

**Mast
Assembly
Manual
for
J
35**

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!

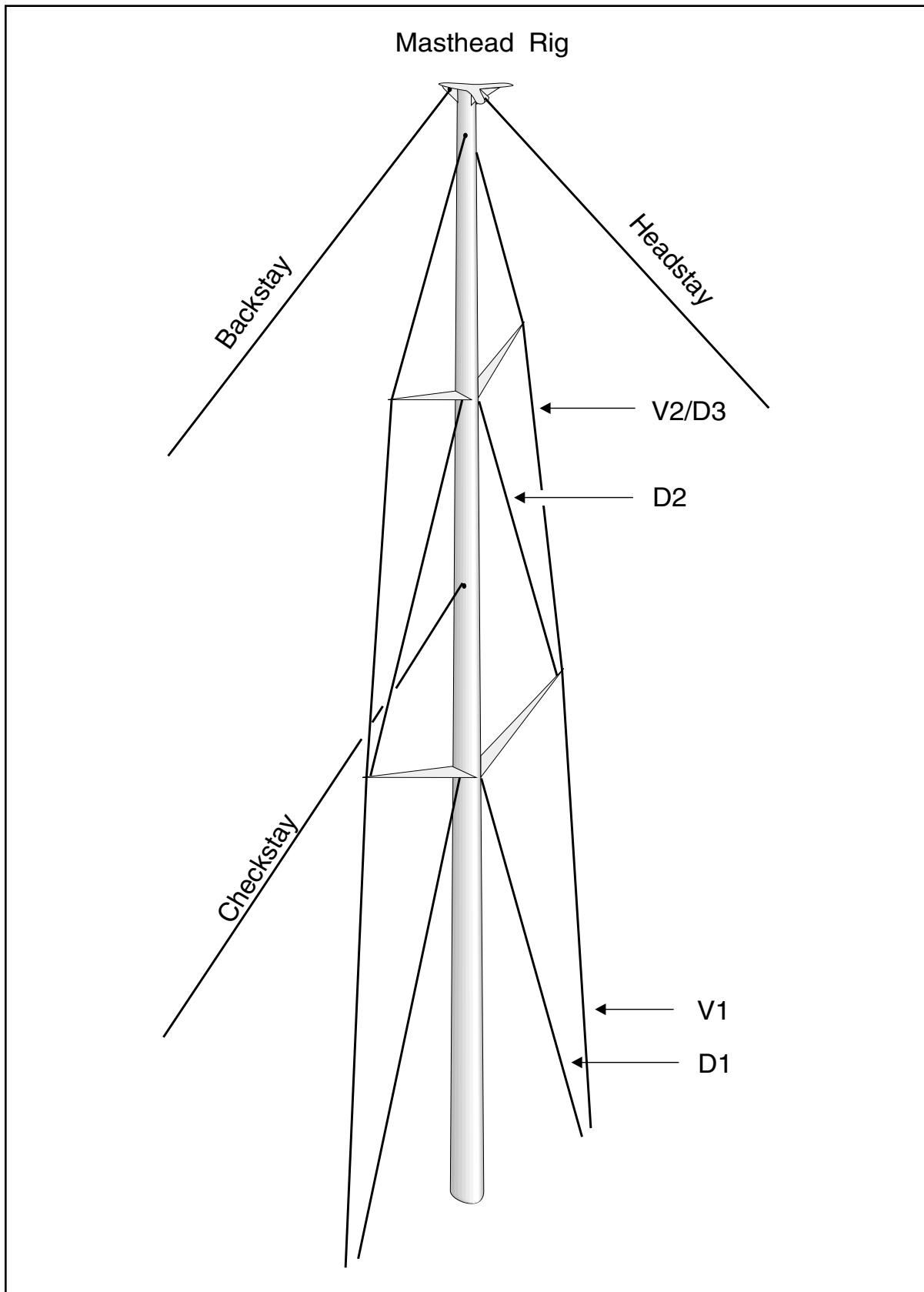
As a yacht owner you are ultimately responsible for your boat and crew. Part of this responsibility is knowing your boat and the basic operation of your gear.

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. Field Splice Assembly
 3. Installing Conduit
 4. Installing Spreader Bars
 5. Attaching Shrouds to Mast
 6. Installing Spreaders
 7. Attaching Shrouds to Spreaders
 8. Attaching Headstay and Backstay
 9. Running Backstays and Checkstays (if any)
 10. Preventing Chafe
 11. Inspection
- B. Stepping
- C. Boom Assembly
 1. Inboard End
 2. Outboard End
- D. Tuning
 1. Dockside Tuning
 2. Inspection
 3. Tuning Under Sail
 4. Final Inspection
- E. Reefing
- F. Sail Control Bend
 1. Final Inspection
- G. Maintenance
- H. Care of Coating



Mast Assembly

Preparation and Set up

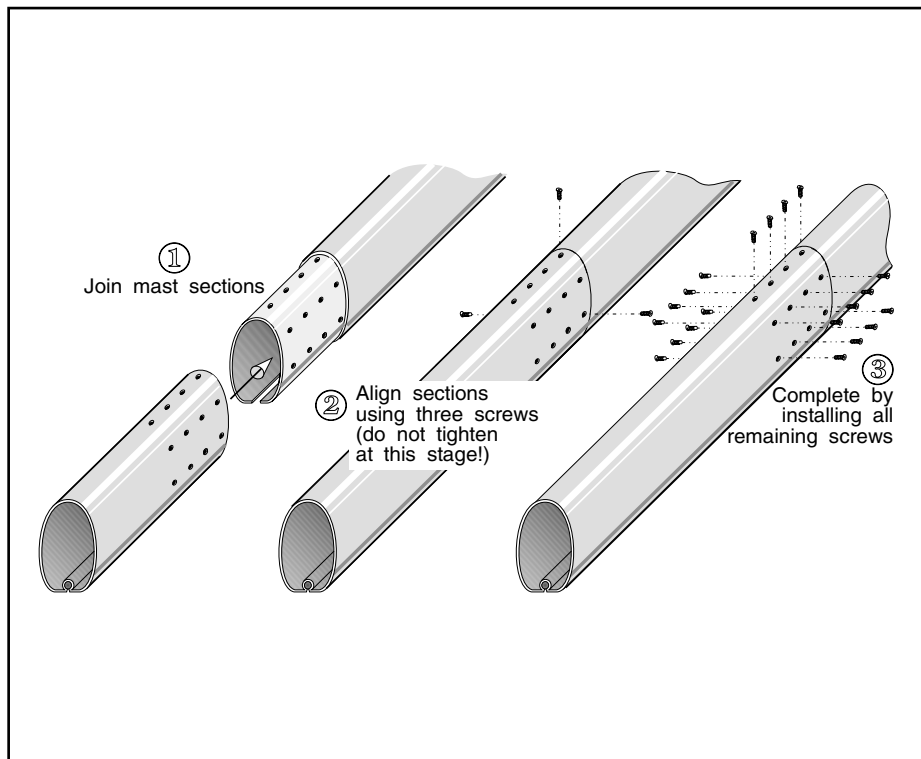
Find a clean, level assembly area near the stepping crane. Set up the mast with the track-side down on at least three strong saw horses. Remove polybag by carefully (don't scratch the paint!) cutting it away with a razor knife.

