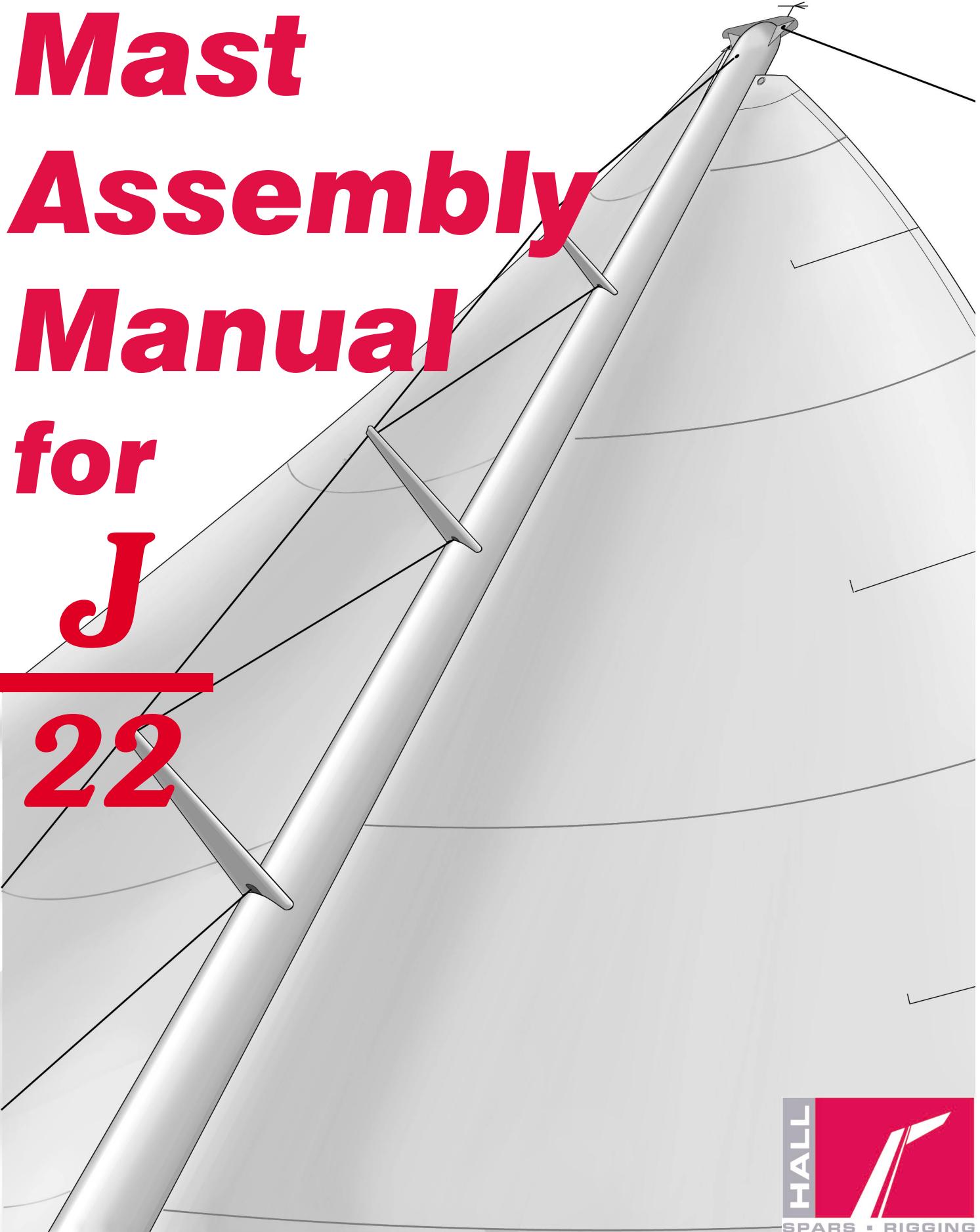


Mast Assembly Manual for J 22



MAST ASSEMBLY MANUAL

Introduction

Welcome to the Hall Spars owners family. Our spars are designed for strength, function, and reliability. Please read this assembly manual thoroughly to insure that your spars give you years of service. It is important that you, the owner, familiarize yourself with this manual, even though dealers or rigging services prepare your mast. Hall products are designed to be readily serviceable. Assembly and disassembly are quite simple.

Please remember, Hall Spars manufactured your spar without using force, so never try to forcibly fit any part. If you have any fit problem, use the phone and call us. Leave the hammer in the toolbox!

