

**From the Editors of**

# ***Practical*** ***Sailor***

## **Headsails & Furling Gear**



*A Look at Sails Volume 2*

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# Chapter 1

## Headsail Ups & Downs

### *Playing the Musical Sails Game*

While having a robust sail inventory is considered a must on most racing sailboats, it's often thought to be more of a luxury for cruising sailboats. That couldn't be further from the truth.

A large part of making a successful passage—be it short or long—lies in the preparation, and stocking your boat with multiple headsail options and the right equipment to handle them means you'll be able to carry on in heavy weather or light air. That can make all the difference whether you're trying to outrun a storm or keep a grip on your sanity in ever-shifting winds for days on end.

We consider the ability to quickly and efficiently reduce and add sail area to be a primary aspect of seamanship.

Written by former *Practical Sailor* Editor-at-Large Nick Nicholson during his circumnavigation, the account below is a testimony to the necessity of the well-stocked sail locker.

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### *Playing the Musical Sails Game*

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*Calypso* motored quietly into Opuā, New Zealand, in the evening of a perfect early spring day—a welcome conclusion to a rough, fast, 2,500-mile passage from Raiatea, French Polynesia. Notified by Russell Radio of our impending arrival, New Zealand's efficient customs, immigration, and agriculture officials arrived at the customs dock to clear us in minutes after we tied up. In less than an hour, we were sitting in the bar of the Opuā Cruising Club with our first New Zealand beer, still slightly dazed after spending 18 of the last 20 days at sea.

We were only the second cruising boat to check into Opuā for the season. The first was a Japanese singlehander who had arrived a few days before. The big influx of boats escaping from the tropics to New Zealand for cyclone season was still at least a month away.

For a passage from French Polynesia to New Zealand in August and September, you can expect cold weather, gales, and big seas. We found all of them.

With crew Dan Bastien of Canada, I left Raiatea—130 miles northwest of Tahiti—under sunny skies, with light winds. Two days later, the promised reinforced tradewinds set in, and 25 to 35 knots of easterly winds pushed us rapidly southwest toward Nukualofa, Tonga, 1,400 miles away. Under double-reefed main with half a headsail poled out, we sailed the boat moderately hard at about 150 miles per day, not wanting to break anything, but

wishing to take advantage of the strong favorable winds.

Twice-daily weatherfaxes kept us abreast of rapidly changing weather patterns along our course. We planned to stop briefly in Tonga to wait for a weather window for the 1,100-mile southward dash to New Zealand. As an option, we were prepared to bypass Tonga and carry straight on.

When decision time came, the weather south of us was still too ambiguous for a non-stop voyage, and we put into Tonga after 10 days at sea. In Nukualofa, it poured rain, and was cold enough for heavy sweatshirts and jackets.

MetServices of New Zealand gave us a moderately good long-range forecast—good weather for the first four days, followed by who-knows-what. Russell, NZ Radio was less optimistic, having little faith in long-range forecasts. Neither was willing to advise us to go or wait.

We decided to go.

Ominously, the B&G Hydra instrument system chose this time to go on strike: no wind output, reducing us to windex and eyeball. After several hours of reading the instruction manual, I performed a system reset, and regained partial operation. In doing so, however, two years of sailing log and weeks of careful calibration of the system were lost.

Our other significant problem was a leaking exhaust. A careful check of the system revealed a broken hose clamp on the muffler, which was leaking exhaust water and gasses directly onto the prop shaft, which proceeded to spray water very efficiently over the entire engine compartment. Fortunately, we carry plenty of spare clamps, and although lying on top of the engine in a seaway while working on the muffler isn't exactly fun, it can be done.

For three days after leaving Tonga, we sailed virtually due south in strong easterly winds, driven by a huge, nearly stationary high-pressure system between us and New Zealand. Winds averaged 25 to 30 knots, with the apparent wind just forward of the beam—a fast, wet, uncomfortable ride. Then our luck ran out.

Russell Radio was almost apologetic when we checked in that evening. “Boys, it looks like you're in for it for the next 48 hours. I'm afraid you'll have winds of 40 to 45 knots, but at least they'll be from the right direction.”

It was small consolation, and I felt discouraged, depressed, almost cheated. At the morning fax, this low had been nothing but a small trough near New Caledonia. Now, the isobars had closed and it was deepening ominously, threatening to fulfill the worst-case scenario of the MetServices long-range forecast, which had predicted a classic, dangerous squash zone between the stationary high and a developing low.

The low was well north of us but dropping south, moving across our track almost at right angles. I decided to push on even harder, hoping the low would be diverted northward by the big zone of high pressure that protected us.

Off came the cowl vents for the first time ever, down came the double-reefed main. We secured the main boom with tackles to the rail, doubled the lashings on the dinghy. The trysail was checked over. We rolled up the headsail, deployed the storm staysail. It seemed ridiculous in only 25 to 30 knots of wind.

Almost immediately, however, the wind backed northward and increased to over 40 knots. Our preparations were just in time.

The barometer was falling rapidly. We sped south, and the winds eased down into the 30-knot range. The barometer held steady. In came the staysail, out went some headsail.

The barometer rose slightly, then steadied. The wind dropped a bit more. Up went the double-reefed main. We headed south as rapidly as possibly. We had dodged the bullet by pushing hard. The weatherfaxes—four each day—were worth their weight in gold, as long as your barometer was properly calibrated.

It wasn't over yet, however.

The wind continued to back. Only 350 miles north of Auckland, it settled into the south-southwest, right where we wanted

to go. The velocity steadied at 25 to 30 knots. With our hopelessly baggy genoa rolled halfway up, it was going to be a long haul.

After almost two days of beating, tacking through 120 degrees, we still had over 100 miles to go. On the next tack, we could lay Opua, in the Bay of Islands. Tired and battered, we took the easy way out.

For the next two days, the wind howled at 35 knots from the southwest. On the third day, it began to die and veer, enticing us on to Auckland, 130 miles away. Just 20 hours later, we motored into Auckland's stunning harbor on a cold, clear spring day.

With almost 11,000 miles on the log since our departure from Newport, including 8,000 miles in the previous seven months, *Calypso* was more than a third of the way around the world. She and her sails were tired and in need of some attention. Her skipper, too, was tired.

This e-book offers *Practical Sailor's* latest tests and reports on light-air headsails and headsail furlers. For further reading, check out Volume 3 of this series, "Specialty Sails and Hardware." That e-book dives into riding sails, trysails, staysails, and sail-related hardware such as solid vang, travelers, and snatch blocks. "A Look at Sails Volume 1" covers sail buying, sailmaking, mainsails, and mainsail handling and furling options. ▲

# Chapter 2

## Headsail Handling

### *Furlers with Swivels • Furlers without Swivels*

Engineering advances have improved roller-furling systems, and the latest units show refinements to original design and some promising new innovations. Today, third- and fourth-generation furlers are smoother operating, easier to install, and reliable in their role as long-lived sail-handling systems. The fact that almost every new cruising boat longer than 35 feet comes standard with a roller-furling headsail—and one of the top priorities in an older boat retrofit is the addition of roller furling—shows how well sailors have embraced the sail-handling gear.

#### **BACKGROUND**

In the late 1970s and early 1980s, Hood, Hyde, and Schaefer were the pioneers behind the idea of handling a headsail with a window-shade-like furling approach. Some of the earliest systems lacked luff-tape foils and relied upon head and tack drum swivels and a faux headstay sewn into the sail luff.

Tension placed on the bearing systems accelerated fatigue, and failures were of a spectacular nature often resulting in a dismasting and marina rumors that caused piston-hanking sails to see a resurgence. Fortunately, engineering improvements stepped in, and Ted Hood and other sailmakers saw the sense in slipping an extruded foil over an existing headstay in order to allow the latter to hold the mast up and the former to handle the furling operation.

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#### ***Furlers with Swivels***

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The current generation of headsail furlers has seen significant changes over the furlers of yesteryear with respect to engineering and construction materials. To get an idea of what's on the market and see how the newer products fare against the simpler, tried-and-true furler systems, *Practical Sailor* rounded up 11 headsail furlers suited for 30- to 35-foot sailboats.

For reporting purposes, the test group was divided into two groups: integral and head-swivel systems. However, in testing, we compared all products at the same time.

Four of the 11 systems evaluated are integral systems that have

no upper halyard swivel. These units attach the head of the jib to a built-in halyard or a fitting at the top foil section. Three of these four completely eliminate the use of ball and roller bearings, relying on simpler bushings to offset thrust and axial loads.

We evaluated head-swivel furlers from Furlex (Seldén Mast), Harken Inc., Schaefer Marine, Facnor, and US Spars. Ranging in cost from \$950 to \$3,200, the test products were the Facnor LX 130, Harken MkIV and Cruising 1, Profurl LCI32, Schaefer 2100, Furlex 200S, and US Spars (Z-Spar) Z-780. One swivel-furler maker not represented in our test was Reckmann Reefing Systems ([www.reckmann.com](http://www.reckmann.com)), whose products are distributed in the U.S. by Euro Marine Trading. Reckmann's RS2000 furler is designed for boats 30 to 90 feet. It and Reckmann's other furling systems are very well designed and well built, but their high costs (upward of \$8,000) priced them out of this test field. Reckmann furlers are better suited to yachts over 50 feet, in our opinion.

The integral systems we tested were the Alado A-2, Cruising Design Inc.'s Flexible Furler, Reefurl, and Spin-Tec's Triumph 2000.

#### **HOW WE TESTED**



*Practical Sailor* conducted on-the-water performance tests of each system on various boats in 5- to 20-knot wind conditions. Testers considered how easily each system furled and unfurled the sail and how smooth the process was. They also evaluated sail shape and how easy it was to reef in a blow.

Hardware design is important but equally so is the installation of the unit on board. As many riggers put it, "the best way to insure operational reliability is to follow the manufacturer's



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*Do-it-yourselfers should consider a furler's ease of installation in their final picks. The Spin-Tec furler is among the furlers we reviewed. (Photos by Ralph Naranjo)*

## VALUE GUIDE HEAD-SWIVEL FURLERS

MAKER	MODEL	PRICE	BEARING TYPE	DRUM SIZE	FOIL TYPE	SAIL SLOTS	WARRANTY
FACNOR	LX 130	\$1,658	SS & composite	N/A	Rounded	2	N/A
HARKEN	MkIV 	\$1,918	Torlon and Delrin	6 5/8 in. diameter	Elliptical	2	7 years
HARKEN	Cruising No. 1	\$1,504	Torlon and Delrin	6 5/8 in. diameter	Rounded	1	7 years
PROFURL	LCI-32	\$1,943	High carbon steel	N/A	Rounded	2	10 years
SCHAEFER	2100	\$3,202	Torlon	3 3/4 in. diameter	Rounded	2	5 years
FURLEX	200S 	\$2,939	Stainless steel	7 1/4 in. diameter	Elliptical	2	5 years
US SPARS	Z-Spar Z-780 	\$960	Stainless steel	2.3 in.	Elliptical	2	2 years

 Best Choice  Budget Buy  Recommended

guidelines implicitly.” And so we looked closely at how each system had been set up aboard the test boats, and we were amazed at how often poor geometry in furling line leads, excessively loose standing rigging, and over-tightened halyards took a toll on furler efficiency.

Testers also inspected a disassembled version of each system, giving close scrutiny to system design and component manufacture. We considered how furling loads migrate from the line to the drum and into the foil itself. Part of the big picture included bearing systems and linkage designs. It was clear that most manufacturers were tuned in to corrosion abatement, picking the right metal for the job, and coming up with foil interlocks that better held the sections together.

A look at a rigger’s scrap heap revealed dead furlers with corroded, frozen bearings, foils that would not stay together when hoisted, and first-generation composite bearings suffering from UV degradation. We also talked to furler owners, listening to stories of halyard wraps, rotating drum guards, and twisted (barber-poled) foils.

So, primed with first-hand underway experience and a good deal of background data, we dug deep to see how each unit turned a pull from a sailor into a twist of the sail.

### WHAT WE FOUND

After sailing and tugging on the reefing lines, we found all of the units to be operationally reliable in normal 5- to 20-knot conditions. Not surprisingly, the units fitted with a plethora of ball bearings spun more freely, even under load, and the super-slick title was a three-way tie among the Furlex 200S, Harken’s MkIV, and Schaefer’s 2100, the former spinning on stainless bearings and the latter two packed with multiple large-diameter Torlon and Delrin bearings.

From a sail shape and reefing point of view, we found that units with an articulating tack (Facnor, Furlex, and Harken MkIV) aided reefing by coax-



Facnor LX130

ing sails to set a little flatter. However, the most influential hand in the reefing process remains the skill of the sailmaker.

### FACNOR LX130

This headsail furler is a favorite among Europeans, and like other Facnor products, it has been sea-trialed in grueling offshore racing conditions.

The system is well engineered and blends a high torque-carrying, rounded foil shape with nicely machined connecting links. The unit uses a traditional swivel and mast-halyard hoist design, and its telescoping foil section eliminates

the need to cut a “shortened section.”

During installation, neither the wire nor the turnbuckle have to be replaced, and the 40-mil hard anodized parts are quite corrosion resistant.

