

20 YR ANNIVERSARY OF GERBER CUTTER

By Steve Haarstick - July, 1994

March 1994 came and went before I realized 20 years have passed since the **Sailmaking World's first computer cutter** was installed in Annapolis. This revolutionary machine has probably done more to change the business of sailmaking than any other innovation in the last 30+ years. This 20th anniversary gives me the excuse to recall the memories of that exciting time in the journey of *Haarstick Sailmakers*.

The original seed of this innovation began at the Star North Americans at New Orleans in 1970, where I met Ian Bruce for the first time. Ian was a World's Champion in the International 14 class, and decided over the winter that the Star looked like a great boat, bought one, and showed up at New Orleans for the first time in a Star. I came that year, as I had just come off a really good series at the Bacardi Series in Miami that past January, and I was "primed" for the NA's. At regattas of this magnitude, there was a very strong "pecking order" that governed how many stupid questions would be tolerated from eager unknowns like myself. In the midst of Gold and Silver Stars, a Blue Star said "rookie", and a Red Star said "novice". As Ian had never sailed a Star before, his Red Star and my Blue Star pretty much left us to our own resources. As a result, Ian and I made our first acquaintance when I spotted him setting up his shrouds backwards. Even I knew that the uppers went forward of the lowers, but coming off International 14's, this would naturally seem backwards. We quickly began to exchange ideas and tuning tips, and sailing techniques like how to jibe the boat in heavy air without killing yourself or your crew, or worse dropping the rig. It was obvious that Ian was a quick learner, and had almost endless enthusiasm for sailing. At the end of the regatta, Ian suggested that we get together and tune up in the summers. I saw Ian at several Star regattas after New Orleans, and we always spent time talking about Stars and sailing in general.

When Ian actually arrived in Ithaca with his Star to sail with me, I couldn't wait to show off my loft, and immediately gave him the grand tour. He was very tolerant of my endless prattle as I explained all the exciting aspects of the seam assembly table. However, his interest perked up when I pulled out a cutsheet and boastfully explained how we could actually plot out the sail with all the seams and offset points on the back of the cutsheet. (We had programmed our design procedure in 1968 to run on a local service's huge IBM computer). Ian looked long and hard at this computer plot and finally asked the obvious question that had eluded me for the past 2 years. He asked: "If you can plot any given sail design on the cutsheet, why couldn't you plot it full size on the cloth itself, and eliminate the variables of hand cutting?" I was stunned by the question. How could I have not thought of this? I stammered, I don't know. Ian continued that the new Laser class was taking off with production in the THOUSANDS of boats, and he was not happy with the lack of sail duplication that he was getting with hand cutting from the local sailloft. Could I figure out how to plot or cut sails on a computer driven machine?? If so, we would have a shot at the entire order. I hadn't built 5000 sails in my lifetime, nor was I likely to in Ithaca, NY, so this was definitely a bombshell. I meekly told him I would "look into it".

As I thought more about the prospects of my designing a machine to do this, or more unlikely, using my personal connections developed over the many years of skillfully interacting with people, I was getting discouraged. But, I did have one connection! Again, another Star sailor friend that I met at the NA's in Rockport, Mass when he caught me blatantly ogling his female companion. This was definitely a man with connections! If Jack Lynch couldn't find a machine to automatically cut sails, then it just didn't exist. When I explained my hair-brained scheme to Jack, he was immediately interested, and as he was a manufacturer's rep in the Aerospace industry, he really did have the resources to find this machine if it existed.

It wasn't long before Jack called back with the momentous news: a machine exists! It is in Hartford, Conn. It was developed by Gerber Technologies for cutting seat covers on General Motors cars. What the Hell, if GM can afford this machine, why can't we? So we went to Gerber for the show and tell. There we were, Jack and myself, a tiny sailmaker from the epicenter of sailing, Ithaca, NY, and Jack the Aerospace Engineer. Some of the other prospective customers at that time were Converse Sneakers, and several other similar "small" companies whose names I forget. The guys at Gerber were polite, and tolerated the endless questions about the machine. We came away convinced that it would work. The Gerber people were secure in their belief that they would never see either of us again.

We called Ian. He WAS REALLY EXCITED! Laser was up for International Status, and he was determined to keep the One-Design Nature of the sails as well as the boat. This was an all together novel idea at the time, as all other international classes, like the Star were completely open on the sails. That is, while there were measurements that controlled the sail sizes, there were no controls on the design of the sail, or the cloth, as long as it was above the minimum weight. The Laser Class sail was an entirely different concept. All sails were supposed to be IDENTICAL throughout the world. Ian felt the only way to convince International Governing Body, that the Laser Class sail should be purchased with the boat, and not from the local sailmaker, was to present a totally different approach to building sails. If we could centrally purchase all the sailcloth, cut all sails with a computer cutter, to tolerances unheard of in sailmaking, there was a chance to gain International recognition for the Laser without giving up the One Design concept of the sail. If we could pull this off, it would make the sail as uniquely One Design as the boat itself.

