER DRAW (high/low transmit at 13.8 volts)	4.5 / 1.2 amps	4.3 / 1.1 amps	3.0 / .4 amps	3.7 / 1.1 amps	3.9 / 1.4 amps
POWER DRAW (high/low transmit at 11.8 volts)	4.7 / .5 amps	4.6 / .5 amps	3.0 / .3 amps	3.7 / .5 amps	3.5 / .7 amps
TRANSMITTER FREQUENCY STABILITY	Very good	Very good	Good	Very good	Excellent
RECEIVE SENSITIVITY	Very good	Excellent	Very good	Very good	Very good
DISPLAY RATING	Good	Good	Good	Good	Good
AUDIO QUALITY	Very good	Good	Good	Good	Excellent
TRANSMIT POWER STABILITY	Very good	Excellent	Excellent	Excellent	Good
COMMENTS	Position tracking; detachable mic; intercom (when coupled with GHS 10 mic); highest power output and highest amp draw.	Uses Garmin GHS handset for display and control; lowest power output and lowest audio output; best receiver sensitivity.	Lowest power draw, but worst frequency error of group (still within specs).	AquaQuake speaker draining feature, intercom (when coupled with optional Command Mic); rear mic connection; front panel mic not detachable.	AquaQuake; intercom (when coupled with Command Mic); mic detachable; only one with keypad.

★ Best Choice $ Budget Buy ✓ Recommended

* Mic controls: 1= Push to talk, 2= Channel change, 3= Quick 16/9, 4= Distress key, 5= Volume adjust, 6+ High/Low power, 7=Other

	RAYMARINE	STANDARD HORIZON
	Ray 218 ★	Matrix AIS + GX2150 $
	$456	$340
	3 years limited	3 years
	NMEA 0183	NMEA 0183
	1,2,3,6,7	1,2,3
	Yes	Yes
	3.84 x 7.79 x 7.06 inches	3.1 x 7.1 x 4.8 inches
	2 5/8 x 1 3/8 inch	2 7/8 x 1 3/8 inch
	No	Yes
	30 watts	30 watts
	Yes	Yes
	IPX7	IPX7
TEST RESULTS		
	89 decibels	88 decibels
	22.8 / .90 watts	23.5 / .81 watts
	22.8 / .90 watts	23.2 / .80 watts
	3.4 / .6 amps	3.8 / 1.2 amps
	3.4 / .6 amps	3.6 / .6 amps
	Excellent	Excellent
	Good	Very good
	Good	Good
	Excellent	Good
	Very good	Very good
	Receiver sensitivity was lowest of group but was good and within specs.	Only unit with built-in AIS; least frequency error.

ing; and all were capable of supporting remote "smart" mics. A few even supported multiple remote mics.

All of the radios had channel scanning features, ranging from standard and custom memory scanning to dual watch, which monitors channel 16 every couple of seconds, and tri-watch, which monitors both 16 and 9. Each radio is also waterproof to IPX7 (can handle immersion in 3 feet of water for up to 30 minutes) or IPX8 standards (rated for continuous underwater use), and all can be interfaced with a GPS.

One test unit, Standard Horizon's Matrix GX2150, featured a built-in Automatic Identification System (AIS) receiver that displays other boats' AIS data (including vessel name, speed, course, etc.) on a radar-like screen.

Only one test radio, the IC-M604A, featured an alphanumeric keypad, which can make entering MMSI contact numbers and DSC call data faster. According to Icom Sales Manager David McLain, fewer than 5 percent of recreational boaters use DSC functions, so an alphanumeric keypad is not always considered a must-have feature. VHFs without keypads are also typically cheaper and require less mounting space; however, access to a keypad is still a valuable benefit, in our opinion.

All of the test radios feature automatic fog signals via a hailer, and all have Class D DSC capabilities and operation, which means they have one receiver that monitors voice channels and another that continuously monitors channel 70 for digital DSC calls. Also, all DSC Class D radios will make distress, individual, all ships, and group calls.

As noted in our June mid-priced VHF test, GPS compatibility and DSC capability are imperative for a VHF to serve its intended function: distress notification. Providing the unit with GPS data and a properly programmed Maritime Mobile Service Identity number (MMSI) for DSC operation means the boat can be more easily identified and located in an emergency.

To make a distress call with a DSC-equipped VHF, users simply press the well-marked, red distress button for five seconds. Once the DSC call is acknowledged, users would then issue a voice Mayday on VHF channel 16.

Future articles will take a look at other marine communication products and accessories, including remote VHF microphones, handheld VHFs, portable sat phones, and AIS standalone units.

HOW WE TESTED

Practical Sailor testers ran all the radios through a series of bench tests—including transmitter power output, frequency accuracy and stability, and receiver sensitivity—using our Ramsey COM3010 service monitor. All radios in our test group met industry standards with regards to the above tests, but some did it better than others.

Regulations set by the U.S. Federal Communications Commission (FCC) restrict the maximum power output of a marine VHF transmitter to 25 watts and specify the need for a low-power setting, typically 1 watt, for harbor use. Testers took transmitter power measurements directly off the VHFs' radio antenna ports, because in any real-world scenario, factors such as antenna size and design, connecting cable length and type, or faulty connections or corrosion could limit the actual radio frequency (RF) power emitted from the antenna.

Transmitter power stability was rated over a range of tests that included varying the input voltage and radio temperature. The less variation in power output, the higher the radio was rated.

Frequency accuracy is the ability of the transmitter to send out signals on a selected frequency. Frequency stability measures the transmitters' ability to maintain frequency accuracy. The FCC mandates an accuracy of 10 parts per million (about 1550 Hz off frequency). Industry groups typically call for half that error.

Each unit was connected to a regulated power supply using the factory leads and appropriate crimp-on terminals. All manufacturer-supplied power leads contained a fuse holder and fuse. Power draw was recorded while transmitting at 13.8 and 11.8 volts DC, in both high and low power modes.

Receiver sensitivity, the ability of the radio to hear a weak signal, is normally

Most all VHF mics provide remote control features. The GX2150 Matrix AIS+ (#1) provides just the basics while the Garmin 300 remote mic (#2) can control all radio functions and has a display. The Raymarine 218 mic (#3) controls a number of the more common VHF functions, including channel scan.

stated in microvolts—usually from 0.22 to 0.35 microvolts for marine VHFs, with industry groups recommending a minimum of 0.50. Each VHF was tested for the minimum signal it could receive at a specific industry standard setting between background noise and generated signal. All the radios proved more than sensitive enough to pick up weak signals within industry standards.

VHF displays were rated on size and readability, the quality of information displayed, and backlighting.

One very important function of the marine VHF radio is its ability to reproduce the sounds of incoming voice communications via internal audio amplifier and speaker. If you can't hear the audio, it doesn't really matter how well the transmitter or receiver works. To rate audio systems, testers measured the sound pressure levels at maximum volume while inputting a 1-kHz tone. The measurements were taken from 1 meter away. Testers also monitored a weather channel at various volume levels to evaluate overall sound quality.

GARMIN VHF 200

While very similar to the Garmin VHF 100 unit reviewed during our June 2012 evaluation of mid-level radios, the VHF 200 brings additional features to the table. These include expanded NMEA 2000 capabilities, re-locatable speaker and mic, hailer and foghorn functions, and compatibility with Garmin's GHS 10 or GHS 10i remote microphones.

Front panel controls include three rotating knobs for channel selection, volume, and squelch, and the channel selector also serves as an "enter" key. The power button does double-duty as the quick-select key for channel 16/9, high/low power selection, DSC, menu, and clear. Three soft keys below the display are linked to onscreen menus and provide access to functions such as screen adjustments, navigation data configuration, channel group selection, channel name editing, etc. Testers found the menu functions to be well-labeled and easy to use.

The 200 uses a monochrome dot-matrix screen to display channel numbers, transmitter power level, selected channel group, and channel comments. Information too long to display in one view scrolls across the bottom of the screen. The 200 has numerous scanning options—normal, saved channels, dual watch, tri-watch, etc.—and also features NOAA weather alerts and position tracking, which allows a mariner to locate and keep tabs on up to three other boats in the area.


Garmin 200

The VHF 200, which features a unique low-profile flush-mount, was rated Very Good for transmit power stability, frequency stability, and receiver sensitivity. Audio output was one of the highest of the group (97 decibels), earning a Very Good for sound quality. At 24.8 watts (13.8 vDC), it had the highest transmit power output of our test group, but conversely, it also had the highest power draw.

Garmin 300

Constructed to IPX7 standards, the 200 comes with a two-year limited warranty good in the Americas and Caribbean.

Bottom line: The Garmin 200 is a solid radio that covers all the basics, but it also has the shortest and most limited warranty.

GARMIN VHF 300

Unique in our test group, the 300 is essentially a multi-station communications "black box" that supports up to three Garmin GHS full-function remote mics. Operation of the unit is via the provided GHS 10 mic, which allows full radio control from a remote location.

The GHS 10 mic features a 2-inch LCD display. Testers noted that some sight-challenged sailors might have problems reading the small screen, which is the VHF's only display.

The mic also has a rotary key for frequently used tasks and three soft buttons for dynamic controls. Audio is provided by the GHS 10's built-in speaker and the 300's four-inch active speaker with a volume knob. A third-party passive speaker could be added.

The VHF 300 provides full NOAA weather alerts and DSC capabilities when interfaced with a compatible GPS chartplotter (NMEA 0183 or 2000). Its position-tracking feature allows users to locate and keep tabs on up to three other DSC-equipped boats in the area. The 300 also has a two-way, 30-watt hailer system.

Two of its most unique features are a voicemail function that allows users to record a 15-second voicemail message that can be delivered to any MMSI number, and the ability to record and replay the last 90 seconds of any incoming voice transmission with the touch of a button.

The 300's remote-mic setup is a good space-saving option, and testers liked

A Rundown on Common VHF Features and Functions

AquaQuake: A draining function specific to Icom radios; a vibrating "buzz" clears water from the speaker grill.

Noise-canceling: Reduces background noise, so you can be heard and can hear more clearly.

PA/hailer and foghorn: Public address function allows users to make announcements from the mic like a loud speaker when an optional external speaker is installed. The foghorn emits horn sounds from the external speaker.

Waterproof ratings: IPX7 means the VHF can handle submersion to 3 feet deep for up to 30 minutes. An IPX8 rating means the unit can handle continuous underwater use.

Dual-watch scan: A channel scan mode that monitors channel 16 and another selected channel every few seconds.

Tri-watch scan: Monitors both channel 16 and two other selected channels while scanning.

Priority scan: Channel 16 is checked between every other channel during scan.

Memory scan: All VHF channels in the VHF memory are scanned from lowest to highest.

Normal scan: VHF channels are scanned in numeric order.

MMSI: Maritime Mobile Service Identity number. Boats are assigned one nine-digit MMSI for all onboard equipment capable of transmitting and receiving digital signals—EPIRBs, AIS devices, DSC-capable VHFs, INMARSAT satellite terminals, etc.—and that number serves as an identifier for the boat. The boat's emergency contact info is linked to the MMSI, so when a distress call is broadcast, the info is included in the message, giving rescue and emergency personnel accurate details of the boat.

DSC: Digital Selective Calling; primarily a distress-alerting function. Users can send a pre-configured digital distress message (over channel 70) to emergency personnel and other DSC-equipped boats in their area. The message contains information about the boat and its owner, its MMSI number, the nature of the distress, and priority of the call. When a DSC radio is connected to a GPS, the Mayday includes the boat's location. The transmission takes about one-third of a second and is automatically repeated until a rescue authority answers.

Class D DSC: Class D radios have two separate receivers, one for voice communications and the second for continuously monitoring channel 70 for any DSC calls.

Icom IC-M424

being able to add multiple stations. However, having multiple mics should not be confused with having system redundancy since the mics depend on a single transceiver. The redundancy provided by a second VHF radio might be a more prudent approach than relying only on remote mics for long-distance cruisers.