The bearing system is referred to as the “bearing box,” and it contains a stainless-steel thrust bearing and large fiber/polymer bearings for axial loads all housed in the compact drum hub. There’s a handy anti-halyard wrap deflector and optional turnbuckle kit.

**Bottom line:** This unit has gained attention of builders and do-it-yourselfers alike. One minor issue testers noted was that the articulating tack bearings are exposed to continuous UV degradation.



Furlex 200S

### FURLEX 200S

Furlex, manufactured by Seldén Mast, has been a frontrunner in headsail furling for decades. Among all the units we looked at, the 200S was the only one that came with a new headstay wire complete with turnbuckle, toggle, and the recommended Sta-Loc compression fitting. Covering a questionable headstay with a new furler can lead to problems. Furlex prevents such complication by offering the total package.

In addition to a well-designed and packaged array of parts, the Furlex comes with a superbly

illustrated manual (in four languages—no need to learn new words while trying to put together this furling system).

At the heart of Furlex's twist technology is an investment-cast stainless drum core and bearing support for multiple races of stainless bearings. The system handles thrust and axial loads very efficiently. The patented halyard swivel "load distributor" spreads the load over many balls to reduce point-loading and friction.

The foil sections are double slotted and elliptical in shape, and the full-turn tack swivel allows the mid portion of the sail to lead off in the furling/reefing process, reducing excess draft in roller-reefed sails.

**Bottom line:** Among a field of quality products, Furlex stands out for its investment cast stainless hub and bearings.

### HARKEN MKIV

Harken has two new furling systems on the market, and both eliminate the "built-in" turnbuckle that Harken had used for decades. The new Mark IV system incorporates the twin slot foil of its proven predecessor the Mark III. The unit retains the full rotation tack and head swivels that cause the furling and reefing operation to flatten the mid portion of the headsail first—a feature that many sailmakers prefer.

The big change for Harken is going to a two-tiered approach and offering different units to cruisers and racers with the Mark IV being the racing/performance cruising option. On both systems, thrust and axial loads are handled by a combination of Delrin and Torlon bearings nicely tucked away in the drum and hidden from sunlight. The interlocking foil segments are secured with captured links that are held in place with adhesive and mechanical fasteners.

**Bottom line:** We found the Mark IV is a compact and efficient furler. It gets the *PS* Recommendation as it's certainly destined to be a favorite among more performance-oriented sailors.

### HARKEN CRUISING 1

The Harken Cruising Unit No. 1 utilizes a rounded foil section with a single track. It likely will handle more furling and reefing torque than the foil used on the Mark IV system.

Flat-head screws and Loctite work in conjunction with Easy C-shaped connectors and bushings to install the head foil over an existing headstay and turnbuckle. The tack of the cruising furler is fixed to the drum, eliminating the flattening feature that many came to appreciate in earlier Harken gear.

Another change is the greater play in the drum toggle, which helps the system cope with the



Harken MKIV



Harken Cruising

increased headstay sag often found aboard cruising boats. The furling action is smooth and easy, and the familiar Harken bearing swirl accompanies the low-drag furling.

**Bottom line:** The single-groove foil limits some headsail options.

### PROFURL LCI32

Profurl, a key player in the field of roller furling, continues its engineering evolution, making a solid performer even better with a series of "from the drum to the top swivel" tweaks and changes. The LCI32's round foil tubes use a C-shaped connector spline and heavy-duty, threaded fasteners that are anodized to reduce corrosion.

A stainless-steel luff feeder snaps into place on the appropriate foil segment with a click. One of the big pluses for this system is the variation it offers in drum clearance and swivel positioning, a feature that has gained rigger approval for decades.

The system places no torque loads on set screws, and seems to have overcome issues such as halyard wraps and foil segment separation that plagued earlier equipment.

Profurl uses a hardened carbon-steel ball bearing set packed in grease and protected by a double-lip seal. The company says that it "can't corrode because the bearings are sealed in grease." However, seals can fail, and those with older systems should do a careful bearing check.

**Bottom line:** The bearing system was the unit's only feature that gave testers pause.



Profurl LCI32

### SCHAEFER 2100

The latest Schaefer headsail furler is a display of well-executed stainless-steel castings, machined parts, and welded and extruded components. The 2100's Torlon bearings make furling silky smooth. Helicoils have been inserted to lessen corrosion caused by stainless-steel fasteners.

With the 2100, Schaefer did not walk the razor's edge separating performance and longevity. The heavy-duty foil section is rounded with high-torque carrying links transferring loads from one to the next. The drum and swivel are large enough to pack good-sized bearing races and transfer plenty of torque to the foil section. Foils are connected via stainless pop rivets that can be drilled out to disassemble—no worries about corroded fasteners.

The installation kit comes with furling line lead blocks and a toggle and link for those who want extra deck clearance for anchor handling.

Two minor drawbacks testers noted were that Torlon bearings could be seen in a few places, which means sunlight can also see the Torlon, and the top swivel has some exposure to sunlight. Schaefer noted that Torlon has a high tolerance to UV, and reported that in 20-plus years of using Torlon in their furlers,



Schaefer 2100

the company knows of no failure due to UV damage.

**Bottom line:** The swivel and bearings' possible exposure to sun is a minor issues in an otherwise very well-engineered, yet pricey, system.

### Z-FURL Z-780

US Spars, a subsidiary of France's Z-Spar, recently released a new Z-Furl unit that incorporates a seamless head foil and stainless-steel bearings. The Z-780's double luff elliptical foil system incorporates a conventional top swivel that's engaged by a mast halyard.

The 2.3-inch inner drum diameter is on the small side, but with a full-length plastic headstay bushing and efficient bearings in the drum and swivel, it remains an easy system to operate.



Z-Spar Z-Furl Z-780

One of the most interesting features offered by US Spars is the chance to acquire this system in a one piece, no foil-segment junction set up. Because of shipping limitations, this is usually only offered for new boats or new spars, but other arrangements for shipping may be able to be arranged.

**Bottom line:** The narrow overall diameter of the drum makes it a good selection for those boats with limited

foredeck space or where pulpit intrusion may be an issue. And its below \$1,000 price makes it our Budget Buy.

### CONCLUSION

Each boat owner must decide whether they prefer a system that allows them to wash off plastic bearings with a hose, rely on permanently sealed high carbon-steel bearings, care for open race stainless-steel bearings that occasionally need cleaning and lubrication, or no ball bearings at all. Price is always a consideration,



and in this furler round up, there was an astounding 400-percent difference in price between the least and most expensive units (including the integral systems described below).

Among the head-swivel furlers, picking a winner was difficult due to the refinements most of these products have gone through and an obvious across-the-board increase in quality. But in the end, sound engineering and the reliability of an investment cast stainless hub assembly and bearings gave the extra nudge to Furler. Harken's MkIV hits a price point and is recommended for performance-minded sailors.

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### Furlers Without Swivels

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One of the big surprises in the integral headsail furling systems test group was the trend toward the keep-it-simple side of roller furling—once the sole domain of Cruising Design Inc. Along with CDI's furler, we took a look at non-head-swivel furlers, suited for 30- to 35-foot sailboats, from Alado, Spin-Tec, and Reefurl. These represent both an evolution in engineering and strides forward in materials selection.

Having no upper halyard swivel, these units put the foil sections in compression and use an external halyard system to attach the head of the jib to a built-in halyard or a fitting at the top foil section. Spin-Tec has taken this design one step further by developing a hoist system with a foil-riding device that hooks and unhooks the head of the sail to the uppermost foil.

### ALADO A2

The Alado A2 is made by Brazil-based Alado Nautica, which has been making headsail furlers since 1990. A well-engineered system, the A2 is a good benchmark by which to evaluate other non-halyard swivel systems. One of Alado's key selling points is that not only can the unit be installed with the mast up, but there's not even a need for anyone to go aloft during the install. Unique overlapping foil sections slide together and are easily fitted with bushings as they are pushed up the headstay using a mast halyard to do the not-so-heavy lifting. On our test furler, these light and streamlined foil sections still appeared brand-new going into the second season.

The Alado earned Excellents for ease of installation and construction. Like all of the non head-swivel furlers tested, it earned a Good rating for performance.

At the heart of the Alado furling system is a sensible self-installation foil design CDI pioneered some years ago. But what sets Alado apart is its staggered slotting of 5-foot foil sections that slide together and interlock over a conventional wire or rod headstay.

This design allows the do-it-yourselfer to fit each foil section over an attached headstay, and simply push the formed furler up

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*The Alado furler uses integral halyards. The challenge is dealing with them in a manner that will keep them free from flogging or snarling the furling process. We rigged both halyards externally and terminated them on a roller drum fitting.*



**PS VALUE GUIDE NON-HEAD SWIVEL FURLERS**

MAKER	MODEL	PRICE / SOURCE	BEARING TYPE	DRUM SIZE	FOIL TYPE	SAIL SLOTS	WARRANTY
ALADO	A3 \$	\$915 / Alado	Bushings	8 inches	Double sided	2	Lifetime
CRUISING DESIGNS	FF6BB	\$525 / Mauri Pro	Torlon balls	8 inches	Double sided	1	6 years
REEFURL	Reefurl	\$1,360 / Furlings.com	Bushings	8 inches	Round	1	10 years
SPIN-TEC	Triumph 2000	\$1,541 / Mauri Pro	Delrin bushings	8 inches	Elliptical	2	Lifetime
HEAD-SWIVEL FURLERS							
HARKEN	MkIV ✓	\$1,918 / West Marine	Torlon and Delrin	6 5/8 inches	Elliptical	2	7 years
FURLEX	200S ★	\$2,939 / Riggers, sailmakers, boatyards	Stainless steel	7 1/4 inches	Elliptical	2	5 years
US SPARS	Z-Spar Z-780 ✓	\$960	Stainless steel	2 1/3 inches	Elliptical	2	2 years

★ Best Choice \$ Budget Buy ✓ Recommended

the wire or rod. Once the furler's top assembly butts against the headstay's upper terminal, it's time to trim and fit the last two interconnecting sections. This is accomplished by momentarily loosening the headstay and slipping on the roller drum. After reattachment, the drum's bushings and end stop are put in place.

The Alado installation process seemed very user friendly, but to make sure, we did our own test installation aboard a Bill Shaw-designed Pearson 32. It is the only one we're long-term field testing.

It comes as a kit, and the top of each half-foil extrusion has a pre-drilled hole that accepts a plastic bushing that clamps over the headstay. These high molecular-weight plastic bushings allow the foil to rotate freely on the headstay. Each extrusion is an example of careful fabrication and quality control. Even after going through acid washing and anodizing, the smooth sliding joints allow each segment of the foil extrusion to slide into another with impressive precision.

Our test installers found the manual to be adequate but not exemplary. Alado plans to offer a how-to video on its website in the near future.

The Alado furler's design uses integral halyard(s) to place a compression load on the foil, causing the sliding extrusion segments to stay where they belong and eliminating the need for Loctite, set screws, and a top swivel. The down side is coping with the furling sail halyards (one or two, depending upon user preference), and how to tie them off in a manner that will keep them free from slatting against the sail or keep their tails from snarling up the furling process.

Once installed, the furler was near flawless. With an easy pull, the 120-percent genoa we hoisted wound into a tight, evenly rolled bundle about the headstay. The fore and aft slotted foils seemed quite capable of handling the torque loads associated with the furling process.

The unit's furling ease matches that of much more costly competitors. Whether or not we will be as optimistic about how the furler functions in a 35-knot squall remains to be seen. But we can say that our initial look revealed a well-designed and well-made unit that was a snap to install, literally. Continued testing of the system will evaluate friction, corrosion, and the impact of repeated use.

**Bottom line:** Dealing with completely external halyards is a bit of a nuisance but by no means a show stopper. The ultra simplicity of the A2 and lack of complex moving parts make it appealing for DIY installation, especially for those with cruising sailboats in the 30- to 35-foot range. Its low price and lifetime warranty earn it the Budget Buy spot.

**CRUISING DESIGN INC.**

The Cruising Design Inc. Flexible Furler set the stage for integral furlers, and recent innovations have improved its operation. The ball-bearing drum option places compression and axial loads transmitted during furling to a ball-bearing cup that greatly reduces friction. The foil is a one-piece plastic extrusion that acts as an effective bushing, a bolt rope slot, and halyard hider. A molded-plastic foil cap is fitted with a turning block, and the halyard is slotted into the leading edge of the foil.

The CDI design has one drawback that should be seriously



The test field included the Spin-Tec Triumph, Schaefer 2100, Z-Spar Z-780, Profurl LCI-32, Harken MKIV, Facnor, Harken Cruising, Furlex 200S, Reefurl, and the CDI FF6BB.

considered: The plastic foil extrusions are quite heavy and adding weight aloft does affect the righting moment of a boat. It earned a Good for construction.

However, it was quite easy to install and notched an Excellent in that category.

**Bottom line:** The simplicity of the installation and the limited number of parts make this unit an appealing design, but if your boat is already on the tender side and shy on ballast, a furling system with a lighter head foil should be considered.

