



# Mainsails

(800) 342-5033

[www.haarsticksailmakers.com](http://www.haarsticksailmakers.com)



**Speed:** The Haarstick design philosophy produces a fast main that trims easily and predictably. A sail that will respond to the available trimming tools throughout its full wind range is our top priority. This goal is realized via our proprietary design and CAD program, and our Gerber cutter. This system, developed in house fully optimizes every seam curve, luff curve, foot curve and roach offset – right down to infinitesimal fabric stretch corrections. This makes for a sail that is as fast in 5 knots as it is in 25 knots!

**Durability:** To make the best, most durable sails, you have to use the best sailcloth. But you can't tell what cloth is good by just looking at it, or by "feel", as the "old-timers" used to do, you have to test it. Our testing program began in the sixties, and has continued ever since. We believe that we test every batch of upwind cloth with the most thorough and rigorous testing procedures in the sailmaking business. We not only test cloth when it is new, but we severely "beat" it up with our proprietary IMPACT FLUTTER testing program, and retest the cloth. The loss of strength after our Impact Flutter test is quite amazing, and the results of this test determine the durability of the cloth, and, most importantly, if we will accept the cloth and have it shipped to us. Over the years, this fabric research program has generated an enormous amount of data on all kinds of sailcloth. ***No loft tests sailcloth like we do. No other loft uses a test procedure as severe as our unique "Impact Flutter" test.*** This benefits every sail we make, race or cruise, working sail or spinnaker.

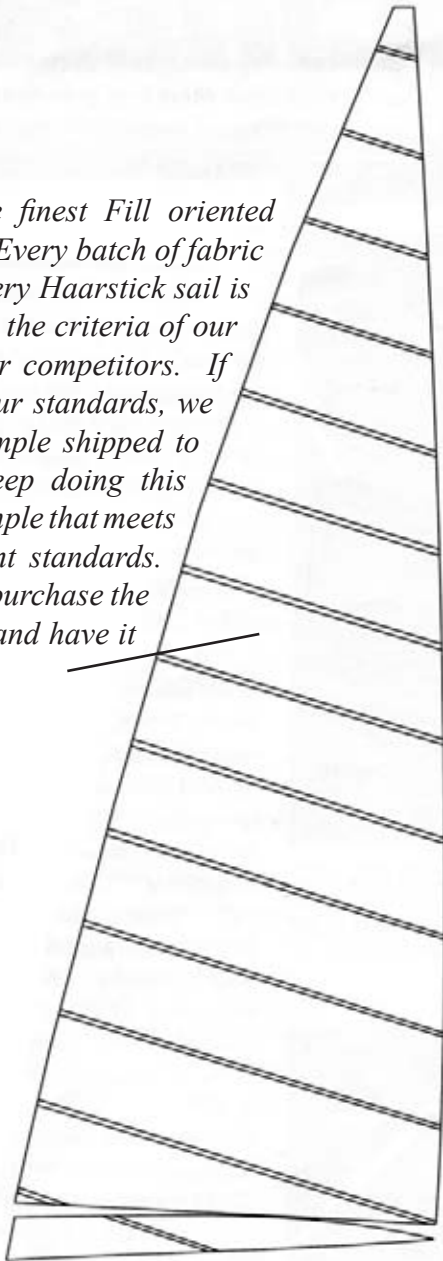
The same attention to fabric quality, panel engineering, construction and finishing details assures you the finest mainsail available. This benefits every sail we make-

race or cruise. Combining our proven expertise in sail design and computer cutting, and engineering with the most accurate CAD/CAM program and the result is the highest quality, durable mainsail for whatever type of boat you have.

**Value:** We encourage you to compare us to the competition. No other sail is engineered like a Haarstick sail, or built with as much attention to detail. Every Haarstick sail is designed and cut from tested and approved cloth, ***ONLY*** at our Rochester loft. Fast shapes, exhaustive fabric testing, engineering excellence, strong customer service, and attractive prices add up to genuine value. The next time you're considering a new mainsail, call us at 1-800-342-5033, or e-mail us at [info@haarsticksailmakers.com](mailto:info@haarsticksailmakers.com).

All Haarstick Mainsails are designed and cut with technology developed in house. This technology, including our proprietary design, CAD, and Gerber cutter, together produce the most accurately manufactured sails. All our mains include computer generated corner reinforcements, load analyzed seam construction, luff and foot attachment to fit the spar systems, 100% Stainless Steel rings and reinforced stress points.