Performance-wise, the VHF 300 held its own. Power and audio output was the lowest of the test group, but it did have the best receiver sensitivity. Transmit power stability was Excellent, while frequency stability was Very Good. Audio quality was also rated Good.

The 300 carries the same limited two-year warranty as the Garmin 200.

Bottom line: The 300, the most expensive VHF in the group, is well-built and offers a lot of options from both operational and installation standpoints, but its limited warranty kept it out of the winner's circle in this close evaluation.

ICOM IC-M424

Icom bills the IC-M424 as the world's first fixed-mount VHF with Class D DSC and active noise canceling, a feature that our test setup unfortunately didn't allow us to try out.

The IC-M424 also features Icom's new soft-key user interface, which is intuitive, easy to use, and provides quick access to radio functions with fewer button pushes than a typical menu-driven interface. The radio is compatible with the new Icom CommandMicIV (HM-195) microphone, which shares the same soft-key user interface.

Icom IC-M504A

The IC-M424 has a built-in 10-watt amplifier that increases audio output for functions such as the PA and foghorn with the addition of an external speaker. When connected to an external GPS receiver, it displays time and current position. When receiving position information from another vessel, the IC-M424 can also transfer it to a compatible chartplotter.

Other features include priority and normal scan, dual/tri-watch monitoring function, and weather channels (with alert function). When coupled with an Icom MA-500TR Class B AIS transponder, the IC-M424 can make calls to an AIS-equipped target boat using the transponder with a few button pushes and without entering the target's MMSI number. Users simply select the AIS target from the display screen, select the VHF channel you want to use, then push the DSC call button.

The test group ran the gamut as far as front panel controls—from dedicated buttons and soft keys to traditional rotary knobs. The displays on the Garmin 200 (#1), Icom 504A (#2), and Raymarine 218 (#3) all were rated Good.

After seeing the acknowledgement "Able to comply" on the 500TR screen, users key up the VHF and talk.

The IC-M424 performed well overall. It had the lowest power draw of the group and had Good transmit power stability. Both audio level and quality were rated Good.

Bottom line: The IC-M424 offers very good overall performance and a long list of desirable features. We'd recommend it as an affordable VHF for those who already have an AIS or those not seeking a VHF with built-in AIS.

ICOM IC-M504A

The IC-M504A is a compact, robustly constructed radio well suited for the marine environment. It's the only radio of our test group with a waterproof rating of IPX8 (continual submersion in conditions identified by the maker). It performed well compared to the other test radios, garnering an Excellent for transmit power stability and a Very Good for receiver sensitivity and frequency error.

The MM504A can connect to one remote mic and can operate as part of an intercom system. When interfaced with a compatible GPS, it will display time and position data, boat course, and boat speed. Like all DSC Class D radios, it will make distress, individual, all ships, and group calls. Own ship and other ship position data can also be exchanged easily using the position request or position report functions. The received position info can be transferred to external navigation equipment. The polling (request reply) function checks whether a specific ship is within the communications range.

The M504A can store up to 100 MMSI numbers and as many as 40 incoming messages. Coupled with an Icom MA-500TR Class B AIS transponder, calls can be made to an AIS target using the transponder without entering the target's MMSI number.

One-button control is available for transmitter power, toggling between weather and voice channels, and making a quick channel 16/9 selection. Volume, squelch, and channel selection are knob controlled. Scan modes include dual-watch, tri-watch, normal, and priority.

A low-battery icon blinks when input power drops below 10 volts. The M504A's large screen shows customizable channel comments, time and position, frequency group, transmitter power, scan tag, and transmit/receive icons. The unit can accept a voice scrambler and comes with a three-year warranty.

Bottom line: A good performer and moderately priced, the IC-M504A offers a number of useful and some unique features. It gets a solid Recommended.

Icom IC-M604A

ICOM IC-M604A

Icom's most sophisticated marine VHF radio, the IC-M604A, features an alphanumeric keypad, large display, and a $512 price tag, making it the second most expensive test radio. The only test unit with a keypad, the M604A had the largest footprint.

It can connect to two optional remote mics and can operate as part of an intercom system. When interfaced with a compatible GPS, the M604A will display time and position data, boat course, and boat speed. Like the M504A, it will transmit and receive position data, and can store up to 100 MMSI numbers and 40 messages. Users also can call an AIS target without entering its MMSI number when the VHF is coupled with the MA-500TR AIS transponder.

The IC-M604A has the same scan modes, one-button and knob controls, low-battery warning, and displayed information as the IC-M504A.

As for performance, transmit power stability was rated Good, while frequency stability and receiver sensitivity were Excellent. Audio quality was also top notch, with an output of 97 decibels, tying it with the Garmin VHF 200 as the loudest unit.

Bottom line: This radio has very good overall performance and numerous user-friendly features. It gets *PS*'s Best Choice for a fixed VHF with a keypad.

RAYMARINE 218

The Raymarine 218 offers a host of useful features, including a moderately sized display and a mount-anywhere microphone option. It can also connect to an optional remote mic to be operated

as part of an intercom system. The standard microphone has buttons to control channel selection, scan, transmitter power, local/distant receive sensitivity, and quick 16 or 9 selection.


Raymarine 218

The Ray 218 provides one-button control for toggling between weather and voice channels, making a quick channel 16 or 9 selection, and selecting menus. Volume, squelch, and channel selection are controlled via rotary knob. Ray 218 functions that are menu selected include local/distant receiver setting, channel group, transmitter power, scan mode, backlighting and contrast, key beep, and speed unit selection.

The 218's phonebook will store up to 50 MMSI numbers, and the radio scans channels using dual-watch, tri-watch, all channels, saved channels, and priority modes. It will also store three favorite channels. When it's interfaced with a GPS, the 218 displays time, boat position, course, and speed.

It also has a powerful, manual or automatic 30-watt hailer/foghorn. In manual mode, it sounds a 400-Hz tone as long as the push-to-talk button is pressed. Sound patterns are menu selectable, and output volume is controlled by soft keys.

Performance-wise, the Ray 218 ranked highly. Testers found the 218's power output over the tested temperature and voltage ranges to be Excellent. Frequency stability and audio quality also were rated Excellent, while receiver sensitivity was Good. It comes with a three-year limited warranty.

Bottom line: The Ray 218 offers outstanding performance and a long list of user-friendly features. It gets the Best Choice pick for a keypad-less fixed VHF.

STANDARD HORIZON GX2150

The GX2150 Matrix AIS+ has a built-in dual-channel AIS receiver that allows the VHF to display AIS target information, including MMSI, call sign, ship name, bearing, distance, speed over ground, and course over ground, your vessel's position in relation to them, and a closest point of approach alarm. It can also output this AIS data to a compatible GPS chartplotter. Like the Icom M424, the Standard Horizon MATRIX AIS + GX2150 can direct dial AIS targets, but unlike the Icom, no standalone AIS unit is needed. Users simply select the AIS target via the soft key menu to make the call. The Matrix's AIS functions use the radio's VHF antenna to receive data, so no special or additional antenna is needed.

In addition to its 30-watt PA/loud hailer with pre-programmed fog signs, the durable, die-cast Matrix features user-changeable channel names, optional voice scrambler, clear voice noise canceling speaker microphone, 4.5-watt audio output, NOAA weather alerts, programmable scan, priority scan and dual watch.


Standard Horizon Matrix AIS GX2150

The GX2150 is also capable of saving up to 100 waypoints, which can be navigated to via the radio's unique nav compass display that shows vessel SOG, COG, and the bearing and distance to the waypoint when connected to a GPS source. The GX2150 also supports a RAM3 remote access mic, allowing remote control of all VHF, DSC, and hailer functions (as well as an intercom between the radio and second station microphone).

Testers found the GX2150 to be a solid performer. Power output over the entire temperature and voltage ranges was Good. Frequency stability was the best of the group, while receiver sensitivity and audio quality were rated Very Good and Good, respectively.

Rated to IPX7, the GX2150 comes with a three-year warranty.

Bottom line: If you're looking for AIS functionality combined with solid VHF performance at an affordable price, the GX2150 is the one for you. It is our Budget Buy.

CONCLUSION

When it comes to full-featured fixed-mount VHF radios—most of which offer excellent performance—the features, price, and warranty carry more weight in our ratings. In our last test of high-end radios, DSC operation made us lean toward units with alphanumeric keypads, which makes using the DSC features much easier (entering contact MMSI numbers and call data is faster and easier with a keypad).

The advent of options like coupling with the Icom MA-500TR Class B AIS transponder (allowing for direct calling of AIS targets without entering the target's MMSI number in the VHF) alleviates this concern to a degree. Keypads are undoubtedly useful, but they appear to be going the way of the dodo, if our test group is any indication. (The Icom IC-M604A was the only test VHF with a keypad).

With good performance and a number of sought-after features (not the least of which is AIS), the Standard Horizon GX2150 edged out the Icom IC-M504A, Garmin 200, and IC-M424 to take our Budget Buy recommendation.

For our top pick—based on performance and features—it was a toss-up between the Raymarine 218 and the Icom IC-M604A, so we divided the field into keypad haves and have-nots for final ratings. Buyers who want the convenience of a keypad should go with the IC-M604A; those who don't can save roughly $83 by going with the Ray 218.

CONTACTS

GARMIN, 913/397-8200, www.garmin.com

ICOM AMERICA, 800/426-7983, www.icomamerica.com

STANDARD HORIZON, 800/767-2450, www.standardhorizon.com

RAYMARINE, 603/881 5200, www.raymarine.com

The Redesigned Hunter 33

An optional asymmetrical spinnaker helps move the Hunter 33's apparent wind forward, allowing tighter sheeting angles to keep the mainsail off the backswept spreaders. Although patches protect the sail, spreader chafe is a downside of the B&R rig.

New transom and cabintop reshape Hunter's popular cruiser.

The new Hunter 33 had the odds stacked against it from the get-go.

The 33-foot family cruiser debuted in the fall of 2011, when the domestic sailboat market was stuck in a ditch, marketing budgets were slashed, and the U.S. boating industry was grasping at threads of good news. Four months later, Hunter Marine's parent group Luhrs Marine filed for Chapter 11 bankruptcy protection.

Against all odds, however, the 33 is selling well. More than 60 have been ordered since the boat was introduced, and all but a few that have been built have been sold. It is one of Hunter's best debuts since the 2008 downturn.

The Seldén roller-furling drum is just high enough to allow anchor clearance without sacrificing too much sail area. A second bow roller is optional.

Looking ahead, the bankruptcy filing should be a boon for Hunter, as it will unshackle the sailboat side of the business from the struggling powerboat brands. Hunter, which converted to an employee-owned operation in 1996, expects to be out of the bankruptcy weeds by the end of July.

While new ownership appears in the offing for Hunter, co-founder Warren Luhrs will likely still have a stake. Luhrs—who's 80-day sail from New York to San Francisco set a record in 1989—helped redefine Hunter in the 1990s. Under his leadership, design innovations by the late Swedish engineer Lars Bergstrom (the "B" in Hunter's signature backstayless B&R rig) and faster hulls from designer Glen Henderson helped propel Hunter's makeover through the last two decades.

"We have several very promising buyers interested, one in particular, but we can't say anything right now," said Greg Emerson, Hunter's chief of public relations. The company has secured financing from Bank of America to help with the transition, allowing Hunter to continue full operations and provide warranty support without interruption.

DESIGN

Of the big three American boatbuilders (Catalina and Beneteau USA are the other two), Hunter reached the farthest outside the box as the traditional boat market sagged. The hybrid powerboat-sailboat Hunter Edge introduced in 2009 was a sharp departure from its usual fare. In 2010, it launched the Elco-powered electric hybrid e27. And last year, Hunter debuted the

Photos courtesy of Hunter Marine

PROS

- A high boom eliminates the threat of a bell-ringing jibe.
- Sail controls accessible from helm.
- Dual-purpose cockpit table.
- High-quality hardware.