He didn't have to nudge me or Jack, we were really hot on this now! Jack called Gerber, and told them we were serious, we wanted a machine, but first, they had to actually cut a Laser sail to show Ian it would work. Although the machine Gerber used for the test was the precursor to the one we finally bought, it worked, at least well enough to prove it could be done. It was possible to cut sail panels on a computer cutter! But this was really only part of the solution. It would be of no real value to cut individual panels on a computer, and then have to "fair up" the pieces by hand after assembly. The current Laser sail was faired on the luff, foot, and leech after the panels were sewn, as were all other hand cut sails. We were told: "If Jack and I were "real" sailmakers we would know that you can't cut soft fabric like Laser cloth on some machine and expect it to come out

smooth and fair on the edges after assembly". Of course, Jack wasn't a sailmaker, as he would quickly point out, and I never listened to anyone anyway. The fact is: NO ONE really understood what this machine could do! It's one thing to be able to position the cutting blade to within 0.008" tolerance anywhere on the table, but the really unique feature of the Gerber 90 Cutter, the feature that allowed us to cut soft squishy cloth to amazing accuracy, and NOT HAVE TO FAIR EDGES AFTER ASSEMBLY, was the powerful vacuum that held the cloth down on the table when cutting. The turbine that "sucked" the cloth FLAT was powerful enough to hold 25 Layers of Dacron as FLAT and STIFF as a sheet of plywood. No yanking, pulling, or tensioning was necessary to get the cloth flat, and to hold it flat when cutting. This eliminated the "rebound" effect after cutting. To eliminate the variables of the cloth edge, all panels were cut on all four sides, all inside the cloth edges. All four features: cloth held flat and immobile, no rebound after cutting, no edges variables, and the incredible accuracy of the cutting head on the table, were the key to this new era of sailmaking: PERFECTLY CUT SAIL PANELS = NO EDGE FAIRING AFTER ASSEMBLY = ELIMINATION OF THE HUMAN VARIABLE IN THE CUTTING OF THE SAIL!! This concept was so unique, that Jack and I were granted a patent on the entire process. Even Sail Magazine printed an article about us in their March 74 issue: "This is robot sailcutting at Chesapeake Cutters of Annapolis, the first computer-operated sailcutting operation in the world, and the brainchild of Steve Haarstick, whose fledgling loft has taken a big gamble in a stodgy trade. They have taken the maker out of sailmaking, almost completely".

It sounds like a piece of cake, doesn't it. Basically, find the machine, buy the machine, move the machine, stick the plug in the wall socket, and your off and cutting. But, nothing is as simple as it seems. There were the unanticipated price hikes at the last minute, later rescinded, thanks to Nixon's Price controls, financial pitfalls and near disasters. What we really bought was Gerber's third System 90 cutter, complete with all the glitches and bugs common to any prototype piece of complicated machinery. Jack and I would talk on the phone: "How's it going Jack? Good, the machine's running real good." The next day, "There's a slight problem, but the new designed cutting head should fix that." I even remember watching in horror as the cutting head took off down the table at full speed, with Jack in hot pursuit! As it smashed right through the roundway stops, and hurled itself off the table, Jack made a miraculous catch of the hundred pound head and cross beam before it hit the floor! This was DEFINITELY an experimental machine, and only brilliant engineering, and some stellar catches by Jack kept it running in the first two years. Most of the subsequent improvements and retrofits made to our Gerber, and its operating system software came as a direct result of Jack's innovations and communications with the Gerber engineers. I think it is fair to say that Jack is the "Main Man" responsible for improving the design of our Gerber 90 to where it is unquestionably the most rugged, dependable, and accurate sail cutting machine in the World, STILL!! That's right, this very same machine is still chugging along 20 years later! I'm not supposed to make a big deal out of the fact that we are still running a 20 year old machine to cut every sail made by the Haarstick Sailmakers group, as this could be interpreted as "outdated" technology. It may be "old", but it's certainly not outdated! There are many other cutters in use today, as a result of our pioneering work in the seventies, but none of them can match the versatility, durability, and efficiency of our Gerber.

Single ply, one-at-a-time machine cutting is not cost effective for sails built in large quantities, so the sails built for North America are currently "stack-cut" by hand! In fact, ***Haarstick Sailmakers*** is still the ONLY sailmaker in the World to ever cut Laser sails on a computer cutter - over 180,000 sails!! (as of 1994). Europe Laser sails are similarly cut by hand, just as they are now in North America. (Amazing how 51% ownership of the U.S. Laser factory embraces the reincarnation of 1973 sail cutting technology). There are many more examples of the superiority of our Gerber that I personally would love to berate, but the hook is in the back of my shirt, and my public relation handlers are wiping the saliva off my mouth, before muzzling me with duct tape as usual. So I have to wind this up. In short, I am very proud of the ground breaking innovation we made in bringing sailmaking into the modern age of manufacturing, and grateful to the many people that made it happen over the years, especially Jack Lynch.