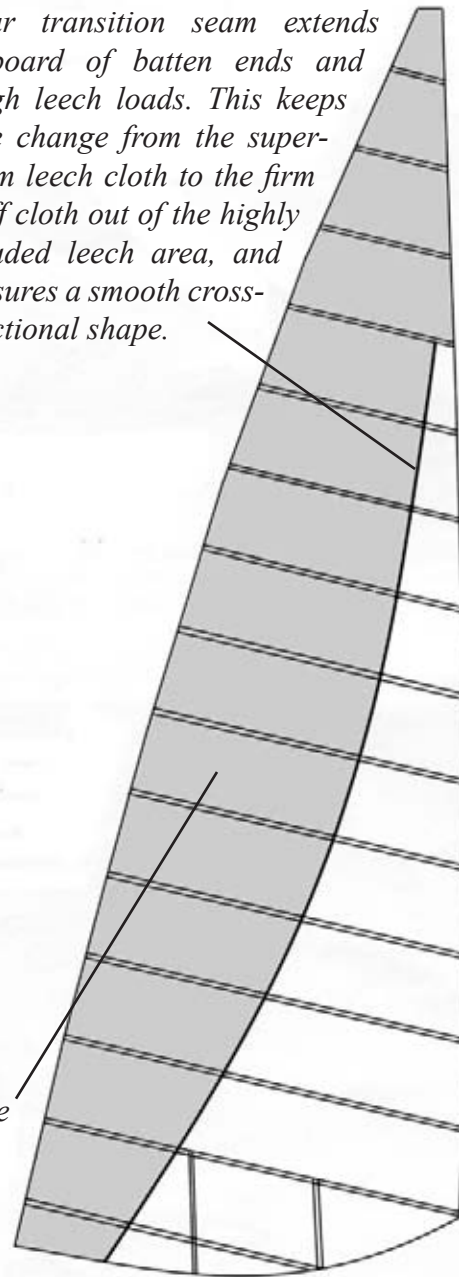
*We use only the finest Fill oriented Dacron fabrics. Every batch of fabric that goes into every Haarstick sail is tested far beyond the criteria of our suppliers and our competitors. If it doesn't meet our standards, we have another sample shipped to be tested. We keep doing this until we find a sample that meets our very stringent standards. Only then do we purchase the accepted fabric, and have it shipped!*



**Cross-Cut Mainsail  
With Wedge Foot**

*Split-Weight construction can dramatically reduce the distortion in the leech area, combined with the weight savings that only a super firm, low stretch leech fabric can produce. Yet, the Split Weight mainsail's shape is more responsive to Cunningham tension than it would be if the entire sail were made from the leech fabric. This technique has proven to minimize the sail's weight and maximizes the sail's shape-holding ability.*

*Our transition seam extends inboard of batten ends and high leech loads. This keeps the change from the super-firm leech cloth to the firm luff cloth out of the highly loaded leech area, and assures a smooth cross-sectional shape.*



**Split-Weight Mainsail**

*We developed this unique cross cut panel layout for our racing mainsails in the early seventies. The concept was to combine the low stretch of a hard finished Dacron in the leech area that could handle the concentration of loads in this area, yet preserve enough "give" in the luff area to make the sail more adjustable. By carefully matching two different finishes across a custom designed transition seam, we were successful in creating this unique sail.*

## TRIRADIAL “QUILT-CUT” MAINSAILS:

Our Triradial “Quilt-Cut” is still the best construction method for racing Mainsails. The primary reason is that we **THOROUGHLY TEST EVERY UPWIND FABRIC BEFORE WE PURCHASE IT, AND BEFORE IT GOES IN YOUR NEW SAIL!!**

This just can't be done when the fabric is being made at the same time as the sail! How can the laminate in these “string sails” be tested ahead of time? They can't! You the buyer are the test; if the laminate holds together and doesn't delaminate, you are in luck. But what happens when you find sheets of film peeling off after only a few races, or worse, after one race in heavy air? There are, many ways for the laminating process to go wrong, but only one way to insure the bad laminations never get into your new sail: Don't make the cloth at the same time that the sail is made! We don't sell our customers sails that are made from untested and unapproved cloth.

*Our unique Triradial “Quilt-Cut” construction aligns the sail panel's warp yarns with the loading in the sail. This type of construction, using horizontal, vertical and radial seams, facilitates highly articulate catenary threadline engineering without compromising the ability to control vertical and cross-sectional distribution of aerodynamic shaping. Further benefits are realized with the ability to utilize multiple fabric styles within specific regions of the sail.*

*Optimized roach is yet another benefit of our Triradial “Quilt-Cut” panel layout. By following the high load paths in the leech with the alignment of every leech panel the distortion in the entire leech area is dramatically reduced to an absolute minimum. This allows a large roach to be stable and flat throughout the wind range. Our threadline engineering, and choosing the proper, TESTED cloth, accurately addresses the leech loading of today's High Performance sails.*