CONS

- Frameless forehatch less desirable than a robust, gasketed framed hatch.
- High, arch-mounted boom complicates mainsail stowage.
- Cockpit table divides cockpit.

electric hybrid e36. The new Hunter 33, by comparison, is a case study in incremental changes. Below the waterline, it is virtually identical to the previous Hunter 33, of which 623 hulls were between 2005 and 2011.

Starting in the mid-1990s, Henderson began revamping the Hunter fleet, exploring ways to boost performance, make sailing easier, and create interior space for the creature comforts that Hunter owners expect. The new 33 bears Henderson's signature changes—beam carried well aft to increase interior volume below, a concave hollow in the bow and shallow forefoot to reduce pitching motion, and a fractional rig to make maneuvering under sail easier. Trickling down from the ocean racing realm, hard chines are the new trend in the recreational market. Henderson located the new 33's chine at the waterline, to aid in tracking when the boat is heeled.

One of three designers we spoke with in *Practical Sailor*'s 2005 designers conference, Henderson emphasized the importance of the rudder in providing lift. Like previous Henderson designs, the 33's elliptical rudder is fairly large, and the keel is conservatively proportioned, allowing sufficient lead—the fore-and-aft distance between the center of effort and the center of lateral resistance—to make for a well-balanced sailer. (See *PS*, February 2009, "The Balancing Act.") Hunter offers a 4-foot-6-inch shoal-draft version and 5-foot-6-inch deep draft of the new 33.

The boat's excitement factor will depend a great deal on the sail plan. Henderson is a firm proponent of the fractional rig, with an easily tacked 110-percent furling jib. To up the fun-factor in light-air, a Code 0 asymmetrical sail will be a good investment.

For the mainsail, Hunter offers two options. Most buyers opt for the in-mast furling rig, an attractive choice for weekend cruisers who don't want the hassles of setting and stowing a mainsail. Performance enthusiasts should opt for the standard rig. A full-battened, fat-head mainsail will significantly boost horsepower: The mast is shorter (by nearly 5 feet), lighter, and more aerodynamic than the furling mast.

Foregoing a furling main has tradeoffs. Hunter's overhead arch puts the aft end of the sail high above the cockpit, making setting and dousing a full-batten sail more of a chore, particularly if a full bimini is part of the picture. To simplify stowage, Hunter offers a self-stowing sailcover system with lazy jacks similar to those we looked at in our February 2008 article "Taming the Main."

ON DECK

The clearest difference between the new 33 and the previous version is the new deck plan. The previous model had a walk-through transom that opened onto a stern boarding platform. The new model has a hinged transom cutout that folds down to create a swim platform

The main saloon table cranks down to convert to an 85-inch long berth (above). The 33 is the first of Hunter's new models with a Yanmar saildrive (above left). A middle section in the starboard settee (left) converts to small table.

that offers more area than the previous platform. As a result, the cockpit is larger, the main cabin can move aft, and the berth below the cockpit gains more space.

One big benefit of the larger cockpit, strictly from a cruising standpoint, is the bigger cockpit table. Featuring twin drop-down leaves hinged along the centerline, the 33's table has a catch-all bin at its base—great for sunscreen, winch handles, and gloves—that doubles as a foot brace. There is plenty of room to move around the folded table, and older sailors will appreciate the extra handhold.

The previous model's more secure—and unattractive, in our view—bathtub wrap-around coaming is gone. Instead, port and starboard lockers (starboard for propane tanks) are aft. The cockpit seats are technically too short for snoozing (4 feet, 9 inches by 1 foot, 6 inches), but seat cushions raise the seats up to the same level of the lazarettes, so you effectively have 5 feet, 7 inches to stretch out. Head clearance under the arch is 6 feet. A 4-inch bridgedeck keeps water from sloshing below. Lexan hatchboards stow in a dedicated storage bin in the port cockpit locker, ready as needed offshore.

Our test boat from Massey Marine in Palmetto, Fla., was equipped with the Mariner Package, which includes the overhead arch, an upgraded 29-horsepower Yanmar, Seldén in-mast mainsail furling with a rigid boom vang, a helm sheeting package for the jib, and the optional folding Lewmar steering wheel. It also had upgraded No. 30 Lewmar winches for reefing and furling lines; No. 16 winches are standard. A high-aspect canvas dodger and full-length cockpit canvas rounded out the package.

Sail control is easily managed from the cockpit. Halyards, reefing, and furling lines lead back to ganged Spinlock rope clutches at each side of the companionway. Molded line bins keep tails and toes from becoming ensnared. Mainsail control—both the traveler and mainsheet—can be reached from the helm, although the test boat's full canvas awning made it hard to monitor the sheet tension and traveler car position, even with a cutout window over the helm. While mid-boom sheeting found on other boats doesn't suffer this problem, Hunter sensibly prefers end-of-boom sheeting, which minimizes the loads on hardware and humans.

The 19-inch-high coaming offers security in a knock-down, but makes for a big step down to the sidedecks. While hardly expansive, the sidedecks allow easy passage fore and aft. Ample handholds and a low toerail offer security when moving forward. A reconfigured rig, with lower shrouds well inboard, also opens up the passage forward.

Six amply sized cleats (two at the bow, one on each stern quarter, and two amidship) handle docklines, but the stern cleats are vertically oriented, making them harder to access and poorly aligned with dock loads.

The self-draining anchor locker, single bow roller (two rollers are an option), and windlass gear meet the needs of a weekend sailor. This is a standard design on boats of this size, geared more toward aesthetics than midnight anchor drills on a pitching deck. (The more sensible hawse pipe is too much trouble for today's sailors, it seems.) The anchor locker is relatively shallow, a poor match for someone who likes to pile on rode or carry two anchors. A locker divider is optional.

Most of the sailing hardware is Seldén gear, and this equipment has done very well in our previous tests. Seldén's 200s Furlex, top rated in our August 2009 test, handles jib furling duties. Seldén's

Photos courtesy of Hunter Marine

Hunter Factory Blends Old and New Technology

The Hunter 33 is built in Alachua, Fla., using high-quality resins and laminates and conventional open molding hand-laminating processes.

Hull: Hull construction begins with a blister-resistant ISO NPG gelcoat sprayed into the female mold, followed by chopped strand mat and, hand-laid with vinylester resin. The rest of the hull is laid up using a modified epoxy resin. The hull is solid below the waterline with Kevlar in the bow for added impact resistance. Above the waterline is a sandwich construction using half-inch balsa-core. Extra reinforcing laminate wraps around the hull at the chainplates, spreading the load. Use of 2-mil e-glass core mat helps combat print-through.

Interior and grid: Hunter uses computer-guided tools to precisely cut parts for the interior. All components, such as the galley unit and the head units, are put together as sub-assemblies, and then bonded to a stout fiberglass grid to form the interior module. After the interior has been built on the grid, the grid and interior are lowered into the hull and the grid is chemically bonded to the hull using Plexus. Structural bulkheads are tabbed to the hull and deck creating 360 degrees of structural support.

Deck: Sandwich construction with marine plywood coring. The marine ply is cut into small squares to prevent any moisture penetration from wicking. Where hardware is mounted, the plywood is replaced by aluminum plates. Hardware is tapped into aluminum plates and through-bolted.

Hull-to-deck joint: Hull and deck are attached using an outward facing flange that is chemically bonded with 3M's 5200 and then through-bolted with stainless hardware all the way around. A heavy, synthetic rubber rail with a stainless steel insert fits over the joint.

Keel and rudder: The standard keel is iron (lead is $9,800 option) with multiple layers of epoxy barrier coat. The rudder-stock stern tube is adhered to the hull with a primary bond and reinforced around the base. The rudder stock is solid Aquamet 22, a high-alloy austenitic stainless-steel solid stainless steel. The rudder is composite construction using fiberglass skins, a stainless-steel skeletal structure, and adhesive foam. It is attached to a stainless-steel stock.

The Hunter 33 features the 15-degree swept-back spreaders that are the hallmark of the backstayless Bergstrom and Ridder (B&R) rig that Hunter favors.

Rig: The Hunter rig is a two-part, deck-stepped mast made by Seldén. Construction varies according to rig type—in-mast furling or standard. The in-mast furling mast is taller and a heavier-gauge aluminum, so adds more weight aloft. Both 33 versions use a B&R rig with spreaders swept back and Dyform wire with swaged studs connected aloft with stemball fittings.

in-mast furler and rigid vang help tame the mainsail, and Seldén's top-rated bullet blocks (*PS*, June 2011) handle mainsheet loads. This is Hunter's first big boat to feature Seldén's mainsheet traveler.

SYSTEMS

The new 33 is the first Hunter model with a saildrive. The standard engine is the 21-horsepower Yanmar 3YM20, but our test boat featured the 29-horsepower 3YM30, which has a shaft output of 27 horsepower. The engine is mounted with the flywheel facing aft, so the gearbox and saildrive mounts and seals are easy to inspect and monitor. Access to the water pump, alternator, and drive belts is through a door in the aft cabin.

Yanmar recommends that this engine be hauled out, inspected, and serviced annually. Paint failure and corrosion on the aluminum lower unit are the chief concerns, so zincs need to be changed routinely, and the paint coating needs to be closely monitored. Copper-loaded bottom paints on the drive are a big no-no. If you live in a tropical climate and are trying to stretch your haulout intervals to three years, you may want to re-think the advantages of having a saildrive.

Saildrives simplify the builder's job, and their only real advantages for the sailer are reduced underwater drag and some noise reduction. The standard prop is a bronze two-blade prop. Our test boat came with a folding two-blade prop. For long-term reliability and fewer maintenance headaches, we still prefer a conventional drive shaft system.

The boat's standard systems are handled professionally and are adequate for

The fold-down swim platform allowed Hunter to expand the interior accommodations aft, creating an exceptionally spacious galley and aft berth for a boat of this size (top). Opting for the "fat-head," full-batten mainsail (above) brings the total sail area to 625 square feet, a significant boost in horsepower. In terms of performance, the new Hunter 33 lands somewhere between the Catalina 315 and the Jeanneau SO 33i, depending upon which sail and keel package the owner decides upon.

HUNTER 33 IN CONTEXT

	HUNTER 33	BENETEAU OCEANIS 34	CATALINA 315	JEANNEAU SO 33i
LOA	33′ 6″	33′ 11″	31′ 11″	32′ 8″
LWL	29′ 5″	32′ 9″	26′ 6″	30′
BEAM	11′ 6″	12′	11′ 7″	11′
DRAFT/SHOAL	5′ 6″ /4′ 6″	6′/ 5′ 6″	6′ 3″/ 4′ 4″	6′ 3″ / 4′ 10″
DISPLACEMENT	12,400 lbs.	12,389 lbs.	10,600 lbs.	10,240 lbs.
BALLAST (shoal)	3,579 lbs.	3,208 lbs.	4,000 lbs.	3,737 lbs.
SAIL AREA (100 % foretriangle)	481 sq. ft.	543 sq. ft.	506 sq. ft.	511 sq. ft.
ENGINE	21 hp.	29 hp.	21 hp.	21 hp.
WATER	50 gals.	77 gals.	41 gals.	42 gals.
FUEL	25 gals.	34 gals.	27 gals.	37 gals.
SA/D RATIO	14.4	16.2	18	17.4
D/L RATIO	217	157	235	130
PRICE*	$160,000	$170,000	$170,000	$162,000

** Manufacturer's listed sailaway price, East Coast delivered.*

daysailing, but most sailors will opt for a cruise-ready package, which includes some things we'd consider essential. There is also an iTech upgrade featuring additional HDMI and USB cabling and a cell-phone booster antenna for those who want to stay connected.

Bronze through-hulls have replaced the Marelon versions used on previous models. All seacocks are easily accessible and well labeled. Wiring and plumbing systems closely adhere to norms set by the American Boat and Yacht Council. The 25-gallon fuel tank is polyethylene. We prefer high-grade aluminum for fuel (*PS*, May 2007). The tank is well supported on all sides and small enough that the rotomolded tank's biggest drawback—the difficulty of installing leak-free inspection ports—isn't a major issue.