## REEFURL

If simplicity, a rugged yet functional approach to construction, and low cost float your boat, the Reefurl system deserves a good look. The hefty, round 1½-inch-diameter foil sections are pop-riveted together with 3/16-inch stainless steel rivets. There's no upper swivel and a welded fitting contains a small sheave for the external halyard that ties to the head of the jib with a bowline.

The drum rides on the headstay with thrust loads being countered by plastic washers and axial loads handled via a loose-fitting plastic tube positioned between the headstay and the drum. The same bushing segments are used in each foil segment all the way to the built-in halyard.

The 5-inch inner and 10-inch outer diameters of the drum make it the largest we tested, affording more torque to compensate for the absence of a more sophisticated bearing system.

Because there's no rotating tack shackle or head swivel, the luff of the sail furls all at once and the sail shape of a deeply reefed headsail becomes a sailmaker's challenge. Manufacturer's literature claims that the system can turn a large genoa into a storm jib. Perhaps in terms of sail area, this is true, but the resulting shape, weight of material and massive leading edge does not result in an efficient storm sail.

The lengthy built-in fairlead helps keep the line evenly spaced on the drum and to some extent makes up for the lack of a cage or bar keepers that keep a loosened reefing line from falling off the drum.

The Reefurl earned across-the-board Goods for installation ease, construction quality, and performance.

**Bottom line:** The strong point of this no-frills furler is that there are few things to break, and if any do, repairs are very straight forward.

## SPIN-TEC

The Spin-Tec Triumph 2000 is another good example of simplicity and reliability in an integral furler. The elongated stainless-steel drum rides on a Delrin bushing that is fitted to the headstay turnbuckle.

The shiny drum assembly is fabricated from high-quality welded stainless, earning it an Excellent rating for construction quality. The drum is quite heavy, but with the added weight and bulk comes significant strength.

Aluminum U-channel links are used to join foil segments, and polyurethane glue (Gorilla Glue) holds the foil links in place. Torque loads radiate from foil to foil through these links. The glue, which expands as it cures, is designed to act as a bushing between the foil and the connector. Notches in the foils strengthen this connection. We're curious to see how years of use treat these

glued junctions. Spin-Tec reported that some of these units have been in use aboard offshore cruisers for more than 15 years with the original glue still doing its job.

The Spin-Tec Triumph 2000 design has no permanent halyard attached to the hoisted genoa, which makes halyard wraps a non-issue but also makes setting and dousing the sail a bit of a chore with the standard setup. A crew must go aloft and shackle or unshackle the head of the sail to a bail at the top of the foil segments. The assumption is that if bad weather makes dousing difficult, you can always roll up the sail and wait to make the sail change.

We much prefer Spin-Tec's optional setup, which incorporates an innovative halyard attachment accessory that is sold separately for \$309. The accessory—a rectangular, plastic slide that rides along the foils like a train over tracks—allows the sail to be raised and lowered from the deck. To raise the genoa, a mast halyard is attached to the base of the slide and a shackle at the head of the sail is attached to the slide's top via a hooked fitting. The slide (with sail attached) is hoisted to the top of the foils, where the hooked fitting catches a bail and releases itself from the slide. The slide is eased back down its foil track, and it and the halyard are removed. Dousing the sail is done via a similar hoist and unhook process. Spin-Tec offers a video of the unique process at [www.spin-tec.com/pages/movie.html](http://www.spin-tec.com/pages/movie.html). The design shows some true ingenuity but accomplishing the feat at 0300 on a storm-tossed foredeck might be a different story.

Having a sail that can quickly and easily be doused in any weather is paramount, and Spin-Tec recommends all offshore boats purchase the halyard accessory. We recommend anyone buying the Spin-Tec furler purchase the optional halyard accessory because being able to dump a sail is important even in coastal waters where summer squalls can be violent.

The Triumph 2000 comes with a lifetime guarantee and a no-maintenance guarantee, good offers for such a pricey piece of gear.

**Bottom line:** The Spin-Tec is a high-quality, well-engineered furler, but we'd like to see the optional accessory made standard.

## CONCLUSION

We believe that there's no perfect system, but some of those tested were better than others. Non ball-bearing equipped furlers made up for some of their added friction by using larger-diameter drums, and the net effect is much like sailing with a longer tiller. The bottom line was that furling a non ball-bearing design took a little harder pull, but in the size range we tested, the pull was still completely acceptable. Those with bushings also require less maintenance.

CDI, with its bearing cup in the base of the furler unit and full-length plastic foil extrusion, was the easiest in this category to furl. Reefurl, with its large drum, and Spin-Tec with its vertical wrap approach were also easy enough to furl. Alado earned a good rating in this category.

With all products performing well, we looked to other qualities for our picks. In today's tight economic climate, a frugal sailor cannot ignore the value of dollars saved, and with three units selling for under \$1,000, we felt this bargain end of the spectrum deserved serious attention. The final call was a tough one, but

for us, the slide-together foils, and easy, no need to climb the mast, DIY installation earned the Alado A2 *Practical Sailor's* recommendation and the title of the most cost-effective choice in this category.

However, when it comes to all-weather easy furling, the units with efficient ball bearings won out, and the Seldén Furlex remains our pick for Best Choice among the headsail furlers we tested.

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### ***Retrofit Kit Powers Manual Furlex***

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Seldén offers a Furlex option that converts its manual roller furler into a reliable pushbutton power furling system. At the heart of the power furler is a reversible 12- or 24-volt DC motor unit that merges with the lower bearing assembly of an existing or new system, creating a drive unit capable of power unwinding, reefing, and furling.

Electrical wires are led through a stainless deck collar to a well-sealed connection box. From there, wires continue on to a control box that acts as the junction center for battery leads and the control switch input line. Signals from either the cockpit-mounted control or an optional remote control activate a relay in the junction box, switching polarity and delivering an in or out response of the headsail furler.

In order to minimize voltage drop during furling, Seldén recommends having at least 115 amp hours available in the bank operating the furling system. The fuse minimum in the circuit is 125 amps, and the wire gauge is dependent upon the length of run. The nominal 12-volt DC power ratings of the furling units are approximately 18 amps (200E) and 37 amps (300E). The hefty reduction ratio (53 to 1 for the 200E) and belt drive deliver considerable torque at a reasonable power drain. Naturally, as the load on the sail and tension in the furling system increases, so



*The Furlex Electric can turn an existing or new manual Furlex into a power furler.*

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does the current draw.

Those already planning to install an electric windlass and or bow thruster may be able to utilize the high current carrying wiring for these components to do double or triple duty. An energy audit identifying how much total power is available and how much current is used at any one time will indicate whether or not this is a viable alternative.

The installation is well illustrated in the manual that comes with the unit. It begins with the disassembly of the manual furling components and changing of the sail feeder.

With the line guide off, and the line drum split in two, a decision must be made as to whether or not to lower the entire furler to the ground. Once on the ground, mounting the motor drive and replacing the toggle with the “high-torque” alternate is

quite straightforward. The installation can be done with the furler in place but fitting the components becomes a little more of a challenge. For a skilled do-it-yourselfer, with a friend willing to lend an extra set of hands, it's a doable task, however the most painless approach may lie in engaging a Seldén-familiar rigger to do the job.

As with any power tool, there's a need to remain aware of the torque available at your fingertip's command. Making sure that the sheets are eased and the spinnaker halyard is not caught in the fray is more important than ever. The auto furling action is like having an extra crew on board—one with very thick shoulders. ▲

# Chapter 3

## Light-Air Sails

*Major Lofts Roundup • Market Survey • More Reader-Recommended Lofts • Shaping A-Sails*

Almost every production-built boat that *PS* editors and contributors go aboard these days has an inventory that includes an asymmetrical spinnaker. That isn't a statement we could have made even five years ago. The increasing popularity of asymmetrical spinnakers on cruising boats is owed in part to technological advances in these products, the inherent performance and handling advantages over their symmetrical siblings, and the ongoing marketing efforts of many sailmakers.

Asymmetrical spinnakers aren't a new phenomenon by any means. Pioneering sail designers like Ken Rose, Bruce Banks, and Peter Sutter were experimenting with these shapes well before many *PS* readers were born. However, the advent of asymmetrical spinnakers in the cruising realm is fairly recent, and their widespread acceptance among cruisers still has a long way to go.

Asymmetrical spinnakers—"A-sails" as many sailors have grown to refer to them—are in many respects a simplification of the conventional, symmetrical spinnaker. For both sailmakers and their customers, this is good news. With an A-sail, there's no bothering with a spinnaker pole (though many boats these days are designed and built with bowsprits for the purpose of setting asymmetrical spinnakers), and there are fewer control lines to worry about. And not only are they simpler, A-sails are potentially much more versatile than symmetrical spinnakers. They can be flown easily through a broad range of wind angles. How low and how high you can steer with these sails is partially a function of the sail's design, the boat's design, and the existing sailing conditions (wind speed and sea state). But generally

speaking, you can make use of an asymmetrical spinnaker from roughly 50 degrees apparent wind angle down to 130 degrees.

Asymmetrical cruising spinnakers are ordinarily constructed out of nylon, due to that material's forgiving nature. Nylon is stronger than polyester (Dacron), so it has slightly higher resistance to tearing. It also has greater elasticity, so it can resist shock-loading. Downside? Nylon sails are more prone to sail-shape distortion when the wind pipes up.

Most sailmakers favor a tri-radial panel orientation for cruising asymmetrical spinnakers. This is because that approach allows them to make the best use of the warp-oriented yarns in the fabric. (The warp yarns—those that run the length of the fabric—are pre-tensioned during weaving and thus don't stretch as much as the fill yarns, those running 90 degrees in the other direction.) A proper tri-radial construction ensures that the major loads on the sail will align with the most stretch-resistant axis of the cloth. This, too, makes these sails more versatile.

### THE SCAN

With the objective of determining what asymmetrical spinnaker products are available, and how they vary, we interviewed representatives from the major sailmaking companies in the U.S. We also touched base with a few lesser known, more regional businesses. We asked each for a quote for an asymmetrical spinnaker to be used on board a fictional Catalina 320 (standard rig, shoal-draft keel) that is kept near Norfolk, Va., and sailed primarily on the lower Chesapeake Bay. We said that this boat never races, but does occasionally cruise for several days on the Chesapeake. Other than that, it is used only for family daysails. We told them that the owner wanted a sail that would enhance the boat's performance in 5 to 12 knots of wind, both reaching and running. As you might expect, the responses we received varied widely, both in their design specifications and in their prices. Here, in alphabetical order, is what the big-label sailmakers had to offer.

### DOYLE SAILS

Based in Marblehead, Mass., with more than 50 lofts in 20 countries, Doyle Sails offers two product lines for asymmetrical



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*New fiber and finishing technology makes it possible to fly lighter 'A'-sails in higher winds, but cruisers will still want to size conservatively. Here, a Swan 40 flies a 1.5-oz. Quantum V-3 on a blustery day on San Francisco Bay. (Photo courtesy of Quantum Sails.)*

PS	MARKET SCAN							ASYMMETRICAL SPINNAKERS						
	DOYLE	HOOD	NEIL PRYDE	NORTH	QUANTUM	UK HALSEY	ULLMAN							
PRODUCT	Asymmetrical Power Cruiser	Hood Cruising Chute	Vectrix	Gennaker G2	Vision V3	Tri-Radial Flasher	Coastal Cruising Spinnaker							
PRICE	\$2,380	\$2,015 (tri-star) \$1,926 (tri-radial)	\$1,573	\$2,276	\$1,933	\$2,320	\$2,332							
CLOTH MAKE AND TYPE	Nylon .75-oz. Contender	Nylon ripstop 1.5-oz.	.75-oz. Challenge Fleetwing and 1.5-oz. Contender Nylite 90	.75-oz. and 1.5-oz. Norlon	.75-oz. Challenge Fleetwing	.75-oz. Challenge Fleetwing	.75-oz. Challenge Fleetwing							
SIZE (SQ. FT.)	688	887	745	796	717	946	977							
AWA RANGE CLAIMED	60° to 130°	65° to 130°	55° to 150°	90° to 145°	70° to 150°	55° to 150°	80° to 160°							
LEECH (FT.)	40.5	39.23	39.5	40.2	38.48	42	37							
LUFF (FT.)	44.68	43.58	43	45.3	45.27	45.76	43							
MID-GIRTH (FT.)	18.98	18.31	20	21.5	20.5	19.12	19							
FOOT (FT.)	21.08	20.35	20.5	22.1	21.47	20.34	21							
WARRANTY	1 year	1 year	2 years	1 year	1 year	1 year	1 year							
DELIVERY	4 weeks	3 weeks	3-4 weeks	6-10 weeks	3-4 weeks	3-4 weeks	2-3 weeks							
SNUFFER/PRICE	ATN Sleeve, \$341	Hood squeezer or ATN, \$380	Chutescoop, \$250; ATN, \$400	ATN, \$370	ATN, \$416	ATN, \$436	ATN, \$471							

*PS asked seven major sailmakers for quotes on an asymmetrical spinnaker for a 32-foot Catalina, and they came back with a wide range of prices and recommendations. Some of the quotes represent the absolute lowest late summer/fall prices at the time of the survey. Regular prices are subject to change and can vary 10- to 20-percent throughout the year.*

cruising spinnakers: the APC (Asymmetrical Power Cruiser) and the UPS (Utility Power Sail). Chris Howes, the company's vice president for sales and a 22-year veteran in this industry, told PS that all of Doyle's spinnaker designs have evolved from the company's research and design in the performance arena. Still, he said, Doyle has been building cruising spinnakers since the company was established in 1982.

