



# StackPack Installation Manual



## FORWARD TO STACKPACK MANUAL by DON STREET

As boats become larger and larger with the aid of modern winches, either hand, electrically or hydraulically powered, most sail handling problems can be solved. But the one difficult problem that continually faces all crews is the furling and covering of the mainsail, especially on boats with a main or mizzen of 400 square feet or over.

There are various methods for stowing large mainsails and mizzens - internal roller reefing (too expensive), behind the mast roller reefing (too inefficient), zip-furl (you have to rely on a zipper and my son-in-law, Scott Vogel, bowman on STARS AND STRIPES, says that one thing he learned while racing on 12 meters is "Don't trust zippers!"), the Dutchman, and now the StackPack.

We installed the Dutchman system and sailed with it for over 1,000 miles. We have now sailed roughly 4,000 miles with the StackPack. If you are buying a new mainsail, the StackPack is the way to go! With the Stack- Pack, one person, or at the most two people, can stow and cover their main and mizzen, regardless of the size of the sail.

Further, the full length battens in the StackPack are a definite plus. Being an original doubting Thomas and believing nothing until I have tested it in all weather conditions, I had serious reservations about the efficiency of full length battens. Now after 4,000 miles using a fully battened main, I am firmly convinced that fully battened sails are the way to go - so much so, that we now have a fully battened mizzen!

One of the greatest things about the StackPack is the fact that whenever the sail is down, the sail cover is on it. It is not a case of having to urge a tired crew to cover the sail to prevent sunburn. The StackPack is really easy and is done automatically once the sail is dropped.



**Figure 1**

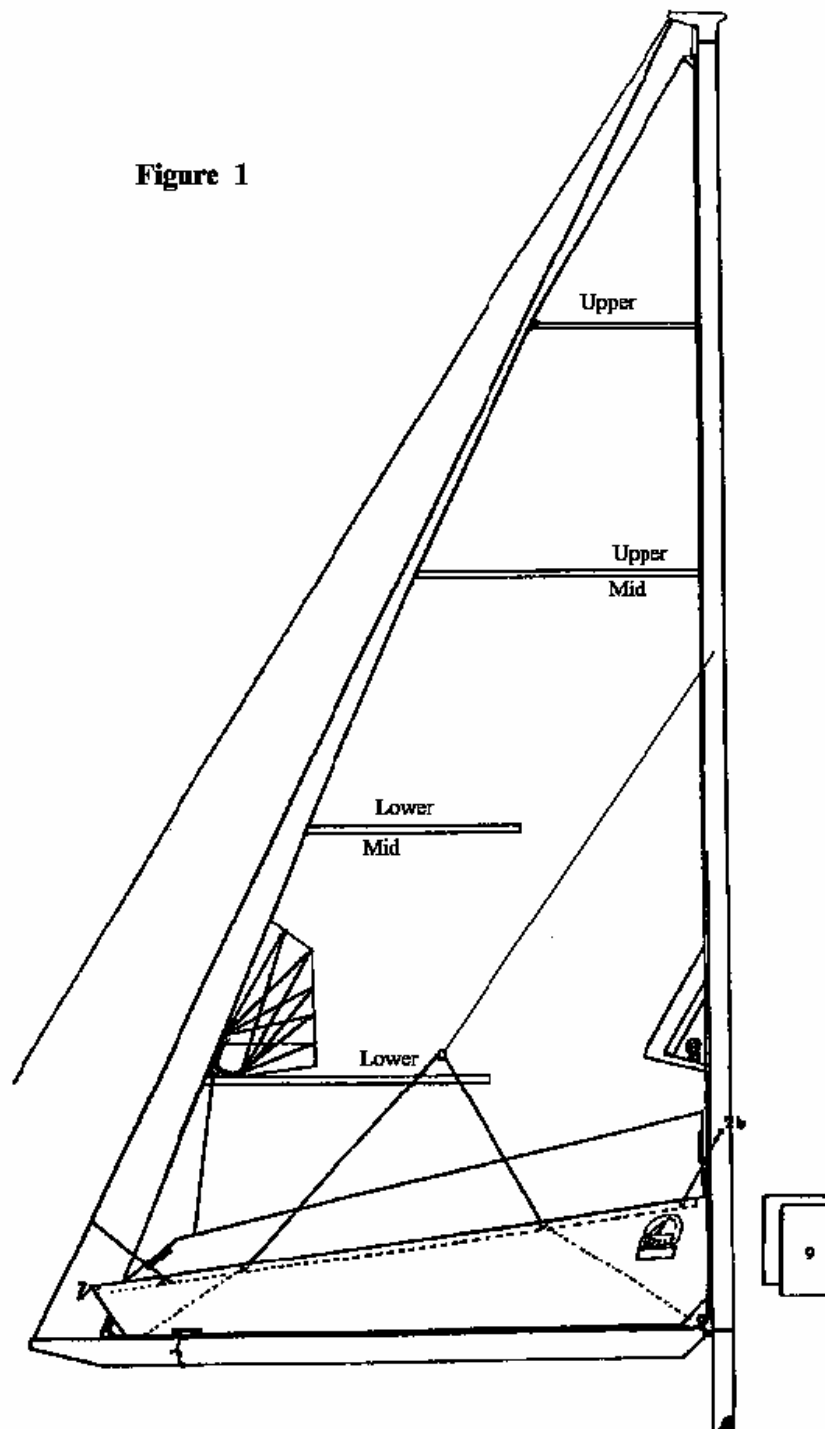
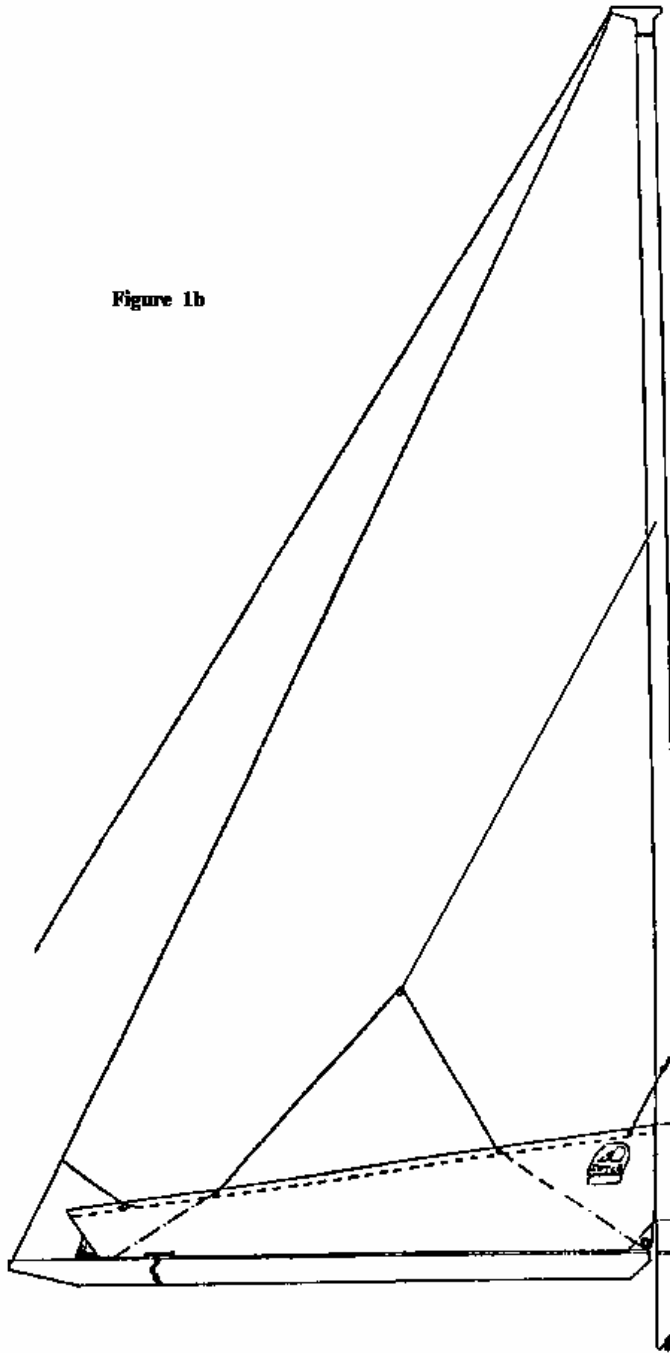