INTERIOR

Hunter's interior arrangements are among its strongest selling points. The computer-cut interior panels are assembled in modules outside the boat, significantly reducing labor cost. Joints, doors, and lockers that require skilled carpentry are pre-built and fitted in the workshop, where they can get the attention they deserve.

You won't find finished edges on all plywood panels, but the warm cherry veneer, the creative use of space, and a few practical touches create an interior that is surprisingly roomy and comfortable for a boat of this size.

The extra space gained by pushing the cockpit aft allowed Hunter to angle the steps inboard, so one can walk down facing forward, with excellent handholds on either side of the companionway.

Headroom is 6 feet, 2 inches. White foam-backed material covers the overhead and sides. The material is held in place by grooved plastic track and can be removed and re-installed (with a special roller) to access deck hardware. This allows Hunter to through-bolt all hardware through a backing plate.

The main cabin and galley are well lit

Photo courtesy of Hunter Marine

Hunter's small headsail makes solo tacking a snap.

with big side windows, and two flush, frameless overhead hatches—one opening forward, the other opening aft—provide ventilation. The forward V-berth has its own hatch, and the aft cabin in the starboard quarter has a larger-than-queen-size bed, two ports and a fairly large hatch in the port settee. These hatches don't get a whole lot of breeze in a still anchorage, but the space is much airier than that of previous models.

The galley is well-appointed, with a gimbaled, two-burner Force 10 stove and oven, and a single, deep sink. So long as you don't need access to lockers or the ice-box (or optional freezer), there's more than enough counter-space. Our test boat had a minimally insulated, front-opening fridge. These self-contained units work well for daysailing and dockside entertaining, but can be real energy hogs away from shore. A top-loading freezer/fridge with better insulation is an option.

The starboard head doubles as a shower, which has its own sump. The space's snug fore-and-aft dimensions allow for a sleeping-length settee to starboard and the spacious aft cabin.

The dinette table has a slightly raised, fiddled catch-all for food, drinks, iPods, Barbie dolls, Legos, whatever. Beneath the vertical structure is a hand crank that raises and lowers the table, quickly converting it into a long 4-foot-4-inch-wide berth. This is a slick, one-person operation. Similarly, the center section of the starboard settee flips inboard to convert into a coffee table or small chart table.

PERFORMANCE

We tested the boat in protected waters on the Bradenton River, Fla., in 10 to 12 knots northwest wind. A quarter-knot incoming tide was nearly aligned with the wind, and the following data, recorded by the GPS on our Velocitek ProStart, compensates for this current.

At 2,600 rpm, the upgraded 29-horsepower engine with a 13-inch, two-bladed folding Gori prop pushed the boat at 6.5 knots. At wide-open throttle, 3,400 rpm, the average speed was 7.3 knots and the wake was clean. The boat easily spun 180 degrees in little more than a single boat length, and it maneuvered easily under power in both forward and reverse. The engine was quiet with very little vibration at either speed, only slightly noisier at the higher rpm, registering 77 decibels in the center of the main saloon and in the cockpit with the companionway open. (Conversation is about 60-70 decibels.)

Even with shoal-draft and an in-mast furling mainsail that had no vertical battens, the test boat climbed to windward well; we would expect much better performance with the deep keel version and the standard mainsail.

Tacking angles were between 90 and 94 degrees. Close-reaching with the wind 45 degrees true and a relative windspeed of 14 knots, the boat made 4.9 knots over ground. Cracking off to 50 degrees true wind angle, the speed jumped to 6.4 knots. The fastest sustained speed was 6.5 knots at 70 degrees true, in 14 knots apparent wind.

Reaching between 130 and 160 degrees off the wind, the boat averaged between 5 and 5.5 knots. Apparent windspeed off the wind was between 6 and 8 knots, perfect conditions for an asymmetrical, although our test boat was not equipped with one. Throughout the test sail, the helm was exceptionally well balanced, even off the wind, and the boat accelerated nicely in puffs.

CONCLUSION

For a new, entry-level family cruiser, the Hunter 33 has a lot going for it. The $160,000 sailaway price is attractive; the five-year warranty on the hull is transferrable. A one-year stem-to-stern warranty covers major components, including things like refrigerators and windlasses.

Our tester was impressed by the excellent use of space in a boat of this size, both belowdecks and in the cockpit. In this respect, it is a big improvement over the previous Hunter 33.

Second was its performance on the water. Even with a battenless mainsail, this was a fun boat to sail. We'd encourage a stickler for performance to opt for the full-batten main.

Two concerns, in our view, are the standard iron keel and the sail drive, but you can't expect a company like Hunter, for which pricing is a key sales point, to fight against market trends. A lead keel is an option for the Hunter 33, and is well worth the extra $9,800, in our view.

If you are having the boat hauled annually to ensure that the keel coating remains intact and the sail drive maintenance regimen is followed, you will avoid the problems that can crop up down the road. Certainly, around-the-can racing sailors will appreciate the reduced drag of the sail drive.

Hunter has had many years to learn what its customers like, and the variety of options in this boat will appeal to a wide range of sailors. We expect it to continue to sell well in this size range, and consider it a good fit for a coastal cruising family.

CONTACT

HUNTER MARINE, 386/462-3077, www.huntermarine.com

PS *tester Bill Bishop checks the units' interfaces before on-the-water testing.*

Small Raymarine e7 Packs a Big Punch

New hybrid display improves interface, offers a wide range of network options.

Practical Sailor evaluated the Garmin 740s chartplotter-sounder and other similarly sized plotter-sounders in the November 2011 issue. For this followup report, we took a close look at the new Raymarine e7D. The Garmin 740s and the Ray e7D are similar in size, and both have a baseline chartplotter with sounder functionality, but the e7D has many new-to-the-marine-marketp capabilities that include WiFi and Bluetooth interfaces to mobile computing devices such as iPads and iPhones. The e7D is also capable of being fully networked with other members of the new Raymarine chartplotter family and the C and E-series widescreen units, while the Garmin 740s was designed to be a standalone, multi-function display (MFD) system.

WHAT WE TESTED

For this report, *PS* testers compared the basic functionality of the Raymarine e7D to the Garmin 740s. This included sounder capabilities, ergonomics, chart systems, interface capabilities, screen visibility, and installation requirements. We also looked at some of the new features of the e7 such as the UniControl rotary joystick, the Bluetooth RCU-3 remote control, and the WiFi interface app for mobile devices.

HOW WE TESTED

Fogging screens, water intrusion, poor visibility in bright sunlight, and slow redraw rates are the most common complaints we get regarding plotter-sounders. Better construction, new screen technology, and faster processors in our current crop of test units seem to have addressed these issues. None of the test products experienced serious problems during our environmental testing. Our tests focused on four key elements:

Ease of installation: Testers used accompanying literature to install the units as directed and evaluated instructions for interfacing with peripheral devices. They made two mock calls to customer support at lunch hour on a weekday, asked identical questions, and rated the responses.

Ease of use: Testers evaluated key functions, including adding waypoints, building routes, and activating man-overboard functions or aids.

Screen visibility: Three testers subjectively rated screen visibility in bright sunlight (with and without polarized sunglasses), at night, and in the shade. Screens were viewed from different angles. Dimming ability and palettes also were compared.

Environmental tests: Testers evaluated the units' resistance to heavy splashing and rain to IPX6 standards, which require that a device withstands water sprayed through a 12-millimeter nozzle at a rate of 100 liters/minute for at least three minutes.

Sounders: Each sounder was rated for presentation and ease of use while following a test track on the Intracoastal Waterway (ICW) near Sarasota, Fla., and doing spot soundings over known structure. Speed during the ICW testing was approximately 6 knots and depths varied from 6 to 12 feet. Water clarity was about 3 feet, and water temperature was in the low 70s.

All units were first tested under default "auto" settings at 200 kHz. Sounder images under these settings were examined for clarity. Testers later manually adjusted the primary settings such as gain, zoom, and color palette, and evaluated image clarity. Key features such as bottom lock were also tested underway, as were some pre-set modes for detecting fish or bottom structure. Total distance covered for each sounder test was approximately 2.5 nautical miles.

RAYMARINE E7D

The e7D is the smallest, and newest of Raymarine's new series of networked MFDs, and it incorporates all of the features available in the larger e95 and e125 units.

This is a hybrid touchscreen unit, meaning it uses both tactile knobs and buttons coupled with touchscreen functionality. The e7D also has drag and drop capabilities, while the 740s is touchscreen only. The e7D and the 740s are very close is size (approximately 9 by 6 by 3 inches), and both have 7-inch

PS VALUE GUIDE COMPACT CHARTPLOTTER-SOUNDER COMBOS

	Manufacturer	GARMIN	HUMMINBIRD	LOWRANCE	RAYMARINE
	Chartplotter/Display	740s ✓	Humminbird 798ci HD SI $	Elite-5 $	e7 ✓
	Price	$1,700	$840	$500	$1,600- $1,750
	Sailboat transducer	$100-$250	$175/$92	$65	$99-$445
	Warranty	1 year	1 year	1 year	3 years/registered
DISPLAY UNIT FEATURES	Unit dimensions (W x H x D)	8.9 x 5.6 x 3.3 in.	6.9 x 7.5 x 4.5 in.	6.9 x 5.4 x 2.5 in.	9.17 x 5.71 x 2.52
	Screen dimensions (W x H, diagonal)	6 x 3.3, 7 in.	5 in.	3.6 x 3.6, 5 in.	6 x 3.3, 7 in.
	Screen resolution	800 x 480	640 x 640	480 x 480	800 x 480
	Push buttons	1	13	6	6 context functions
	Soft keys	Touchscreen	0	0	Touchscreen
	Brightness levels	5-100%	10 levels	900 nits/10 levels	0 to 100 in 100 steps
	Supports DSC VHF	Yes	No	Yes	Yes
	Radar / AIS optional	Yes/ Yes	No/No	No/ No	Yes
	Weather receiver optional	Yes	Yes	No	Yes
	Power usage	0.9 amps	0.7 amps	0.75 amps	1.09 amps
	Water resistant	IPX7	IPX6	IPX6	IPX6
	Warranty period	1 year	1 year	1 year	3 years
PLOTTER FEATURES	GPS antenna	Internal	Internal	Internal	Internal
	GPS receiver	12-channel WAAS capable	50-channel	16-channel	48 channel/WAAS
	Included charts (Optional charts)	Garmin Bluechart G2 (G2 Vision)	Navionics U.S. (Navionics Gold)	Lowrance Base Map (Navionics Gold)	Navionics Silver/Gold/ Platinum/Plat+
	Card Slots	SD card	2 micro-SD card slots	Micro-SD card	2 micro-SD card slots
	Waypoint storage	3,000	1,000	3,000	3,000
	Route storage	100 (6 colors)	50	100	150
	Waypoint symbols	26	30	16	16
	Waypoint max. # of characters	10	12	25	58
	Network protocols	NMEA 2000/0183	NMEA 0183/Ethernet	NMEA 0183	NMEA 2000/0183/E-net
	Additional waypoint info	Water temp, depth	Depth	None	Water temp, depth, time
RATINGS	Ease of install	Excellent	Fair	Fair	Excellent
	User interface	Excellent	Good	Good	Excellent
	Day visibility	Excellent	Excellent	Good	Excellent
	Night visibility/dimming	Excellent / Excellent	Excellent / Fair	Good / Fair	Excellent / Excellent
	Features	Excellent	Good	Fair	Excellent

★ Best Choice ✓ Recommended $ Budget Buy

diagonal daylight viewable displays with 800 by 480 WVGA resolution. GPS receivers and sounder modules are internal with both units. Interfaces for the systems include radar, NMEA 2000/0183, and AIS support.

The two units diverge when it comes to networking. The e7D can stand alone, but is also capable of being fully networked with the older E-series widescreen MFDs and the new e7, e95, and e97, e125, and e127 MFDs. The unit can also be networked with the non-touchscreen c95, c97, c125 and c127 MFDs. As mentioned, the new Raymarine MFD family now includes WiFi and Bluetooth wireless interfaces, along with touchscreen integration of the FLIR thermal vision cameras.