The following tools will be useful:

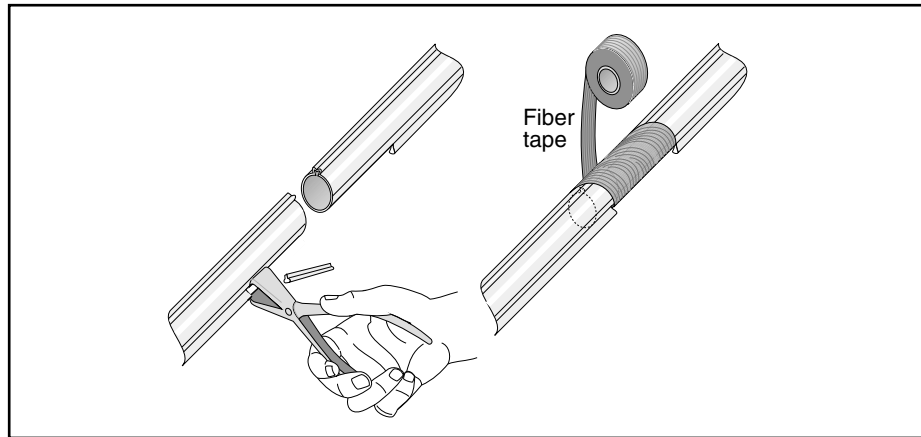
1. Large adjustable wrench
2. Small adjustable wrench
3. Large screwdrivers (both Phillips and slot type)
4. Small screwdrivers (both Phillips and slot type)
5. Medium or large size vice grips
6. Medium size pliers (or large needle nose pliers)
7. Large wood clamp (or C-clamp with opening larger than 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[®] No. 35 vinyl tape (sold in many colors)
11. Allan key set (some spars)
12. 4:1 Block and Tackle is helpful

Field Splice Assembly

Note:
Put in ALL screws
before tightening.

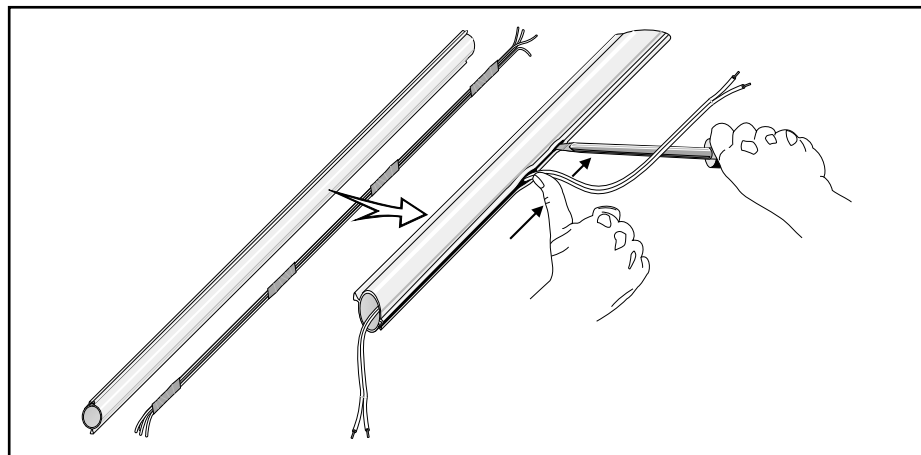


Installing Conduit



Sleeving Conduit

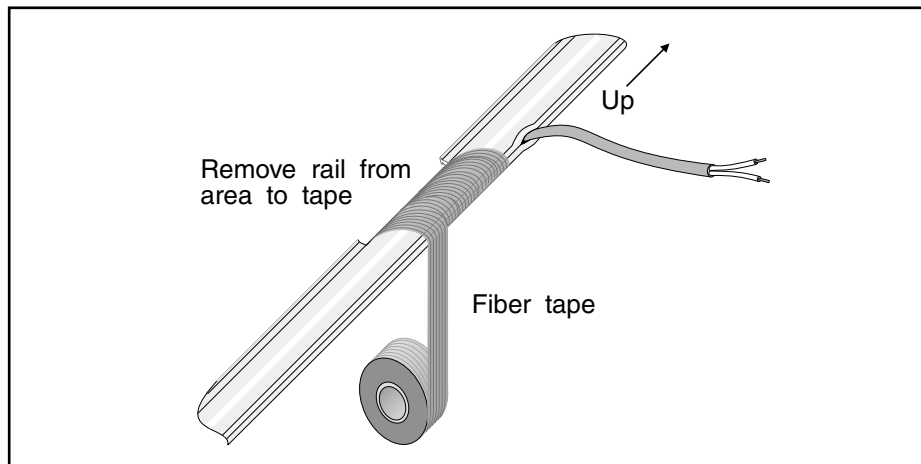
Layout wires and conduit next to each other and insert wire.



Mid Mast Wire Exit

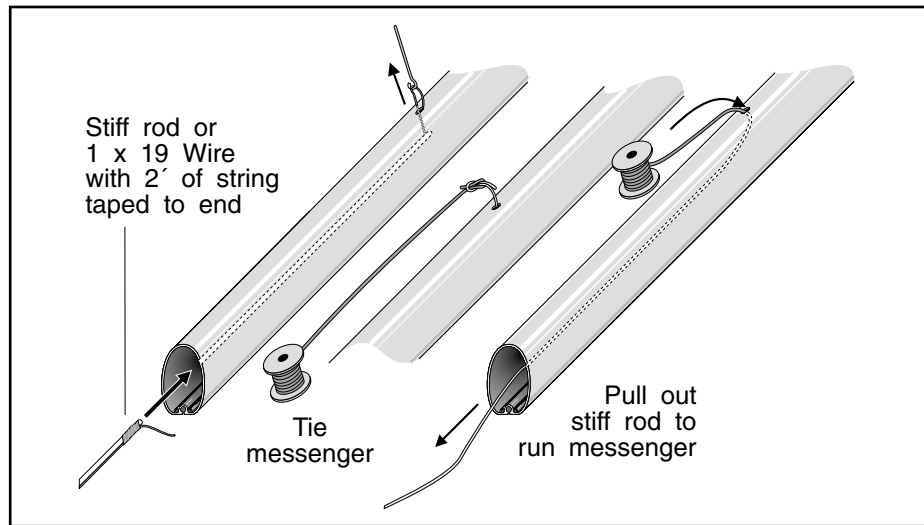
Tape wire exiting conduit at exit height.

Note:
Snip away rail
before taping.