Figure 1b



## STACKPACK INSTALLATION INTRODUCTION

The following StackPack instructions have been written with the expectation that the initial installation will be done under ideal conditions: calm weather and seas, five knots of wind or less, boat head to wind on a mooring or at the dock. Under these conditions the initial StackPack installation can be made in less than three hours. If it is not possible to wait for all of these ideal conditions in your particular case, please remember IT IS VITAL TO HAVE THE BOAT HEAD TO WIND DURING THE INSTALLATION PROCEDURE.

Once the StackPack unit has been installed correctly, the unit should give efficient service and long life in any reasonable sailing weather, as long as the "StackPack Tips" and prudent seamanship rules are observed.

NOTE: The StackPack has been adapted to fit a wide range of boats however, for your StackPack to function correctly, the slide gate on the mast must allow slides to start stacking up directly above the tack fitting, i.e., the slide gate must be no more than 3" above the tack fitting. This insures that the stacked height of the slides will be low enough to allow the acrylic cover to be zipped closed after the sail has been lowered.

Doyle StackPack is a full battened mainsail, with lazy jacks and an integral sail cover attached to the sail by a membrane and supported at the cover top by two battens. The sailmakers at Doyle take great pride in constructing this sail and providing all of the components necessary to easily and properly install it. When you receive your Doyle StackPack, please check the package for the following components:

- A) Dacron mainsail with attached sail cover of correct color and attached, coiled lazy jacks.
- B) Bundle of six full length battens (labeled): top, uppermid, lower mid, bottom, port cover, starboard cover.
- C) StackPack Installation Kit in small gray bag contains the following:
  - Copy of manual
  - Four Stainless steel pad eyes
  - Eight stainless 1/2" self-tapping screws
  - One 11/64" drill bit
  - One bottle of lubricant for use on luff slides. This has been supplied to lubricate the mast track so the hardware runs up and down with minimum friction. The easiest way to apply to the track is from the bosun's chair. Better yet, apply the lubricant prior to stepping mast at the beginning of the season.

In addition to the components supplied by Doyle Sailmakers, you will also need the  
**Doyle Sailmakers Inc.**

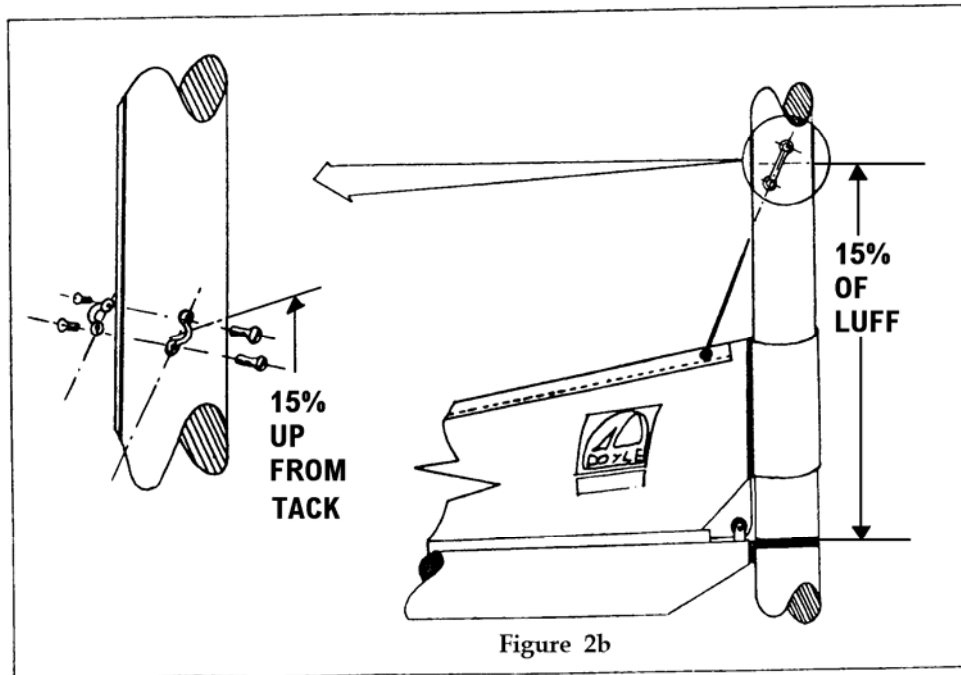
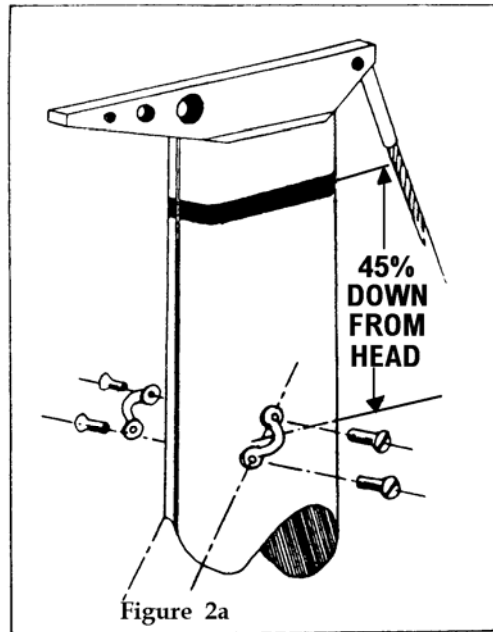
following:

- Sharp knife
- One roll of vinyl rigging tape
- Bosun's chair
- Screwdriver with 5/16" slot head
- An electric drill, cordless power drill preferred
- Felt tip marker

The steps for installing the StackPack should be taken in proper sequence to insure correct and, hopefully, carefree installation. Please read through the whole procedure first to familiarize yourself with the overall picture:  
(Fig. 1 & 1b).

- Install upper pad eyes on mast. (Fig. 2a)
- Install lower pad eyes on mast. (Fig. 2b)
- Install mainsail battens and cover battens. (Fig. 3a,b,c)
- Install (bend) mainsail on to mast and boom. (Fig. 4a)
- Rig lazy jacks. (Fig. 5)
- Lead forward cover lines to lower pad eyes. (Fig. 2b)

After completing the above steps, be sure to make a dry run, at the dock or on the mooring. Lower and stack the sail, and close and zip the StackPack to insure everything is in proper working order. During this practice session, make any final adjustments and familiarize yourself with the forward cover.



