

THE SAILWRIGHT NEWSLETTER

July, 1980
Issue # 4

Sailrite Enterprises
Route 1, Columbia City, IN 46725
Phone (219) 244-6715

Broadseaming Consistently

Professional sailmakers usually put in broadseams by eye. This should tell you one thing immediately—broadseaming need not be terribly accurate or even consistent. But we are all attempting to build the best possible sails. There is certainly nothing wrong with eliminating as much of the uncertainty about our work as we can.

In an effort to accomplish this, many lofts have attempted to describe each sail that is produced in terms of certain standard broadseaming curves. These curves are usually stored on mylar sheets. Whenever a sail like the one produced for Mr. "X" is desired, the files are checked, a curve for the broadseaming is identified, and that curve is used to taper the panels for the new sail.

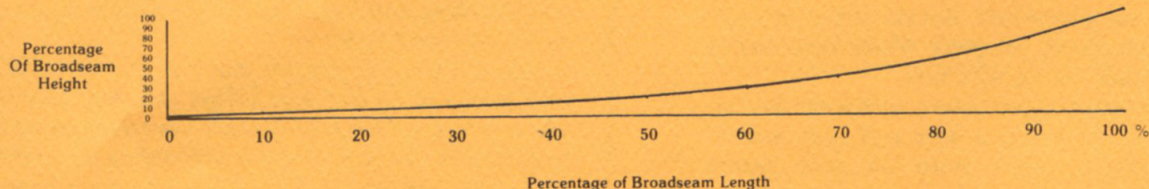
This procedure can be mathematically duplicated in a rather straightforward way. I put down what I considered a "nice looking" broadseam. Then I measured the offsets from the seam's "baseline" at 10 equally spaced points along its length. A curve was then made to fit the line using a least squares method on the logarithms of the numbers. This provided a very neat exponential formula for broadseam curve.

The formula, for those with a mathematical bent, is:

$$Y = .3261287251 (1.03525501^X)$$

"Y," the seam offset, equals constant "a" times constant "b" to the power "X." And "X" is the point along the broadseam at which the seam offset is found. Fortunately for those of us who have not spent years studying algebra, this formula need not be used or even understood in order to be implemented for improving our broadseaming consistency.

A scale rendition of the curve is shown below. Note that its length is divided into 10 segments.



Consider each of these 10% of the total length of the broadened part of the seam. Similarly, the total increase in width of the seam can be conceived as "100%." That way the curve below can be used to describe any broadseam at all given its length and its maximum width.

We can ask ourselves questions in the following form:

What will the percentage of the total broadseaming width be at a point 50% along its length?

To answer such questions, all one needs to do is refer to the table below. Under the "Y" column are listed the percentages of the maximum broadseam width (remember that this width is over and above the "normal" width of the seam before broadening was initiated). Under the "X" column are listed percentages of the broadened part of the seam's length. At the zero end of this scale the broadseaming is just beginning. At the other end, the broadseam reaches its maximum extent.

Y	X
0%	0%
10	4.6
20	6.5
30	9.2
40	13.0
50	18.4
60	26.1
70	36.9
80	52.1
90	73.7
100	104.3

Thus, at a point midway along the broadened part of the seam, the seam width will be its original width plus 18.4% of the total broadseaming width. You can use this table with any broadseaming length and width because it is in terms of percentages.

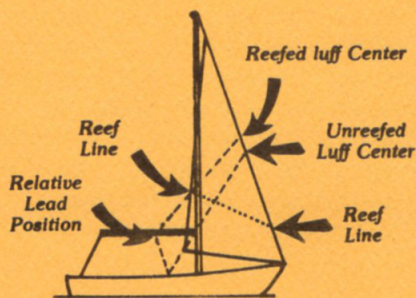
Jibsail Reefing

More and more sailors are asking us about jib-sail reefing. I have fought it for years on the moderate grounds that it is difficult to use and potentially harmful for the sail. But, in spite of this, there are more and more people using it. So let's examine how it should be done.

There is nothing unusual about the clew reef. It should be a sewn ring installed in three or four layers of patches at the proper height.