Because of its network capabilities, the e7D has some features that need to be enabled if it is being used as a standalone device, notably its internal sounder module and internal GPS.

MAPPING

The 740s comes preloaded with Garmin's Blue Chart maps for U.S. coastal waters, and the e7D comes with a Navionics "USA Raymarine" microSD map chip that has the Navionics Silver charting package. This chart package is sold only to MFD manufacturers, and according to Navionics, the Silver mapping package contains the "Minimum content for safe navigation," and therefore does not include any tidal or

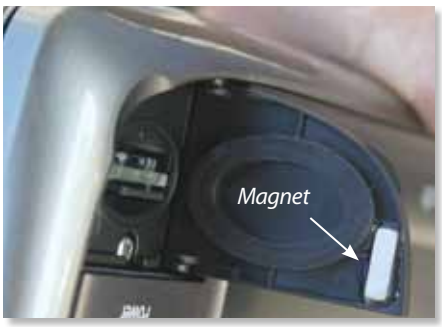
Both the Garmin 740s (above, left) and the Raymarine e7 (above, right) can display customized views of navigation data. Note the semi-transparent databoxes on the e7.

current data. Navionics does offer a migration path forward for Silver users to Gold or higher, starting at $169. The e7D uses micro SD memory cards and has two slots to accommodate them; the 740s uses the standard SD memory cards and has one slot.

Chart detail and presentation in the 2D chart view for both units were clear and well presented. The e7D with the Navionics chip allows color coding of water based on user-defined "Safety Contours" settings. For example, setting the safety contour at 7-foot colors all water that is 6 feet deep or less a dark blue, and deeper waters are lighter colors. The 740s color contours are fixed, with blue indicating waters that are 6 feet deep or less, and all other water is white. Upgrading to Garmin's G2 Vision chip, however, enables a similar ability to customize contours on the 740s.

Testers did find the Navionics e7D's 3D chart view to be sharper than the 740s, and they liked the speed and ease of use of the e7D's Unicontrol.

Testers were reminded that the accuracy of these vector charts is not so precise as some users believe. At one point, both Navionics and the Garmin Blue Chart showed the test boat over the edge of a shoal when the it was well within the 12-foot-deep channel.



A close-up photo shows the magnet latch on the e7's micro SD card slot.

SOUNDERS

For sounder testing, the e7D was connected to a 600-watt Airmar P66 transducer, and the 740s was connected to Garmin's 500-watt transducer. Both were transom-mount units. The Raymarine e7D and the Garmin 740s have internal sounder modules, and both produce the crisp images of bottom structure and fish targets that we have come to expect from the latest generation in sounder technology. Both units also performed very well in their auto-gain setting.

Sounder menus are intuitive and easily accessed in both units, and the functionality of both is very similar.

The e7D has a number of capabilities not present in the 740s that include the ability to do a "Shift" function that allows a closer view of any part of the water column, and easy access to four user-defined, preset sonar configurations. These included single-frequency, dual-frequency, shallow-water, and deep water. Each of the preset configurations can be edited to rename the configuration setup. For example, preset 1 could be named "Flats." Preset configurations can also be easily adjusted manually on the fly to accommodate changing conditions. The e7D also allows you to manually adjust transmit power. Testers liked being able to select one of three preset auto-gain settings (cruising/low gain, trolling/medium gain, and fishing/high gain).

Both units performed very well, and provided excellent bottom tracking using just their standard auto settings.

By adding an adapter cable (E66066), the e7D supports the expensive 1000 watt (RMS, root mean squared) transducer (for deep water) tilted-element transducers (internally compensated for hull deadrise), in-hull transducers (no drilling required), and some additional stainless-steel options. Even with the 1,000-watt transducer, the output is still 600 watts, but you get the benefit of the more focused beam pattern.

EASE OF USE

PS testers found both units to be intuitive in menu layout and basic features functionality, but due to the e7D's increased capabilities, its manual is around 300 pages long, while the 740s's manual is a mere 100 pages. Both manuals are easy to understand, but the e7D's additional features such as the FLIR thermal camera touchscreen controls, media streaming, WiFi, and networking aspects increases the systems complexity.

In addition to the touchscreen, the e7D has a UniControl (rotary/joystick/push-button) combination control that is both fast and easy to use. As mentioned in the *Inside PS* blog in April

Raymarine's WiFi Advantage

RCU-3 Remote and 2 New Apps Clip the Wires

Raymarine has re-defined onboard interface with WiFi and Bluetooth capabilities in its new MFDs. Using an iPad or iPhone (Version 4 or newer), a Kindle Fire Tablet, or any Android Smartphone or Tablet, users can stream the e7D display to these devices using the RayView free app downloadable from iTunes, Amazon, or the Google Play Android store. This allows you to use these devices as a second display.

We tested the Bluetooth interface with the battery-powered (4 AAAA) Raymarine RCU-3 remote ($135). The unit clamps onto the helm where it is finger-tip accessible or can be worn around the neck on a lanyard. This is a context-driven device, allowing you to zoom charts, change depth ranges on the sounder, control music volume, and change pages without your hands leaving the helm. You can also customize the remote for specific tasks. The RCU-3 was easy to set up and use, but the battery compartment proved a bit difficult to close.

Two new wireless apps, RayRemote ($30) and RayControl ($50) allow for full two-way control of the e7. RayRemote, designed for smartphones, includes a screen viewer, as well as a full function WiFi remote controller. All of the keys and controls, including the Unicontroller, are available on the RayRemote app.

RayControl offers touchscreen control of the the e7D from any 7-inch or larger Apple iPad or Android Tablet. The live image from the MFD is presented on the tablet, and you can touch and control the e7D on the tablet, exactly as If you were working on the actual e7D. In addition to the touch interface, there is a virtual slide-out keypad that mimics the e7D's keypad and unicontroller.

The Bluetooth interface also lets you manage media streaming from a Bluetooth-enabled device or one with a Bluetooth adapter.

The Bluetooth-enabled RCU-3 lets users control the e7 display remotely.

2012, this feature allows system cursor control with gloves on, and some may find this easier to use in heavy sea conditions than the touchscreen alone.

The e7D also uses dual-use push buttons. Touching the waypoint button momentarily takes you to the waypoint management page. When pushed and held longer, the same button creates an MOB waypoint. Display icons also change, depending on the context. A moving vessel uses the icon you selected for it, but when the vessel is stationary, and with no heading data, the icon changes to a black circle. This approach is used system wide, and although we liked the concept, the user will have to study the manual to understand these.

THE MAGNETS

Both the 740s and the e7D are ideally sized for binnacle helm mounting, but testers were concerned that both used small, but strong, magnets to hold their chart chip compartment doors closed. Garmin specifies a 32-inch safe compass distance for the 740s, while Raymarine specifies safe compass in six directions with the closest distance being 7.87-inches when the e7D is mounted below the compass; the furthest distance was 27.5 inches (mounted forward of the compass).

Buyers should check compass impact carefully prior to mounting these units. Although the electronics themselves will cause compass deviation, the magnets were the chief offender. Magnets are should be avoided for this application, in our view.

THE BOTTOM LINE

This was not exactly an apple-to-apples comparison, but we felt there needed to be a basic functionality comparison for the e7D, and the Garmin 740s was the best option currently available for testing. *PS* liked both of these units. They are compact, and both performed basic navigation and sounder functions well.

The bottom line is whether you want the added capabilities the e7D offers such as additional MFD networking and the WiFi and Bluetooth interfaces. If you just need a single-station system with radar, we would judge the Garmin 740s the better buy. If you need more than a single station, then the e7D is the obvious choice. If you can't live without interfacing your mobile devices, then the e7D is for you. Budget oriented sailors who just want a chartplotter-sounder should consider the Lowrance Elite 5, while serious fishermen who want side-scanning capabilities will want to check out the Humminbird 798ci HD SI; both of these were described in more detail in our November and December 2011 issues.

CONTACTS

GARMIN, 913/397-8200, www.garmin.com

HUMMINBIRD, 800/633-1468, www.humminbird.com

LOWRANCE, 800/628-4487, www.lowrance.com

RAYMARINE, 603/881-5200, www.raymarine.com

Soft Deck has a diamond pattern (far left) that required a little scrubbing to clean (at left, pre-scrubbing).

Nonskid Test Update

Practical Sailor recently tested a nonskid mat from Soft Deck Inc. as a followup to our January 2012 report on do-it-yourself options for replacing worn nonskid. Soft Deck Inc., owned by brothers and lifelong sailors Ross and George Champion, is a family-run business with manufacturing based in Southern California. The January report reviewed six nonskid paints, three nonskid additives, and two nonskid mats. For this evaluation, we used the same test protocol to compare the Soft Deck to our Best Choice mat, Tiflex's Treadmaster (*www.tiflex.co.uk.com*).

The adhesive-backed Soft Deck mats, made of quarter-inch-thick, EVA foam, are available in a number of pre-cut sizes and a few colors; they are sold in kits to retrofit the whole boat, seats, or decks. Soft Deck has a long diamond pattern that's similar in depth to the nitrile-rubber Treadmaster pattern, but the lightweight material is more akin to the foam SeaDek mats we tested. While Treadmaster is adhered with a two-part epoxy, the Soft Deck, like the SeaDek, is backed with 3M adhesive for peel-and-stick installation.

Testers applied a 24- by 16-inch Soft Deck mat to a fiberglass test panel. The supplied instructions were clear and easy to follow. The five install steps (clean, dry fit, heat if necessary, lay on, and apply pressure to set) were fast and so easy that any boat owner could do it themselves.

The 3M adhesive also makes it easy to remove or replace the nonskid pads. All that's needed is a plastic scraper, possibly a hair dryer or heat gun, and acetone. Removing epoxy-adhered mat like Treadmaster would be a much more labor-intensive project.

To test grip, we mounted the test panels on a jig that allowed the panels to be inclined in 5-degree increments until the tester standing atop the panel slipped. We repeated the test while wearing boat shoes and with bare feet, and with the panels wet and dry. Interestingly, the Soft Deck's grip actually improved when the surface was wet. It was an average performer when wet, compared to the nonskid paints and additives we tested, but it had noticeably less traction than the other nonskid mats.

To gauge how easy the Soft Deck was to clean, testers walked through wet soil in boat shoes and then tromped across the test panel to get it good and dirty. The surface dirt rinsed away easily with a hose, but the light-grey test mat still appeared dirty in some ground-in areas.

TEST UPDATE

These came clean with a soft-bristle boat brush, so we rated it Good for ease of cleaning. According to its maker, Soft Deck can tolerate bleach and other chemicals, but the company does not recommend it.

Soft Deck was super easy on testers' bare feet, elbows, and knees. It would be a good choice for padding boat areas where crew spend a lot of time kneeling, sitting, or standing. Soft Deck even offers an optional layer of shock-mitigating padding that can be added to the nonskid mat. This, however, adds to the mat's thickness, making it about 5/8-inch thick, so it's likely not a look you'd want across the whole deck.

A kit including two 6- by 20-inch pieces with adhesive backing retails for just $25, and a 40- by 62-inch sheet retails for $110. Soft Deck rates its nonskid mats for five years, including color fastness, but the company offers only a one-year warranty.

Bottom line: Soft Deck offers dead-simple installation, and the cushy EVA foam is easier on skin and clothes than most other nonskid products we tested. But when it comes to traction and durability, it failed to surpass *PS*'s two-time favorite nonskid mat, Treadmaster.

We'd recommend Soft Deck for areas like swim platforms or cockpit seats and soles, where crew spends a lot of time sitting or standing, but if top grip is your top priority, stick with the Treadmaster.