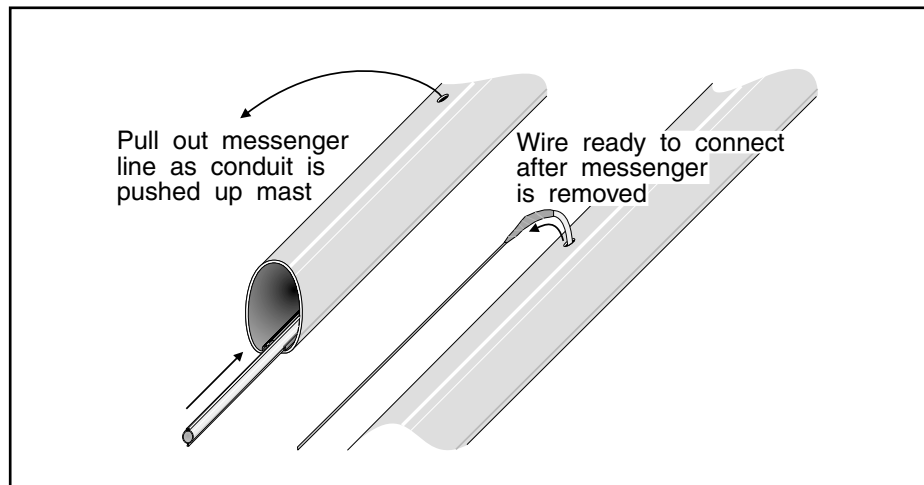
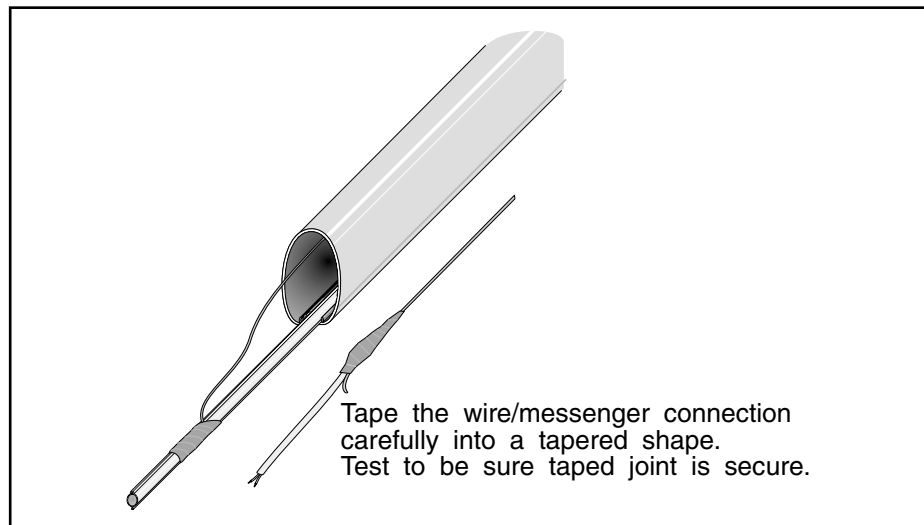


Run messenger to mid-mast.

Attach messenger to wire.

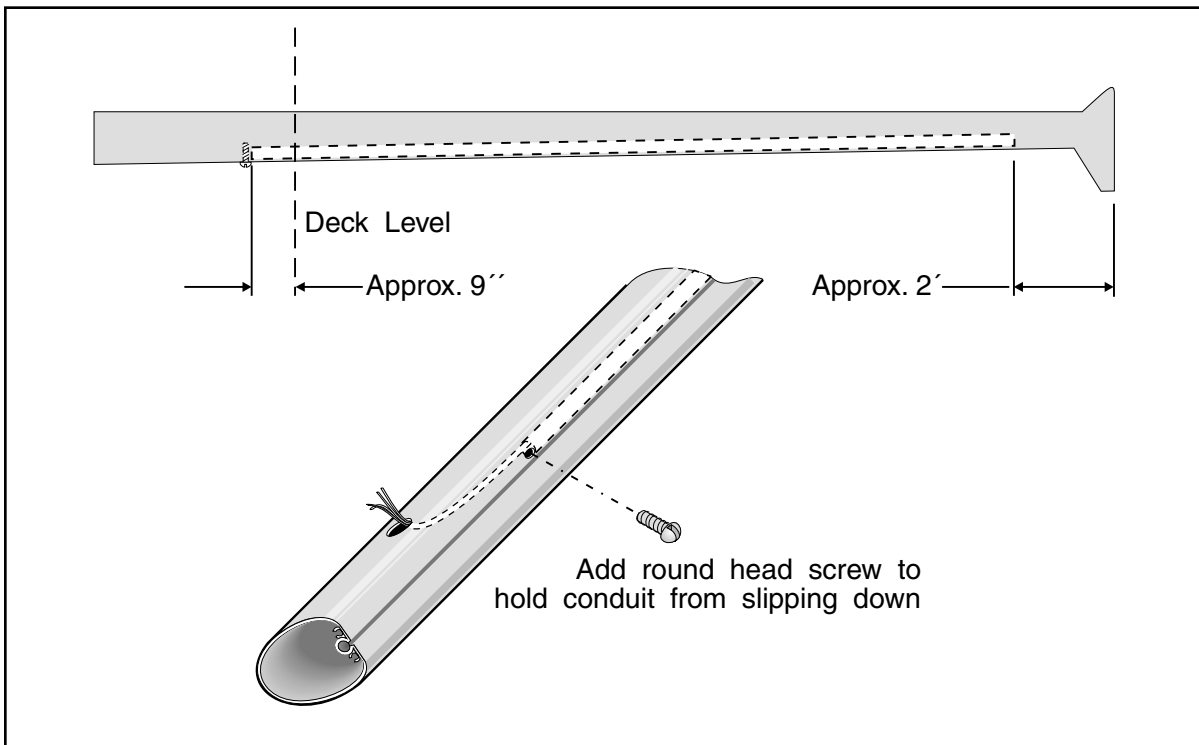
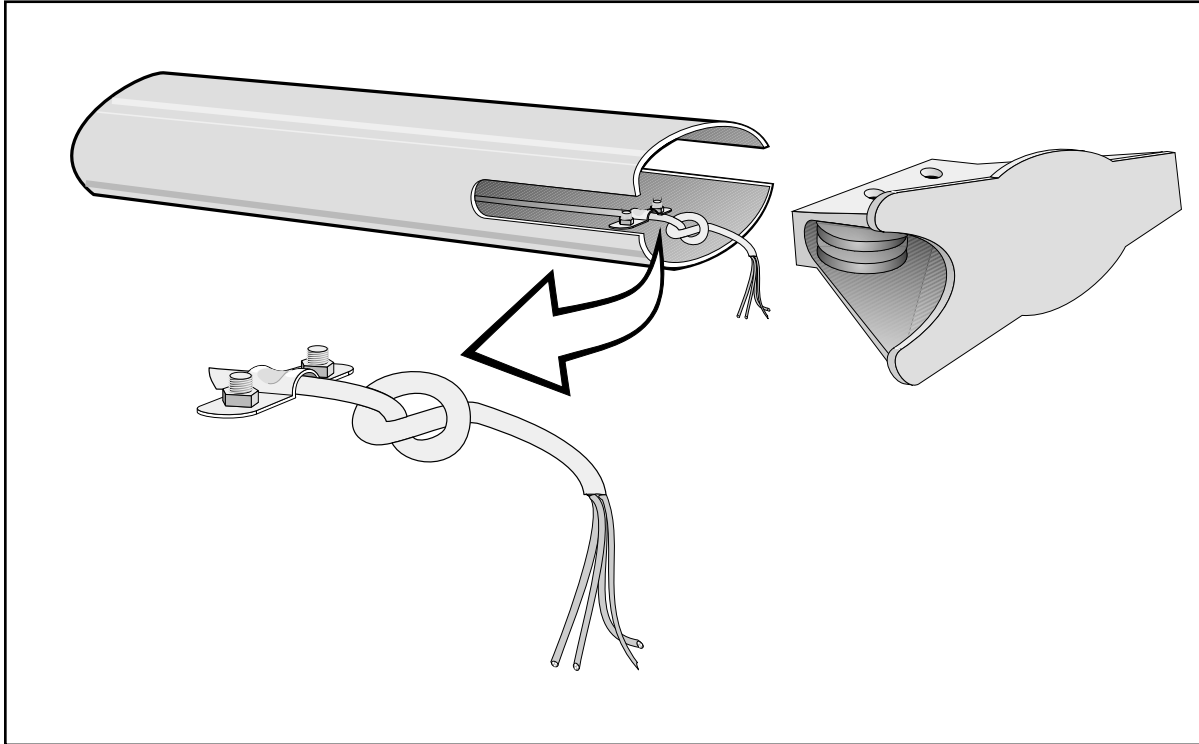