Doyle Sailmakers Inc.

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## INSTALLING UPPER PAD EYES

Pad eyes are most easily installed at the mast head before the mast is stepped. If this cannot be done, it is necessary to send someone aloft in a bosun's chair. Upper pad eyes should be located 45% down from the mast head, on opposite sides of the mast, just behind the shroud tangs. (See Figure 2a) **DO NOT INSTALL PAD EYES ON THE AFT PORTION OF THE MAST, NEAR THE MAST TRACK.** If located on this aft section, the pad eyes will position the lazy jacks in such a way that they will snag the sail when it is hoisted. Do not locate pad eyes in any position where the lazy jacks will cross a shroud, a piece of hardware, or any other equipment.

**NOTE:** It is always more important to keep pad eyes, lazy jacks, and other StackPack rigging clear of other gear than to install them in any specifically defined location. Once you have determined the best location of your pad eyes, hold them against the mast and mark the holes with a felt tip marker. Drill one hole, tap it, insert screw, and secure pad eye before drilling second hole. Drill the holes with an 11/64" bit and an electric drill (a portable drill is really handy here if you are at the top of the mast!) Carefully, tap the holes with the 10 x 24 thread tap and wrench.

**HINT:** To produce clean threading, do not use complete turns in threading the hole. Turn the tap clockwise one half turn to cut the thread, then back it very slightly (less than 1/8th of a turn) counterclockwise to break and to release the cut metal. Approximately six complete clockwise turns should thread each hole.

Align pad eyes over the threaded hole. Screw the bolts into the mast. Turn the bolts as hard as possible by hand.

## INSTALLING LOWER PAD EYES

To determine the position of lower pad eyes on the mast, (See Figure 2b), measure up from the gooseneck approximately 15% of the mainsail luff length, i.e., 15% of the distance between the black bands. The same rules for lateral placement of pad eyes apply to lower and upper eyes.

Install lower pad eyes using same tapping and threading technique as used for upper pad eyes.



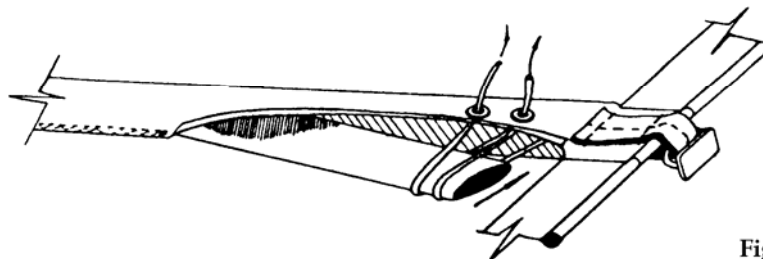


Figure 3a

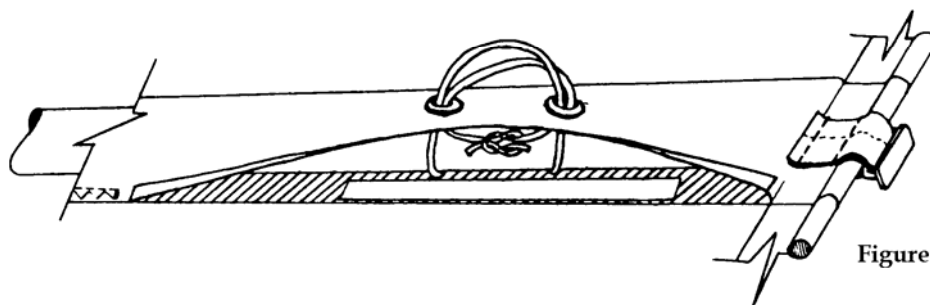


Figure 3b

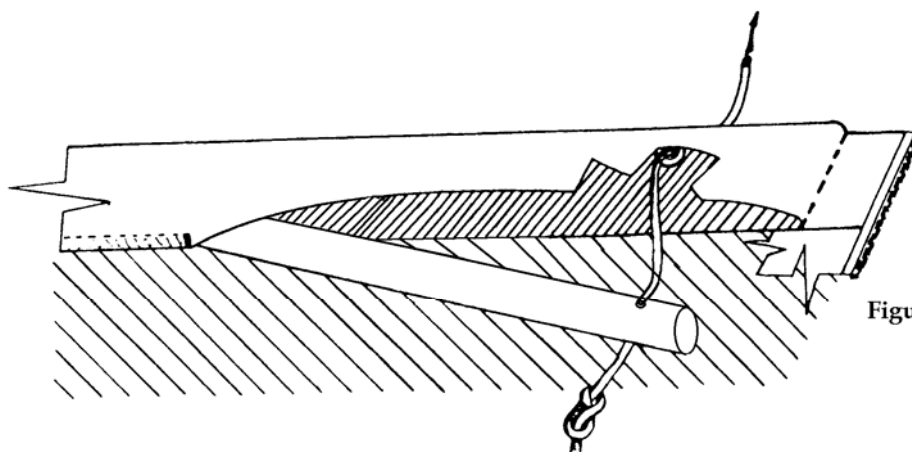


Figure 3c

## INSTALLING MAINSAIL BATTENS

After installing the pad eyes on the mast, proceed to the mainsail installation. To set the stage for installing the mainsail, remove the sail from the StackPack bag and lay the sail along the deck of the boat, inside the shrouds, with the luff of the sail at the mast and the clew, aft near the companionway.

Now you are ready to insert the battens from luff to leech in their respective pockets. There are four sail battens and two cover battens. Each batten is custom cut to fit exactly and snugly into its pocket. Each batten is identified with markings to indicate which pocket it goes into and how it should be inserted. Please note the leech end of the battens are angle cut to match the leech angle of the sail. After insertion, each batten must be tied into the pocket, as shown in Figure 3a and 3b, and the Velcro closure should be secured. When inserting the cover battens, note that each cover batten has a line passed through it, as shown in Figure 3c at the forward end. This line, when the batten is in place, must pass through a hole in the batten pocket in the acrylic StackPack cover. There is no need for any other Velcro closure on cover pockets.

