

A quick fix to a broken spinnaker pole

By Meade Gougeon

Adagio, our 35' trimaran was already off to a bad start in the 100th anniversary of the first running of the Chicago to Mackinaw race with an over-early call by the race committee. Everything went downhill from there.

Less than an hour into the race the luff wire in our number one genoa parted, putting our crucial 360 sq ft light air weapon out of business. Attempts to use it to leeward on our spinnaker pole resulted in more loads than the pole was designed to handle. It collapsed with a bang!

In an instant, our inventory of five sails was reduced to two: the main and the working jib. No spinnaker, no screecher and no genoa. In effect we were out of the competition—a huge blow to the crew who'd looked forward to this prestigious race all season. Fortunately, we were still sailing to weather with the fleet, but without the use of our genoa we lagged behind most of our competitors. Thoughts turned to a pole repair, but could we do this quickly enough to get us back into this race?

Within five hours of the breakage, the modified epoxy blend had cured on the pole splice. With the spinnaker pole fully restored we were back in the race.

With nothing to lose we started to prepare the remains of the pole by squaring off each broken end about six inches in from the break point, effectively reducing our pole length by one foot. To realign the halves, we fit the two ends using a spare sail batten, making two 18" splints that we stuffed into the hollow ends. We then sanded the sharp edges smooth.

In the main cabin we set up a gluing operation complete with Handy Packs of WEST SYSTEM 105 Epoxy Resin® and 205 Fast Hardener®, and two small bottles of G/5® Five-Minute Adhesive. We laid out lengths of 1½" 702 Unidirectional Carbon Fiber Tape for wet out on a sheet of thin repair plywood (an item we always carry when going offshore). We first wet out two 20" lengths, which we then cut in half and applied to the pole leaving 5" on either side of the butt splice, with the four layers just covering the pole circumference. We applied four more layers like these, each two inches shorter than its predecessor.

The key to success of the operation was mixing 105 Resin/205 Fast Hardener with G/5 resin and hardener in a two-to-one blend.¹ This mixture vastly sped the cure time of 105/205 to 15 minutes working time and a tack free cure of about one hour. With two separate batches we got the job done in about 40 minutes using only a plastic spreader to apply the epoxy and to remove air while the cure progressed on the layers of carbon fiber tape.

At one hour (while still in the green stage) we wrapped the entire carbon splice area with light cordage under tension, both to consolidate the various layers and increase hoop strength.

Meanwhile, our navigator and chief rigger Butch Babcock was busy figuring out how to replace the broken wire in our number one genoa with a ¾" diameter spectra rope. He incorporated an ingenious method that lim-





ited our boat shutdown to less than an hour to complete the operation.

Within five hours of the breakage, the hopped-up epoxy system had cured on the pole splice. With our weapons fully restored we were back in the race.

Our new enthusiasm was tempered by the fact that we were now at least 20 miles behind our class leaders. We knew this because all 432 boats in the race were equipped with transponders that updated every boat's position on the hour with immediate display on the internet. With good cell phone reception on Lake Michigan, every contestant—for the first time in history—could tell where they stood in relation to their competitors.

Up to this point our frustration was so great that all we wanted to do was sail the hell out of *Adagio* all the way to the finish line, which was still over 200 miles away. We had little hope of catching up to our fleet.

Perhaps Murphy decided to give us a break or we just got lucky, but we managed to work our way through the fleet over the next 30 hours to become the second multihull to finish, coming in behind the 60' trimaran *Earth Voyager*. Even though we corrected out to fifth place on rating, this was a moral

victory; we were proud of our seamanship, response to adversity and drive to keep old *Adagio* in the hunt in her 39th season. ■



¹For a number of years we've been juicing up WEST SYSTEM 105/205 with G/5 to speed cure. Initial test data shows little loss of physical properties at the 2-to-1 ratio we used on the pole repair. When blending 105/205 with G/5 Adhesive, it's important to meter the G/5 resin/hardener mix at the correct ratio and the 105/205 at the correct ratio before blending all together. Contact the technical staff if you have any questions about blending WEST SYSTEM epoxies. We will of course, continue to break things, experiment, do our research and publish articles on the subject.

Meade preparing the boom for repair while underway. 1—Squaring the broken end with a hacksaw. 2—Fitting a batten in the broken end. 3—Connecting the broken ends before completing the repair with a WEST SYSTEM Handy Pack, two small bottles of G/5 and some lengths of 1½" Unidirectional Carbon Fiber.

The bowsprit is back in action as *Adagio* approaches the Mackinac Bridge.