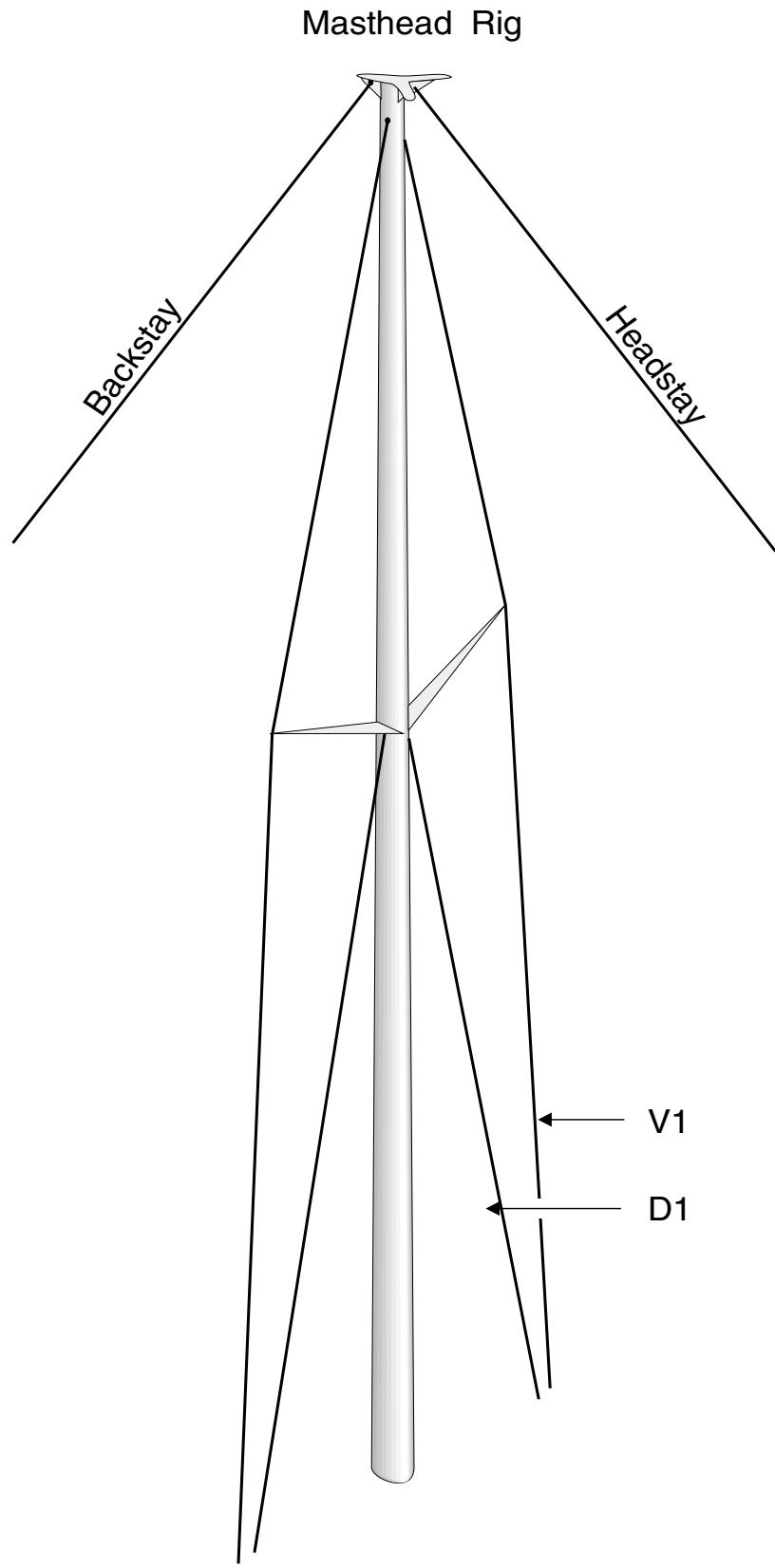
As a yacht owner you are ultimately responsible for your boat and crew. Part of this responsibility is knowing your boat and the basic operation of your gear.

If you read this manual carefully, you can acquaint yourself completely with your Hall Spars products in a very short time.

Assembly and Tuning Sequence

Installing your spars and rigging should follow this basic sequence:

- A. Mast Assembly
 - 1. Preparation and Set Up
 - 2. Installing Spreader Bars
 - 3. Attaching Shrouds to Mast
 - 4. Installing Spreaders
 - 5. Attaching Shrouds to Spreaders
 - 6. Attaching Headstay and Backstay
 - 7. Preventing Chafe
 - 8. Inspection
- B. Boom Assembly
 - 1. Inboard End
- C. Tuning
 - 1. Dockside Tuning
 - 2. Inspection
 - 3. Tuning Under Sail
 - 4. Final Inspection
- D. Reefing
- E. Maintenance
- F. Care of Coating



Mast Assembly

Preparation and Set up

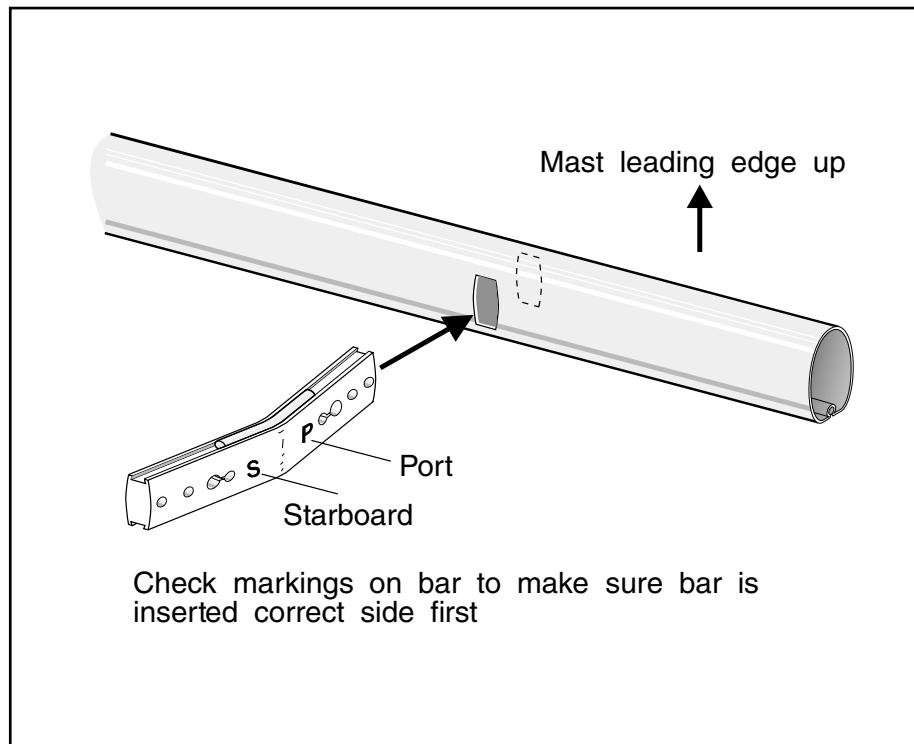
Find a clean, level assembly area near the stepping crane. Set up the mast with the track-side down on at least three strong saw horses. Remove polybag by carefully (don't scratch the paint!) cutting it away with a razor knife.

The following tools will be useful:

1. Large adjustable wrench
2. Small adjustable wrench
3. Large screwdrivers (both Phillips and slot type)
4. Small screwdrivers (both Phillips and slot type)
5. Medium or large size vice grips
6. Medium size pliers (or large needle nose pliers)
7. Large wood clamp (or C-clamp with opening larger than the width of the mast section)
8. BLUE LOCTITE®
9. Navtec RIG LUBE® or similar anti-seize lubricant
10. A few rolls of 3-M® plastic tape
11. Allan key set (some spars)
12. 4:1 Block and Tackle is helpful