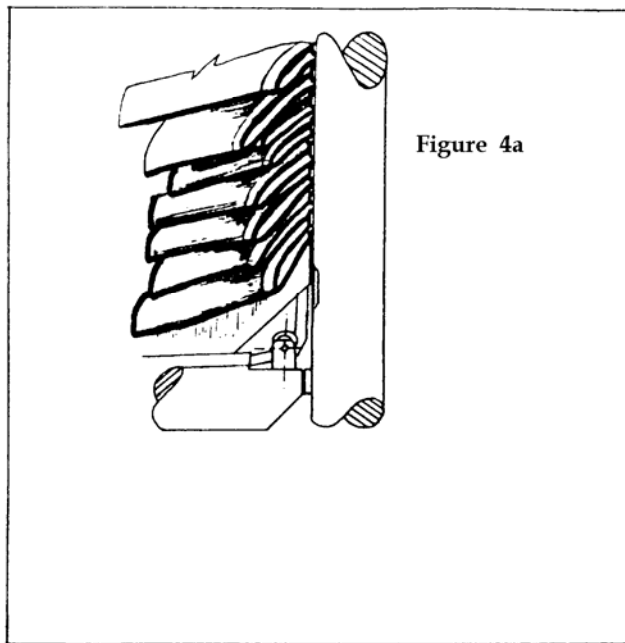


Figure 4a

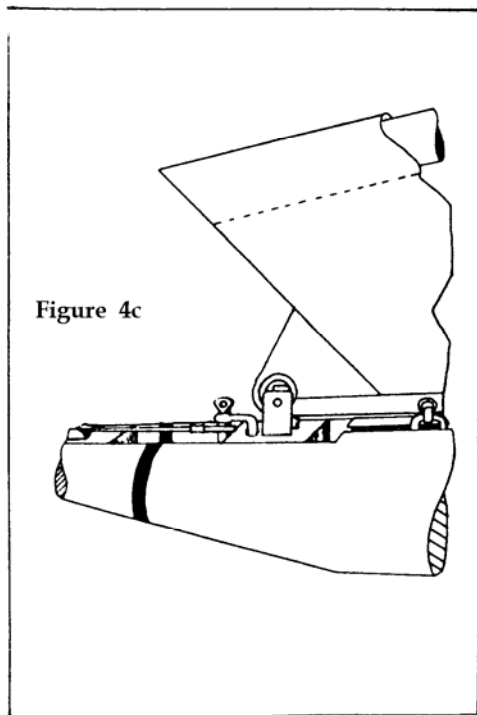


Figure 4c

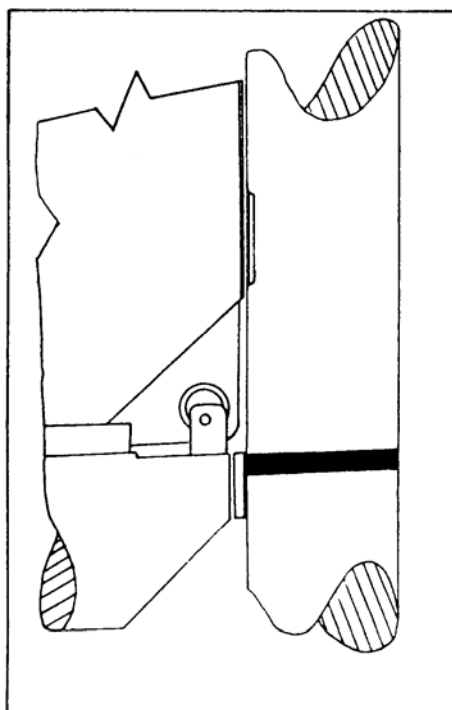


Figure 4b

## BENDING MAINSAIL ON MAST AND BOOM

With the battens installed in the sail and cover, you are ready to thread foot hardware or bolt rope onto the boom track. Put the clew end of the sail onto the forward end of the boom and pull the sail aft as the slides enter the track- this definitely is easier with an extra set of hands helping you. As you pull the sail aft, be sure the acrylic cover and sail do not snag and tear on cleats or other hardware which may be on the boom. Fasten the clew and tack rings into their respective cars or pins. See Figure 4b and 4c

NOTE: Any Doyle mainsail requires that the boom must be equipped with a clew outhaul car, or the sail must have a slide attached directly to the clew ring. If your sail does not have such a slide, contact your sailmaker before proceeding with the installation.

With tack and clew secured, put moderate tension on the outhaul and make it fast. At this point, you are ready to install mainsail luff slides.

Ideally, the mast track has already been lubricated using the bottle of lubricant before the mast was stepped as suggested in the introduction. If this has not already been done, the designated person to ascend in the bosun's chair should be sent aloft to spray the entire track.

The easiest method for threading the slides is to attach the main halyard to the head of the sail and to hoist the sail slowly while feeding the slides into the gate. When the sail is fully hoisted, you are ready to proceed with rigging the lazy jacks.

NOTE: For your StackPack to function correctly, the slide gate on the mast must allow slides to stack up directly above the tack fitting. This insures that the stacked height of the slides will be low enough to allow the acrylic cover to be zipped closed after the sail has been lowered. See Figure 4a.

**IF YOUR GATE DOES NOT PERMIT THIS COMPACT STACKING OF THE SLIDES, HAVE IT MODIFIED SO THAT IT WILL!**

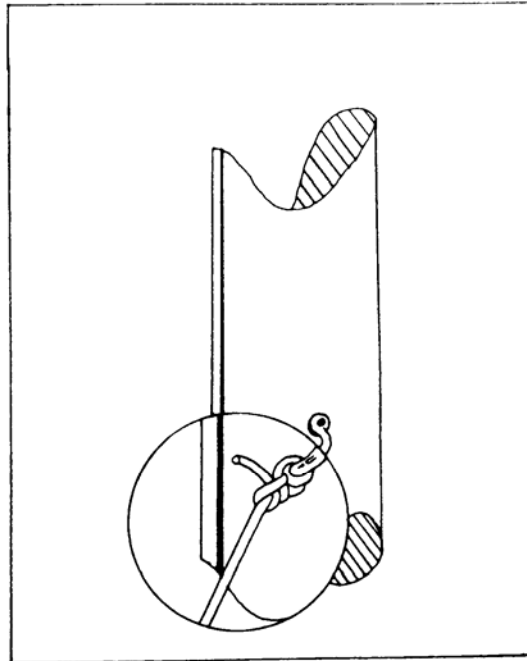


Figure 5a

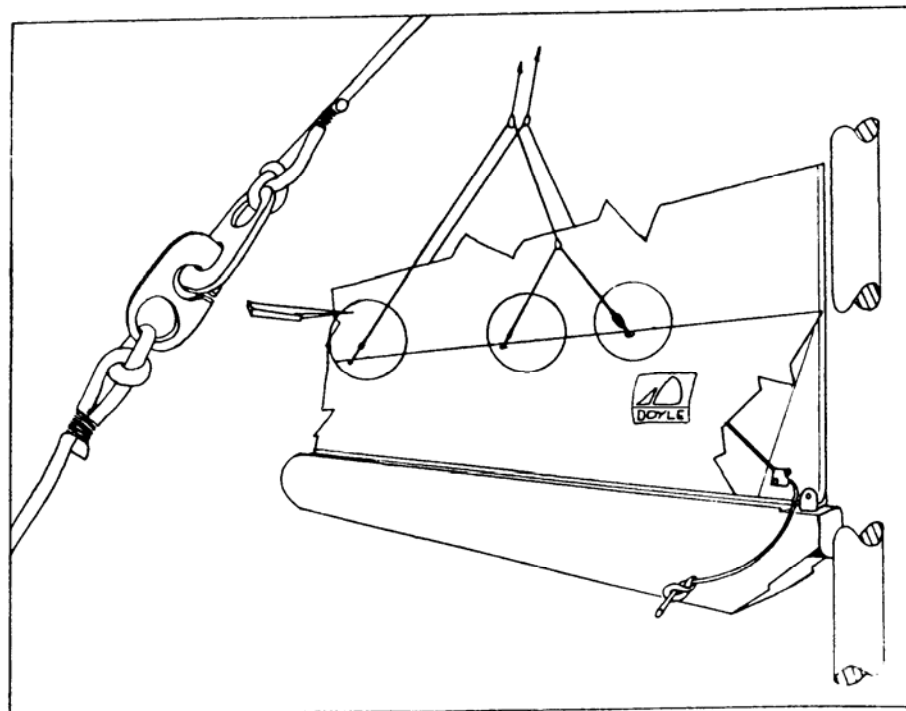


Figure 5b

## RIGGING LAZY JACKS

To rig lazy jacks, it is necessary to send a person aloft in a bosun's chair. However, before you start hauling them up, carry out the following steps, so all will be ready when the person goes up the mast.