Take up messenger slack as conduit is inserted.



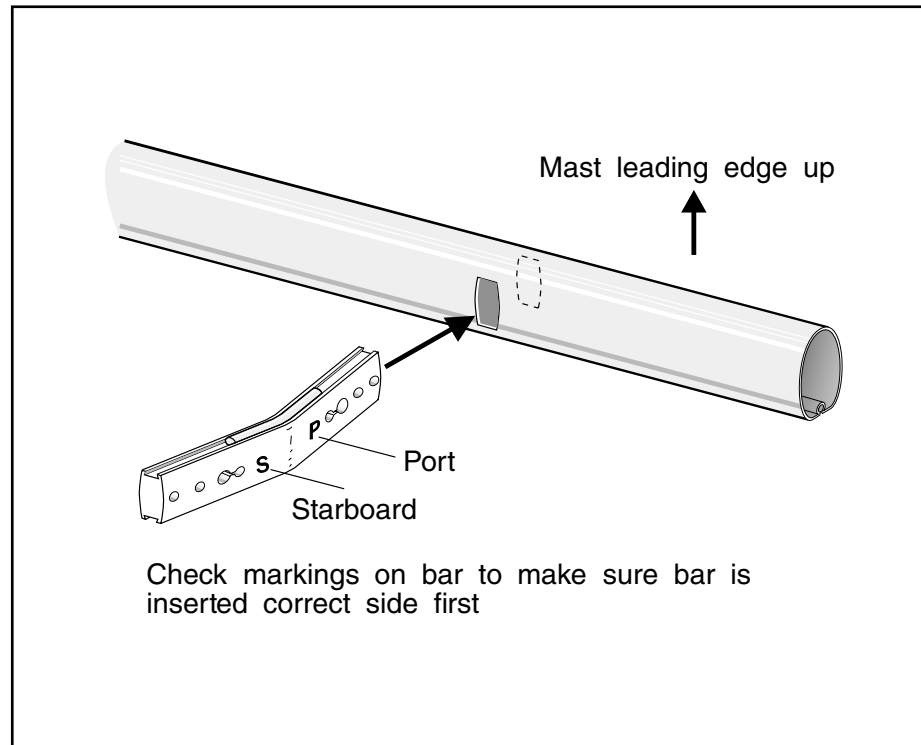
Installation Tips:

Add a padeye and knot wire at masthead to support wire harness weight.