CONTACT

SOFT DECK, 858/633-3853, www.soft-deck.com

PS VALUE GUIDE DIY NONSKID OPTIONS TEST UPDATE

	PRODUCT	PRICE	EASE OF APPLICATION	SKIN ABRASION	EASE OF CLEANING	TRACTION TEST RESULTS			
						BAREFEET DRY	SHOES DRY	BAREFEET WET	SHOES WET
MATS	Soft Deck	$110 (40 x 62-inch sheet)	Excellent	Excellent	Good -	35	35	40	40
MATS	Tiflex Treadmaster ★	$117 (35.5 x 47.5-inch sheets)	Good -	Good	Excellent	50	45	50	50

★ Best Choice

Anti-Seasick Bands

A dial on the inside of the PsiBands adjusts the level of pressure applied.

Although most sailors know all too well what it means to be nauseous, few may know that the word "nausea" actually derives from the Greek word for "ship": *naus*. Apparently even the ancient Greeks had to hang over the rail occasionally.

Always on the lookout for drug-free anti-seasickness options, *Practical Sailor* recently tested a new one designed to ease seasickness by activating acupressure points on the wrists. PsiBands are similar to other acupressure bands, including Davis Instruments' Queaz-Away ($10, *www.davisnet.com*), which *PS* reviewed in the December 2009 issue. Acupressure bands are designed to stimulate specific nerves located at the inner wrists. Applying pressure at these points can provide relief from nausea.

PsiBands were developed by two women looking for a way to ease their pregnancy-related nausea. The bands resemble plastic watchbands and are made from latex-free, medical-grade synthetic rubber. A dial on the inside of the band allows the wearer to adjust the pressure.

PsiBands (pronounced "sigh" bands) fit wrists from 5½ to 8½ inches around; they are waterproof, reusable, FDA-OKed, and drug-free. The PVC- and BPA-free bands come in five colors and are designed for relief of nausea from motion sickness, pregnancy, chemotherapy, and anesthesia. PsiBands retail for $15 per set and are available at stores like REI and CVS, and online retailers like Amazon.com and Target.com.

None of our testers became nauseous while wearing the PsiBands during sea trials, but they did note that the bands were comfortable, easy to don and adjust, and well designed with quality materials. We particularly liked that the bands were functional in the rain and after swimming, unlike the cloth, elastic wristbands, which become water-logged.

SURVEY SAYS

Our December 2009 report on drug-free solutions to seasickness looked at acupressure wristbands and other remedies, including ginger products and herbal teas. While drug-free remedies may be effective for some sailors or in some conditions, most of our 2009 survey respondents found them to be ineffective or only effective in mild cases. More than half of the 37 survey respondents said they did not know anyone who regularly used non-drug seasickness therapies, with the exception of ginger.

Most shared the opinion of Susanne Huber-Curphey, who leads all-women offshore charters: "It only works if you really believe in it…We tried ginger, the wristbands, gallons of herbal tea, and all helped those who believed in it." Based on our survey and experiences, ginger (lozenges, drinks, etc.) proved to be the most effective non-drug therapy in providing relief of mild seasickness.

PS also reviewed over-the-counter and prescription seasickness drugs in the January 2009 issue. We looked at nine anti-emetic medications, including Bonine, Dramamine, Phenegran, and Stugeron. Testers determined that the best anti-seasickness drug depended on the patient, and how they chose to balance potential side effects and efficacy.

RESEARCH SHOWS

One of our longtime subscribers—Dr. James Li, an emergency physician and clinical researcher in Maine—recently tipped us off to current medical research on motion-sickness management. He said the research report, published in the prestigious British Medical Journal (December 2010, *www.bmj.com*), was one of the most unbiased sources of medical research that he had read.

The research found that using behavioral treatments, such as habituating someone to the environment, was the most effective solution. Habituation—exposing someone to the environment that makes them sick until they become accustomed to it—has few bad side effects, but it can be unpleasant and time consuming, according to the report. Another drawback was that the habituation was "motion specific"—so getting used to car sickness did not make one immune to seasickness.

In our experience, most seasick sailors acclimate to the motion after about three days at sea. Slowing the boat down, heaving to for a few hours, and improving cabin ventilation also can help alleviate symptoms.

The journal also concluded that hyoscine (also known as Scopolamine) is an effective preventive medicine but that "evidence to support the use of other drugs, taking into account the tradeoff between efficacy and adverse effects, is weaker. Management of motion sickness with traditional remedies such as ginger and acupressure bands has not been shown to be effective."

BOTTOM LINE

Non-drug nausea remedies have been shown to be less effective than pharmaceuticals. However, they have no side effects, so using them has no downside.

Every boat should have seasickness treatments onboard. Acupressure wristbands work for some sailors sometimes, so adding PsiBands to the onboard first-aid kit is worth the $15, in our opinion. They are easy to use and more comfortable and stylish than elastic bands—a bonus when trying to persuade a child or teen to strap them on.

CONTACT

PSIBANDS, 831/373-7712, www.psibands.com

Photos by Ralph Naranjo

Matt Rutherford's battered 36-year-old Albin Vega, St. Brendan, *drew curious visitors after his arrival in Annapolis, Md.*

Solo Sail Around the Americas

Skipper Matt Rutherford's epic voyage tests seamanship skills.

By RALPH NARANJO

While the yachting press fawned over Volvo Ocean Racers and their tribulations rounding Cape Horn, not a peep was heard about a young fellow named Matt Rutherford who also recently rounded the infamous cape. His 36-year-old, 27-foot Albin Vega had been christened *St. Brendan*, in honor of the patron saint of navigators and explorers. And with a barebones budget, a bit of Irish luck, and lot of able seamanship, Rutherford pulled off a major voyaging feat—with minimal fanfare—becoming the first sailor to circumnavigate the Americas solo and non-stop.

Matt Rutherford's route as he covered 27,077 miles in 309 days.

As he was homeward bound in the South Atlantic, a handful of ardent supporters began spreading the word. Rutherford's Cape Horn rounding was just part of a bigger picture, that when laid out on a small-scale chart revealed the track of a single-handed, nonstop voyage around the Americas via the infamous Northwest Passage. On April 18, 2012, *St. Brendan* re-entered the Chesapeake Bay, and Rutherford's 309-day nonstop voyage, stretching 27,077 miles, was almost over—and the press was finally there.

In the aftermath of a hero's welcome, with even the governor of Maryland on hand to recognize a job well done, many wondered what led Rutherford to attempt such a journey, how he prepared for the voyage, and what experience he had before he set sail. Hoping to find the answer to some of those questions, I interviewed Rutherford and looked over his driven-hard, put-away-wet pocket cruiser.

Acorn barnacles hung from the counter; the topsides were streaked and smeared; and the austere, weathered accommodations below gave a new meaning to Spartan minimalism. But the gleam in the eyes of the skipper spoke well of his nearly yearlong adventure.

Part Everest climb, part self-actualization, part escape, Rutherford's approach to extreme sailing defines a razor's edge balance between risk and reward. And at a time when we hear of sailors aboard well-equipped, fully crewed boats running into near-shore islands or tacking too close and getting caught in the surf zone, we can't help but wonder how Rutherford avoided the obstacles, dodged the ice, and coped with the wind and waves, to pull off such a feat. Add to this the fact that a good bit of the "must have" gear deemed essential was not even part of Rutherford's kit, and the *St. Brendan* saga gives us a lot to think about.

The basis for Rutherford's success is a nuanced blend of sailor and sailboat, and the way in which he learned what the Vega could and couldn't do. In essence, Rutherford figured out how to make a boat with modest design and structural attributes behave well in a wide range

of conditions. And in this blend of boat and boat-handling, Rutherford realized that seamanship had to take first chair. Yes, some may say that there was a fair dose of run-the-table luck in play, but over the course of 309 days, the flip side to good luck was bound to show up, and that's when decision-making and seamanship are tested.

Small boats are neither inherently safe nor unsafe at sea. They vary according to their design and structural attributes. But one thing is certain, they do bounce around at sea a lot more than larger sailboats, and one needs to be ready for the ride. Decades ago, I talked a couple of friends into joining me on a passage from California to Hawaii aboard my Excalibur 26. It was about the same size as the Vega 27, and the prospect of turning my 21-day passage into a 309-day, ice-to-ice odyssey seems unfathomable. But regardless of one's opinion on Rutherford's boat and gear, it all pales in comparison to the gumption it took to close the loop.

THE BOAT

The Albin Vega 27 is a good old boat, but by no means the epitome of an offshore pocket cruiser. She's a shoal-draft, sloop-rigged, Swedish-built fiberglass favorite, and over 3,400 hulls have been built. A few have stretched their legs crossing oceans and carrying their crews on well-chronicled adventures. John Neal wrote about his Pacific odyssey in "The Log of the Mahina," a tale of a Vega 27 and a voyage among the tradewind islands of the South Pacific. Rutherford didn't linger in the tropics; his course was north and south across climate barriers and through some of the worst weather regions on the planet. It was a voyage in a small production boat that's equivalent to taking the family sedan on the Dakar Rally.

The Vega was designed by Per Brohall in 1964 for Lars Larsson, a Swedish boatbuilder who saw the promise of fiberglass production boats and wanted a pocket cruiser/racer to enter the new market. Larsson's company was renamed Albin, and the Vega took off, becoming very popular in northern Europe. Production came to a halt in 1979 with 3,450 boats launched. It's not surprising that a cult following continues today and that many find the vessel's proportions, simplicity, and capability as a pocket cruiser to be compelling.

From a going-to-sea perspective, it has pros and cons, and like any small boat, regardless of design, progress to weather in a breeze and a seaway is a test of patience and tenacity. Rutherford's track shows time spent coping with headwinds and even laying to a sea anchor when conditions became untenable in the Bering Sea and off Cape Horn.

With a relatively heavy FRP hull laminate, the boat was billed as a rugged and durable cruiser by the builder, but I'm sure he didn't have "ice capable" in mind when referring to her scantlings. The boat's shoal draft may be an attribute in the Bahamas, but in oceanic conditions, the decreased windward ability and shallow draft negatively impacted the boat's limit of positive stability.

The Vega's design did, however, include 2,017 pounds of ballast in the form of iron or lead encapsulated in a long run of keel. This kept the ballast low in the boat and the 40-percent ballast ratio and relatively short rig lessened the threat of wind-induced capsize. The cutaway forefoot and long run of keel aft with an attached rudder led to a few steering issues. Rutherford's powerful Monitor pendulum-servo self-steering vane had no problem coping with the unbalanced rudder design and the lively motion of a small boat at sea.

The deck and coachroof are another story, and many owners have alluded to core deterioration in the sandwich structure. Rutherford had wisely re-rigged the Vega thanks to some inkind sponsorship help from Eastport Rigging and Spars. The spar was stepped ondeck, supported by an athwartship fiberglass-reinforced beam

Rutherford set his sea anchor from a bitt that was through-bolted and linked by tie-rod to the stem.

PS ST. BRENDAN'S GEAR REPORT

GEAR TYPE	MAKER	GRADE
SELF STEERING	Monitor wind vane	A+
SAILS	Hyde	A
NEW RIGGING	Eastport	A
FURLER	Harken MKIII	A+
WATER MAKER	Katadyn (Survivor 35)	B+
MAST STEPS	Unknown	B+
LAZY JACKS	Unknown	D
RUNNING RIGGING	NE Rope VPC	A
ENGINE	Volvo MD 2002	B
SOLAR PANELS	Powerfilm	D
GPS	Multiple units	A- to F
WIND GENERATOR	Rutland	B+
E READER	Kindle	F
SLEEPING BAG	NorthFace -40	B+
FOUL-WEATHER GEAR	PVC	A
SEA ANCHOR	Paratech	A
FREEZE DRIED FOOD	Self Reliance	A
STOVE	Origo	A-
E-MAIL/WEATHER	Predictwind.com	A+
ROPE CLUTCH	Spinlock	A
WINCHES	Andersen	B+
SPARS	Proctor	A-

Rutherford's boat was in recovery mode in the days after his arrival in Maryland. Note the bolted reinforcement beam under the mast (above the V-berth doorway).

between the coachroof coamings, rather than the usual compression post directly under the mast, which distributes the load to the hull. Many sister ships have had the secondary bond between the beam and coaming crack. *St. Brendan* was no exception.