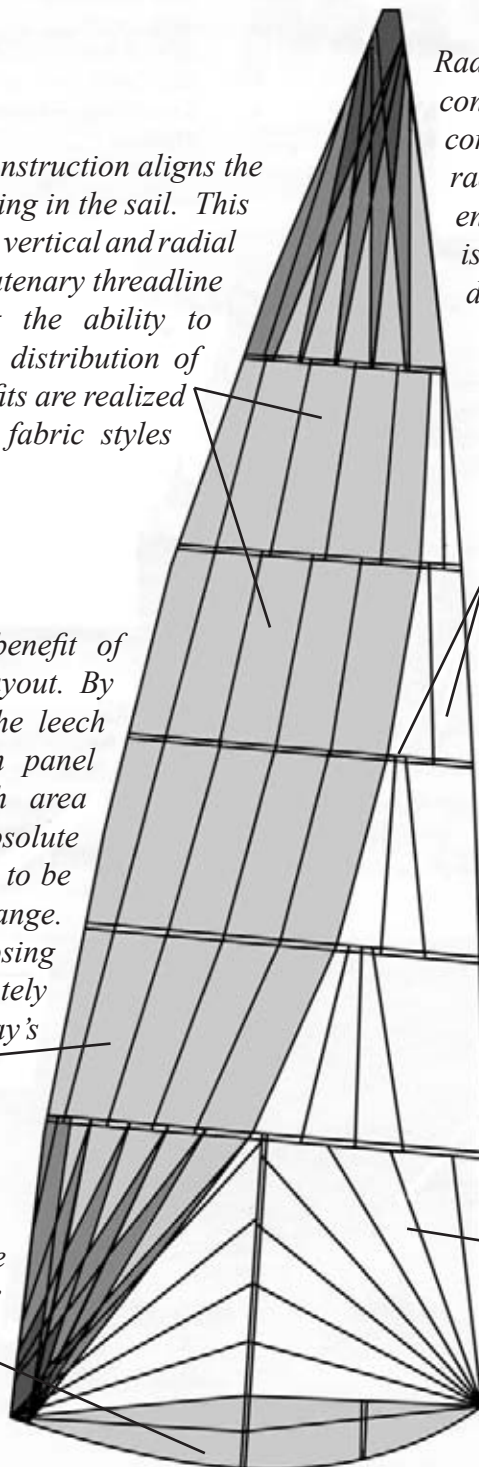
*Tri-Radial Quilt-Cut Mainsails are available with either Loose-Foot or Lens-Foot construction. (Loose-Foot shown)*

*Radially fanned head & clew panels concentrate strength in these highly loaded corners efficiently handling the loads radiating into the body of the sail. Proper engineering and construction of sail corners is critical to a sail's ability to withstand distortion and pre-mature failure.*

*Every seam curve, every luff, foot, and leech curve is faired on our proprietary CAD program, before the panels are nested and prepared for our Gerber cutter. Our design and CAD programs are proprietary software, developed in house. Our Gerber Cutter is the most accurate sail-cutting machine in use anywhere in the world (Resolution of 8/1000”). No other sail cutting method, by hand or by some other computer cutter, can match this accuracy. The sail shapes generated are backed by a solid knowledge of aerodynamics, two years of wind tunnel testing at Stevens Institute for a Master's thesis, and 40+ years of design experience.*

*Radial Foot construction distributes clew and tack loads into the body of the sail where they align with the Quilt-Cut body panels.*

## Tri-radial Quilt-Cut Mainsail



## STANDARD FEATURES

### All Haarstick RACING mains include:

Sail Numbers  
Sail Logo  
Draft Stripes  
Loose Foot or Wedge Foot  
Sail Hardware to Match Spar  
Adjustable Leech and Foot Lines  
Tapered Battens  
Cunningham  
Leech Telltales  
CAD/CAM Corner Reinforcements

### All Haarstick CRUISING mains include:

Sail Numbers  
Sail Logo  
Loose Foot or Wedge Foot  
Sail Hardware to Match Spar  
Spar Adjustable Leech and Foot Line  
Tapered Battens  
Leech Telltales  
CAD/CAM Corner Reinforcements

## OPTIONS

**Reefing** Virtually all PHRF mains should be fitted with at least one reef. If you are considering any extended cruises or passages we recommend two or possibly three reefs.

**Flattening Reef** (not required on loose foot mains) placed about 12" – 18" above the clew, the flattening reef is not really a reef, but is used to remove excess fullness from the foot and lower portion of the mainsail when tightened.

**Cunningham** (Standard with racing mains.) Placed 10" – 18" above the tack, the Cunningham is used in lieu of adjusting the halyard for controlling fore/aft draft placement of the camber.

**Lens Foot** Also referred to as a "Shelf Foot", this panel adds additional fullness to the foot of the sail. This option requires a powerful outhaul that is adjusted easily to assure proper flattening for upwind sailing.

**Draft Stripes** (Standard with racing mains.) Stripes of contrasting color (black, blue, white, red or green) placed on the sail parallel to the water to aid in illustrating the sail shape for more accurate trim adjustment.

**Full Battens** Full battens or a combination of extended length and full-length battens can be a great addition to your new mainsail. Prolonged life, stable sail shape, larger roach, all add up to big plus! Discuss the options and alternatives with your Haarstick Sailmaker.

**ULTRABOND** glued seam construction is a "standard option" on all laminate racing sails and on larger sails, all seams are glued. This results in a seam that is twice as strong as the fabric allowing ABSOLUTELY ZERO SLIP in the horizontal shaping seams.

**Sail Handling Systems** We have available sail handling systems from BattSlide, Harken, Antal, Tides, Dutchmen and many others. Your Haarstick Sailmaker can discuss these options with you and provide you with specific product information and prices.



**WE  
MAKE  
WAVES  
Since 1970**

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