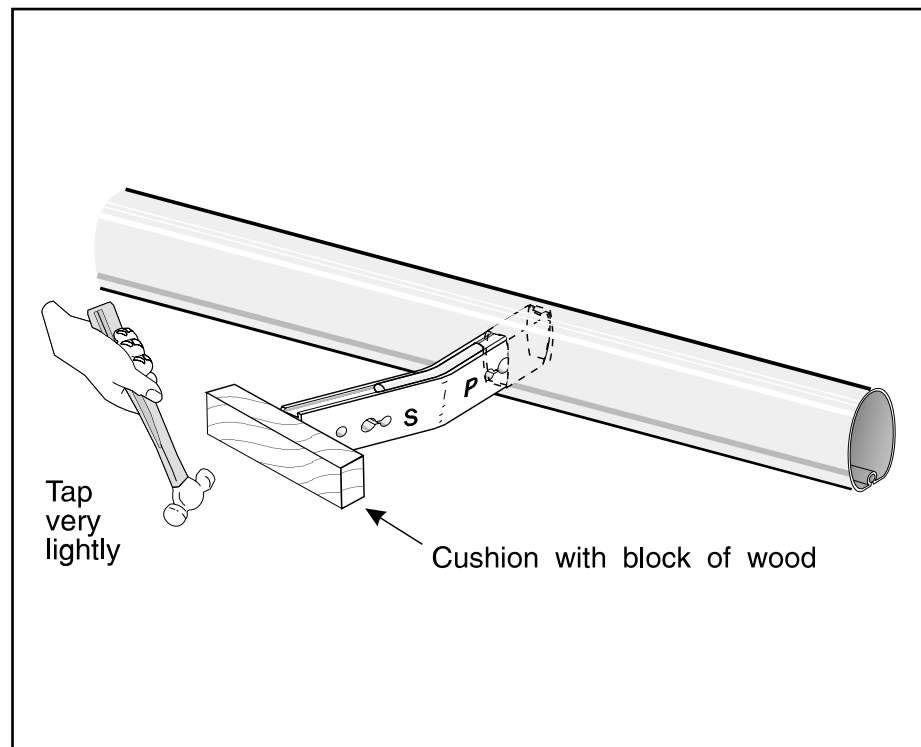


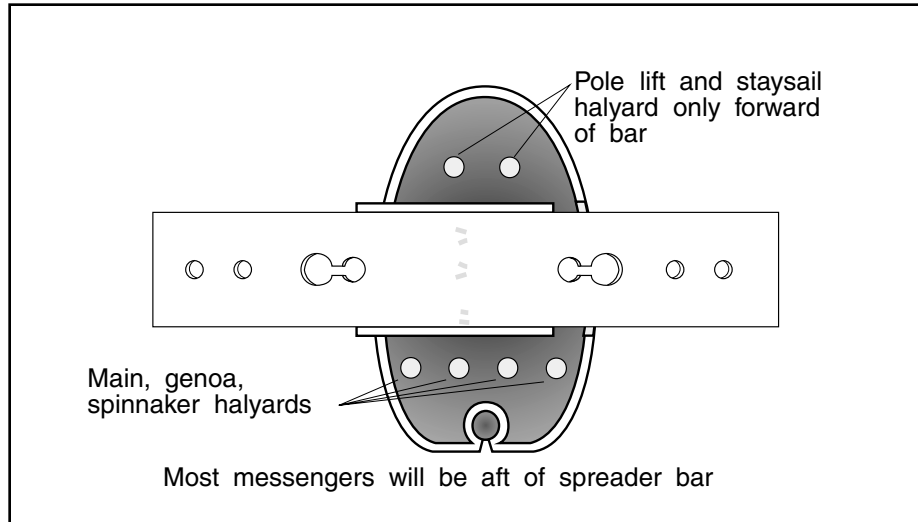
Installing Spreader Bars

Note:
Always insert
spreader bar from
starboard side.

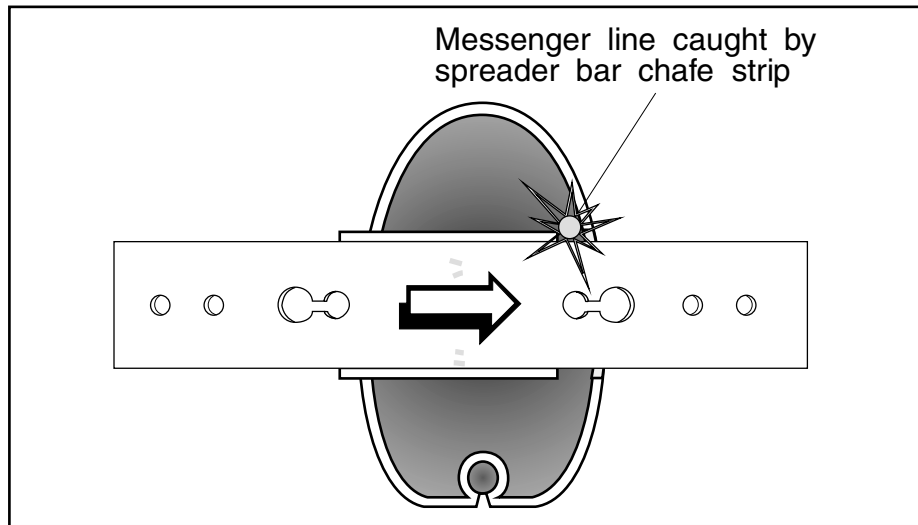


Note:
At this point the bar
will tend to stick
due to its bend. Free
the bar by lightly
tapping its end with
a hammer. Place a
scrap wooden block
against end before
tapping with
hammer to avoid
any damage to the
bar.

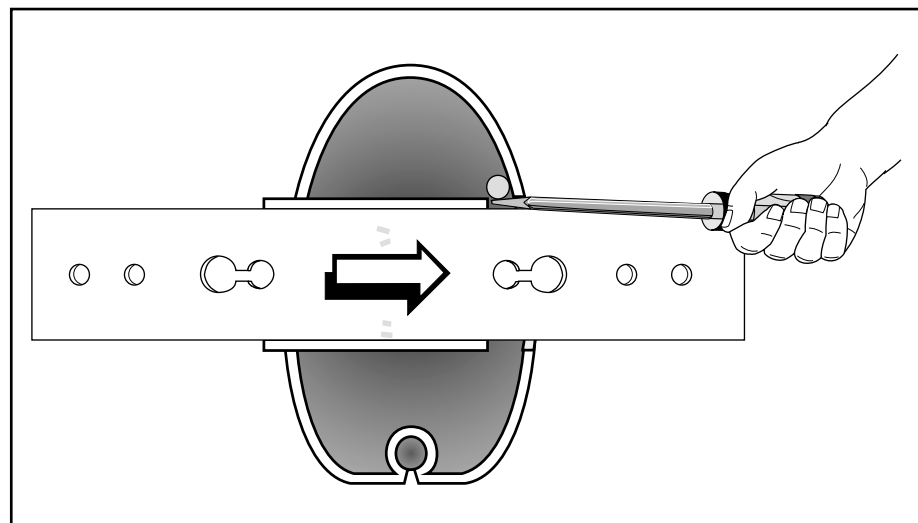




CAUTION:
Messenger line can jam the spreader bar

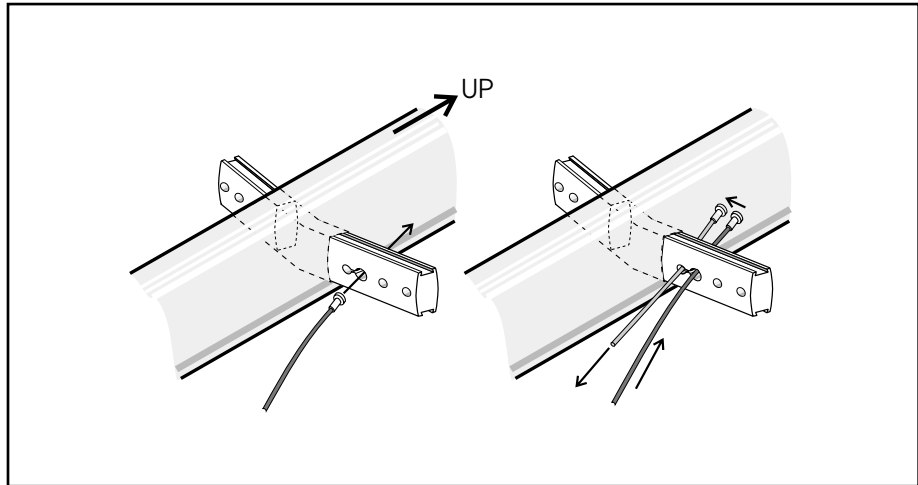


Solution:
Hold messenger line away from trim bar with a small screw driver while inserting bar.