During the voyage, the extra reinforcement held, but the loads transferred to the cabin coamings and deck caused some buckling. However, the rig stayed in place.

Getting through the Northwest Passage requires a lot of motoring, and fortunately, one of the previous owners had repowered the Vega with a Volvo MD 2002 diesel that helped make the transit a realizable feat.

A tried and true stainless-steel Monitor windvane did most of the helming.

On three occasions during the voyage, Rutherford needed replacement parts and equipment, and in keeping with the concept of a nonstop voyage, he had the gear transferred from vessels that rendezvoused with his route. One of those stops was for a replacement watermaker. His rendition of a watermaker was a hand-pump PAR that delivers 1.2 gallons for every hour of pumping.

Perhaps the old Vega's biggest downside was the confluence of leaks that turned the boat into what Rutherford referred to as the "wet cave." The bedding of the mechanically fastened deck had long since given up the ghost, and the stiffer hull and more flexible deck caused rig loads to flex the hull-to-deck joint and allow water from spray, rain, or waves to drip, dribble, and cascade down the inner skin of the hull creating a pervasive dampness.

GEAR REPORT

It is clear that the boat and sailor had an affinity for each other that seemed to tip the scale in success's favor.

One of these "right fit" factors was the ultra-simple masthead rig that was supported with fore and aft lower shrouds, a single set of alloy spreaders, upper shrouds, plus a headstay and backstay. The modest 340-square-foot sail plan was made even easier to handle with a Harken MKIII roller furler. Rutherford had nothing but praise for the unit.

Hyde Sails had donated the sails, and despite the fact that there were only four in the quiver, Rutherford was able to cope with the constantly shifting conditions. He lacked storm sails, but relied upon a third reef-point sewn into the well-reinforced Dacron, 7.5-ounce mainsail. This approach is not ideal for larger boats, but in this case, the mainsail was small to start with, and the high-cut working jib could be partially furled into a heavy-weather jib.

A single-line mainsail reefing system aided the reefing process. Rutherford also gave high marks to his New England Ropes VPC Vectran/polyolefin core running rigging, supplied by West Marine Annapolis, that kept stretch to a minimum.

The sails and sail-handling gear were essential to reducing the amount of time Rutherford had to spend out of the cockpit. The pure simplicity and functionality of the rig is driven home by the fact that 90 percent of the time, Rutherford sailed under working jib and some amount of mainsail. The genoa was used for 7 percent of the passage, and the asymmetric spinnaker was up for only 3 percent of the voyage.

The percentages are a little misleading. For example, the 3-percent under spinnaker means that it was up for about 223 hours, a substantial period of time, especially when fuel is scarce and getting through light-wind, high-pressure systems means doing so under sail. All-in-all, Rutherford's harmony with his rig and sail inventory was a big plus and so was the seasense he developed that told him when to reef and when to add sail area.

Most electronics gave him trouble, but an exception was a satellite communicator from predictwind.com, which gave him worldwide access to sophisticated weather predictions, enabled online boat tracking, and allowed for text e-mails.

Rutherford met his worst weather in the Bering Sea when nearing Cape Horn. In the worst of it (when his course was off the wind), he favored running

Small Boats Open Big Vistas

Matt Rutherford relaxes at home aboard St. Brendan.

In 2003, Matt Rutherford made a sight unseen commitment to cruising from his home in Ohio. Over the phone, he bought a Coronado 25 located in Trappe, Md. The boat needed a lot of TLC. He fixed what he could and learned to do without what he couldn't afford.

In 2004, Rutherford and his girlfriend who had never sailed before set off down the Intracoastal Waterway (ICW), headed for adventure. She left after the shakedown cruise, but Rutherford carried on, working his way up a series of older boats.

Three years and three boats into his cruising life, Rutherford moved up from the Coronado to an old Pearson 26. When an old Pearson 323 came into his sights, so did a plan for extended bluewater voyaging.

The 323, a Bill Shaw designed racer/cruiser, saw its heyday in the late 1970s as a part-time racer and summer cruiser. But for Rutherford, this was a big boat, and he soon set out on a high-latitude passage to Europe. A string of gales and a tropical storm quashed plans to visit Greenland and Iceland, and after 34 days at sea, he made landfall in Falmouth, England. He sailed on to France and the Netherlands where he stored the boat while he returned to the U.S. to build up the cruising kitty. The following season, 2006, it was on to Portugal, Spain, and as fall turned to winter, he headed on to the Canaries.

After a detour to Gambia, he headed back across the Atlantic in warm tradewind easterlies, making landfall on Antigua. He arrived in the Caribbean with $20 left in the kitty and headed to the U.S. Virgin Islands to find work. Between voyages, he worked on Alfa Romeos, stitched sails, and did what it took to prepare for his next voyage. Always looking for the next boat and the next adventure, he eventually founded a relationship with the Chesapeake Region Accessible Boating (CRAB) nonprofit.

Run by Don Backe, CRAB has been promoting and developing programs for handicapped sailors for decades. Backe and Rutherford devised a fundraising plan to support CRAB's mission to increase access to sailing for handicapped sailors. At the time, Rutherford was planning an Arctic voyage in an International Folkboat, but when CRAB offered him its Albin Vega 27, the plans became reality. Rutherford's voyage raised significant funding for CRAB's cause via *www.crabsailing.org*. (Visit the website to learn more.)

As for Rutherford's next passage, he's planning an Arctic trip to raise awareness of the region's fragile habitat.

before the seas, towing a warp that comprised 200 feet of half-inch anchor line with 30 feet of attached chain. He found the Vega to be small and light enough to respond to the drag of this simple towed warp. It slowed the boat slightly and significantly increased its directional stability. When really bad weather settled in and the wind came from where he was headed, he dropped sail and deployed a sea anchor off the bow. The helm was lashed amidships and Rutherford learned to wait it out.

At the top of his list of valued equipment and gear was his Monitor windvane. Rutherford had used it aboard his Pearson 323 for two Transatlantic passages, and it was just as capable in steering his Vega. Monitor guru Hans Bernwall gave Rutherford sage guidance plus all the parts to mount the unit on the Vega.

Creature comforts were few, but when it came to the things Rutherford valued most, a half-broken galley stove made the list. Only one burner of the boat's original Origo two-burner alcohol stove gave off heat, but it never missed a beat. The "big wick" cooker provided BTUs to heat up Rutherford's freeze-dried cuisine. One of his favorite foods was the creamy lineup of soups from Self Reliance, a freeze-dried food company that dominated in his provisioning.

Unimpressed by fancy foul-weather gear, Rutherford swears by the plain PVC rain gear favored by Alaska fishermen. He said that all too often, the "fancy stuff" ends up breathing both ways. In cold weather, and even when it's raining and the spray is flying in warmer latitudes, he liked the watertight barrier the PVC provided, and was never bothered by moisture buildup inside the material.

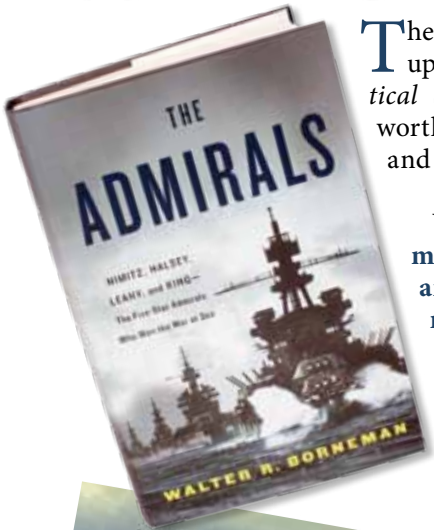
As with most sailors, Rutherford is set in his ways. At the heart of his prejudice resides a valid sea-trialed cause/effect justification. Another of his strong opinions relates to lazy jacks and why the best thing to do with them offshore is remove them from the mast. His logic is pure and simple. Lazyjacks aid in hoisting and dousing the mainsail—a process that's replaced by reefing and unreefing on a passagemaking boat. Getting rid of the lazy jacks lessens chafe and reduces lines that can hook battens or catch the tip of a spreader.

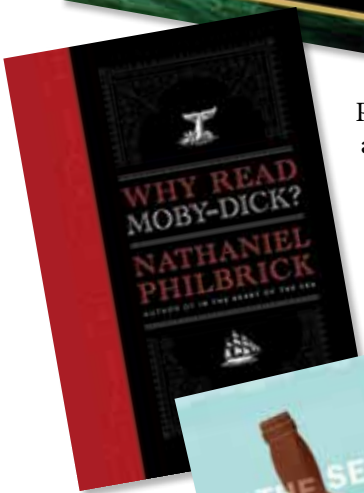
Also on his gear letdown list was a Kindle reader stuffed with some 30 books that gave up the ghost. Rutherford went through three GPS units, probably due to the wet and wild conditions on deck and below. His bargain-priced, roll-up solar panels (frequently maligned by *PS* readers, soaked up water and shorted out, but the Rutland wind generator held up well until the last part of the voyage when a starter problem also rendered the diesel inoperable.

Stopping for a refit would have resolved most of the issues, but Rutherford was intent on his goal and carried on with fewer and fewer gadgets.

Summer Reading List for Sailors

Enjoy the sailing season, on the water and off, with these reads.





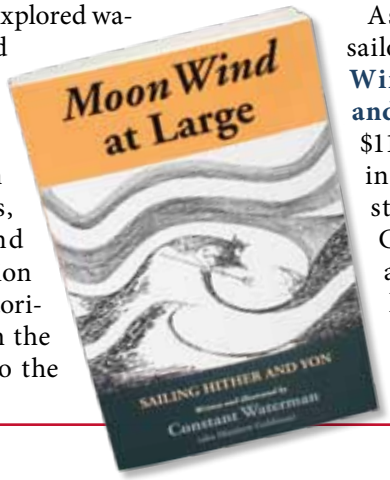
The summer reading season is upon us, and the editors at *Practical Sailor* have selected 10 titles worth reading during the lazy days and easy nights ahead.

Walter R. Borneman's **"The Admirals: Nimitz, Halsey, Leahy and King – The Five-Star Admirals Who Won the War at Sea,"** (Little, Brown and Company, 2012, $18, Kindle $15, audio $22) is a great pick for marine history buffs. It is a large and powerful narrative of the only five-star fleet admirals in U.S. history. These four United States Naval Academy graduates led the U.S. to victory in World War II, and turned the Navy into a global force. The story is told through the relationships between the men, their egos and arguments, their camaraderie, and their counsel, patience and war time tactics. Author Borneman has written seven other nonfiction books and holds a master's degree in history and law.

"Beyond the Blue Horizon: How the Earliest Mariners Unlocked the Secrets of the Ocean" (Bloomsbury Press, 2012, $19, Kindle $15, not available in audio), written by Brian Fagan, is another compelling book of maritime history. "Beyond the Blue Horizon" looks at how early mariners' mastery of the ocean changed the course of human history. Why did these sailors take off for unexplored waters? What compelled them to search for new lands? Was it hunger, trade, curiosity? Fagan mixes anecdotes, archeology, and imaginative fiction in this salty historical work. From the first chapter to the last page, the reader is carried along with the trade winds, side-by-side with Micronesian, Polynesian, Egyptian, Greek, and Norse sailors. Born in England, Fagan has decades of sea experience and has authored several best-selling non-fiction titles as well as the "Cruising Guide to Central and Southern California."

Another sailor-turned-writer, Nathaniel Philbrick combines his love of sailing, history, and literature in his impassioned and enthusiastic book: **"Why Read Moby Dick?"** (Viking, 2011, $16, Kindle $12, audio CD $16, audio download $12). With unabashed excitement, minute detail, philosophical query, and humor, Philbrick breaks down Herman Melville's "Moby-Dick," convincing the reader to dive into this daunting American classic without looking back. The best-seller author argues that 161-year-old "Moby-Dick" is relevant now more than ever before. He also authored "In the Heart of the Sea," the epic story of the whaling ship *Essex* and the real-life events that inspired Melville's classic.