Ah, but what is the proper height? It is the height that will enable one to reef the sail and maintain a good lead while not changing the location of the fairlead itself. It may be easy to define this way, but it is not easy to quantify in feet and inches up the leech.

To do this you will have to resort to a little geometry with a scale plan of the sail. First, locate the "normal" sheet lead for the full size sail by finding the center of the luff and drawing a line from that point through the clew. The sheet will follow this line out of the sail most of the time.



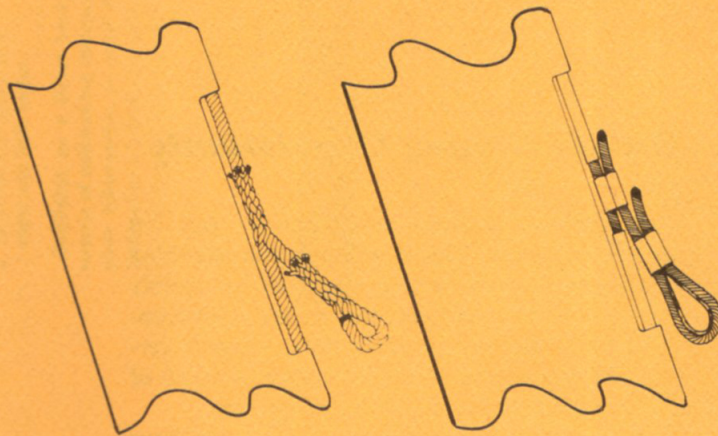
Next, locate the desired height for the reef cringle at the luff. It can be anywhere from 10 to 25% up the luff from the tack. Depending upon how much of a reef you want. Keep in mind that smaller reefs are easier to use.

Then put down a point above the normal lead point at the same height as the tack reef cringle and on a line parallel to the sail luff. This is the relative position of the lead when the sail is reefed. Finally, find the center of the reefed luff and draw a line from that center point to the point put down just above. You will want to install your leech cringle at the point where that line crosses the leech. Note that this point will be higher than the luff cringle. That is because, as the sail size is reduced, the new clew is moved forward and it must be raised if the same sheeting lead is to be maintained.

After sewing the leech cringle in place, you can turn to the luff. The problem here is to make sure that the sail itself is secured to the luff reinforcement. That can be done nicely if the sail is in construction or has a rope luff. But the job is very difficult to accomplish properly when they sail is already together with a wire luff.

Let us consider the procedure with a sail in construction first. If it has a wire luff; you should slide a Nicopress sleeve onto the wire before finishing the wire with eyes in its ends. Then make up a separate eye with a tail of three inches or so.

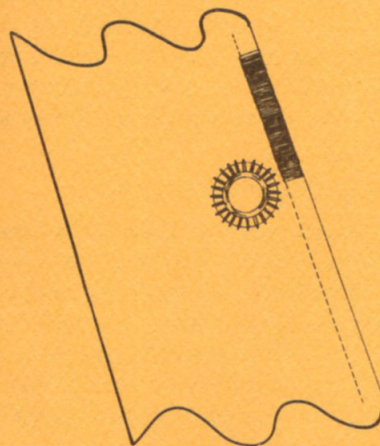
Pull the luff wire with its Nicopress sleeve into the cloth sleeve along the sail and cut a hole in the cloth just above the point where you want your reef cringle. Locate the Nicopress sleeve on the wire and work it to this open place. Use it to splice



the separate eye onto the luff wire. This eye will thus form a secure new tack for the reefed sail. Sew a ring just above the eye and whip the two together just as you normally do at the head or tack of a jibsail.

Follow the same procedure if you are using a rope luff in either an old sail or one under way. Here you can, however, simply splice a rope eye into the luff rope.

When you have an old sail with a wire luff, you will be forced to settle for a rather makeshift attachment of the sailcloth to the wire. All you can do is whip round and round it in an attempt to



bind the cloth in the sleeve as tightly as possible. If the wire has a vinyl coating, you will be able to do a fairly good job, but you should expect some slippage if the wire is bare. Then sew a ring just below your binding and insert an eyelet. This will serve as the new reef tack.