"The APC, which was first introduced in 1993, is our standard cruising spinnaker. It's a full size, performance-oriented sail, but the design has been toned down to make the sail easy to trim," explained Howes. "The UPS is more of a hybrid between a genoa and a spinnaker, and it's much like a Code 0." Doyle salesmen usually recommend using the UPS in conjunction with a continuous line furler, or an ATN Sleeve. "It's a smaller sail, usually easier to manage, and its optimum apparent wind angle is 35 to 90 degrees. With the APC, you can usually sail from 60 degrees to 130, all of that depending upon the wind and the sea state."

The UPS sails are often built using polyester cloth, usually with Technora woven in and a film applied. The APC sails, said Howes, are all built from high-end nylon at the company's Marblehead facility. Nylon, he says, is very tricky to seam, so Doyle deliberately has a particular person—Kim Allison—in charge of assembling all the nylon products. "She's been doing this for a long time and is very experienced," he said, adding that all the seams on Doyle's nylon spinnakers are both glued and stitched for smoothness and longevity.

For PS's particular request, Howes would recommend an APC built from .75 nylon with a Vectran luffline and Dacron leech and

foot lines. The sail would come with labeled corners, color-coded edges, and a launching bag. Each sail, he told us, comes with the appropriate length downhaul, and he encourages customers to purchase sheets with snap-shackle attachments.

Doyle representatives almost always recommend that a customer use a dousing sock with the APC on boats up to 50 feet, and Howes specified the ATN Spinnaker Sleeve. For boats larger than that, they specify the appropriate fixed furling system or a snuffing device. This 688-square-foot sail would cost us \$2,380, he said, and carry a one-year warranty. That's a spring price, he said, whereas sails are customarily discounted in the fall.

### HOOD SAILMAKERS

We spoke with both Joe Cooper, a sail consultant at Hood Sails Rhode Island, and Tim Woodhouse, the company's owner and president. They have each spent more than 25 years in the sail-making industry, and both said they'd steer our customer toward the Hood Cruising Chute, which they also referred to as an MPS (multipurpose spinnaker). These sails have been in production since 1977, with ongoing refinement. Hood's literature describes the product as having a "narrower, flatter head, which also lowers the center of effort," compared to a conventional symmetrical spinnaker. Those features are intended to "improve handling and alleviate some of the control problems" associated with symmetrical kites.

The company also claims that the Hood Cruising Chute's tri-radial and tri-star designs "exploit the strong warp characteristics of nylon to control shape and minimize distortion." Both

Woodhouse and Cooper were emphatic that not all sailmakers utilize nylon cloth in the same way. “We always align the vertical axis of the triangle of any spinnaker panel with the warp axis of the cloth,” Woodhouse said. That “balances the bias properties of that triangle.”

Both sailmakers said that they commonly see a different design approach on other sails that are brought in to Hood for service. On those sails, said Woodhouse, “one side of the panel is aligned parallel to the warp axis of the material, so the other side is aligned on the bias...and that causes the sail to become lumpy and unsmooth with use.”

Cooper told us that Hood’s MPS products tend to be larger than comparable sails sold by their competitors. “We use the I dimension of the rig for the luff length, and we generally use 165 percent of the LP (Luff Perpendicular measurement of the foretriangle) as the foot length. The mid girth is 90 percent of the foot length and the leech is 90 percent of the luff.”

For the average cruising sailboat, Cooper said, this sail can be used from about 65 degrees apparent wind angle in light air (5 to 7 knots, and mild seas) to about 130 degrees in winds from 15 to 18. “Depending upon how accurately the owner wants to steer and how much he wants to employ technique, he might be able to sail as low as 140.” And, “it’s perfectly acceptable to run dead downwind with the kite alone...so it’s a pretty utilitarian sail. If you have a 30-foot or 35-foot boat, in 20 knots of wind, this sail will be all the power you need.”

Woodhouse told us that the objective is to make the sail easy to use for the owner, with built-in longevity. He said the company would always recommend 1.5-ounce cloth because the tear strength is superior to .75-ounce cloth. “Three-quarter-ounce cloth tends to lose one-half its tenacity (tear strength) after about 300 hours in UV light. A sail made from 1.5-ounce cloth may weigh a little more, but it won’t lose half its tenacity in that time,” he said. Cooper added that the design emphasis would make the sail forgiving so that an autopilot could steer the boat easily with that sail up, but “it won’t be so flat that the owner can’t sail downwind.”

As for a snuffing device, Hood manufactures the Hood Squeezer. It’s not unlike the ATN Spinnaker Sleeve in that it’s a nylon tube with a fiberglass bell at the bottom.

Cooper’s quote included an MPS built with 1.5-ounce nylon fabric for \$2,395 for the tri-star and \$2,306 for the tri-radial, each with a three-year warranty. That price would include the Hood Squeezer or ATN Spinnaker Sleeve (usually \$380 for either unit). Customers can choose from a full spectrum of colors and color combinations, and the normal delivery time is three weeks.

## NEIL PRYDE SAILS

Bob Pattison, the technical director for Neil Pryde Sails, told us that he remembers making his first asymmetrical spinnaker back in the early 1980s. Based in Stratford, Conn., Neil Pryde Sails builds a line of asymmetrical spinnakers it calls Vectrix, which Pattison said can be used in winds from 3 to 15 knots (seasoned sailors would likely use them in more wind) from 55 to 150 degrees AWA. For ease of use, he explained, these sails are designed approximately 10 percent smaller than the company’s regular, full-dimension asymmetrical spinnakers. This means

that the foot of the sail is about 6 percent shorter and the area in the shoulders has been diminished.

“Historically...boats were equipped with many sails,” Pattison said. “But with the improvement of roller-furling systems, for a large percentage of cruising sailors, two upwind sails is now the norm. So adding a cruising spinnaker really fills a big void.”

Neil Pryde’s Vectrix sails are made using radial construction, with either tri-radial or true-radial panels. According to Pattison, the tri-radial sails are primarily for light-displacement boats, and most customers order true radial sails. The company designs the sail with a high clew to accommodate varying wind angles more easily and make the sail more versatile.

The company’s sales reps look first at boat type in order to determine what kind of asymmetrical spinnaker to build. “Spinnaker size governs the top end of the sail’s wind range, so if you go with a maximum size, people won’t use the sail quite as much. Another important factor is locale.”

Pattison said his company would recommend a 165-percent asymmetrical spinnaker built with a combination of 1.5-ounce nylon in the high-load area of the luff and .75-ounce cloth in the aft section of the sail. He said this would result in a “better-flying but stronger sail overall.” He also sent along a “Cruising Spinnaker Overview” as well as a how-to article on the techniques of managing asymmetrical spinnakers, and instructions for using the company’s color selection program.

He recommended that we also purchase a dousing sock, saying that Neil Pryde supplies the ATN Spinnaker Sleeve for boats 45 feet and longer and the Chutescoop from V.F. Shaw for boats shorter than 45 feet (\$250 for the Chutescoop and \$400 for the ATN). Instead of a strop to fit around the furled headsail and keep the spinnaker tack close to centerline, Neil Pryde prefers its own version: parrel beads. These sell separately for \$47, but are usually included in the price of the Vectrix sail, which would be \$1,573 in this case. Add the dousing sock, and that’s \$1,823 for the 744.76-square-foot sail, which comes with a two-year warranty on material and workmanship. Delivery time would be three to four weeks.

## NORTH SAILS

In business for over 30 years, North Sails is the largest sailmaking firm in the world, with franchise or affiliate lofts on five continents. *PS* spoke with Jack Orr, a 20-year veteran of the industry and a sail consultant who operates out of the company’s office in Milford, Conn.

Orr told us that North has refined its asymmetrical cruising spinnakers into three product areas that are designated using nomenclature from the racing arena: The company builds G-Series gennakers in G-0 (relatively flat for tighter angles), G-2 (largest and most powerful), and G-3 (smaller, flatter, and more versatile than the G-2) configurations. These sails are made using North’s proprietary nylons, Norlon 70 or Norlon 250, in cloth weights of either .75-ounce or 1.5-ounce.

Two things distinguish North’s A-sail products, Orr said. “We make so many more of these sails than anyone else that we’ve got volumes of experience. And, our technical approach is both sophisticated—with wind-tunnel testing, and finite element analysis on computers—and pragmatic—we get a lot of feedback from



*A UK Halsey Flasher powers an Express 37 across the water. (Photo courtesy of UK Halsey.)*

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our extensive network of sailmaking professionals who spend a lot of time on the water. That experience, derived from developing, building and using racing sails gives us the knowledge to make a cruising A-sail more stable and therefore easier to trim.”

Two days after we spoke with him, Orr sent us an e-mail that contained quotes for all three of the G-Series models, but said that the best choice for our customer would be the G-3. “It has the most versatile shape, being flat enough to reach well and a little smaller in size, making it easier for shorthanded sailing. I would recommend .75-ounce Norlon (nylon) cloth for the body of the sail with some 1.5-ounce in the high-load area of the luff and head. These sails can generate more loads in the luff than a conventional kite, so we usually offer a step-up cloth weight,” he explained.

This sail, which would measure 796 square feet, would cost \$2,646, and would include the Snuffer (\$370 if purchased separately), an R-F Tack belt (similar to the ATN Tacker), as well as spinnaker turtle bag. North also provides a CD ROM video that explains the basics of flying a gennaker and using the snuffer.

North’s prices change seasonally. “The best time to buy a sail is always late-summer and fall.” Our quote, he told us, reflects a September price. After a 50-percent deposit is received, the customer is directed to the company’s Color Me Fast program online where he will be guided through the color and layout process. Delivery time depends on the season, but it will usually be somewhere from six to 10 weeks.

## QUANTUM SAILS

Based in Annapolis, Md., and just now completing its first decade of existence, Quantum Sail Design Group is a relative newcomer to the industry, but that statistic belies the depth of experience shared by this company’s principal players. The organization now boasts 45 lofts on five continents. *PS* contacted David Flynn, a Quantum sail consultant with over 20 years experience.

Flynn explained that Quantum’s asymmetrical spinnakers

for cruising applications—the Vision Series—are built in three styles. Like North, its numeric names derive from racing, with V0, V3, and V5 models that graduate from close reaching to broad reaching capabilities as the numbers increase. Flynn credits some of this to the company’s direct involvement in sail development for the America’s Cups of 1992 and 1995.

“The courses at that time featured reaching legs, so that spurred a lot of A-sail development and was the impetus for more efficient sails,” said Flynn. “One of our company’s first projects was a joint effort with the University of Maryland’s Department of Aerospace Engineering. They wanted to analyze off-wind sail shapes, specifically spinnakers, and that gave our designers access to their wind tunnel...Despite claims to the contrary, computer modeling or finite element modeling of spinnakers is very difficult, and virtual wind tunnels just aren’t that accurate.”

Stressing that the company is a custom sailmaker with essentially no off-the-shelf products, Flynn said he would recommend a V3 for our Catalina 320 owner. “Since this boat has a relatively modest J dimension, I sized this sail using 180 percent of J for the foot, making it a full size sail. Because the owner sails in the Chesapeake Bay, and the goal is light- to moderate-air reaching and running with an emphasis on broader, not closer angles, that should work out well. The mid-girth measurement (SMG) would be 95 percent of the foot since this is not a pure runner, but a sail that will see plenty of reaching.”

Flynn said that the cloth would be .75-ounce Challenge Fleeting nylon, which should be strong enough for the intended range of use. In fact, he said, .5-ounce cloth would be suitable, so the .75-ounce option would provide “a margin of error.” And Quantum, he explained, does not recommend fixing the tack to the headstay (with the use of something like an ATN tacker). “This harks back to the day when cruising spinnakers were more like cut-off symmetrical sails with short luff lengths that flew high up off the deck. Modern asymmetricals have a long luff, with the tack right at the pulpit level for close reaching, so there is little need for a tacker.”

The price Flynn offered for this 716.8-square-foot sail—\$1,933 (not including an ATN Spinnaker Sleeve, which would add \$416)—reflects Quantum’s fall prices. It would be roughly 10 percent more if purchased another time of the year. The sail would come with a turtle bag, and the customer would be able to choose from a full range of colors. Typically, said Flynn, the sail would be delivered by a sail consultant (where possible), who would install and hoist it on the owner’s boat while going over the fine points of its setup and use.

## UK HALSEY

*PS* contacted Adam Loory, the general manager of UK Halsey International, who works out of the company’s office in City Island, N.Y. Loory told us that UK Halsey first began building asymmetrical spinnakers in 1975 when the firm was operating under its original name, Ulmer Sails. According to Loory, the company’s chief designer at the time—Owen Torrey—had perfected the radial head design for symmetrical spinnakers, so it was a logical extension for him to apply that to an asymmetrical

application. Though UK Halsey's asymmetrical spinnakers still utilize tri-radial construction, and the sails are still marketed under the original name—Flasher—the designs have evolved considerably since then.

