OUTFITTING THE DASHEWS' WIND HORSE WITH SMALLER DRAG DEVICES AND PUTTING THEM TO THE TEST *by Zack Smith*


Photo credit by Mike Munson

My first contact with yacht designer and author Steve Dashew came after he wrote an article entitled *Drag Device Polemics* in the May 2000 issue of *Blue Water Sailing*. He concluded that the parachute sea anchor system "can work in gale and moderate storm conditions, but may not be suitable for use in huge breaking seas and winds of severe storm strength."

A New Theory

As a drag device designer for parachute sea anchors, I disagreed with him and submitted a response to his article that essentially provided a basic outline of the "Constant Rode Tension Theory" that I developed from experience gained during sea trials while designing the "Buckle" and "Para-Ring" parachutes with Fiorentino's Research Team. This theory states that "Keeping the rode taut is the key to successful parachute anchor and storm drogue use." Maintaining taut rode often requires changing rode lengths, adding weights next to the para-anchor and balancing the boat with bridles sail and/or through rudder position. I concluded by saying that constant rode tension allows bow deployed para-anchors to be used effectively in extreme weather.

Larger vs. Smaller Para-Anchors

Four years later, Steve, who still favored storm drogues over the parachute anchor, surprised the folks at Fiorentino when he acquired a Fiorentino offshore para-anchor for his 83-foot (25 m) trawler, Wind Horse. Steve followed Fiorentino's recommendation and opted for the 24-foot (7.3 m) para-anchor despite the overwhelming industry belief that "larger" is better. For example, here are other approximate recommendations published by other manufacturers for a boat like Wind Horse:

Para-anchors Australia—well over 30-feet (9.1 m),
Para-Tech—a minimum of 32-feet (9.8 m),
W.A. Coppins—a minimum of 32.9-feet (10 m).

Fiorentino's Philosophy for Using Smaller Para-Anchors

According to industry standards, a boat like Steve's would require a para-anchor approximately two sizes larger than Fiorentino's recommendation. Many of Fiorentino's online instruction videos demonstrate how maintaining "constant force" in the system is the "big secret" in maximizing the performance of a drag device, thus permitting the use of a smaller para-anchor.

Fiorentino's original formulas, as shown in the video, demonstrate how to pay out specific lengths of rode and/or to connect a small piece of chain next to the para-anchor to minimize stretch in the setup. If you minimize stretch, then force generated from the para-anchor reaches the bow of a boat faster to help maintain the bow head to wind or in a hove-to position. Without "constant rode tension," rode becomes slack far too long and the boat tends to bounce around back and forth uncomfortably.

We have found a slight advantage in using a larger para-anchor as recommended by the industry. You typically can omit the use of chain and be less exact on how much rode you deploy since the larger anchors grab more water that generate extra force on the rode. However, our research team discovered that certain wind conditions still require rode length adjustment if one is to maintain "constant rode tension" with their para-anchor set-up in changing sea states. (In the end, we choose to use smaller para-anchors because they are easier to handle.)

Para-anchor and Storm Drogue Test

After two years of e-mail exchanges about setting up para-anchor and storm drogue sea tests, Steve and I finally arranged to meet at Ventura Harbor in California at noon, November 26th 2006. It wasn't hard to find his 83-foot (25.3m) trawler, Wind Horse. It's a very interesting vessel to look at…sort of a destroyer/sailboat combination…innovative and very cool. A number of Dashew fans were there taking pictures of the boat.

Setting Test Parameters

This was the first time Steve had ever deployed a drag device so his desire to test several of them was very encouraging. Since engineering is second nature to him, he quickly figured out the basics of how both the para-anchor and storm drogues worked. We decided to follow the test parameters established from my previous sea trials conducted with Fiorentino and other government organizations. We first practiced deploying the 24-foot (7.32m) Fiorentino para-anchor from the Wind Horse. Later, we conducted tow tests with a Galerider, a Jordan Series drogue (stopping drogue) and a Fiorentino Shark drogue. Steve's wife, Linda, helped us out by taking the helm. Two reporters, Beth Leonard and Evans Starzinger were invited onboard to observe the test. Professional photographer Michael Munson, hired by Fiorentino, photographed our efforts. Beth Leonard also contributed photos.