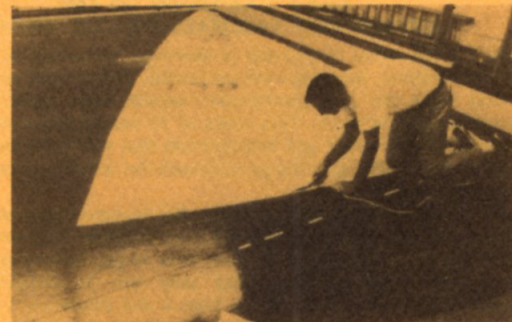
I do not want to suggest that you cannot install reef points in an old wire luffed sail, but, if you do, it is a good idea to inspect your tack cringle frequently to be sure that it is not sliding down the wire. That will very quickly lead to overstretched, perhaps even torn, cloth above the cringle.

Learn Sailmaking At Home

Sailmaking has always been taught through apprenticeship. It is an art and the teaching of any art requires the personal interaction that apprenticeship makes possible. But traditional apprenticeship has some very real disadvantages. It requires a full time commitment over an extended period. And apprentices often complain that they are trained in particular tasks and left to perform just those tasks. As a result they are often never able to learn the work completely.

The Sailmaker's Series retains all that was good in traditional apprenticeship programs and does so without any of the disadvantages. Students work under the direct supervision of Jim Grant. Jim (who has a Ph.D., from the University of Chicago in Political Science) is an internationally recognized Master of the Sailmaking Art. He Founded Sailrite Kits in 1970 to make material and instructions for sailmaking more widely available. His five books on sail construction have become classics. They have been used by sailmakers everywhere. Even the largest, most respected lofts like Ratsey and Lapthorn, Hood, and North make use of the books to train new employees. These books are excellent texts for professionals working in a loft and they are fully satisfactory for individuals building just a few sails for personal use. But the books alone cannot convey the full story of the sailmaking art. To teach the art of sailmaking properly, there must be an interaction between student and master. And that is the purpose of the Sailmaker Series.

The Series is the first attempt to teach sailmaking in a carefully structured and organized way. The instruction is not compromised by any requirements of production efficiency. Moreover, it is possible for students to move at their own pace through the material. Indeed, students can even decide for themselves what level of expertise they wish to achieve. The Series is divided into four distinct Units. Look over the outline of each Unit on the reverse of this sheet.



Terms of Enrollment

All of the Assignment Papers are to be completed and mailed to the school. There they will be evaluated and graded as well as extensively commented upon. The grading system employed follows:

Excellent — A	Below Average — D
Above Average — B	Unsatisfactory — F
Average — C	

A grade of "D" or better must be achieved by students enrolled in Unit I on all assignment papers before succeeding lessons may be attempted. Lessons may be repeated only three times to obtain a satisfactory grade. After having completed all ten lessons and the Final Exam with a "D" or better grade and upon the student's payment of the full tuition, the Academy will award an Apprentice Sailmaker's Certificate attesting to the student's ability to perform the work covered by the course.

Students must apply themselves consistently and seriously, completing at least one lesson every four months and completing the entire Unit within three years from the date of acceptance, at which time this agreement, with the exception of the student's obligation for any payments if not completed, will terminate. If work must be discontinued for any length of time, the Academy must be notified so that special arrangements can be made to discontinue and reinstate enrollment with appropriate review work.

If, at any time, qualifications for continuing the work are not met, enrollment will automatically be considered to have terminated and tuition will be refunded on a prorata basis as explained below.

Postage on all material sent to the school will be paid by the student. The Academy will pay postage on all lesson work and supplies sent to students. Lesson materials will be sent via first class mail or UPS or parcel post. Air mail is available upon special order — students will be billed for the excess postage charges incurred.