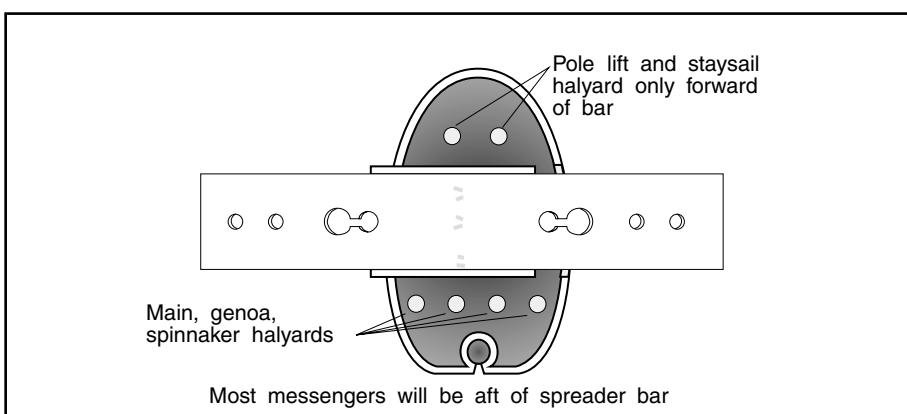
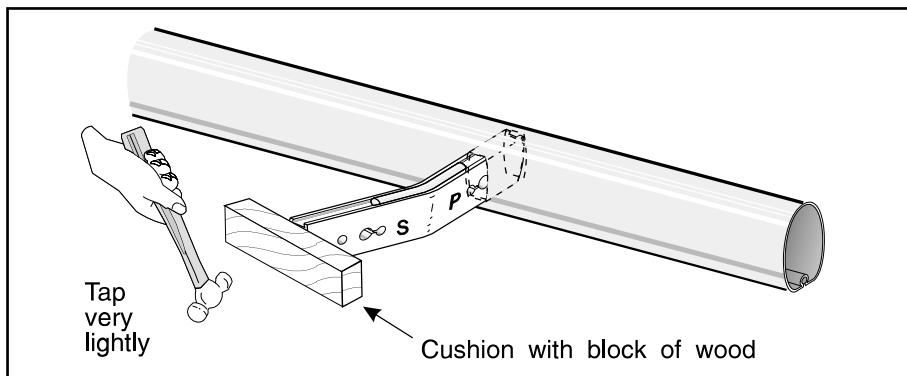
Installing Spreader Bars

Note:
Always insert spreader bar from starboard side.

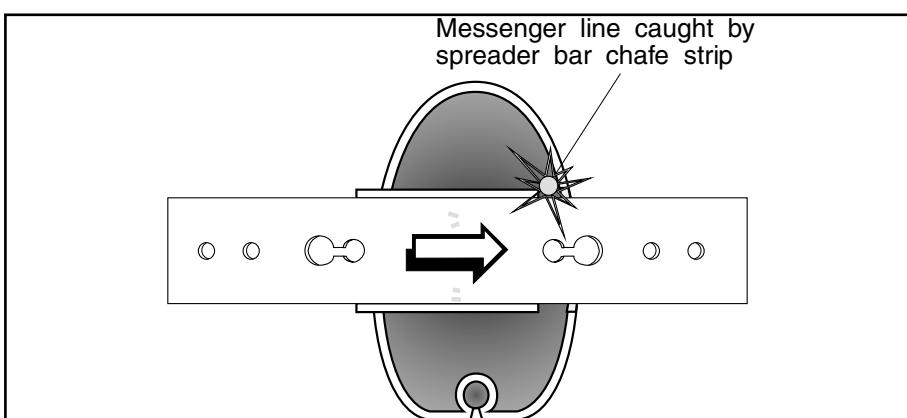


Note:

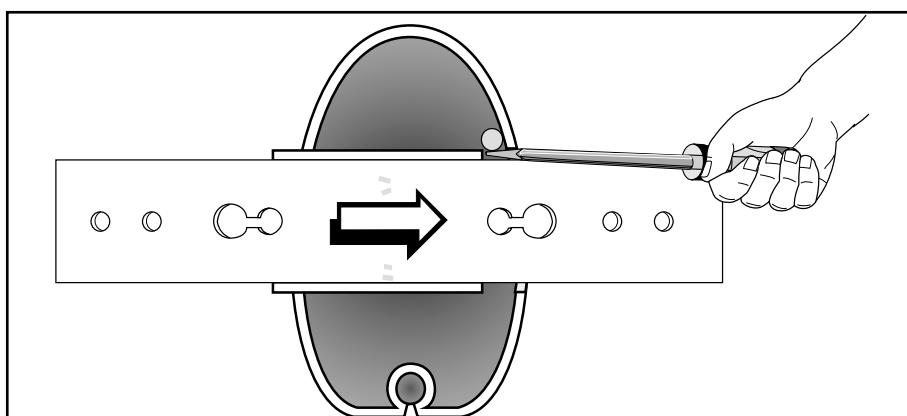
At this point the bar will tend to stick due to its bend. Free the bar by lightly tapping its end with a hammer. Place a scrap wooden block against end before tapping with hammer to avoid any damage to the bar.



CAUTION:
Messenger line can jam the spreader bar

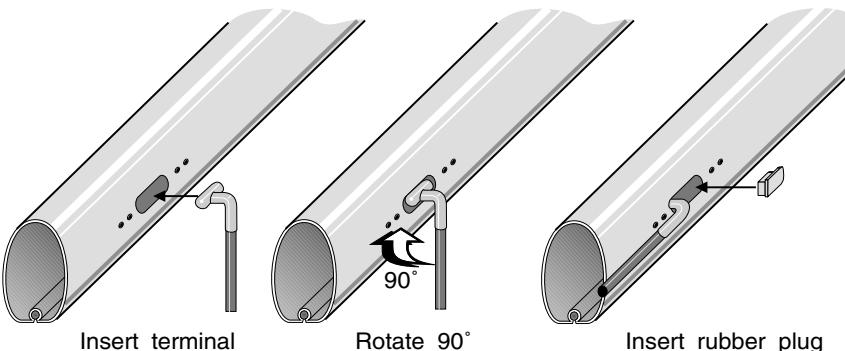


Solution:
Hold messenger line away from trim bar with a small screw driver while inserting bar.



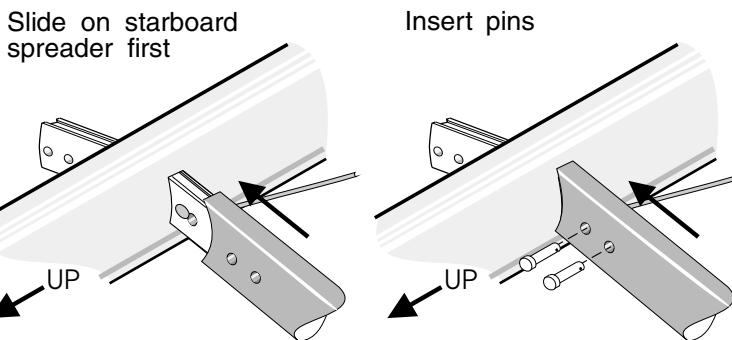
Attaching Shrouds to Mast

Attach upper shroud to upper shroud tang.

