

"I swear, we didn't do anything, *it just broke!*"

by Dennis Chevront

I HAD JUST BEACHED MY 1983 NACRA 5.0 after a great sail in 12-15 knots of wind. Two of my friends, both excellent sailors, were up next for the boat. They took off while my crew and I retired to the yacht club for a brew. On the veranda of the club, I saw the cat returning to the beach. Knowing that my two friends generally sail "to the max", I wandered down to the beach in idle curiosity.

One of them said "I have good news and bad news. The good news is we made it back. The bad news is we broke your boat." Thinking that the had broken some component such as a pad eye, block or shackle, I said "No problem, what did you break?" He said "No, really. We broke the boat." He pointed to a massive fracture around the aft crossbar on the port hull and some serious gelcoat cracks near the forward crossbar. They claimed they were doing nothing unusual at the time of failure. They each said "It just broke!" I said "Sure, it did." Being in the sailing industry, a sailmaker and a canvasmaker, they got the hull fixed quickly.

The after most fracture began at the

inboard edge of the top of the hull, ran across the deck, down the outboard hull wall under the crossbar, then across the deck to the inboard corner. The fracture was completely through the hull allowing a gap of about 1-2" when the hull was flexed inward. We repaired this damage by cutting through the inboard wall of the hull just aft of the crossbar. A gusset was glassed in longitudinally under the crossbar. The gelcoat was repaired cosmetically.

When we re-attached the hull, we sheared one of the bolts on the forward crossbar, because we didn't completely clean some of the stray epoxy from the bolt's threads. To fix this, I cut of a 1/2 inch stainless bolt which I then drilled and tapped. After chamfering the threads on the sheared bolt, we torqued down the new bolt onto the sheared one. We used a special two part lock washer which utilizes a ratchet type action to prevent loosening. We felt that a 1/2" split lock washer would require too much torque to flatten and would result in a second bolt shear. We wanted to totally flatten the washer to prevent any movement of the crossbar.

Well, when my friend and I took the boat out later in 10-12 knots, we were sailing along just fine, closehauled, sheeted tight and cruising up behind the local Sunday afternoon monohull race fleet when.....crunch!! The port hull fractured again. I turned to my friend and said..."It just broke!" My friend turned to me with this "I told you so" look on his face and just smiled. We nursed the boat to the beach and onto the trailer.

Obviously, this was a case of poor root cause determination. After a call to Performance Cat and a few e-mails with Mark Michaelson at Small Craft Advisories, I was able to begin a more successful repair.

First, I removed the forward and aft nonskid panels on the deck. This was accomplished by very carefully tapping a thin, flexible blade putty knife between the coremat panels and the hull. Removal of the panels reveals several adequate accesses in the deck.

Inspection of the hull revealed several cracked longitudinal stringers. The first 5.0's (1983/84 or so) were built with the "eggshell" hulls reinforced

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## Cat Trix

By John McDaniel

ARE YOUR HARKEN traveler cars and blocks running as smoothly as they did when they were new? If not, they probably need a good scrubbing.

Each year at the many Nationals I have noticed, as I do at all other regattas, traveler cars sliding, not rolling across the travelers track. I also see cam cleats and blocks not working as smoothly as they should. People try different types of oil-based lubricants without much success. If an oil-based lubricant is used, the unit works worse than before it was lubed in a very short time. It turns out the maintenance on Harken products is very simple and very cost effective. (Translated...Very Cheap!).

### BLOCKS AND CAM CLEATS

Harken blocks use Torlon® and Delrin® bearings (types of plastic polymers) which require minimal maintenance. These bearings work best when they are clean and free of dirt and salt. To ensure optimum performance, periodically flush your blocks with fresh water. A good time to do this is after scrubbing the hulls, making sure that any loose dirt or extra soap is flushed out of the blocks.

Thoroughly clean and inspect your blocks at least once a year (at launch). Take loose blocks off the boat flush the bearings with WD-40 or LPS-1 (to remove salt and dirt deposits. Soak blocks in a bucket of liquid detergent and fresh water to remove the penetrating lubricant. Thoroughly rinse with fresh water. Although lubricants that do not attract dirt, such as dry Teflon or dry silicon sprays. Never lubricate Harken blocks with grease.

Inspect your blocks for damage. In particular, check the shackles for elongation and swivel post for cracks and stress corrosion. Replace any hardware with Harken parts to maintain the correct working load. The black plastic side plates on harken blocks are UV stabilized.

However, after extensive exposure to sun, they may develop a gray "chalk like" film on their surface. This discoloration may be removed using a Scotch Brite (pad with Armor-All). In highly corrosive atmospheres, discoloration

may occur around the rivets and fasteners. This may be removed with a metal polisher such as Duro's Naval Jelly.

### TRAVELER CARS

Maintain your main traveler car and self tacking jib car, the same way you do your Harken blocks. Periodically, take a small plastic bottle full of soapy water and squirt the bearings through the slots on top and bottom. Make sure to move the car back and forth so all the bearings are cleaned. Flush with fresh water. Use a fine Scotch Brite (pad with soap to clean the track. Inspect the shackles and control blocks for signs of fatigue. Be sure that every installation includes Harken track end stops. Arrange control tackles so that cars don't hit the end stops under load, but are stopped by the traveler line.

Once a year (at launch) remove the traveler car from the track for a thorough cleaning and inspection. Make sure you have a car loader when you do this! Empty the bearings into a container. Inspect the balls and car, and clean with WD-40 (or LPS-1). Look for flat spots or cracks in the balls. Inspect traveler endcaps for any cracks or damage. Replace if necessary.

Remember, if you sail for fun or sail to win, basic maintenance is important. It takes little time and saves hours of frustration and equipment breakdown.

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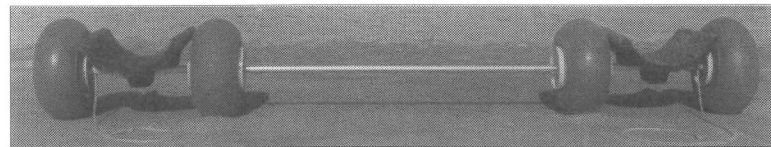
with stringers which were fiberglass over cardboard half tubes. Another design of the early 5.0's was the two hull/ crossbar connector bolts inside the crossbars. This was redesigned to the "C straps" with four external bolts found on newer models.

Further inspection revealed what I believe to be the root cause of the failure. The transverse bulkhead under the forward crossbar had become detached from the hull. This probably allowed longitudinal flexing of the hull resulting in the stringer failures and the hull fracture. I reattached and strengthened the bulkhead and repaired all stringer fractures. I sanded the mating surfaces of the nonskid panels and deck and reattached them with West Systems epoxy. I made the mix a bit cool and monitored the curing process. When the excess around the edge of the nonskid panels was fairly stiff, I removed it with a 5 in 1 knife.

I have sailed the boat since in 10-15 knots with no new failures. My only second thoughts are whether I should have inspected the starboard hull and whether I should have added the "C straps".

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George C. Kuney, Philadelphia, PA

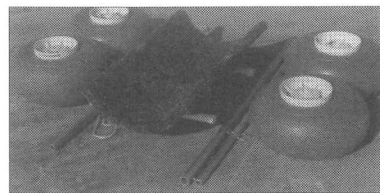
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