This agreement may be cancelled by the student upon written notice sent to the Academy. Students will be entitled to a refund subject to the following rules:

1. Within 72 hours after midnight of the day on which the enrollment agreement is submitted, students may cancel their enrollment and receive a full refund of all monies paid.
2. If the agreement is cancelled after the first lesson is received and prior to completion of the course, the student is obligated to the Academy only for the lessons received. The school will refund charges on a prorata basis. Each lesson received is valued at \$25. The \$100 registration fee, however, is non-refundable after the 72 hour grace period. Also there will be no refunds made if enrollment is terminated more than 18 months after registration. All texts and materials received by students are their property and need not be returned in case of cancellation.
3. At any time during the enrollment period, all materials for Unit I will be sent to any student who has paid the full tuition upon his written request. But, in such cases, the student waives any refund to which he might otherwise be entitled in the event of enrollment termination.

Enrollment Agreement for Unit I of the Sailmaker's Series

Please enroll me in Unit I of the Sailmaker's Series.

Name _____
Address _____
City _____
State _____ Zip _____

I understand that the entire tuition and materials fee is \$350.00. In addition to ten lesson books, supplies for the construction of model sails, ten Assignment Papers, and one Final Examination, this fee includes the following texts and supplies:

● The Sailrite Sailmaker's Library	\$20.00
● The Sailrite Sail Repair Kit	24.95
● Marchaj, The Theory and Practice of Sailing	17.50
● Bowker and Budd, Make Your Own Sails	3.75
● The Best of Sail Trim	11.95
● The Canvas Worker's Library	20.00
● Basic Drafting Tools	9.50

Students who own any of the texts or supplies listed above should deduct their value from the total cost of Unit I.

Total Tuition and Materials \$350.00
Less texts or supplies owned: _____

Total Due _____

I have checked below the payment plan that I prefer:

☐ **Plan A** — I enclose \$100 as a non-refundable registration fee and agree to pay \$24.82 by the 10th day of each month to Sailrite Enterprises Incorporated for 11 months or until the total payments (including registration) amount to \$350 plus interest (annual interest rate 18%; total payment if the full 11 month term is used will be \$373.05 — prepayment without penalty is permitted and will reduce interest charges by the rule of seventy-eight).

☐ **Plan B** — I enclose the entire tuition and material fee for Unit I of the Series or \$350. Of this amount, I understand that \$100 is a non-refundable enrollment fee.

You may charge the above to a Visa or a Mastercharge. Indicate the card number and the expiration date below.

Card Number _____
Expiration Date _____
Your Signature _____



Sailmaker's Series Syllabus

Unit I — LEADING TO THE APPRENTICE SAILMAKER'S CERTIFICATE

Unit I is intended to provide a thorough introduction to sailmaking. Terms are defined, principles are set forth, and techniques are developed. Practical skills are also introduced—several scale model sails are constructed during the work. This series of 10 lessons will convey a complete knowledge of sail design and construction that will make any skipper a better sailor. But it also lays the groundwork for actual sail construction that begins with Unit II.

Each Lesson within this Unit is intended to convey an essential element of the knowledge and skills necessary for sailmaking. Whenever possible, the student will be asked to use his own boat as the framework for his work. Measurements will be taken and sails will be designed within that framework (note, however, that a boat is not required). Scale model sails will be constructed and examined by the Academy Director to insure that principles are grasped.

Lesson 1 — The Words and Measures of Sailmaking:

An introduction to the unique terminology employed by sailmakers. Organized in a manner which makes this section a useful reference tool.

Lesson 2 — Sailmaking Fabrics and Materials:

This section starts with a review of sailmaking in the recent past and moves to a detailed consideration of modern sail fabrics and hardware.

Lesson 3 — Sewing Techniques:

Covers the principles of sewing machine usage in sailmaking. Includes detailed instruction on sewing machine repair and adjustment. Hand sewing techniques are also presented.

Lesson 4 — Mainsail Design and Construction:

A complete study of the mainsail. Moves from design considerations such as aspect ratio and roach width to construction details such as boltrope attachment and broadseaming techniques.

Lesson 5 — Jibsail Design and Construction:

Structured like Lesson 4 above but focused on headsails and the design parameters peculiar to them. Emphasis is placed upon draft needs and draft placement in sails.