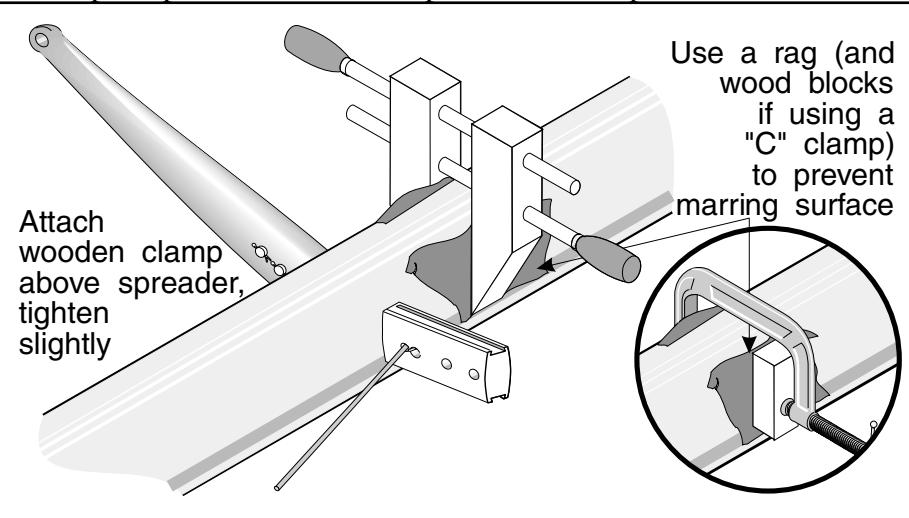


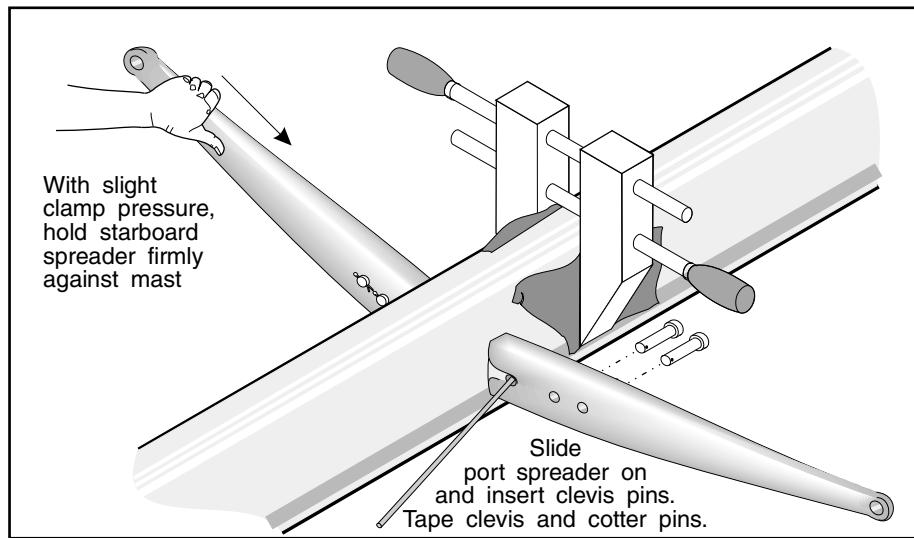
Installing Spreaders

Attach starboard spreader.

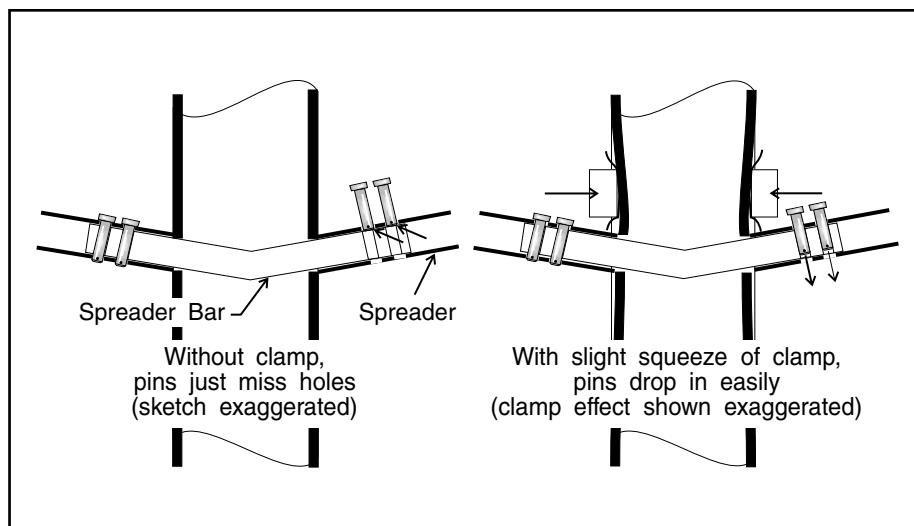


Attach port spreader. Use a clamp to make this operation easier.





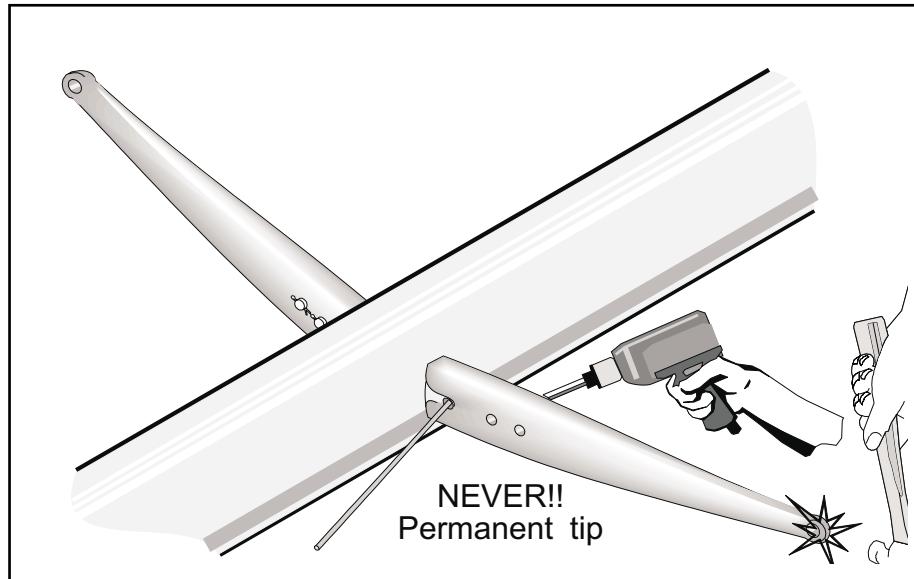
Reason for Using Clamp:



CAUTION:

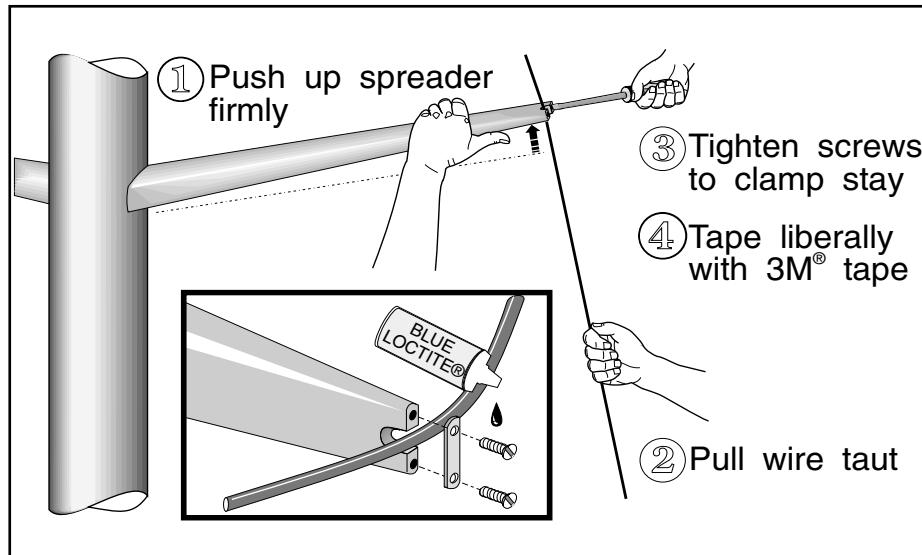
Do not try to force spreaders into place with a hammer.

Do not open up holes in spreaders to allow pins to fit or spreaders will be loose after installation.

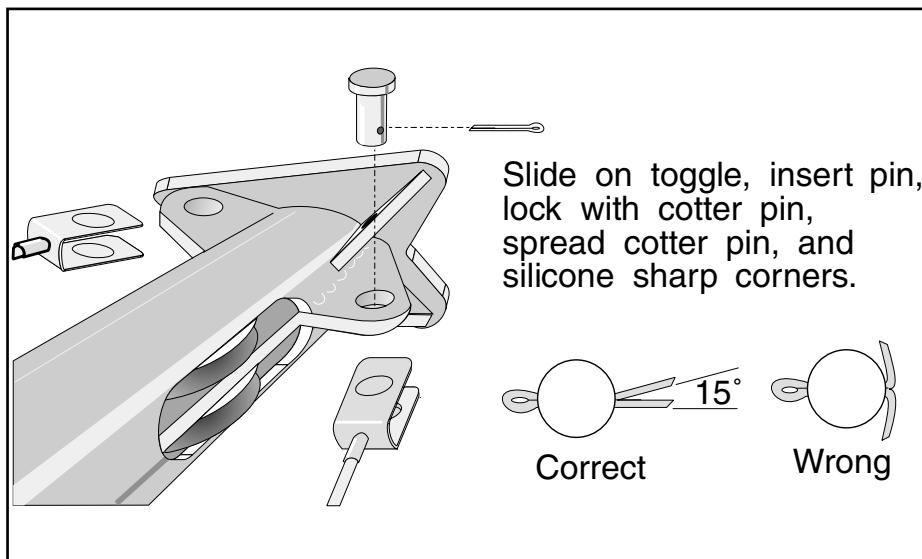


Attaching Shrouds to Spreaders

Upper Spreaders



Upper Spreader (1 x 19 wire)



Attaching Headstay and Backstay

Attach headstay, backstay jaw toggle.

Process is similar to that of marine eyes.

Preventing Chafe

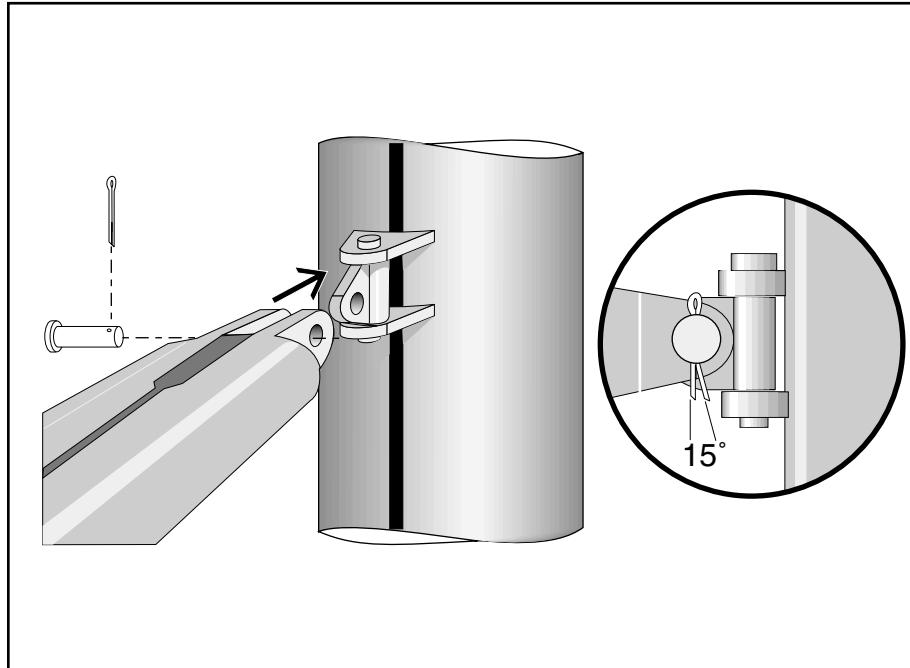
Tape or silicone all sharp edges to prevent sail chafe.

Inspection

Inspect the mast at this point. Confirm proper installation of all spreaders, shrouds, and stays. Insure proper fits, tight screws, and spreader pins.