UK Halsey, said Loory, essentially builds two lines of asymmetrical spinnakers for the cruising market, the Flasher and the tri-radial Flasher. The former uses horizontal panels in the middle of the sail, whereas the latter has only radial panels. "A Flasher is the least expensive model," said Loory. It's a more economical sail that's suitable for small boats up to 30 feet. "The tri-radial Flasher is more sophisticated, and it carries the loads better, especially when reaching...The development of the tri-radial is what we call the Matrix, with no straight horizontal panels in the middle of the sail. All the seams are rocked to follow the load lines. Essentially, all boats over 40 to 45 feet should be using the Matrix construction because it's stronger and holds the shape better."

Loory keenly stresses the importance of familiarizing customers with the proper use of the product. "If you don't teach them how to use it, the sail will stay in its bag, and then no one benefits." Loory and his colleagues at UK have developed several useful teaching tools, including instructional videos for jibing and dousing asymmetrical spinnakers. And he highly recommends the use of tapered spinnaker sheets with low-profile shackles like Tylaska T5s instead of knots, because these can help a less experienced sailor perform jibes easily. "Thick sheets will weigh down the clew and knots like bowlines will get hung up on the shrouds and the forestay during a jibe. All of that simply leads to frustration on the part of the owner."

Tripp Fellabom from UK Halsey South in Charleston, S.C., responded the same day of our request. (The Annapolis, Md., loft would normally serve a Chesapeake-based boat, but PS's researcher was based in Charleston, so the quote request went there). Fellabom sent us a quote specifying a 945.96-square-foot Tri-Radial Flasher to be built out of .75-ounce cloth. The sail would cost \$2,320, and Fellabom recommended we purchase an ATN Spinnaker Sleeve (\$436) and an ATN Tacker (\$80). He said that a tack line and tapered spinnaker sheets would add \$117 to the package for a full price of \$2,953. We'd have to make a 50 percent deposit to place this order, and normal delivery time would be three to four weeks. The sail, he said, would come with care instructions and warranty information. "When we delivery every A-sail," he told us, "we also give the owner a DVD called 'The Cruising Spinnaker A to Z.' It tells you everything you will ever need to know about these sails."

## ULLMAN SAILS

Known principally for the success of its one-design racing sails, Ullman Sails has been in business for over 30 years. Founder and proprietor Dave Ullman is a well-known competitive racing sailor with a slew of championships to his name. What was once a small family business has expanded to a company that now has 24 lofts on four continents.

Rather than offering a stock line of cruising sails, Ullman Sails prefers to custom-make its products according to the clients' needs and specifications. To fulfill that directive, the company has two distinct lines of cruising sails: Coastal and Bluewater. The underlying emphasis on the former is value; on the latter, it's durability

and strength.

We logged on to the Ullman Sails website ([www.ullmansails.com](http://www.ullmansails.com)) and registered our request for a quote. The company routed this to its loft in Deltaville, Va., and about a week later, we received a fairly detailed response from Jerry Latell, the manager of that facility.

For our Catalina 320 owner, Latell proposed to build an all-purpose radial-cut cruising spinnaker from the company's Coastal line using .75-ounce nylon from Challenge for the sail, which he said offers the best combination of quality and value. "There are size options," he said, "and I generally build spinnakers to match the boat, skipper, and sailing conditions, which usually falls into the range of 160 to 180 percent of the boat's J measurement. The Catalina 320 has a relatively large masthead fore-triangle, and for sailing on the Chesapeake Bay, I would recommend 170 percent, so the sail would measure 977 square feet overall. The design would favor the reaching side of the all-purpose formula. A reaching spinnaker has a narrower head and often narrower mid girths that allow it to be used at closer apparent wind angles. This sail would be good from about 80 degrees apparent wind angle in light air to almost 160 degrees off the wind in heavier winds."

The sail would run us \$2,332.

Latell told us that in addition to a strop like ATN's Tacker, almost all of the cruising spinnakers his loft builds are delivered with spinnaker sleeves. In our case, he said he'd specify ATN's Spinnaker Sleeve.

"If a customer is experienced with using a cruising spinnaker, then they'll often just come to the loft and pick up the sail. But if he were a novice we would provide a training test sail as part of the sail purchase. During that, we'll demonstrate rigging, handling, and trimming the sail. And many of our new customers will have us rig the sheets and tack lines as part of the sail purchase."

Throw in the ATN Sleeve (\$471), the Tacker (\$110), and the purchase would total \$2,913. The sail would carry a one-year warranty.

## CONCLUSION

Although we would not purchase sails based solely on price, our market scan provided much useful information. The pricing could be broken down into three groups. Only Neil Pryde's sail/snuffer combo came in under \$2,000. In the mid-range, Hood (tri-radial) and Quantum priced a sail and sock just over \$2,300. The Hood (tri-star), Doyle, North, UK Halsey, and Ullman rounded out the high end at \$2,600-plus. The sailmakers discussed in the "Market Survey" section offered very competitive prices, some beating Neil Pryde's. With many sailmakers, these prices can vary from 10 to 20 percent during the year. Late summer and fall are generally the best times to buy. Regardless of which sailmaker we settled on, we'd seek out the opinion of sailors in our area using a similar sail, and we would request a cloth sample.

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## Market Survey: Smaller Lofts

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Recognizing that there are more sailmakers in business than just those whose ads you're apt to see in glossy publications, we



*Like many of the Ullman crew, Doug Fisher of Ullman Sails in Sarasota, Fla., applies knowledge gleaned from racing to his sailmaking.*

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canvassed a number of representative businesses around the U.S., asking what they'd offer our particular customer in the way of a cruising asymmetrical spinnaker. There are dozens of other lofts out there, so this stands as only a partial presentation of the many options available.

Harry Pattison of Elliot Pattison Sails responded to our request for a quote by telling us that the company builds asymmetrical cruising spinnakers in two versions: an Offshore and a Weekender. All sails are designed and built at the company's facility in Newport Beach, Calif. The Offshore model features an all tri-radial panel layout while the Weekender utilizes vertical panels in the foot section. This latter approach, he said, keeps the stronger warp yarns aligned with the vertical loads coming out of the tack and clew while also keeping the price down. All sails are computer designed and the panels are cut by a CAD cutter. Given our scenario, Pattison said he'd recommend a Weekender, built out of .75-ounce nylon with a 165 percent girth resulting in a 796-square-foot sail. This sail would cost \$1,904, but a 10 percent discount for online orders knocked that down to \$1,713.60. By adding an ATN Sleeve and a Tacker, the full freight would be \$2,177, with a one-year warranty.

Aaron Jasper of Jasper & Bailey Sailmakers in Newport, R.I., offered his company's Cruising Star, which features all-radial construction "for the best possible thread line orientation to reduce stretch and eliminate bias distortion." He told us that this sail would be effective with the apparent wind from 60 to 140 degrees. Should we want to sail lower than that using the sail, the owner's guide Jasper provides with each sail offers information on the best way to do that. For easier sailhandling, his company recommends coupling the Cruising Star with ATN's Sleeve, and Jasper has dubbed that combination the Cruise Control system. He offered us a 753-square-foot Cruising Star, built out of .75-ounce nylon with a girth of 21.6 feet for \$2,130. Throw in the ATN Sleeve (\$420), and that would be \$2,550. The sail carries a one-year warranty.

FX Sails is an online sail loft that builds custom mainsails, headsails, and spinnakers. For this scenario, Sandy Goodall, head of design for FX Sails and former technical director for Elvström Sails, recommends an 891-square-foot asymmetrical spinnaker with 12 head panels constructed of .75-ounce Challenge Fleetwing nylon. "A modern design like this," said Goodall, "can reach quite well and quite high in light to medium conditions, close-reaching up to 70 degrees apparent wind angle in about 3 to 8 knots of breeze." This sail, with an ATN Snuffer and Tacker, would be priced at \$2,557 and would carry a three-year warranty. But FX Sails offers two other options: an A-sail generated by the firm's online quoting system (829 square feet, 1.5-ounce nylon with an ATN Snuffer and Tacker, for \$2,101), and a sail from the company's sister site at The Sail Store ([www.thesailstore.com](http://www.thesailstore.com)). (899 square feet, 1.5-ounce nylon, with the ATN Sleeve and Tacker, \$1,877).

Somerset Sails in Barker, N.Y., specializes in mail orders. It quoted a tri-radial asymmetrical spinnaker out of .75-ripstop nylon with any color or combination of colors the buyer would



like. The price of \$1,930 would include a Chutescoop, but not a stop or shipping. The company offers one of the most appealing warranty arrangements: It will repair the sail for free as long as the original purchaser still owns the boat.

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### **More Reader-Recommended Lofts**

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**AirForce Sails**, [www.airforcesails.com](http://www.airforcesails.com)  
**Atlantic Sail Traders**, [www.usedsails.com](http://www.usedsails.com)  
**Bacon & Associates**, [www.baconsails.com](http://www.baconsails.com)  
**Banks Sails**, [www.bankssails.com](http://www.bankssails.com)  
**Bremen Sails**, 305/635-1717  
**Cruising Direct**, [www.cruisingdirect.com](http://www.cruisingdirect.com)  
**Eastern Sails**, [www.easternsails.com](http://www.easternsails.com)  
**Elliott Pattison**, [www.epsails.com](http://www.epsails.com)  
**Elvstrom-Sobstad**, [www.sobstad.com](http://www.sobstad.com)  
**Fairclough Sailmakers**, [www.fairclough.com](http://www.fairclough.com)  
**Haarstick Sailmakers**, [www.haarsticksailmakers.com](http://www.haarsticksailmakers.com)  
**Hathaway Reiser and Raymond**, [www.hathaways.com](http://www.hathaways.com)  
**Hong Kong Sailmakers**, [www.hksailmakers.com](http://www.hksailmakers.com)  
**Jasper and Bailey Sails**, [www.jasperandbailey.com](http://www.jasperandbailey.com)  
**Kappa Sails**, [www.kappasails.com](http://www.kappasails.com)  
**Lee Sails**, [www.leesails.com](http://www.leesails.com)  
**Mack Sails**, [www.macksails.com](http://www.macksails.com)  
**Nat Wilson Sail Loft**, 207/633-5071  
**Pineapple Sails**, [www.pineapplesails.com](http://www.pineapplesails.com)  
**Point Sails**, [www.pointsails.com](http://www.pointsails.com)  
**Port Townsend Sails**, [www.porttownsendsails.com](http://www.porttownsendsails.com)  
**Sabre Sails**, [www.sabresails.com](http://www.sabresails.com)  
**Sails East**, [www.sailseast.com](http://www.sailseast.com)  
**The Sail Warehouse**, [www.thesailwarehouse.com](http://www.thesailwarehouse.com)  
**Thurston (Quantum) Sails**, 401/254-0970  
**Santa Cruz Sails**, 831/454-0868  
**Shore Sails**, [www.shoresails.com](http://www.shoresails.com)  
**Schurr Sails**, [www.schurrsails.com](http://www.schurrsails.com)  
**Sperry Sails**, [www.sperrysails.com](http://www.sperrysails.com)  
**Super Sailmakers**, [www.supersailmakers.com](http://www.supersailmakers.com)  
**Yager Sails**, [www.yagersails.com](http://www.yagersails.com)

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## Shaping the A-Sail

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In designing an asymmetrical cruising spinnaker, most sailmakers begin with the boat's foretriangle rig dimensions (I and J), and combine those with information about the intended use of the sail (tight reaching, reaching, or running) and information regarding where the sail will be used.

In general, close reaching sails are smaller and flatter, and sails meant for broad reaching and running are larger and deeper. For a flat, tight reaching sail, like North's G-0, Quantum's V-0, or Doyle's UPS, a sailmaker would likely start by prescribing the A-sail's luff to be anywhere from 90 percent to 100 percent of the distance from the stem to the spinnaker halyard exit box on the mast. That will give the sail a relatively flat luff for tighter sailing angles, but also preserve some latitude for the user so that he could ease the tack line and develop a slightly fuller shape for sailing somewhat deeper angles.

The foot dimension speaks to the overall breadth of the sail. Generally, sailmakers take their cue from the boat's J dimension to determine this. A flat reaching A-sail would

have foot dimension around 150 percent to 160 percent of the J measurement. A deeper reaching sail would likely have a foot dimension closer to 180 percent.

The mid-girth measurement is ordinarily described as a percentage of the sail's foot length. For instance, a large, versatile, reaching A-sail like North's G-2, Quantum's V-3, or Doyle's APC, would have a slightly longer luff than its flatter counterpart, and would be designed with a mid-girth of that's closer to 95 percent of the J. The mid-girth measurement on the flatter sail (the G-0, V-0, or UPS, etc.) might be smaller, say 85 percent to 90 percent of the J.

Three other concepts are instrumental in determining an A-sail's shape: Aspect ratio—how wide the sail is relative to its height—the twist profile of the leech, and the distribution of vertical camber. Keep in mind, that a sail's fullness will almost always be in flux due to uncontrollable factors: The tack and clew can and do move about, and their relative positions affect the sail's depth. Also, the wind is rarely constant; when it's stronger, Nylon tends to stretch more, increasing the sail's depth. ▲

# Chapter 4

## Foil-less Furlers

*Code Furler Test • Test Update • Tech Tips • Light-air Sailing with a Twist*

Roller furling has pushed piston-hanking headsails to the brink of extinction, and with this roller revolution has come one major drawback: the realization that one size really doesn't fit all.