Lesson 6 — Spinnaker Design and Construction:

Covers bloopers as well as horizontal, radial, spherical, star cut, and tri-radial spinnakers. The effects of cloth stretch are analyzed and assessed.

Lesson 7 — Staysail Design and Construction:

Here the primary focus is on the theory of sail interaction. The design and construction of 6 distinct staysail types is considered in the light of this theoretical grounding.

Lesson 8 — Stormsail Design and Construction:

Strength and seaworthiness are the primary objectives in stormsails and, thus, these elements of sailmaking are emphasized here.

Lesson 9 — Sail Repair Work:

The maintenance of sails from a sailmaker's point of view.

Lesson 10 — Canvas Work:

Sail covers, boat covers, bags, awnings, dodgers, weather cloths, etc. The principles of construction and techniques of securing are presented.

Unit II — LEADING TO THE JOURNEYMAN SAILMAKER'S CERTIFICATE

Unit II focuses on the building of working sails. The student completes two sails. Correspondence is maintained with the Academy Director at each stage of construction to assure complete understanding.

The student must complete Unit I or pass an exemption test demonstrating his knowledge before undertaking Unit II. All students enrolling in this part of the course will be expected to possess some manual dexterity and a mechanical aptitude.

Design and build a mainsail and either a working jibsail or a genoa. Proceed under supervision through the following stages:

1. Present a scale plan and a packing list for approval.
2. Assemble the sail, keeping a record of trouble spots.
3. Assess the completed sail—submit the finished sail if possible; if not, send photos and drawings of the sail. Estimate draft and draft placement in the finished sail.
4. Modify the cut if necessary and report results.
5. Repeat all of the above for the second sail.

Unit III — LEADING TO THE MASTER OF THE SAILMAKING ART (MSA) CERTIFICATE

Unit III is intended to confront the student with all of the specialized types of projects that he is likely to encounter during the course of business. These projects are categorized below in terms of the kinds of design parameters and construction techniques employed. Upon completion of this part of the Series, the student can feel confident that he has the ability to confront any challenge.

- | | | | |
|-----|--|-----|--|
| 1 { | Swedish Mainsail
Storm Foresail
Storm Triesail | 4 { | Radial Head Spinnaker
Spherical Spinnaker
Starcut Spinnaker
Horizontal Spinnaker
Tri-Radial Spinnaker |
| 2 { | Blooper
Drifter
Reacher | 5 { | Two of the following:
Sail Cover
Weather Cloths
Awning for Sunshade
or ONE of the following:
Boat Cover
Spray Dodger |
| 3 { | Mizzen Staysail
150% Staysail
Tallboy
Spinnaker Staysail
Cheater | | |

Unit IV — THE BUSINESS OF SAILMAKING

Unit IV of the Sailmaker's Series is designed to help those who desire to build sails for profit. Too many professional sailmakers are excellent craftsmen with inadequate knowledge of proper business practices, equipment needs, production shortcuts, bookkeeping, pricing policies, and marketing strategies. Many of the professionals fail and many more merely limp along barely subsisting. This Unit will help students take advantage of the booming sail market.

Unit IV is available to students having completed Units I, II, or III and to others demonstrating to the satisfaction of the Academy Director sufficient experience to benefit from this instruction.

Lesson 1 — Choosing Facilities:

What physical structure does a professional sail loft require? How much space is needed? How should the space be apportioned? Before these questions can be answered, a business plan must be constructed. This lesson aids in the construction of such a plan and then turns to the questions above.

Lesson 2 — Finding a Location:

How many customers are needed? What service area is required? Where should one locate within the service area? These are the leading questions of Lesson 2.

Lesson 3 — Selecting Equipment:

Sewing machines, cutting room appliances, sailmaker's tools and other equipment are surveyed here. The lesson ends with a discussion of "what it will cost."

Lesson 4 — Production Shortcuts:

Specialized tools of production like computers are considered here. How are they used and when should they be used?

Lesson 5 — Suppliers:

Where do sailmakers buy their materials? What are the terms of purchase? Which suppliers are well stocked and prompt? What are the most economical ways to purchase materials? These questions and others like them are answered in this Lesson.