Boom Assembly

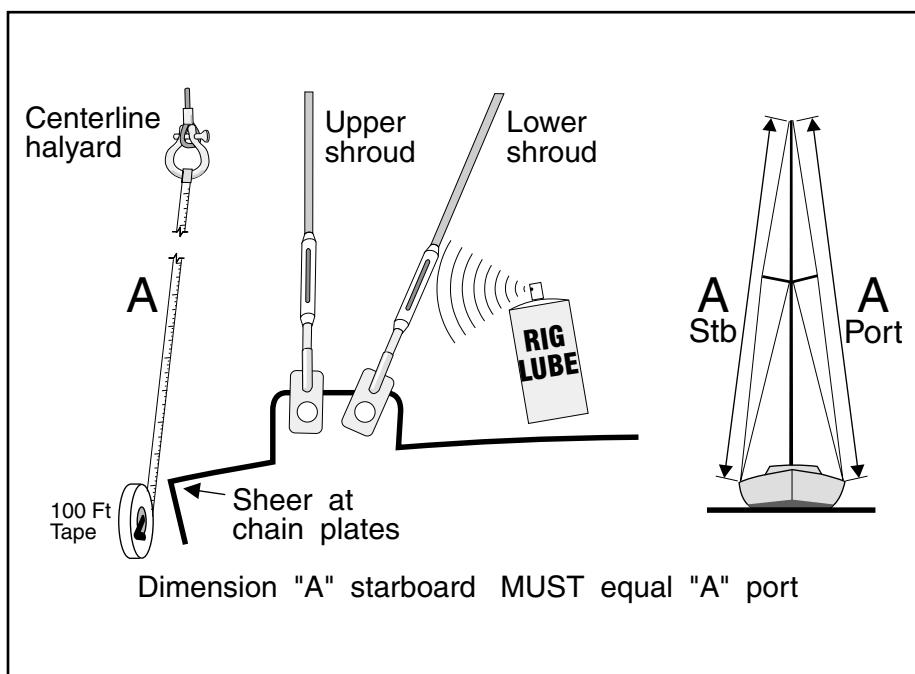
Inboard End



Tuning

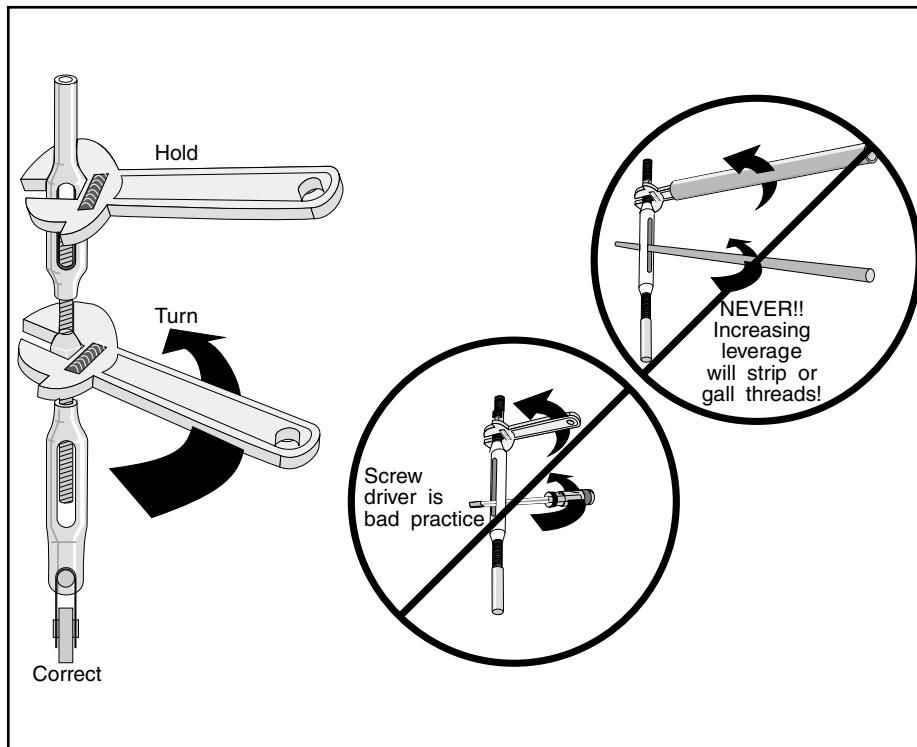
Dockside Tuning

Center mast in boat. The mast is centered when dimension A is same Port and Starboard.



Ease all diagonal shrouds to “very loose.” Tighten vertical shroud turn buckles equally from side to side as much as possible with normal-size tools. Large tools or pipe extensions to tighten turn buckles easily cause damage.

CAUTION:
Never use excess force tightening turn buckles.



Use lubricant.

Inspection

Once vertical shrouds are tight, make sure diagonal shrouds are “loose.” Your rig is now ready to tune under sail.

Tuning Under Sail

Important:

Your mast is still relatively untuned, so caution is advised at this stage.

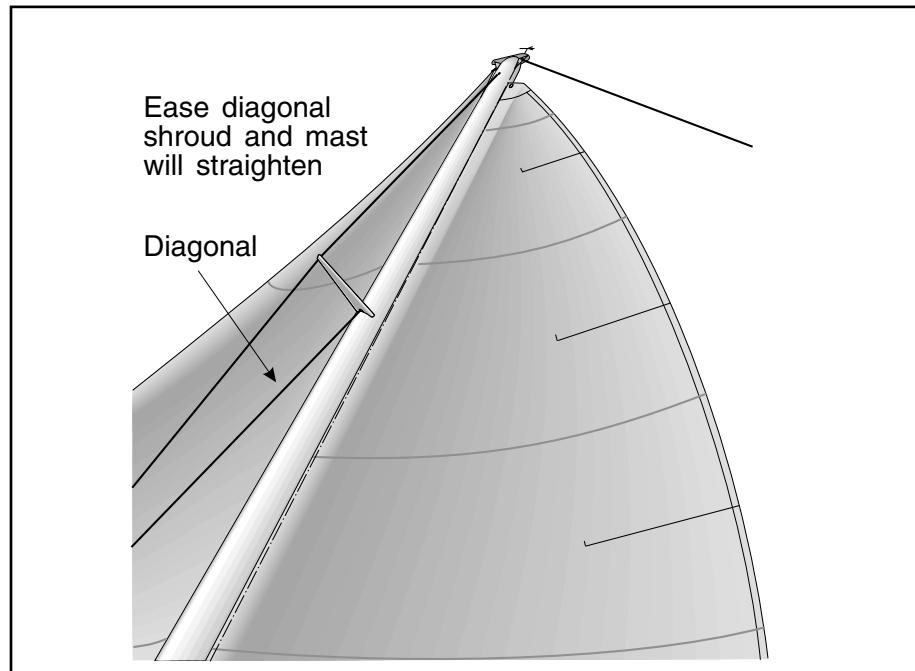
Under mainsail alone, check vertical shroud tension and transverse straightness of mast.