Roller furling makes headsail handling a whole lot easier, but it also results in a significant loss in light-air efficiency. This stems from the fact that the light No. 1 genoa and the hank-on drifter/reacher have become orphans without a stay on which to hank. The process of peeling a boltrope-fed genoa out of a furler slot and replacing it with another, even larger sail is an arduous task at best, one that makes a traditional hank-on headsail swap seem like easy business.

The real problem, however, begins when the breeze kicks up and the excess sail area of the lightweight sail must be diminished, not by roller reefing, but by dropping the sail and replacing it again with the heavyweight genoa. This swap involves sails that lack hanks, and do not remain tethered to a headstay while being doused. Light-air, loose-luff sails love to go over the side. Because of these issues, many sailors reluctantly accept the poor, low-end performance of a fairly flat cut, heavy furling genoa, and make up for its shortfalls with diesel fuel.

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A new generation of light-air roller-furling sails aims to resolve these issues. They require no fixed stay, and on a properly equipped boat, can be set, furled, doused, and dropped with relative ease. Interestingly, gennaker or code zero furlers share some similarities with early, forgettable jib-furler designs. Before roller-furling headsail gear evolved into the safe, reliable equipment of today, there was quite a bit of experimentation with foil-less, swiveling head-and-tack systems that allowed sails with sewn-in wire luffs to function as both a furling mechanism and a permanent headstay. This “all the eggs in one basket” scenario had a downside that was much more serious than the prospect of a torn headsail. Early malfunctions resulted in the industry shift to slotted foils that were placed over a permanent headstay—a decision that ushered in a safe, reliable roller-furling revolution.

However, a new twist on the old technology drew attention during a

re-start sequence of Race 2 in the 2000 America's Cup, when the Kiwis dragged a bag onto the foredeck of their AC boat and set a sail that set a new standard in light-air performance.

The crafty New Zealanders had baited the stylish Italians aboard Prada into following them on a long hitch away from the starting line. The breeze was light, and as soon as the Kiwis tacked, they hoisted a lightweight, furled-on-itself headsail coined a “code zero.”




It unrolled with a whoosh and left the Italians in the proverbial dust. As the two boats headed toward the line, it was indeed a rabbit and turtle race. Contrary to folklore, the Kiwis proved to be a smart rabbit, and the gains they made with the code zero and their consummate sailing skills still stand today.


### WHAT WE TESTED

Our testing focused on the assumption that if light-air sails could be made easier to handle and offer better performance, more cruisers and day sailors would opt to expand their sail inventory. Asymmetric spinnakers, gennakers, and good old lightweight drifter/reachers have been around for a while, but the latest trend is to take a few lessons from the Kiwis and grand prix racers around the world and stick them on a sprit. And by toning down the dimensions a bit, the result was a tame version of the sport-boat sail plan that can up the average sailor's light-air fun.

We tested seven models. Five of the units we tested were head-swivel and tack-drum designs with the sail luff acting as the



PS VALUE GUIDE FURLERS FOR LIGHT-AIR SAILS							
MODEL	BAMAR 	CDI	COLLIGO	FACNOR 	HARKEN (3126)	KARVER	SCHAEFER 
MODEL	Roll-Gen RLG08-15	Spinnaker Furler	Cn-5	Fx 2500	Code 0 MkII	Kf2	650
DESIGN	Torsion rope	Torsion rope	Swivel/drum	Swivel/drum	Swivel/drum	Swivel/drum	Swivel/drum
FURLING LINE	Endless	Endless	Endless	Endless	Endless	Endless	Spool
DRUM DIAMETER	5 inches	5 inches	7.5 inches	5.4 inches	6 inches	3.7 inches	1.75-4.5 inches
WEIGHT	8.76 pounds	9 pounds	7.85 pounds	2.6 pounds	4.6 pounds	2.7 pounds	2.4 pounds
TACK ATTACHMENT	Wire pendant	Line	Clevis/rings	Quick pins	Quick pins	Quick pins	Clevis/rings
ROLLER EFFICIENCY	Excellent	Good	Excellent	Excellent	Good	Good	Good
BEARINGS	Delrin	Torlon	Sealed SS	Sealed steel	Hardened steel	Stainless steel	Torlon
SAFE WORKING LOAD	4,840 pounds (code) 1,980 pounds (asym)	3,000 lbs.	6,000 pounds	5,511 pounds	8,000 pounds	5,000 pounds	3,400 pounds
BOAT SIZE	40 feet (49 feet max luff)	40 feet (50 feet max luff)	48 feet	45 feet	60 feet	40 feet	41 feet
PRICE	\$1,900	\$1,850	\$1,500	\$1,886	\$2,650	\$1,420	\$840

★ Best Choice   \$ Budget Buy    Recommended

torsion-inducing member. In conventional roller-furling designs, a slotted, rotating foil sleeves the headstay, connecting the tack drum and the head swivel, and causing the head and tack of the headsail to rotate almost simultaneously, even though the torque is introduced only at the tack point.

Many sprit-furlers are linked by only the sail luff, and are designed to operate without metal torsion tubes. They cause the sail to start furling from the tack upward, because it takes a few wraps to cause the luff to transfer the torque. Of those we tested, only Cruising Designs Inc.'s (CDI) Spinnaker Furler and Bamar's Roll-Gen incorporate a torque rope connection between the swivel and the drum, along with a unique swivel process that causes all of the torsion generated by pulling the endless line to be transmitted to the head of the sail. Therefore, the furling becomes a top-down rather than a bottom-up process.

All test units except the Schaefer 650 used an endless loop of Dacron to rotate the furling drum. The taper used in creating the end-to-end splice was crucial, because any increase in line diameter became very apparent as the line traveled through the friction groove in the drive drum. Line lead was also of paramount importance, and by either splicing bullet blocks into the endless loop, or using small snatch blocks, it was easy to keep the run of the endless loop fair, and make line handling more efficient.

## HOW WE TESTED

The test units were first evaluated in the workshop for bearing friction, material choices, construction, functionality, corrosion resistance, and engineering features.

In the field, all test products were tested aboard an Ericson 41 and were mounted on a carbon-fiber bowsprit that extended 2 feet beyond the headstay chainplate. In light air or a flat calm, the 2-ounce Dacron 160-percent (750-square-foot) drifter was conventionally hoisted with the head swivel and tack drum at-

tached. The sail was immediately furled using the endless line that could be operated anywhere along its length. The CDI and Bamar units were also compared using a loose-luff gennaker. We also tested the smaller furlers with a genoa and an asymmetric spinnaker on a Cape Dory 19, noting how handy these systems can be on smaller boats.

## BAMAR

Bamar's Roll-Gen is similar in operation to the CDI furler. It incorporates a caged drum, eliminating any issues with a furling line jumping, and a mechanical end-of-line clamp that allows an owner to cut the torque line to fit the exact length of the sail it will be used with.

Another interesting feature of the system is its ability to be used as either a torsion-rope furler intended for loose-luff assyms, or to be used without the torque rope as a drum-and-swivel furling system for code sails and drifter/reachers. The key to this dual capability is the simple quick release of the torsion rope, inversion of the head swivel and removal of the anti-rotation rod. This allows the head of the sail to spin freely, while the tack drum induces the twist moment to the luff of the sail.

This hardware flip-flop changes where the torque is directed, and extends the furling process along the length of the luff, rather than a top-down affair.

**Bottom line:** Fittings are well thought-out, and the overall construction of the unit is excellent. Testers also liked the duality of the unit and rated it as a Recommended product.

## COLLIGO

The Colligo Cn-5 is a large, nicely machined and finished piece of gear that's boldly anodized and exceptionally smooth in operation. The large diameter of the drum wheel increases torque, magnifying the rotational effect from a given amount of line

*The PS Best Choice Facnor Fx 2500 features robust construction, efficient furling, and clever details.*

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pull. Testers found the head swivel equally smooth running, but it is also big. When setting and dousing, testers' concern for their noggins rose in proportion with head swivel size. The unit we tested was large enough to function quite well aboard a boat much larger than our 41-foot test boat. It proved to be the most powerful product tested thanks to both its large drum diameter and smooth bearing system.

**Bottom line:** A rugged, attractive, and efficient unit. Its large top swivel and minor details hold it out of the top spot.

### CRUISING DESIGN INC.

CDI's Spinnaker Furler will work with loose-luff nylon sails as well as lightweight Dacron reachers. The drum is rotated at the base, but the tack of the sail actually spins on a Delrin bushing, allowing the torque to be transferred to the head of the sail, via the stiff rope. This winds the sail in a top-down context. A nylon sail, with little or no extra leading-edge reinforcement, to be effectively furled. The downside: It's a little trickier to keep the nylon from puckering and pinching itself, causing overrides. CDI's new spinnaker furler (\$850) replaces the aluminum spool with a larger-diameter plastic spool that better prevents the line from slipping off.

**Bottom line:** If you go this route with a nylon, loose-luff sail, work closely with your sailmaker to get the right shape.

### FACNOR

One of the early leaders in free-flying furlers, Facnor makes the FX 2500 is an elegantly engineered system. It is small in size but proved that it really has what it takes to handle a code sail, drifter, or gennaker. The 750-square-foot radial clew drifter that we used fit right into the jaws of the drum and swivel, and the unit's simple but functional capture ring kept the endless loop from jumping out of the groove. Facnor uses uniquely engineered spring tensioners to hold clevis pins in place. Testers found that these are easy to use and make the unit easy to handle. The stainless-steel cage surrounding the furling sheave allows easy installation of a furling line.

Facnor also offers the Asym-FX, a torsion-rope version designed for asymmetric spinnaker furling.

**Bottom line:** Rated our Best Choice, this well-executed piece of gear nosed slightly ahead of the other high-quality units in this test.

### HARKEN

Harken's Code Zero MKII furler system has a proven track record aboard modern race boats and is more than up to the task on a cruising boat. In addition to our test boat and bench testing, we checked out the Harken's functional applicability aboard a new Alan Andrews-designed custom 39-footer that sports the modern small-jib, big-main sail plan, and a built-in carbon bowsprit. The code zero furler was used to tame a massive, lightweight No. 1 genoa that nearly doubled the headsail area.

The Harken Code Zero furler incorporates easy-to-use tack and head pins that are held captive by an innovative piston-locking function. It offers an easy-loading feature to engage the



endless furling line.

**Bottom line:** The user-friendly Harken is pricey, but it also has the highest safe working load of the group. Harken's smaller 3101 (5000- pound SWL) is about \$900 less.

### KARVER

Even smaller than the Facnor, the Karver Kf2 packs big sail-handling ability into a very compact package. Like the Facnor, it uses clevis-pin tethers, but its retaining clips are a little harder to use, in our opinion. The quick line-feeding system is even quicker in the newer version released after our test.

Its bearing setup was not quite as friction-free as others tested, but it proved to work efficiently on both the larger and smaller test platforms. In fact, it made gennaker handling on our Cape Dory 19 a snap. And by furling the sail before dousing it during a deep reach, it made single-handing in 20 knots of wind a smooth sailing experience.

**Bottom line:** A good small-boat furler that is priced right.

### SCHAEFER

This unit has a "Back to the Future" flair. It's a lightweight rendition of the Schaefer technology used to pioneer the company's early roller furling. The unit is not an endless loop, but instead is a miniaturized alloy drum and spool, set up for a fairly small-diameter furling line. The light, free-spinning top swivel is made of aluminum hardware and multiple races of high-molecular-weight Torlon plastic bearings. Its only downside is that when it comes to furling a large headsail, lots of line is needed on the relatively small drum, mandating a fairly thin line that's a little less friendly to handle.

**Bottom line:** Not the most elegant or compact, but it worked well in testing, and the price is very attractive. A no brainer for our Budget Buy.

### CONCLUSION

Sailing in 5- to 10-knot conditions with a 135-percent heavy genoa can prove to be anything but an exhilarating experience. More often than not, it results in a premature desire to turn the ignition key.



sails, then bear off to about a 120- to 130-degree reach, and with the main-sail blanketing the drifter, they would ease the sheet and haul away on the furler's endless line. A simple spring scale measured the initial tension it took to start the process, and testers found that—as might be expected—the furling line load decreased as the sail area diminished.

Evaluators were split on whether to terminate the big loop on the foredeck or lead it all the way back to the cockpit.

The latter requires careful use of lead blocks and a bungee cord tensioner at the end of the loop. The former lets a crew work near the mast with a full view of the furling sail and an ability to make the best use of boat motion. After testing the furlers at both locations—with the furling line near the mast setup and then from the cockpit—the test crew reported that the mast location was preferable.

Testers evaluated the furlers' hauling ease, attachment efficiency, and construction quality, and also compared their prices and warranties in the final ratings.