Lesson 6 — Inventory Maintenance:

How much inventory is needed? What should turnover be? How to maintain inventory records. Forms and rules of thumb are presented to facilitate inventory management.

Lesson 7 — A System of Bookkeeping:

This lesson presents the standardized bookkeeping system developed by the Academy just for sailmakers. Specialized forms and procedures are presented which will make record keeping precise and relatively easy.

Lesson 8 — Wage Scales and Benefits:

What does the law require of sailmakers? What do sailmakers do beyond what the law requires? The lesson will present trade association sources for fringe benefit plans that make employment much more attractive at little extra expense to the employer.

Lesson 9 — Pricing Policies:

How do sailmakers charge for the work they do? How should they charge? What factors must be taken into consideration in setting prices? What is a proper return on investment? This is a fascinating lesson full of surprises!

Lesson 10 — Marketing Strategies:

Probably the most difficult element of any sailmaking operation. What is the market? How can it be reached? How effective are boat shows? What about seasonal discounts? How much should be spent on advertising? How do you know if it is effective? This lesson will prove invaluable to business success.

Sailwright Academy Graduates

The Academy has been in existence a little over two years now, but we already have a list of distinguished graduates. The following have been granted the **Apprentice Sailmaker's Certificate**:

R.C. Andreasen	Richard McFalls	Jay & Pam
Lynne Dugan	Donald Pierce	Gardner
John P. Gengler	John Shugar	Don & Kate
Dawn & Dann	Thomas Thompson	Hutson
Holden	Erik Abrahamsen	Ray Kinsel
Peter Jacobson	Henry Bossett	Mark O'Keefe
John Jamieson	Ray DeCosta	Lee Pinion
Leon P. Jorgensen	Wil Evans	K.L. Waters
K.T. Knapp		

And these people have earned the **Master Sailmaker's Certificate**:

John Shugar	Jay & Pam Gardner
Thomas Thompson	Don & Kate Hutson
Erik Abrahamsen	Ray Kinsel
Henry Bossett	Mark O'Keefe
Ray Decosta	Lee Pinion
Will Evans	K.L. Waters

These individuals have received the **Journeyman Sailmaker's Certificate**:

Thomas Thomson	Don & Kate Hutson
Erik Abrahamsen	Ray Kinsel
Henry Bossett	Mark O'Keefe
Ray DeCosta	Lee Pinion
Wil Evans	K.L. Waters
Jay & Pam Gardner	

Finally, the following individuals are members of the Sailwright Guild.

Erik Abrahamsen (Abrahamsen Sails)	Don & Kate Hutson (Hutson Sails)
Henry Bossett (Bossett Sailmakers)	Ray Kinsel (T-Bay Sails)
Ray Decosta (Cat Parts)	Mark O'Keefe (O'Keefe Sails)
Wil Evans (Sail Mart)	Lee Pinion
Jay & Pam Gardner (PJ's Canvas & Sail)	K.L. Waters (C.C. Waters Sails)

Membership in the Guild is granted to professional sailmakers who have demonstrated proficiency in their art. In addition, they have indicated their commitment to the maintenance of their levels of expertise by enrolling in Unit IV of the Sailmaker's Series. This Unit of the Academy is developing into an active Trade Association. Thus far it has made available to members a very extensive listing of sail plans, a spinnaker clew gore program for the Texas Instruments 59 programmable calculator, and a radial head program for that machine. More programs are on the way along with a complete record keeping system designed just for sailmakers.

It is obvious that the Academy has been very well received during its short history. I am convinced that it will play a key roll in the sailmaking business in the coming years—setting standards for excellence and providing a source for continuing education among professionals in the field.

A New Motor for The Sailwright Sailmaker

If the sailmaker had a weak point, it was in the power of the portable sewing machine motor that drove it. That problem is now behind us. I have found a beautiful little 1.7 amp motor with ball bearings that has just the right speed and torque to do the job.