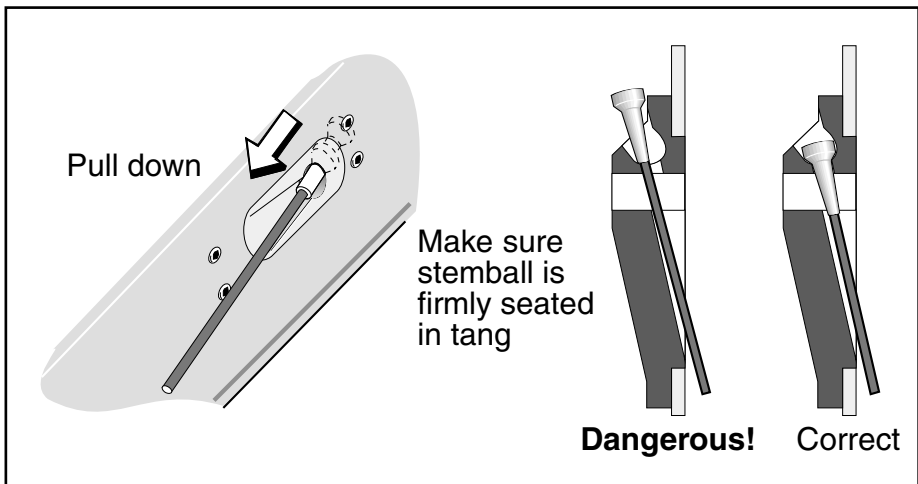
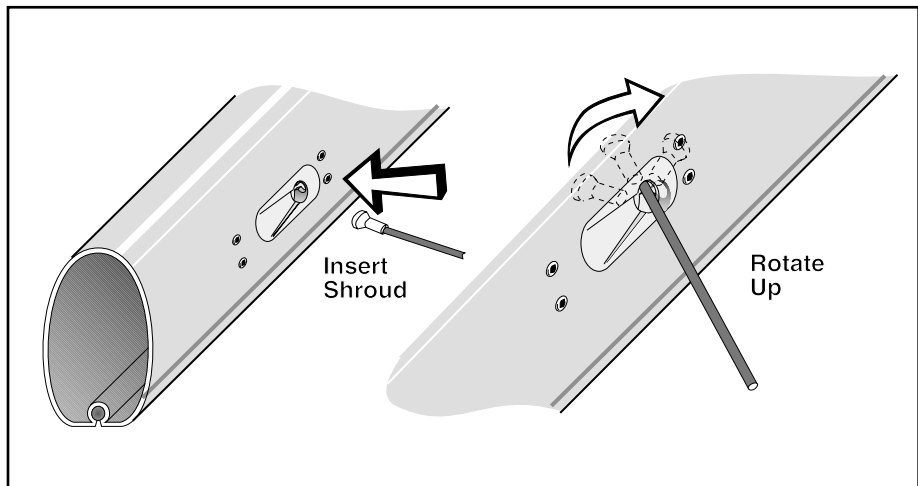


Attaching Shrouds to Mast

Attach all diagonal shrouds first before attaching spreaders.



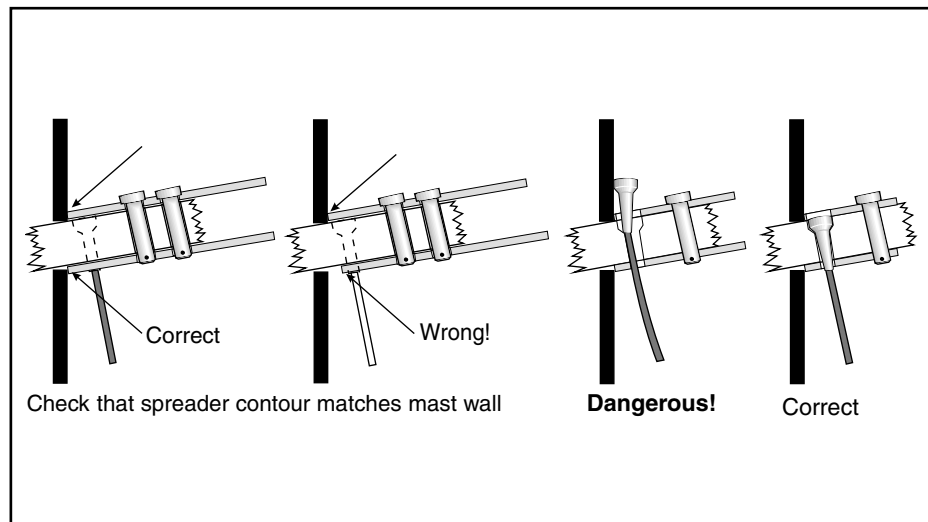
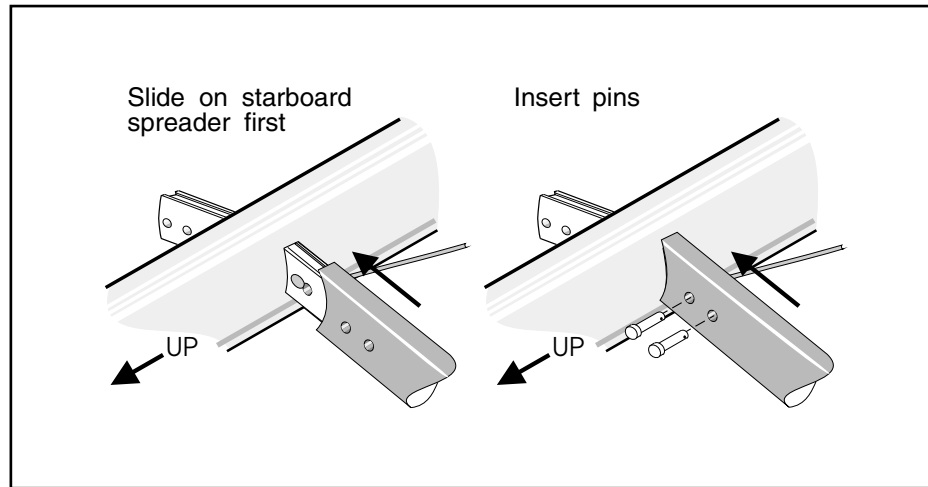
Spreader Bar Tang



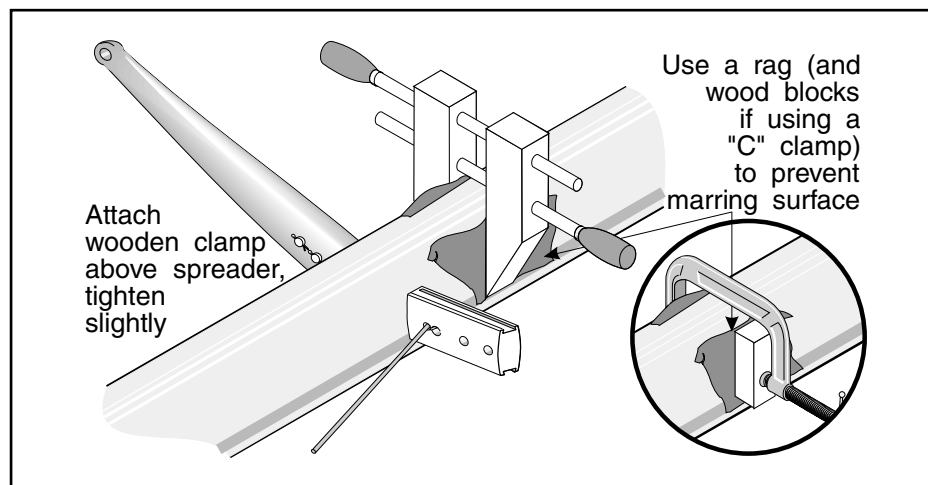
Schaefer tang with Navtec stemball terminals

Installing Spreaders

Attach starboard spreader.