Our test platform was *PS* Technical Editor Ralph Naranjo's classic Ericson 41, Wind Shadow, a light-air efficient, double-headsail sloop with an 18,000-pound displacement. In true cutter-like tradition, the boat was sailed for decades with piston-hank sails before making the transition to roller furling. For furler tests, Naranjo installed a Seldén gennaker bowsprit, which comes kitted with all the fittings for an easy-to-set temporary bowsprit. (See Chapter 5 for a look at add-on sprits.) Testers needed to extend the sprit a few inches beyond Seldén's specs listed for unsupported length, so we had to add a removable bobstay to the equation as a precaution.

Alloy and carbon tube sections are immensely strong in compression, but when used in an unstayed context, the load becomes more of an example of a lever and fulcrum. The stress riser or "hotspot" becomes the first bale that the pole goes through on its way aft, and the sail's upward crimping force increases as the apparent wind moves forward. In order to counter this load, we turned the central-axis gennaker control line into a removable Dyneema bobstay. The upward tension of the sail was offset, and the bending moment tormenting the unsupported sprit was turned into a more manageable compression load. This extra complication isn't necessary if the unsupported sprit segment is kept short; however, the bobstay addition allowed testers to project the tack farther forward and sail a bit higher in light air.

### PROFURL NEX 2.5

Profurl's continuous-line furler, the NEX 2.5, is indeed a well-engineered, efficient, and easy-to-operate furler. Sized just a bit larger than the Facnor FX2500 furler, the Profurl hauled in the 650-square-foot drifter/reacher with similar ease. The NEX 2.5's 5 7/8-inch spool diameter makes the unit as efficient as the Facnor and just as tight-gripping. Profurl uses an S-grip pattern in the spool groove to keep the spliced control line from slipping or binding.

Not only are too many sailors missing the pure fun of light-air sailing, one of the most enjoyable aspects of the sport, but with fuel prices skyrocketing, enhancing your boat's light-air ability under sail makes more sense than ever before.

There were no lemons among the furlers we tested. However, the Facnor Fx 2500 did stand out enough to get our cream-of-the-crop nod for *PS* Best Choice. For loose luff asymmetric spinnaker users, Bamar's Roll-Gen nudged out the CDI unit. At about half the price of some other furlers in our test, the Schaefer furler is the choice for *PS* Budget Buy.

When it comes to using a sock or a furler for asymmetric control, the furler has a slight edge over the sock, provided the sail is a good match, in our opinion.

Testers also found that proper halyard tension was important, and the polyester-covered, Spectra-cored spinnaker halyard we used limited stretch and proved to be very easy to handle. Finding a happy balance in halyard tension made furling easier—too little, and the luff bowed to leeward, making furling difficult; too much tension put excess load on the bearings and also decreased the ease of furling. Light sheets were also a big plus. Ring-type pin fasteners can snag sheet covers causing damage to lines and even the unintentional removal of a keeper pin.

When all is said and done, adding light-air sailing ability to a daysailer or cruising boat is well worth the extra effort and expense.

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## Test Update

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After our code-sail furlers test wrapped up, two latecomers entered the fray: the Profurl NEX 2.5 and Selden's CX15. We put the pair through close scrutiny and sea trials, comparing their performances to the Facnor continuous-line furler, which was the Best Choice from the previous test and is a past *PS* Editor's Choice/Gear of the Year awardee.

### HOW WE TESTED

For testing, we converted a 650-square-foot, hank-on, radial-clewed, 2-ounce Dacron drifter/reacher into a furling sail by sewing on a length of heavy-duty, 1-inch polyester webbing. It ran the full length of the luff and handled both the tension load and torque associated with furling.

To gauge a furler's performance, testers would unfurl the

Just for fun, testers furled the test sail a few times with the wind forward of the beam and found that the large-diameter spool delivered plenty of torque to get things rolling. The line operated smoothly in tests, never slipping, even when there was slack on the returning line.

Both the control-line spool and the head swivel run on a no-maintenance, sealed bearing cassette. The alloy housings are rugged and well-reinforced, but at the same time, they're designed to be as light as possible.

To accommodate the needs of offshore sailors, Profurl made the furler's head snap-shackle operation and tack-pin removal as one-hand-executable as possible. The company's I-connect pin-latch system used to attached the sail tack is quick, ergonomic, reliable, and repairable. The approach to threading the spliced, looped furling line onto the spool is efficient, and no parts need to be removed in the process.

When it comes to load-bearing metal components, manufacturers have to find a balance between acceptable corrosion resistance and tensile strength. Typically, the stronger stainless grades are less corrosion resistant.

The Profurl NEX 2.5, manufactured from 6061 machined aluminum, uses a 17-4ph stainless Wichard snap shackle in the lower end and 316 stainless for the tack pin. The snap shackle's metal is equivalent to 304 stainless, which is harder and stronger than 316, but has less nickel content and is very magnetic. Over the years, we have seen a direct correlation between corrosion resistance and high-nickel content, non-magnetic alloys.

**Bottom line:** An efficient, well-engineered continuous-line furler, the Profurl NEX 2.5 gets *PS*'s Recommendation.

### FACNOR FX2500

The initial enthusiasm we had about the Facnor FX2500 hasn't waned a bit. During our long-term test of the furler (ongoing for more than two years), we discovered that the terms "reliable" and "corrosion resistant" should be added to the original list of accolades we gave the furler.

An unintentional submersion test of the furling spool proved that the bearing cassette features a very tight seal. For several weeks, the spool was stored in a plastic bucket deep in the test boat's locker, where a faulty hatch gasket allowed water to partially fill the bucket. Despite its extended dunking, the Facnor's furling spool spun freely during tests and continued to perform as well as ever. It's worth noting that Facnor uses non-magnetic 316 stainless in the FX2500's construction, and the immersion "test" is testament to its corrosion resistance.

The Facnor unit is about the same size as the Profurl, a tad bit lighter, and equally easy for the foredeck crew to handle. Adding and removing the long, spliced furling loop involves a simple tuck and turn around the spool, and the clevis pin releases are the most one-hand friendly of all the units tested. The stainless steel outer ring and frame weldment holds up well over time,

VALUE GUIDE FOIL-LESS FURLERS UPDATE			
MANUFACTURER	FACNOR	PROFURL	SELDÉN
MODEL	FX2500 ★	NEX 2.5 ✓	CX15 \$
ONLINE PRICE / WARRANTY	\$1,500 / 2 years	\$1,520 / 3 years	\$1,170 / 5 years
WEIGHT	2.54 pounds	2.82 pounds	1.9 pounds
SPOOL DIAMETER	5½ inches	5 7/8 inches	4 3/8 inches
MAX SAFE WORKING LOAD	5,511 pounds	5,500 pounds	3,300 pounds
MAX SAIL AREA	861 square feet	900 square feet	861 square feet
RATINGS			
ATTACHMENT EFFICIENCY	Excellent	Excellent	Excellent
HAULING EASE	Excellent	Excellent	Good
CONSTRUCTION MATERIALS	Excellent	Good	Good
★ Best Choice \$ Budget Buy ✓ Recommended			

and the efficient alloy spool with a functional line-gripping "V" shaped groove is light and smooth handling under load.

**Bottom line:** The Facnor FX2500 takes a sousing and keeps on spinning. It maintains its place at the head of the continuous-line furlers pack.

### SELDÉN CX15

The CX15 is the smallest unit in Seldén's Code X line of genna-ker-handling gear. It is rated for sail areas up to 861 square feet and has a max working load of 3,360 pounds—well over what our 650-square-foot drifter/reacher would generate in light- to medium-air scenarios.

The CX15 furler spool is considerably smaller than the other two units in this test, naturally requiring more pull to generate the same amount of torque. Despite this apparent reduction in furling power, the unit easily coped with the requirements at hand. One of the reasons the lesser torque sufficed in testing was that we tended to sail a course for optimum furling. In a racing situation, where a diversion from the heading to the mark is the last thing a helmsman wants to do, it might be worth upsizing to Seldén's CX25 unit (\$1,450), which is closer in physical size to the Profurl NEX 2.5 and Facnor FX2500 furlers.

The CX15 is a ruggedly built, compact unit that comes with a variation on the tuck-and-twist around the spool approach to loading the continuous loop furling line. The line stripper pops out of the spool to allow users to easily insert or remove the furling line. The line stripper and spring-loaded clevis pins are tethered with knotted pieces of small line, preventing them from inadvertently going over the side.

Seldén's engineers have come up with a handy, double cam cleat, tandem furler control that makes line-handling—especially securing the furled sail—much easier. The CX15's furling spool is made of glass fiber-filled polyamide composite. Its hardware is duplex stainless steel, which is stronger than 316 but also is highly magnetic.

**Bottom line:** Unique features, a five-year warranty, and an affordable price earn the capable and compact CX15 the PS Budget Buy.

## CONCLUSION

If improving your boat's light-air performance is a priority—and you don't have a couple of teenagers on board or a hyperactive sailing partner—a foil-less furler could be the ideal solution. The rolled-up sail is set and doused with neither drama nor taxing gymnastics.

The two test latecomers and the Best Choice Facnor all met their mark and came away with respectable ratings. The Profurl NEX 2.5 is chasing at the heels of our favorite, the Facnor 2500. Seldén's CX15 handled the job at hand and then some. For cruisers looking for a capable Budget Buy, Seldén's compact unit and alloy sprit kit have a lot to offer. These furlers are a step ahead of those products we tested in the first go round.

With the boost in light-air sail-handling comes a savings in fuel, more fun under sail, and a big decrease in the likelihood of having to wrestle with an out-of-control foredeck fire-drill.

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## Tech Tips

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Our test sail, a 750-square-foot genoa, proved to be valuable both in light-air, close-reaching conditions, and when the apparent wind was abaft the beam in 10- to 15-knot conditions.

The sail unfurled flawlessly on a beam reach, but it is best not to wait too long to begin furling when the breeze picks up. As with all light-air sails, there's a window of optimum use defined by apparent wind angle and velocity, and the closer you sail to windward, the lower the upper limit to wind speed becomes. We found that bearing off and blanketing the spritsail with the main made for relatively easy furling. If a snafu does occur, simply release the halyard to drop the sail conventionally.

Nylon asymmetrical spinnakers, especially deeper-reaching designs with significant draft, are harder to furl, and that's where the Bamar Roll-Gen and CDI Spinnaker Furler have an advantage. These units actually twist from the top-down, causing the sail to furl from head to foot. Even so, it's very important to work with a sailmaker on configuring the head of these sails. If there's too much stiff reinforcement built in at the head, it may be difficult or impossible to properly furl the sail. These two units function by allowing the tack to remain immobile while the torsion rope sends the torque of the drum aloft to the head swivel, thus inducing the top down furling action. The result is a tight furl aloft that defies bulging nylon bubbles. The Roll-Gen incorporates a foam-covered torsion line that helps keep the furl compact and eliminates air bubbles. Uneven furling tension can pinch sections of nylon, causing furling problems that may require dousing the sail to remedy. Careful operation is essential.

When set up correctly, with enough spinnaker crane forward projection, the right amount of luff length and good halyard tension, these furlers make an easy job of controlling lots of sail area. The sailmakers we caucused were split on whether they favored a sock or furler system for asymmetric spinnakers. All

liked the swivel and drum units for flatter-cut gennakers, drifter/reachers, and code sails.

In heavier wind, you clearly will want to lower the tightly wound sail, bag it, and put it below. It also makes sense to lower and stow the sail when you're away from the boat, thus providing the best UV protection and eliminating the potential for a squall to peel open an upper portion of the leech.

We were surprised to find that in light air, a crew member could actually coax the big drifter through the two-foot slot between the headstay and the spritsail's tensioned luff. It was also a snap to furl the sail, tack the boat, and unfurl it on the other side. We considered setting the leads up to jibe these sprit furlers with the clew-forward approach used to handle asymmetric spinnakers, but quickly found that such complication was unnecessary.

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## Light-air Sailing with a Twist

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Today's breed of well-engineered, conventional, slotted-luff headsail furlers affords a wonderful home for the compromise genoa—a 12- to 25-knot, easy to handle, 120-135 percent sail. The compromise genny is neither working jib nor light-air-optimized headsail—and the idea of making it a 4-ounce, 150-percent genoa defies both shape concerns and material constraints. The setup leaves many boat owners, in their quest to optimize power under sail, seeking a light-air solution.

One option is to simply drop the heavy, mid-sized genoa and replace it with either a light, 165-percent drifter or a heavy, working jib. Doing so—especially in a racing situation—without a dexterous crew can make piston-hanking sails seem the better option, and it also closes out some future choices. For example, once the heavy 135 is bagged and the 165 reacher has been wrestled into the slotted roller-furler foil, it's probably time for the gusty 20-knot afternoon sea breeze to arrive. Overpowered with the new snoot full of wind, the large, fragile headsail must be furled, leaving the sloop rig one sail short.

In order to change back to a smaller, heavier headsail, the big light-air genny must be unfurled and peeled out of the luff groove—a process that redefines “mechanical friction” and “crew discontent.” It comes as no surprise that single-handed sailors often opt for three independent furlers to avoid just such sail-shuffling snafus.

## A BETTER SOLUTION

Those who enjoy the time they spend under sail and are willing to invest in some aftermarket equipment to take better advantage of light-air sailing conditions (less than 10 knots) can avoid the sail-swapping hassle. Modern fractional-rig boats with a masthead halyard can supersize their light-air headsail response with a continuous-line furler, and owners of older, low wetted surface, masthead-rig sailboats will benefit just as much from them.