On one tack, tighten leeward vertical shroud as tight as possible counting turns. Then repeat on opposite tack with an equal number of tightening turns. Hand tighten lower (D1) to hold mast sideways centered at first spreader. Unless mast is bending sharply, do not adjust upper diagonals (D2 and up) yet.

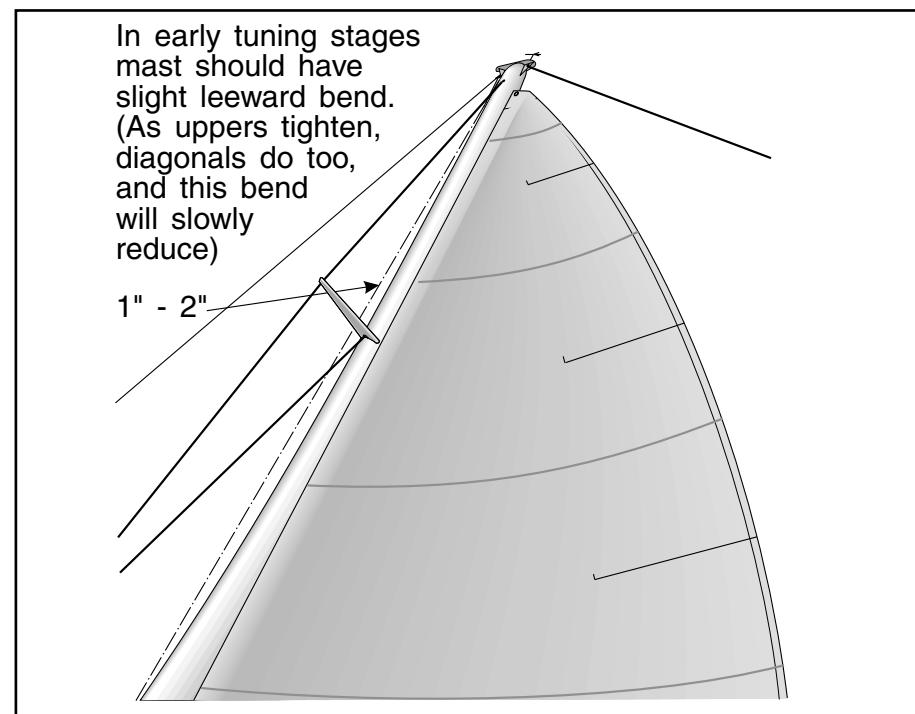
Put up a number 3 jib or similar working jib and repeat sequence above. Check sideways bend.

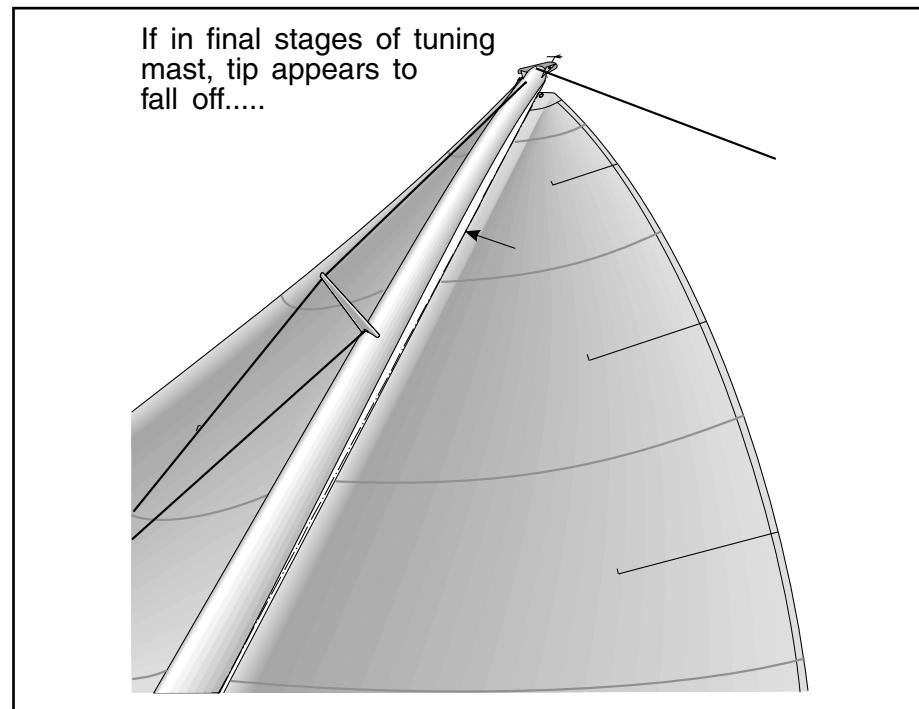
Repeat with genoa, if not too windy. The leeward shrouds should be firm, not floppy at 20° heel.

Now adjust diagonals to straighten mast sideways.



Repeat for other diagonals. At this point your Hall Spars rig is ready.