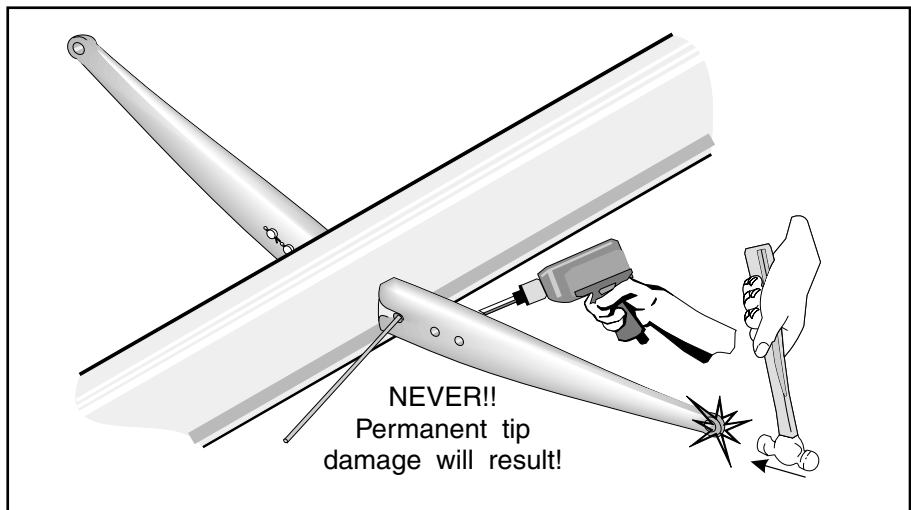
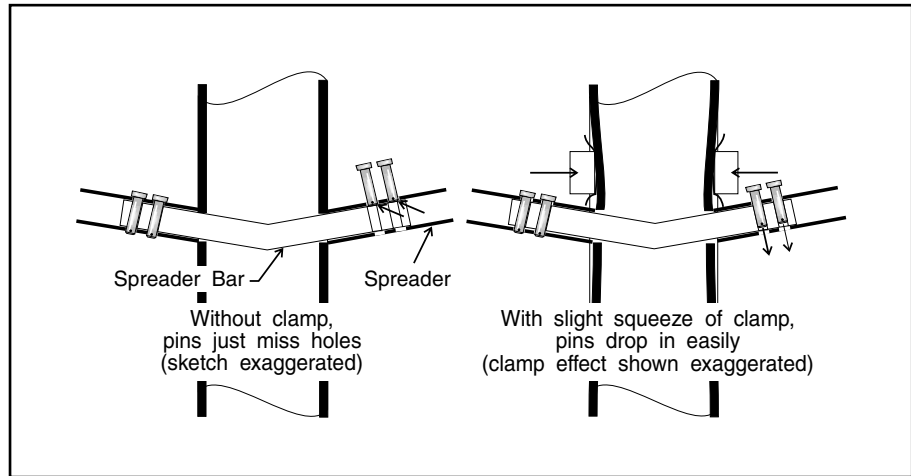


Attach port spreader. Use a clamp to make this operation easier.



Reason for Using Clamp:

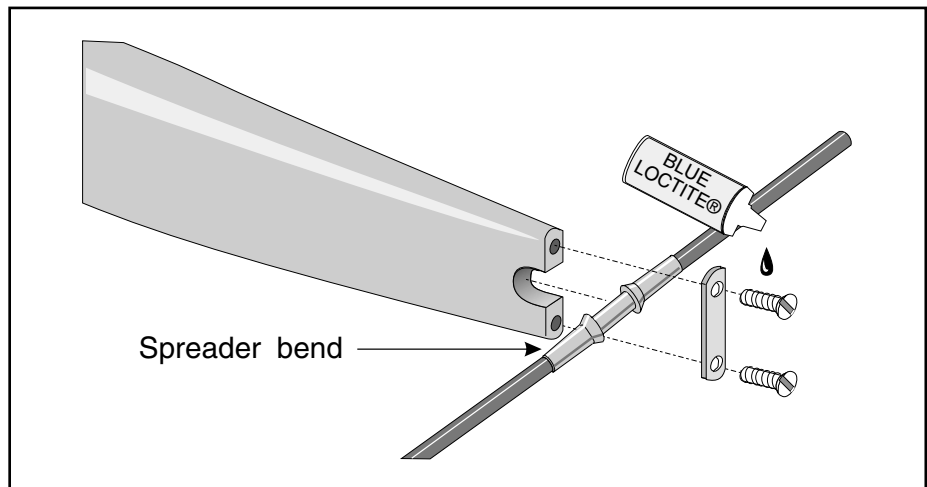
CAUTION:
Do not try to force
spreaders into place
with a hammer.



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

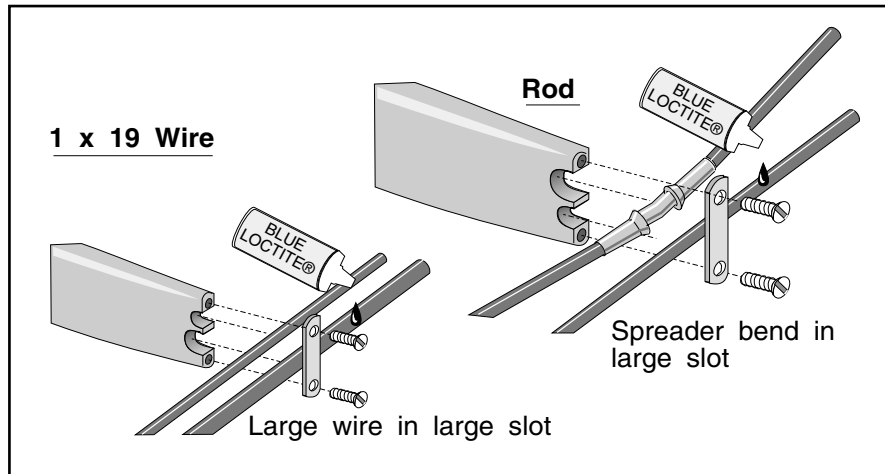
Attaching Shrouds to Spreaders

Upper Spreaders



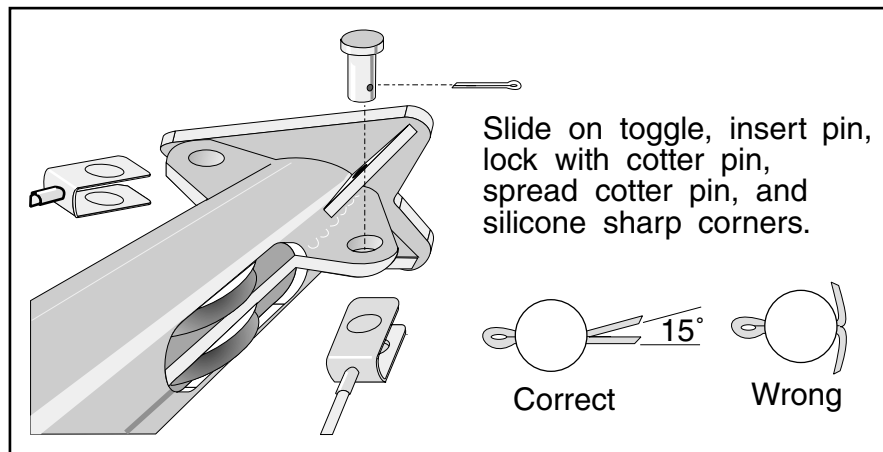
Upper Spreader (Rod Rigging)