- ❑ Locate the lazy jack, neatly coiled and hanging from the acrylic cover on each side of the sail.
- ❑ Locate the lazy jack adjustment cleats fastened to the sail in the tack area just inside the acrylic cover.
- ❑ Locate tail of line hanging from each cleat. Adjust the tails so that four feet of line extends through the cleat. The tails should both hang at equal lengths and must have a stopper knot in the end (figure 8 knot is just fine here.) Jam the tails in securely. (See Figure 5b.)
- ❑ Uncoil the lazy jacks on each side of the sail. Bring the end to the mast. Tie both ends together, so the person in the bosun's chair can carry them aloft.

Having completed the above steps, you are ready for your bosun's chair and person who likes heights!

Equipped with a sharp knife and a roll of vinyl rigging tape, a person should be hoisted aloft. The person in the bosun's chair should be careful to thread the lines aft of the lower shrouds, the spreaders, the intermediate shrouds, and the preventor stays.

When they reach 55% of the distance up the mast, the lazy jacks must be tied off to the correct pad eye on each side of the mast, i.e., the port lazy jack to the pad eye on the port side of the mast, etc. Lazy jacks must not cross one another, and they must run clear from small blocks above the cover to the padeyes without interfering with any other rigging. To secure each lazy jack properly, pass "its" end through the pad eye twice and pull it snug, then tie, at least four half-hitches around the standing part of the line (see Figure 5a).

**Note: It is not necessary to make the lazy jacks excessively tight, since they can be adjusted at the lower forward end later.**

With the four half hitches secure, carefully tape the entire knot with rigging tape, right up to the pad eyes. This should be about 4".

Now lower your mast person in the bosun's chair to the lower pad eye position on the mast. They should take the forward cover lines and tie them to the lower eyes, leaving about 6" of slack in these lines. **DO NOT CUT AND TAPE THESE LINES UNTIL YOU HAVE DETERMINED THAT THEY WILL SUPPORT THE COVER CORRECTLY WHEN THE SAIL IS LOWERED AND PACKED.**

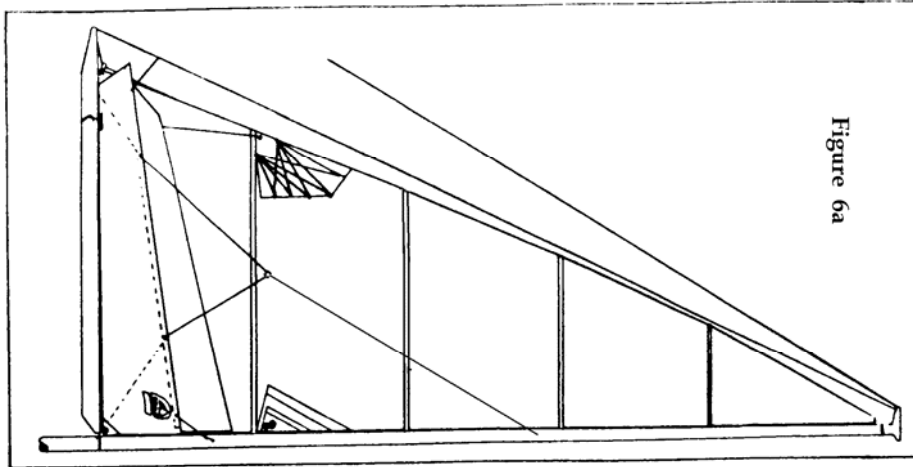


Figure 6a

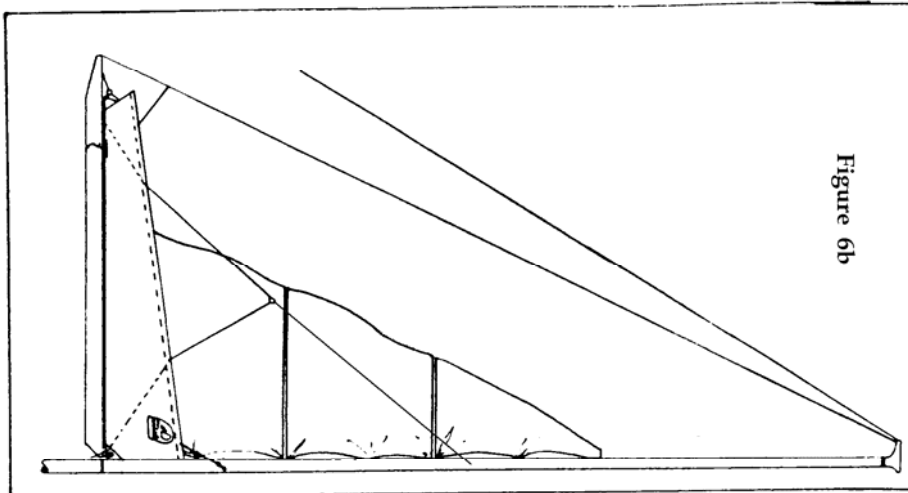


Figure 6b

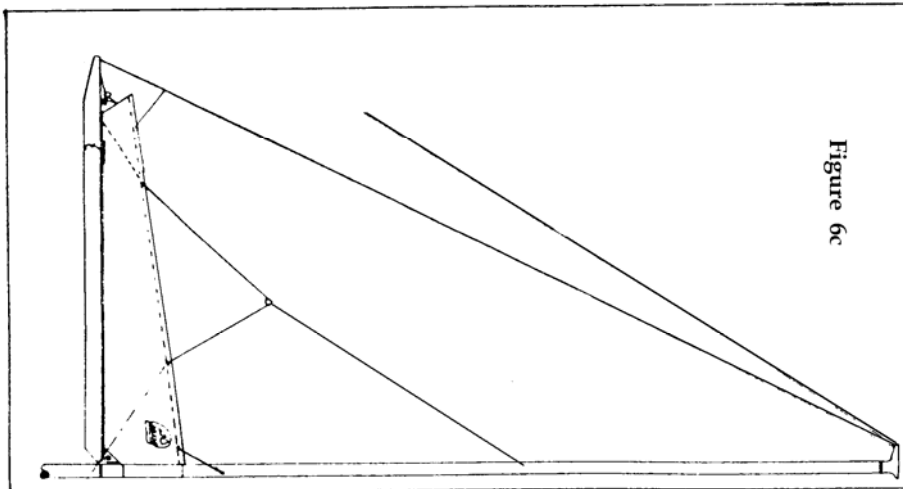


Figure 6c



## LOWERING AND STACKING THE SAIL

### Figure 6a, 6b, 6c

Before proceeding with this next step, go over the following list and be sure you have checked these things out:

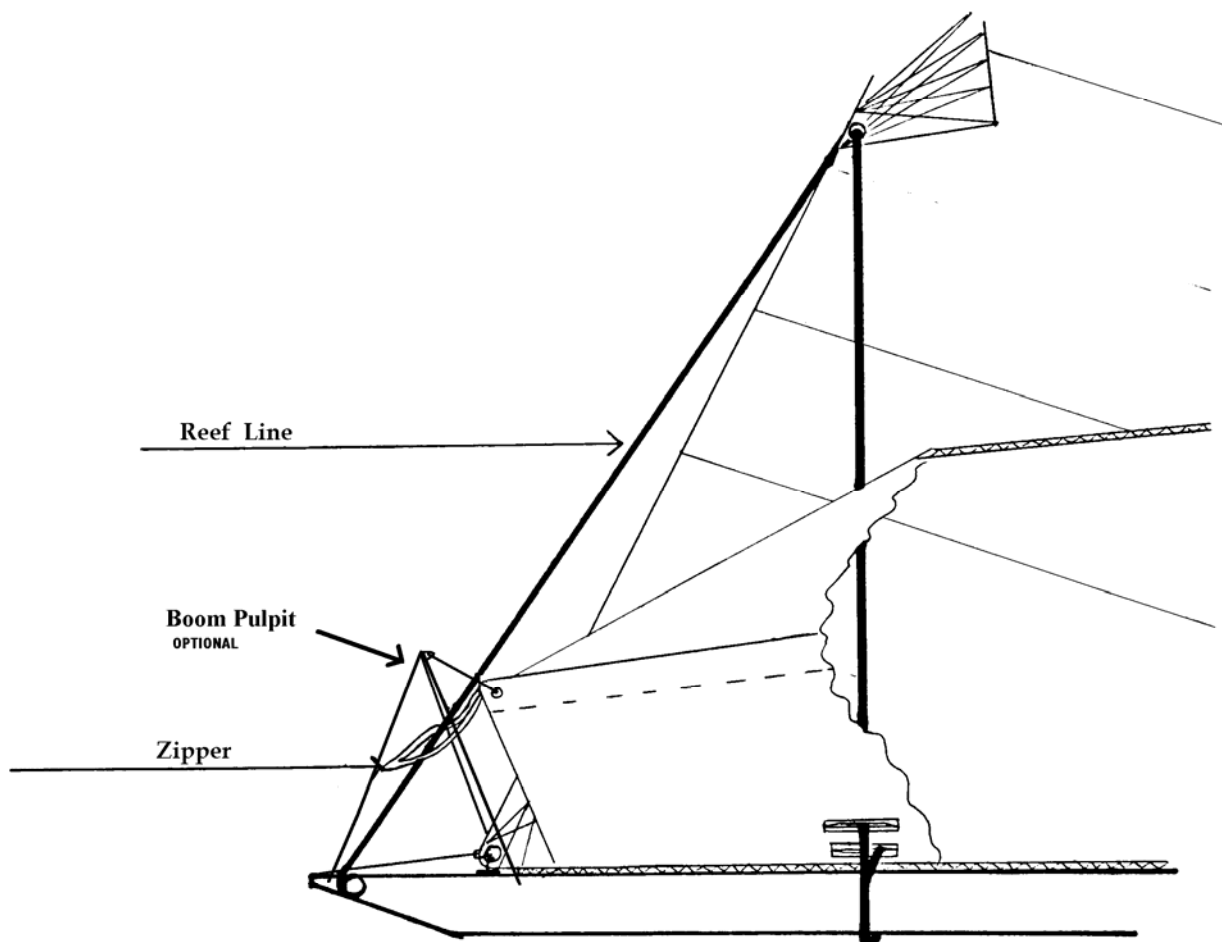
- ❑ Read the enclosed sheet: STACKPACK TIPS.
- ❑ Tighten topping lift to relieve load on lazy jacks. Lazy jacks are not designed to withstand the dynamic loading of a dropping boom. ALWAYS USE THE TOPPING LIFT TO SUPPORT THE WEIGHT OF THE BOOM AND SAIL.
- ❑ Secure the boat so it is head to wind and the sail is luffing. Full length battens can put twisting strains on sail slides. This causes them to bind in the track. Only when the sail is luffing in the wind can the slides be made to move freely.
- ❑ Lazy jacks must be cleated securely in their cleats at the tack. If they come loose while the sail is being lowered, the sail will start to fall outside the cover portions. The lazy jacks may also be hard to tighten when the sail is down. Adjustment of the lazy jacks is always easier with the sail hoisted.

When you have checked the above points, you may lower the sail by easing the main halyard. The halyard must be completely eased, and the sail must be lying in the cover before the main zipper is zipped. See Figures 6a,6b,6c.

The StackPack is a simple efficient sail furling system, but it is not automatic! A few moments spent tweaking the sail into the cover will insure smooth operation of the zipper and a neat appearance of the cover.



RIGGING THE REEF LINE



## INTERNAL REEF LINES WITH END BOOM SHEAVES

Starting from the sheave at the outboard end of the boom, thread the reef line up between the two halves of the cover zipper and through the reef grommet itself. Then, pass the line down through the top of the cover, inside the acrylic portion, and out the slit provided in the foot of the cover. Go around the boom and back through the slits in the cover and foot of the sail, and tie off to itself. (A rolling hitch works well.)

## EXTERNAL REEF LINES

Make sure the reef block is positioned well aft of the clew itself. When reefed, the clew reef line should pull down and back. Follow same path as for internal lines.

## REEFING

Reef normally, securing the new tack first, then the new clew. Once the new tack and clew are secure the sail is reefed. The two sides of the cover can be zipped at the luff, just as it is when the sail is at full hoist.

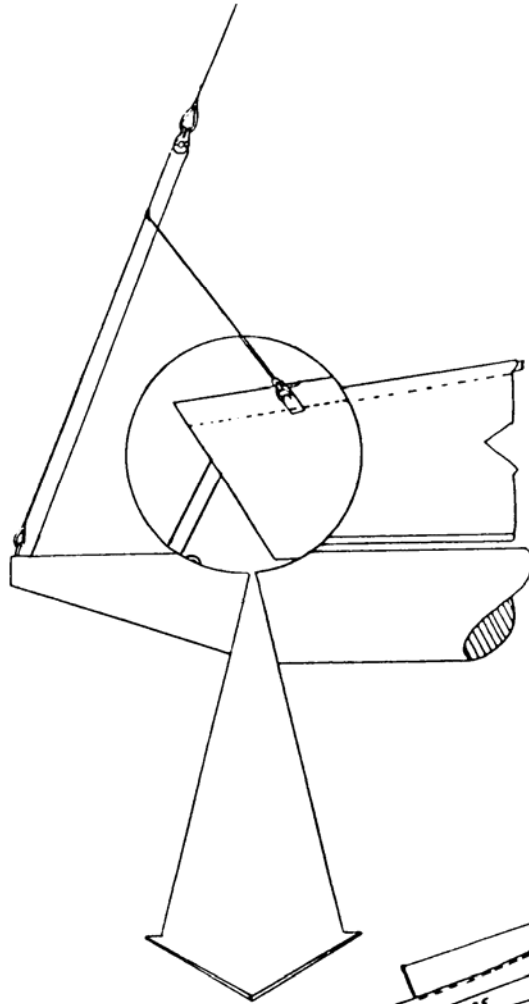


Figure 7a

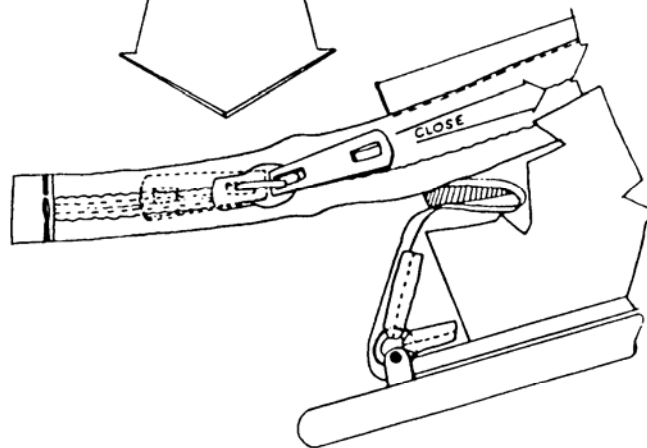


Figure 7b

## **ZIPPING AND CLOSING THE STACKPACK**

### **Figure 7a and 7b**

Grasp the zipper tail at the aft (clew) end of the cover, (see Figure 7b) work the zipper car forward to the acrylic cover. Pinch the two sides of the cover together while zipping the car onto the acrylic for the first 12".