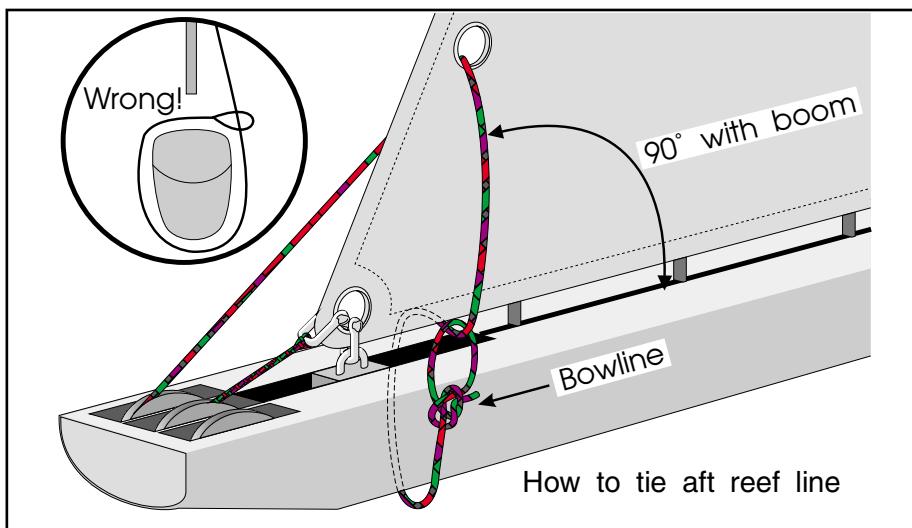
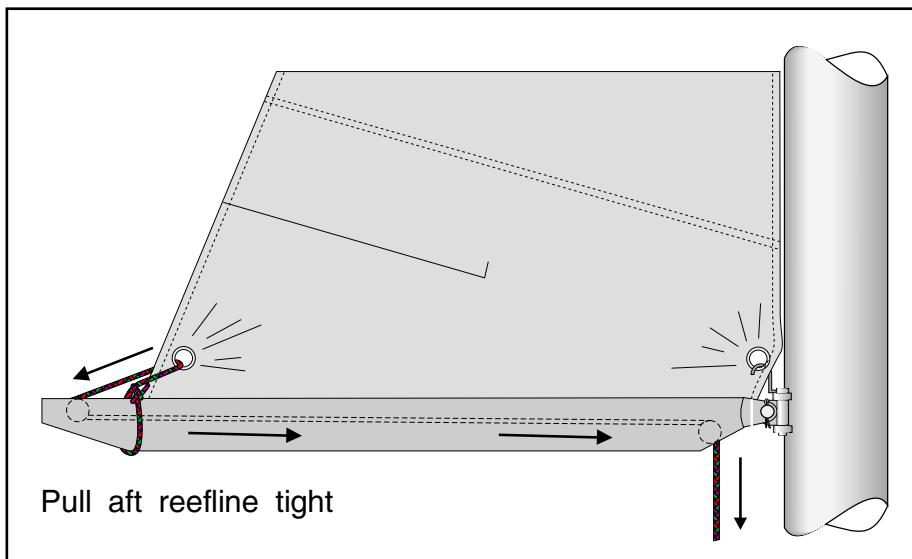
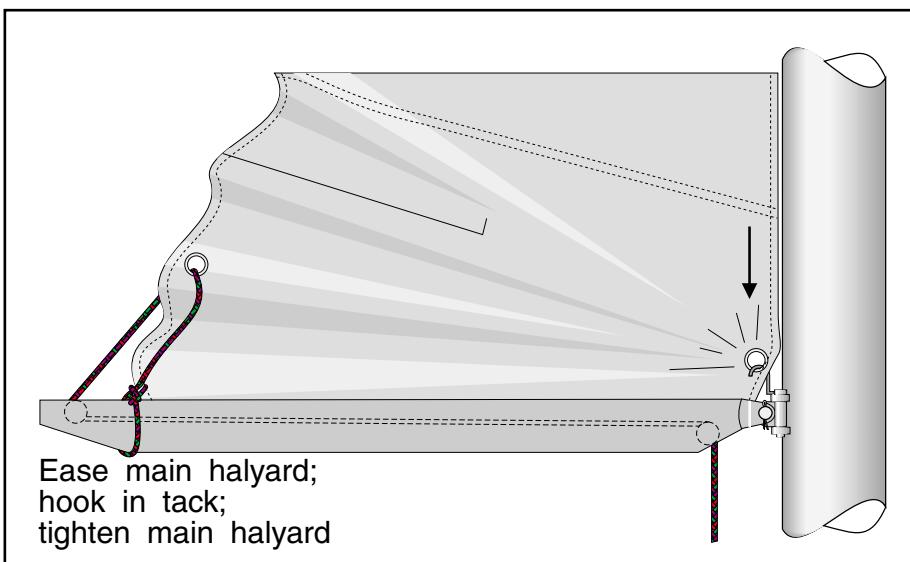
Final Inspection

Important:

Send someone aloft
in a bosun's chair to
inspect all rigging.

It is good practice to inspect your rig after a race, passage, or cruise.

Reefing



Maintenance

MAST:

Mast should be unstepped at least once a year and inspected. The following lubrication should be done once a year.

1. Remove, inspect, and lube sheaves (Harken sheaves do not require lubrication).
2. Remove headstay and backstay and inspect mast; clean and lube pins and reinstall.
3. Visually check alignment of shrouds in upper tang. Misalignment especially in rod is a cause of fatigue.
4. Tip Cups: Remove set screws and flattened balls, unscrew collar. RIG LUBE® threads. Screw on collar, reinstall set screws with new plastic balls.
5. Turn buckles: Note tuned position, remove cotter pin, totally loosen. Spray threads with RIG LUBE.® Retighten to tuned position, insert cotter pin.

Note: Easing and tightening turn buckles must be done under sail unless mast is fitted with hydraulic jack.

6. 1 x 19 Wire Stays: Visually inspect swages for longitudinal cracks or wire strand failure at top of swage.
7. Visually inspect spreader tips and roots for damage or wear.
8. Inspect mast for sharp edges and silicone as needed.

BOOM:

1. Check gooseneck lugs for cracks or hole elongation.
2. Inspect vang and sheet bails.
3. Inspect condition of outhaul wire.
4. Check function of outhaul car. If it slides with difficulty call Hall Spars for fix.

Care of Coating

Your spars are coated with AWLGRIP®, a paint originally developed for aircraft. It is a tough paint with excellent gloss retention. But it can be damaged. Here are some hints.

1. Use care when servicing mast. Cover areas adjacent to work area with cloth rags.
 2. Cleaning Mast: Use light detergent (SOFTSCRUB® or similar - NO abrasive cleansers!). For especially tough grease smudges Acetone or Toluol may be used if mast is over one month old (AWLGRIP® fully cured).
 3. Touch Up:
 - Small scratches: using AWLGRIP® touch up kit available from Hall Spars, mix parts 1 to 1 and apply carefully in scratch with modeler's brush.
 - Large scrapes: repair should be done by professional painters using AWLGRIP® procedures.(A paint scratch is a cosmetic problem with no danger of corrosion leading to structural damage. If metal is gouged, call Hall Spars for advice.)
 4. Paint bubbling at stainless parts: This will happen sooner (in southern climates or marinas with imperfectly engineered electricity) or later. Merely sand bubbled area and touch up or respray. Again this will not be a structural problem unless aluminum is excessively corroded.

Notes

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