The old Pfaff motors were just 1.3 amps and they had simple bronze bearings. As a result, it was sometimes necessary to reach up and fling the flywheel to get the machine started. That may still be necessary with 5 or 6 thicknesses of heavier Dacron fabrics, but, for normal sewing, you should have all the power you need to start the machine at any point. I expect much better looking stitches from all of you now!

The replacement motors are available for \$35.00. We will extend \$10 credit to anyone who wants to exchange their old motor for a new one.

Sailrite Kites?

Sailcloth is not just for "sails." Dr. P. H. Byles of Syracuse, N. Y. sent us the picture below of a kite made of 1½ oz. ripstop nylon. Dr. Byles won first prize at the Provincetown Kite Festival with this kite.

There are many using 3.8 oz. Dacron for hang glider wings. And the cover cloth makes excellent upholstery material (there are several chairs and a couch in our own house covered with Sunbrella).

So let your imagination run wild! But do keep us informed about your projects and how they work out.



◀The Sailwright Sailmaker▶

Until now sailmaking and sail repair have been carried out either with small, lightweight, and often underpowered sewing machines designed for home use or with heavy and ridiculous-ly specialized machines intended for volume commercial work.

Now there is a sewing machine that perfectly fits the requirements of the sailor and small loft. A "professional" machine originally intended for tailors but modified to meet the special needs of sailmaking and sail repair.

Complete with hand crank, powerful portable 110 volt motor, and solid white oak carrying case, the Sailwright Sailmaker can be taken anywhere and used with confidence.

Just a few features

1. Complete bronze bearings than the largest home machines.
2. Full rotary gear driven mechanism
3. A unique second upper tension mechanism—this machine will sew the lightest of fabrics as well as 8 to 10 layers of 9 oz. sailcloth
4. An under arm space 33% wider and 20% higher
5. A huge 12 millimeter wide zigzag and a straight stitch 5 millimeters long (twice the width and 25% longer than any home machine)
6. A special locking needle bar so straight stitches will be truly straight

Available on a direct basis from the world's only complete source of sailmaking instructions and supplies. Write for complete information or send \$1.00 for the latest edition of the Sailmaker's Catalogue and the Academy Catalogue (describing correspondence courses in sailmaking).

Sailrite Enterprises

Route 1, Columbia City, IN 46725

Phone (219) 244-6715

The Sailwright Newsletter

Route 1

Columbia City, IN 46725

See us at:

The Newport International Sailboat Show
September 4—7

The Great Lakes Sailboat Show
(Mt. Clemens) September 24—28

The Long Beach Sailboat Show
October 24—November 2

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BE YOUR OWN SAILMAKER

Make your own sails, covers, bags, awnings. Save money, and have fun! Try our sail cover kits: complete with twist lock fasteners and leather for chafe protection. Assembly takes four hours or less.

For booms less than:

10.5 ft. 13 feet 16 ft.

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\$34.95 \$51.95 \$67.95

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By Jim Grant
Ph.D.,
M.S.A.

The Sailmaker's Library

Used by professionals and amateurs alike. A collection of the serious sailor cannot afford to be without. Included in the 5 manuals are detailed, up to date, step-by-step instructions for sail design, sailmaking, and sail repair.

* Build a sail—* Better your performance through an understanding of sail design—

* Be prepared for an emergency sail repair

328 pages in a convenient box \$20.00 ppd



Please send the indicated items to:

Name _____

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☐ Charge this order to my (Mastercharge) Visa

Number _____

Expiration Date _____

☐ The latest Sailrite Catalogues.

☐ Information on _____ sail kits for my _____.

☐ The Brother Sailmaker with solid white oak case and all accessories including hand crank and 110 volt AC motor. (I have enclosed \$750 and understand that freight charges will be collect or I have indicated my bankcharge card number on the right in which case all charges will be made against it.)

☐ A sail cover kit for a _____ ft. long boom in the _____ fabric. (I have enclosed \$_____ or have indicated my bankcharge card number on the right.)

☐ The Sailmaker's Library (I Have enclosed \$20.00 or have indicated my bankcharge card number on the right.)

If you know someone who would like to receive a Sailwright Newsletter please give the following information:

Name _____

Address _____

City _____

State _____ Zip _____