After that, the car should run freely with an occasional push or tuck to the leech and batten ends, if they poke out.

When the cover is zipped almost all the way to the mast, remove the halyard from the head of the sail and fasten it to the ring on the starboard side of the cover. If your cover has a bronze hook, run the halyard through the hook and you will not have to disconnect at the head. Either way will prevent the halyard from slapping against the mast.

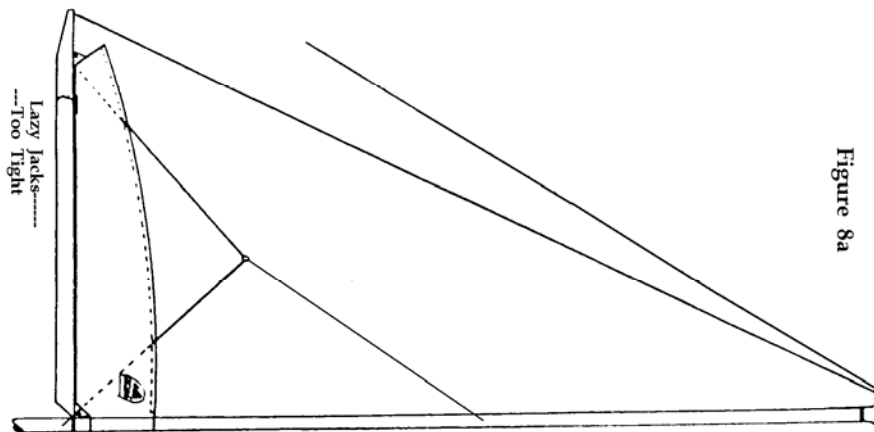


Figure 8a

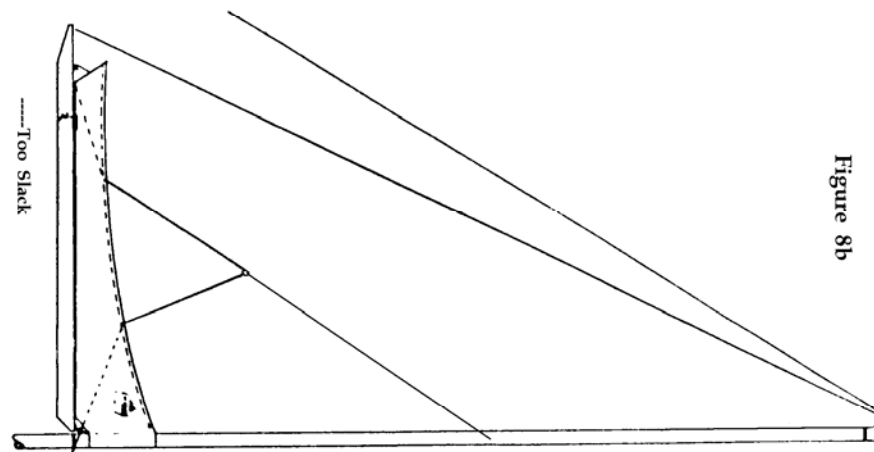


Figure 8b

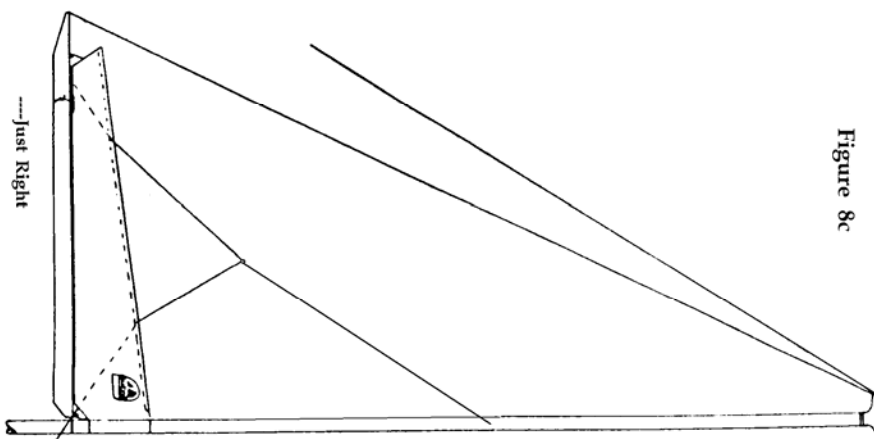


Figure 8c

## FINAL ADJUSTMENT

### Figure 8a, 8b, 8c

With the cover zipped, stand back and examine the set of the cover. The top edge of the acrylic cover should run fairly straight from the mast to clew.

Adjust the forward cover lines to support this end at a comfortable height. The cover should be upright, with these lines just taking a load. (See Figure 8c). With the line attached to webbing loop at the aft end, use a rolling hitch around topping lift and tie off to other webbing loop. This line need only be tight enough to keep the aft end from sagging or flopping.

**CAUTION:** Always tie rolling hitch to the part of the topping lift which dead ends on the boom. Otherwise, this line will try to hold the boom up when topping lift is eased, risking damage to the cover.

A final adjustment to the lazy jacks at the cleats may be needed to remove any sag (note Figure 8b) or bow (note Figure 8a) in the top edge of the cover.