"The Sea is My Brother" (Da Capo Press, 2012, $16, Kindle $11, audio CD $23, audio download $10) is the recently published "lost novel" by Jack Kerouac, who often is called the father of the Beat Generation. In the spring of 1943, while working as a merchant seaman, 21-year-old Kerouac set out to write his first novel. Written entirely by hand, "The Sea is My Brother," went unpublished in North America until now, 70 years after its completion. A clear precursor to Kerouac's 1957 classic, "On the Road," the book details his adventures as a young seaman, offering a glimpse of a young man whose youthful idealism is at odds with the harsh realities of a nation at war.



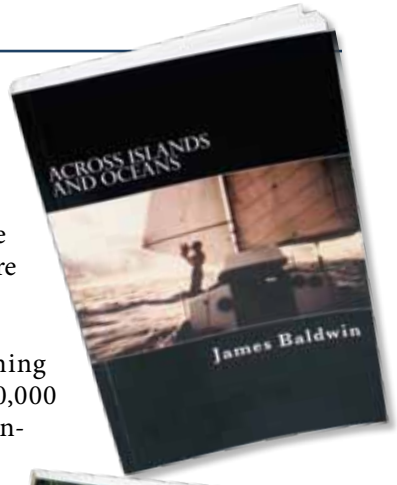
As intriguing and addictive as sailors' search for mermaids, **"Moon Wind at Large, Sailing Hither and Yon"** (Breakaway Books 2011, $11.66, Kindle $7.99, not available in audio format), written by Constant Waterman (aka Matthew Goldman), is a collection of meandering and compelling tales of life messing about in boats. His lyrical storytelling and beautiful prose—along with his enter-

taining bend and quirky drawings—make this swirl of stories of a life well wasted near his home waters in New England a fulfilling and thought-provoking read.

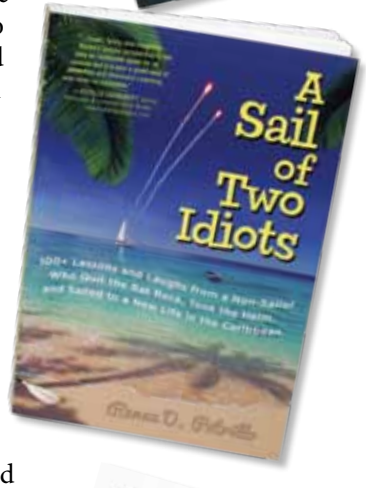
After years of preparation and research, 25-year-old James Baldwin left South Florida with the intent to sail around the world alone. **"Across Islands and Oceans"** (Atom Voyages, 2012, $10, not available in electronic or audio format), is the story of Baldwin's two-year circumnavigation. Baldwin's crisp, clear writing carries the reader forward, like the trades that pull his trusty 28-foot Pearson Triton across the Caribbean, toward the Pacific and Indian oceans, returning through the Atlantic to the coast where he started. Baldwin's commitment to hike across every island he visits adds to his adventure. Written 25 years after he completed his voyage—with the help of photo albums and journals—the book has a reflective tone as Baldwin examines his own growth during the journey and the many lessons he learned that only the sea can teach.

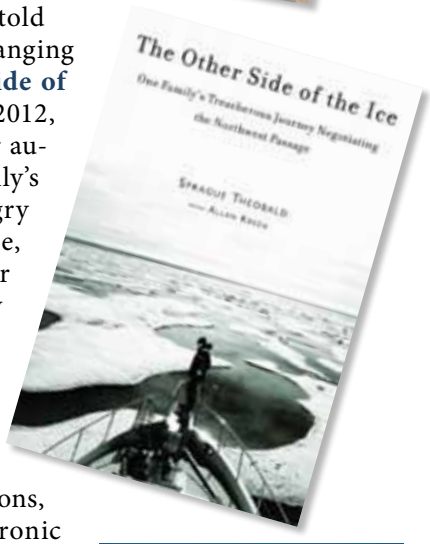
Renee D. Petrillo's **"A Sail of Two Idiots"** (International Marine, 2012, $13, Kindle $12) is an entertaining and easy-to-read book about "100+ lessons and laughs from a non-sailor who quit the rat race, took the helm, and sailed to a new life in the Caribbean." Petrillo's story began with her and her husband's dream to sell everything, buy a boat, and sail off into the sunset, and like many similar cruiser stories, she found that living the dream could be hard work. Determined to save future dream-seeking sailors from the same hurdles she faced, Petrillo passes along her stories and wisdom in "A Sail of Two Idiots."

When the fierce winds off the coast of Nova Scotia force a small boat into port, the boat's pilot, eccentric Capt. Charles Johnson, takes up residence at the small inn run by young Jim and his mother. With each day, the captain's presence becomes increasingly valuable to the family as they struggle to keep the inn open for business—and his past becomes evermore mysterious as Jim discovers how much the captain knows about the lives and battles of the old-time pirates. **"Pirate's Passage"** (Trumpeter/Shambhala Publications, 2006, $12, not available in electronic or audio format), written by William Gilkerson, is an award-winning young adult's novel, with enough excitement and adventure for pirates of any age. Gilkerson is a sailor, painter, journalist, historian, and adventurer. He has written 10 nautical nonfiction books and lives with his family on the shores of Mahone Bay, Nova Scotia, where he sails his ancient cutter, *Elly*.

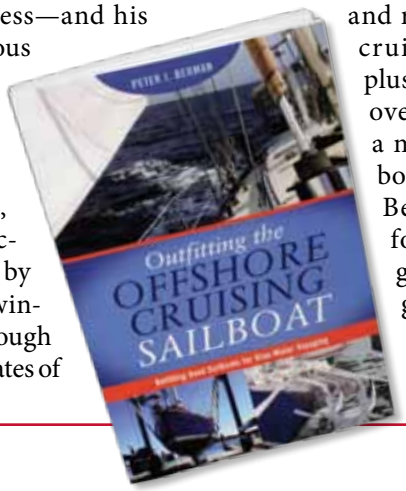


Sprague Theobald, an award-winning documentary filmmaker with over 40,000 offshore miles under his belt, always considered the Northwest Passage—the sea route connecting the Atlantic to the Pacific—the ultimate uncharted territory. Since Roald Amundsen completed the first successful crossing of the fabled Northwest Passage in 1906, fewer than 30 pleasure craft have followed in his wake. What Theobald couldn't have known was just how life-changing his journey through the Passage would be. Reunited with his children and stepchildren after a bad divorce more than 15 years before, he and the other family members embark with unanswered questions, untold hurts, and unspoken mistrusts hanging over their heads. **"The Other Side of the Ice"** (Skyhorse Publishing, 2012, $17, not available in electronic or audio format) is the story of the family's adventure. Unrelenting cold, hungry polar bears, a haunting landscape, and crew clashes make "The Other Side of the Ice" a harrowing story of survival, adventure, and, ultimately, redemption.





In Peter I. Berman's **"Outfitting the Offshore Cruising Sailboat"** (Paradise Publications, 2011, $20, not available in electronic or audio format), Berman details how to buy a used fiberglass sailboat and refurbish it for offshore cruising. Sharing his 40-plus years of experience in overhauling and refitting a myriad of different sailboats for offshore cruising, Berman offers straightforward advice on rigging selection, engines, ground tackle, safety gear, electronics installations, and the hull.



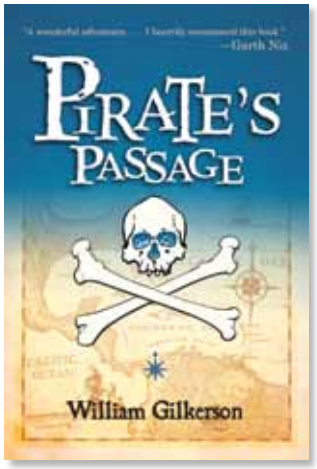


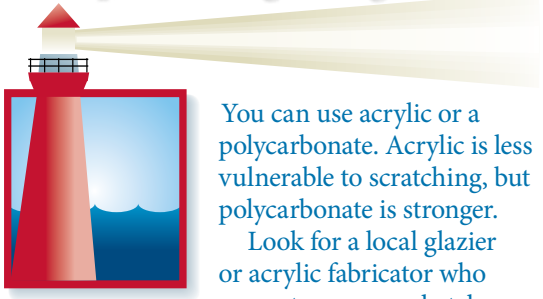
Photo courtesy of DeLorme

ON THE HORIZON
PORTABLE SATCOM DEVICES
HIGH-TECH LIFELINES
WATER HEATERS
NAV SOFTWARE

Practical Sailor™

Companionway Hatch Fix

Forget the adhesive and replace the glazing.



PS ADVISOR

While rigging my boat, the boom came crashing down on the companionway hatch cover. The crash resulted in a crack in the cover: What was once a single rectangular plastic cover was in two pieces.

I did some research on gluing plastics and came away more confused than when I started. My research revealed that some plastics cannot be glued, while others can be, as long as the right glue is utilized. I don't even know what the smoke-colored, half-inch-thick hatch cover material is: acrylic, poly-carbonate, Lexan? Any suggestions would be appreciated.

Anton Piotroski
Pearson 27

When using an adhesive, it's best to know what the materials are that you'll be gluing—not all adhesives are appropriate for all materials. For example: You should never use a polyurethane sealant or caulk on polycarbonate (Lexan) or acrylic (Plexiglass). Our August 2010 report on adhesives, caulks, and sealants offers more details on selecting the best one for the job. There are glues that work on Lexan or acrylic, but we have not tested them in the way you'd be using them. We'd be interested in hearing from readers who have had success here.

In your case, we'd recommend replacement. The material itself and DIY installation is not too expensive. You can use acrylic or a polycarbonate. Acrylic is less vulnerable to scratching, but polycarbonate is stronger.

Look for a local glazier or acrylic fabricator who can cut you a new hatch slide cover. If you can't locate one in your area, check out Maritime Plastics in Annapolis, Md. (410/263-4424, *www.maritimeplastics.com*) or Select Plastics in East Norwalk, Conn. (203/866-3767, *www.selectplastics.com*). Both are *PS* reader-recommended for companionway hatch/dropboard replacements. Depending on the job specifics, prices range from $300-$800.

If you decide to install the new cover yourself, you'll find a good how-to in Don Casey's "This Old Boat." He recommends GE SilPruf SCS2000 or Dow Corning 795 Silicone Building Sealant; both are silicone adhesives designed for structural glazing. You can find the book in *PS*'s online bookstore at *www.practical-sailor.com*.

MONOCULAR vs. BINOCULAR

I was re-reading "The Compleat Cruiser," and author Francis Hereshoff made a case for using a monocular onboard small boats instead of binoculars. He asserts that monoculars are lighter, more compact, simpler in operation, and that the binoculars' depth perception is largely irrelevant to the small-boat skipper who is primarily just trying to identify navigation aids, etc. These arguments appeal to me especially, since I do not have stereoscopic vision. (One eye is much more near-sighted.) What's your opinion?

Ed Aasvik
Boise, Idaho

Two eyes are better than one, so binoculars trump a monocular. That being said, a high optical quality 7x50 monocular is better than a 10x28 pair of binoculars, which offer too much magnification and too small a field of view. Two obvious benefits to 7x50 marine binoculars over a monocular are that they collect light better and offer a large field of view. The former means binos will have the advantage at dawn or dusk and in other low-light settings. And the latter is a definite plus when scanning the horizon.

Humans with binocular vision do not easily, nor efficiently, shift to telescope viewing. Many immediately close one eye, a strain that complicates long-term viewing because it's a deviation in sensory input through the optical pathways to the brain.

Those with significant dominance in one eye may be good candidates for a monocular, but another option worth considering is a marine binocular with individually focusing eye pieces. In high-quality binoculars, the diopter adjustment is accurate enough to be set to an eyeglass wearer's prescription.

The bottom line lies in binoculars for the dual-sighted and a monocular for those who are single-sighted or very dominant eye biased. We'd choose waterproof 7x50 binos with a compass, preferably image stabilized. Good choices include the Fujinon FMTRC-SX or Steiner Commander V.