Many of the antique Cals, Rangers, Ericsons, and Pearsons sported narrow, light-air efficient, easily driven hull shapes, with fairly small sail plans. But when owners converted to a conventional extrusion-over-headstay roller furler, their compromise genoa was both heavier and smaller than an optimum light-



air sail should be, and the trusty 165-percent, 2-ounce Dacron drifter/reacher was left in the basement along with the ability to enjoy a 7-knot breeze.

As we've pointed out before, all it takes is a sturdy stem projection or removable sprit and one of the new flying-sail furling systems for skippers to reincarnate the boost of the 165 drifter-reacher. An even better option lies in a whole host of more sophisticated code and reaching sails available from local sailmakers. These gennakers are ideally handled with a luff-line furling system like those in this test.

As with all large-area sails, there's a need to recognize that

modest increases in true wind velocity can add up to a large increase in energy generated by the sail. Boat motion in a seaway can also influence the load on the sail and rigging, and each crew needs to develop a set of guidelines regarding the wind velocity and point of sail in which the gear is used. Cruisers are usually shorthanded and will close down the show sooner than racers looking for a performance edge. By waiting too long, especially when the breeze is well forward of the beam, there's a chance to blow out a light-air sail and perhaps even break the pole. The gear is not meant to "reef down" the light-air sail in heavier air, that's the time to swap back to the genoa furled on the headstay. ▲

# Chapter 5

## Add-on Bow Sprits

Already *de rigueur* with many performance-oriented sailors, easy-to-handle lightweight sails are gaining popularity with cruisers. And setting a gennaker, asymmetric spinnaker, or a new rendition of an old-fashioned drifter/reacher is easier than ever before. The big question is: Will the cost of a mini-bowsprit actually be worth the effort and expense involved?

After a series of sea trails with sprits, spinnaker socks, and free-luff furlers, we've come to the conclusion that the technology works well, but whether this is a valid investment depends on how important it is to you to keep sailing in light conditions. With fuel prices scraping the stratosphere, efficiency in light wind may be a bigger priority than it was in the past.

In our look at furlable code sails, drifters, gennakers, and asymmetric spinnakers, we proved that an efficient “no foil” furler made hoisting and dousing a large light-air sail almost a walk in the park. We also were quick to recognize that setting the sail a couple of feet ahead of the stem, on a pole, sprit, or other projection, improved both performance and the sail's handling characteristics. With this in mind, we decided to delve deeper into the issue of sail-tack projection, and evaluate the differing approaches to tacking the light-air sail forward of the bow of the boat.

Much of the credit for mainstreaming this renaissance in bowsprits goes to Rod Johnstone, designer of the J/Boat line and creator of the metric Js (130, 120, 105, etc.) that hit the water with a built-in, extendable free-standing pole meant to replace traditional spinnaker-handling gear. The new approach simplified foredeck gymnastics and significantly streamlined the chute-

handling routine. Even so, cruisers and many racers rightfully balked at the prospect of having a big hole near the bow of their boat and a noticeable proboscis built into the topside. At the same time, shorthanded round-the-world racers were flocking to triple sets of furling headsails with light-air sails the size of circus tents set on an articulating tubular bowsprit.

This approach to sailing efficiency has now launched into the mainstream as Seldén, Forespar, Forte, Sparcraft, and others have designed aftermarket kits suitable for a wide range of sailboats. All these kits have one aim: Move the tack point of any light-air sail ahead of the stem. Each design faces similar challenges, specifically the need to handle side loads on a tubular structure and the ability to adapt to a wide range of deck geometry and pre-existing obstacles.

### BOWSPRIT ENGINEERING

In order to better understand the forces associated with modern sprit technology, a bounce or two on a playground seesaw offers some insight. On both the seesaw and the bowsprit, the location of the fulcrum and the load applied at one end of the lever arm determines what happens at the other. It's important to note both the strength and the direction of the pull when contemplating the force vectors involved. Like any lever, the longer the stress arm becomes, the more load is imposed on the fulcrum—and the stronger both the bowsprit tube and its support members must be.

Traditional bowsprits incorporated a bobstay and even whisker stays to reduce the bending loads at the fulcrum. Just as rigging turns side loads on a mast into compression loads, a bowsprit's bobstay and other wires do much the same. However, many modern mini-sprits actually behave more like a free-standing mast, resisting sail loads through stiffness rather than being kept in column by a bobstay. This requires thicker or higher-modulus materials able to withstand the point load induced at the fulcrum, usually a collar-like fitting mounted on the deck.

Our furler tests revealed that close reaching with a Code 0-type sail (a specialized lightweight sail designed for sailing tighter angles than an ordinary asymmetrical spinnaker) or even the use of a more conventional light No. 1 genoa, tripled and even quadrupled the tack load. In *Practical Sailor's* view, this sort of use mandates the need for a bobstay. Those planning to use the sprit solely for reaching purposes with an asymmetrical



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*Forespar's aluminum sprit is among several sprit options available off the shelf. (Photos by Ralph Naranjo.)*

PS	VALUE GUIDE	ADD ON BOWSPRITS		
MANUFACTURER	✓ FORESPAR	FORTE	★ SELDÉN	SPARCRAFT
MATERIAL	Aluminum tube & strut	Carbon	Aluminum tube	Aluminum/Carbon
ATTACHMENT	Un-pin	Retractable	Retractable	Retractable
FULCRUM	Toggle	Saddle	Ring	Ring
SUPPORT	Free or bobstay	Free or bobstay	Free standing	Free or bobstay
TUBE SIZE FOR (35'-40' BOAT)	2.6 inches	3.5 inches	3 inches	3.2 inches
SUPPLIED LENGTH	5 feet, 4 inches	8 feet	7 feet, 3 inches	5 feet, 11 inches
MAX EXTENSION PAST BOW*	22 inches	30 inches	36 inches	35 inches
PRICE	\$646	\$2,375 (kit)	\$620 (kit)	\$1,018 (aluminum kit)
✓ Recommended ★ Best Choice \$ Budget Buy		*Size of boat and sail area will limit maximum safe extension for some sprits.		

spinnaker or gennaker only need a bobstay if they intend to use the rig in heavy air conditions. Most manufacturers set extension length and/or wind speed limits for their sprits.

On some boats, the advantage of a sprit is offset by the amount of clutter it adds to the foredeck. Working around a windlass, bow roller, cleats, and the anchor well can turn an easy installation into a real challenge. Fortunately, these sprits come with versatile hardware kits and installation guidelines that make sense. There's usually a need to add topping and backing plates, as well as address the concern about spreading the loads.

The installation is best handled by a pro rigger, but a skilled do-it-yourselfer should be able to handle the job. It is critical that the deck core be sealed at any new penetrations, and any new points of stress in the deck or hull are conservatively reinforced to cope with the loads of the sprit kit.

### FORESPAR

The Forespar Banana Sprit uses a smaller-diameter sprit tube with a thick wall section, and incorporates a downward bias and a bottom gusset to add stiffness. The latest version has been extended at both the inboard and outboard ends. It features tangs on top and bottom, which makes attaching an endless line furler and a bobstay quite simple.

When using the sprit without a furler option, the Banana Sprit leads the line aft through an optional top mounted block—as opposed to the internal tack line in the Seldén sprit (see below). For added reinforcement, the manufacturer offers an optional attachment bracket along with a bobstay chainplate fitting.

There's an upside and a downside associated with the sprit's shorter length: Forward projection is limited, but the unit's compact size makes it very locker-stowable.

**Bottom line:** Though its deck fittings and design are not as elegant as some of the others tested, it will hold favor with those who have limited space at the bow.

### FORTE

Based in Ledyard, Conn., Forte Carbon Fiber Products is a composite spar builder that has gained solid ground with competitive sailors. Its sprit kit package comes with nicely machined saddle-type deck fittings and webbing loops for tack attachment.

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*The Seldén sprit, top, has a larger diameter tube, while the slender Forespar sprit is reinforced and angled to counter loads.*

The diameter of carbon sprits tended to be a little larger than the alloy alternative. However, the quality of the composite tubes we looked at met an aerospace standard, and for those with extra cash to spare, the carbon sprit option is worth a second look.

**Bottom line:** The weight savings of a carbon fiber sprit is significant, but so is the price increase over aluminum.

### SELDÉN

Seldén makes aluminum and carbon fiber sprits. It offers three different diameter tube sections for its aluminum kits. Each comes complete with end fittings and mounting bracket options. The tack line runs through the sprit, so the outboard end acts as a guide for a tack line. The sprit also has webbing attachment points at the top and bottom.

An owner can choose either a stainless steel mounting bracket designed to fit an anchor roller, or a similar fitting designed for direct deck attachment. The well-thought-out kit includes two inboard end-clips that allow the sprit to simply be retracted and clipped for storage. In cases where an anchor locker lies beneath the sprit, the tube can be easily pulled completely free and set in a second deck ring and inboard end-clip that is set outboard near the rail.

**Bottom line:** This kit's combination of simple but rugged design and user-friendly installation options moved it to the top of the pack. It gets the *Practical Sailor* Best Choice pick.



## SPARCRAFT

Similar to the Seldén sprit, the Sparcraft system *Practical Sailor* evaluated is an alloy, free-standing sprit featuring a tack line through the center of the tube. The kit contains a stainless-steel mounting ring with a high molecular weight plastic sleeve insert that helps reduce chafe at the tube and the tendency for the tube to crimp. Sparcraft also offers a carbon-fiber version.

Various mounting options are available, including a temporary bobstay attachment and the ability to rig the sprit for the heavier loads imposed by a Code 0 or close-reaching in light air. The pole can be retracted for storage or removed and placed elsewhere.

**Bottom line:** This sprit is very similar to the Seldén, using a slightly greater tube diameter for equal-sized boats, and costing nearly double what the Seldén costs.

## FREE STANDING VS. BOBSTAY ASSIST

As mentioned before, tack loads create an upward force that can be offset by a bobstay. The wire can be attached to an eye-fitting bolted through the thick solid fiberglass stem at a point well below the headstay chainplate but above the waterline. The bracket or welded tabs on the outboard end of the sprit effectively join the tack and bobstay into a single bow-string that puts compression loads on the arrow—the sprit. Hardware at the inboard end needs to be up to this compression loading. However, with a bobstay attached, some sprits can be used as a tack point for a code sail as well as for off-the-wind reaching with an asymmetric spinnaker.

With a free-standing sprit, the load at the fulcrum collar is upward, and there's a tendency to crimp the sidewall of the tube. At the inboard end of the pole, the force is downward rather than aft because there's much less compression on the sprit. Adding a

bobstay causes the upward crimp load at the collar (fulcrum) to lessen, but a new compression component is introduced at the support structure located at the aft end of the pole.

## CONCLUSION

Adding more sail to the pointy end of the boat will improve light-air performance, and the furling systems and sock technology available today make it easier than ever to manage more sail area. But it is tempting to go overboard, and add too much sail area and a too-complex system to handle it.

When all was said and done, our nod of approval went to Seldén for its simple, versatile, alloy free-standing sprit, a unit that's intended for gennakers and asymmetric spinnakers. The hardware versatility makes it user-friendly, and its cost-effective price point adds to its appeal.

For those with a tight squeeze on the foredeck, Forespar's Banana Sprit offers a recommended alternative. Its projection length provides a sniff of clear air and a convenient tacking point for a gennaker or asymmetrical spinnaker. Forespar does not recommend using the sprit for Code 0-type sails.

The best solution varies from crew to crew and will depend upon how much you care about performance and how much effort you're willing to put forth to get that performance. A mini-sprit for an asymmetric or gennaker that slides forward into place and aft for easy storage will have the widest appeal. A more permanent installation with a bobstay adds light-air on-the-wind sailing capability and makes sense for those with reasonably efficient sailboats.

Carbon sprits are pricey, but the tube technology is terrific and the weight savings will probably appeal to those who go to the effort to keep neither chain nor heavy anchors stored at the bow. ▲

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## Contacts Directory

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**ALADO NAUTICA USA**, 501/984-5154,  
www.aladous.com

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**COLLIGO**, 480/703-3675, www.colligoengineering.com

**CRUISING DESIGN INC.**, 607/749-4599,  
www.sailcdi.com

**FACNOR**, 704/597-15 02, www.facnor.com

**FORTE**, 860/464-5221, www.fortecarbon.com

**FURLEX (SELDÉN MAST)**, 843/760-6278,  
www.seldénmast.com

**HARKEN**, 262/691-3320, www.harken.com

**KARVER (EUROMARINE TRADING)**, 401/849-0060,  
www.karver-system.com

**PROFURL**, www.profurlamerica.com

**REEFURL**, 866/733-3875, www.furlings.com

**SCHAEFER**, 508/995-9511, www.schaefermarine.com

**SELDÉN**, 843/760-6278, www.seldénmast.com

**SPIN-TEC**, 877/774-6832, www.spintec.com

**SPARCRAFT (CHARLESTON SPAR)**, 704/597-1502,  
www.charlestonspar.com

**US SPARS (Z-SPAR)**, 800/928-0786, www.usspars.com