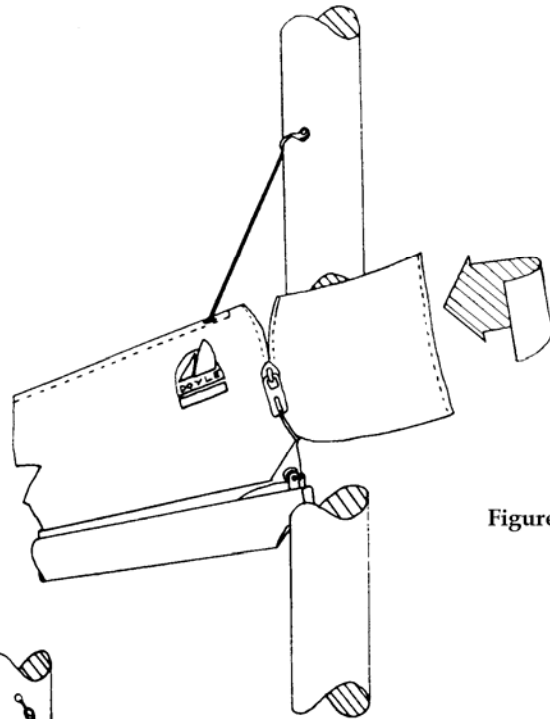


Figure 9a

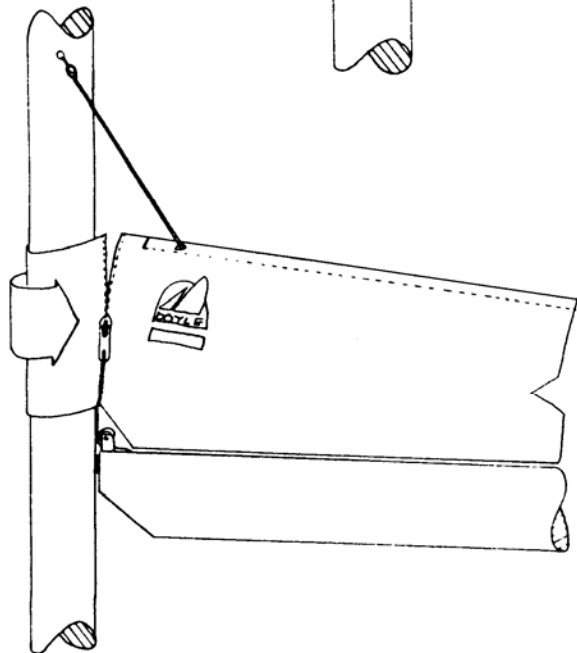


Figure 9b

## FORWARD MAST COVER Figure 9a and 9b

The forward mast cover is fitted with separating zippers that zip onto the main cover at each side. Zip one side on, starting at the bottom. (See Figure 9a) Then pass the forward flap around the mast, inside of all of the halyards and rigging, to avoid any possible chafe.

NOTE: If you have a winch on the mast, it may interfere with the cover. Mark carefully where it interfere with the cover and return the mast cover flap to Doyle for modification.

Zip on the second side (see Figure 9b) and your StackPack main is completely stowed and standing crisply on the boom.

### FINAL CHECK

Before leaving your boat, check on the following points:

- Is the cover completely zipped?
- Are the lazy jacks snug and secure, not too loose or not too tight
- Is the topping lift supporting the weight of the boom? Not the lazy jacks?
- Is any rigging or hardware fouling or chafing the cover or lazy jacks?
- Is the main sheet secure and is the boom not swinging?

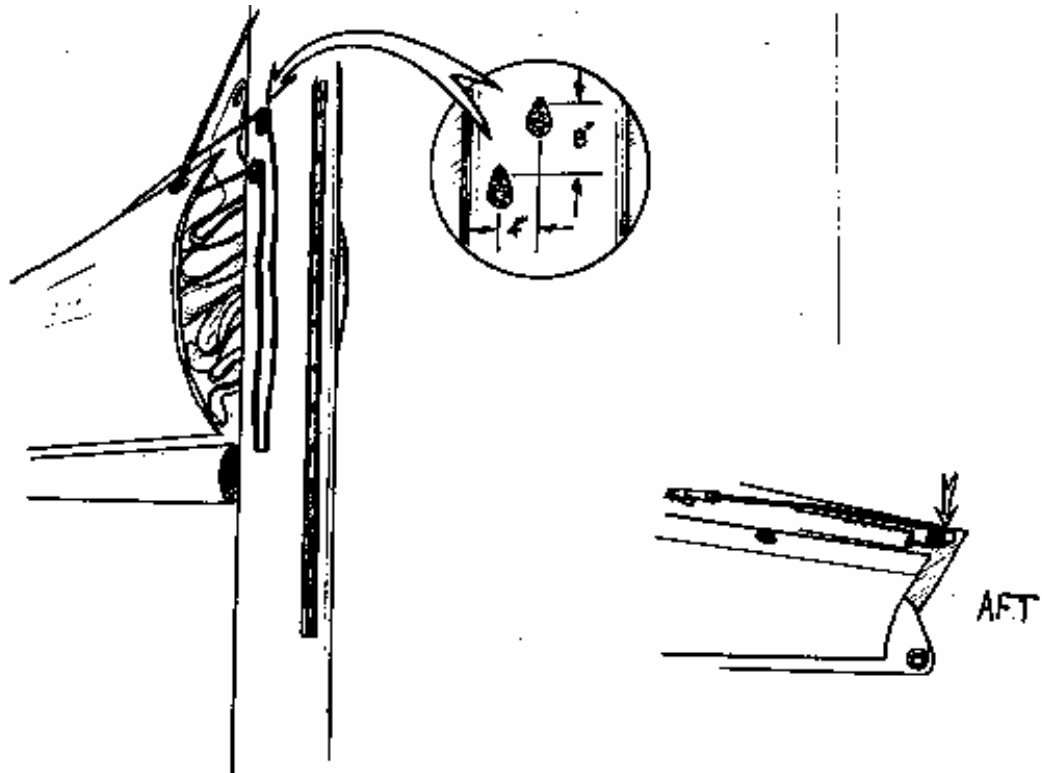
SMOOTH SAILING!



## CONTINUOUS ZIPPER SYSTEM

For the skipper who has a continuous zipper system, cheek blocks must be installed on the mast to best utilize the system. A Harken block has been installed at the clew end of the StackPack cover and the line has been secured to the zipper car at the front of the cover.

Remove the lines from the zipper car and thread them through the cheek blocks and reattach to the zipper car. (See diagram below)



## STACKPACK TIPS FROM ROBBIE DOYLE

Over the seasons, I have either discovered myself, or have been told by helpful customers, a number of helpful tips on the use of the Doyle Stack Pack. These are worth passing along to you.

**"Head to Wind"** - To experience the smoothest hoisting and lowering of the mainsail, be sure the boat is directly head to wind. This minimizes the friction of the mainsail against the lazy jacks while lowering and reduces the chance of a batten catching on the lazy jacks while hoisting.

**"Flaking the Luff"** - If possible, a guiding hand at the mast while lowering the sail goes a long way in producing the smoothest drop. With any fully battened mainsail, if the halyard is struck and the sail is allowed to drop without gentle tugs on the luff, the aft end of the battens will touch the boom before the forward end. This can result in a mainsail that stops two thirds of the way down with the battens now wedged against the mast, preventing the luffslides from stacking. Again, a helping hand at the mast as the halyard is smoothly lowered, flaking the luff from side to side will make for the neatest drop and will allow most of the mainsail to drop into the cover without help. This procedure produces the best flake or furl for any mainsail and is not particular to Stack Pack.

**"Helping the Zipper"** - After the sail has been stuffed inside its cover, the best technique for zipping is to hold the cover battens together with your hand closer to the bow and zip with your aft hand. This takes load off the zipper slider, greatly reducing friction and, hence, the force required to pull the slider. At the same time you will be increasing the life of the zipper teeth.

**"Cleanliness"** - Before removing your StackPack, be sure the deck is clean and the mast and boom have been thoroughly wiped clean in areas that will come in contact with the cover while the sail is being slid off.

**"Maintenance"** - A thorough washing and yearly maintenance of your StackPack is advisable. When removing the StackPack, it is easiest to leave the battens, and lazy jacks with the boat. The lazy jacks are easily detached via the brummel hooks, just above the cover, and the battens are all removable from the forward end of the cover. When bringing the sail back for even a wash and check over, a written description or photographs of any concerns with the sail is always helpful.