At the start of the testing, the Dashews and I had a good discussion about the various aspects of packing, unpacking, deployment and retrieval. Sharing information and ideas helped us work smoothly through the tests. We then headed outside the breakwater when the reporters boarded Wind Horse. Because the water was relatively calm on the day of testing, we decided to concentrate on ease of deployment and retrieval for the sea parachute. We practiced using the same techniques as demonstrated in my 2003 DVD "The Complete Para-Anchor Set-Up."

Type of Rode Used for the Test

When we laid out the Fiorentino Para-Anchor on the deck of the Wind Horse, Steve brought out a bag of Spectra anchor rode, telling me he thought lighter rode would be better for para-anchor use because it was lighter and easier to handle. Although this is not my preferred choice for rode, I do appreciate Spectra for its ease of handling and low stretch characteristics.

The Para-Anchor deployment and retrieval went off without a hitch. Steve noted in his log posting a few days later on setsail.com that, "Fiorentino makes what looks to our eye a very robust, well-thought out piece of gear." Of course, Steve hopes to never have to use it!

More About Rode

Nylon is currently the industry's established standard for rode used in drag device deployment, but it can stretch easily creating significant slack in the rode. Long periods of rode slack can cause the drag device to lose its grip allowing a boat to fall sideways to the waves. As the drag device re-inflates the rode becomes taut very quickly which generates a high rate of force that can easily break equipment.

Traditional Nylon vs. Fiorentino's Mixed Rode

Fiorentino's sea trials have been most successful in reducing shock loads caused by oscillating rode when we use a braided rode that has an outer Dacron cover to reduce rope stretch and chafe, but an inner nylon core to absorb shock loads. This is the same mix that Fiorentino uses exclusively in its rode manufacturing process. Research completed by our team shows that the mixed rode is stronger than rode that is all Dacron or all nylon, because the combined fibers work together more efficiently to keep the rode taut. The mixed rode is heavier to use, but it does give sailors the option of omitting the use of chain weight attached to the para-anchor.

Regardless of the fiber-type you choose for deployment rode, I recommend sticking with braided rode since it has less stretch and is easier to pack than stranded rope. If you choose to use stranded rode then we highly recommend that you connect at least 6-feet (1.83 m) of chain to the para-anchor to maintain constant force upon the rode. Chain diameter should equal the deployment rode's tensile strength.

Lightweight Spectra

Fiorentino's sea trials demonstrate that lightweight rode like Spectra can be made more effective, by adding weight next to the para-anchor or storm drogue to maintain "constant rode tension." (View Tech report FPA-124 and the Shark Manual for research results on this subject). Weight added next to a para-anchor contradicts the industry standard of attaching weight at the boat end instead of the anchor end, but Fiorentino's reports show that it's a more effective way of keeping constant tension on the rode.

Shark Drogue vs. Galerider and Series Drogue

After packing the para-anchor we then went on to test my new Shark Drogue, Galerider, and a Series (stopping) Drogue. In an effort to maintain consistency with previous drag tests that I conducted with Fiorentino and others, I recommended that we set Wind Horse's speed to seven knots before deploying each of the drogues. Again, the test went smoothly. I think Steve was a bit surprised by how well the small Shark Drogue performed and how easy it was to use. In his Dashew Log of November 28, 2006, published on setsail.com, he calls the Shark Drogue, "A very welcome addition to the heavy weather arsenal. The compact design and ease of launching are big advantages"

Today, I think Steve still believes that moving the boat is probably the best policy for storm tactics, but he's decided to cover different scenarios such as "What if the boat breaks down or what if actively steering the boat fails?" Steve now equips many of his power trawlers like the Wind Horse with both storm drogues and Fiorentino para-anchors. Steve sizes all Fiorentino para-anchors according to the Fiorentino's size recommendations, lending support to our theory that "smaller" may be better.

To view Technical Report FPA-124, the Shark Manual or Fiorentino Instruction Videos, log onto www.Para-Anchor.com and go to the "News" section where "Drag Tests Conducted Aboard Wind Horse" is located. How-to Videos can be found on the homepage. Please contact Fiorentino at 949-631-2336 if you have any comments or questions.