**Intermediate,
Lower Spreaders
(Continuous
Rigging)**



Attaching Headstay and Backstay

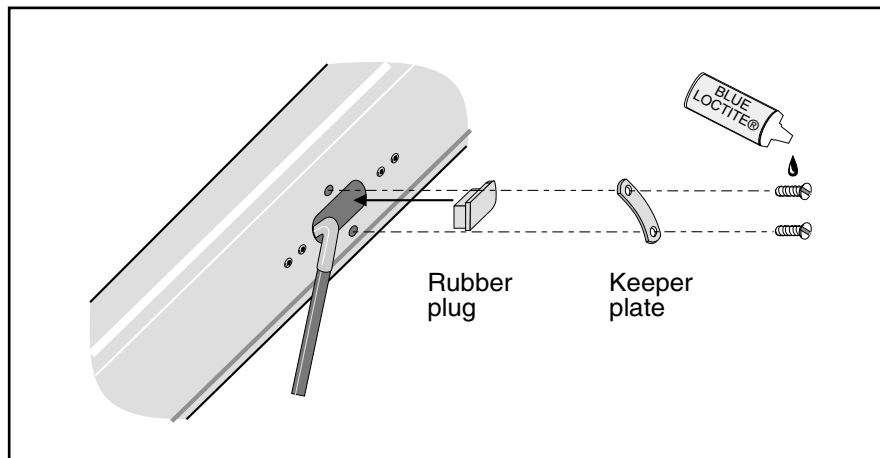
Attach headstay, backstay jaw toggle.



Process is similar to that of marine eyes.

Running Backstays and Checkstays

Remove keeper plate and rubber plug. Insert terminal (see Gibb Tang on page 4). Insert keeper plug. Attach keeper plate, and LOCTITE® screws.



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 spread cotter pins. Make sure all sharp corners are liberally taped.

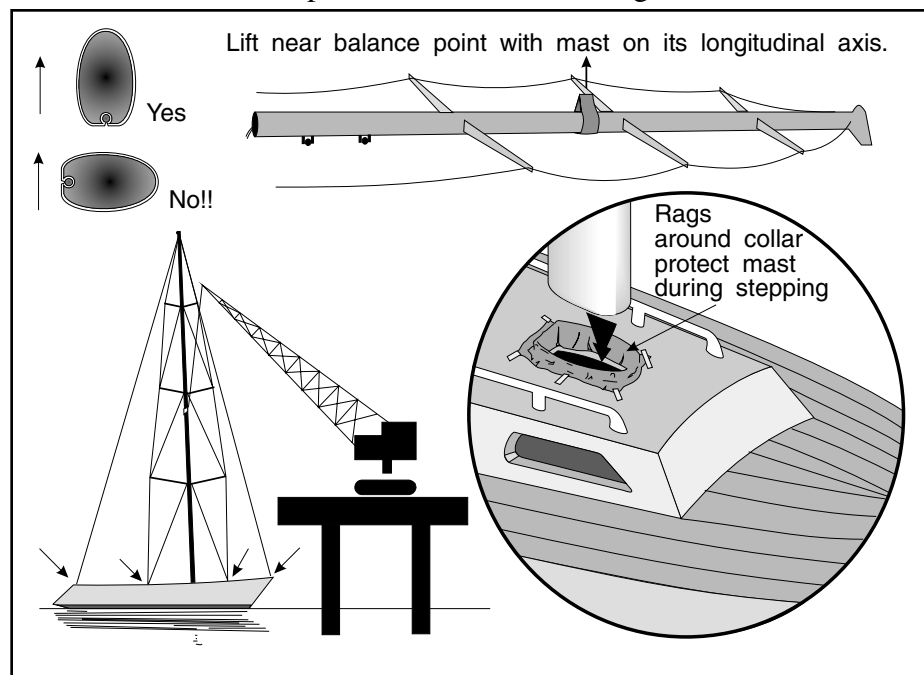
Your Hall Spars mast is now ready to step.

Stepping

Lift at or near balance point with mast on its longitudinal axis.

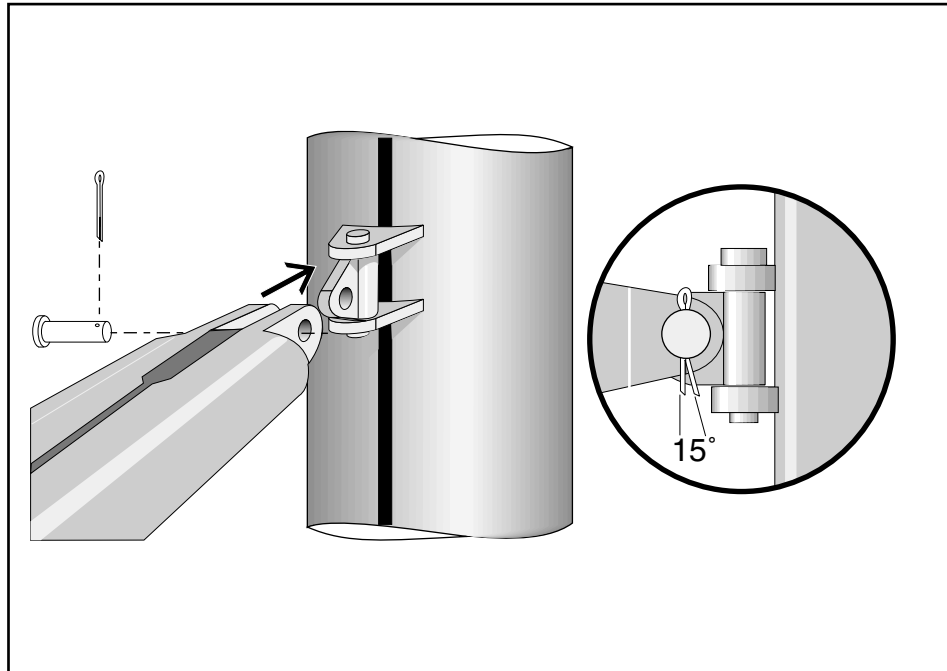
Note:
Only qualified yard
personnel should
attempt to step your
mast.

Important:
Hold mast with
crane until all
shrouds and stays
are pinned with
cotter pins to chain
plates.

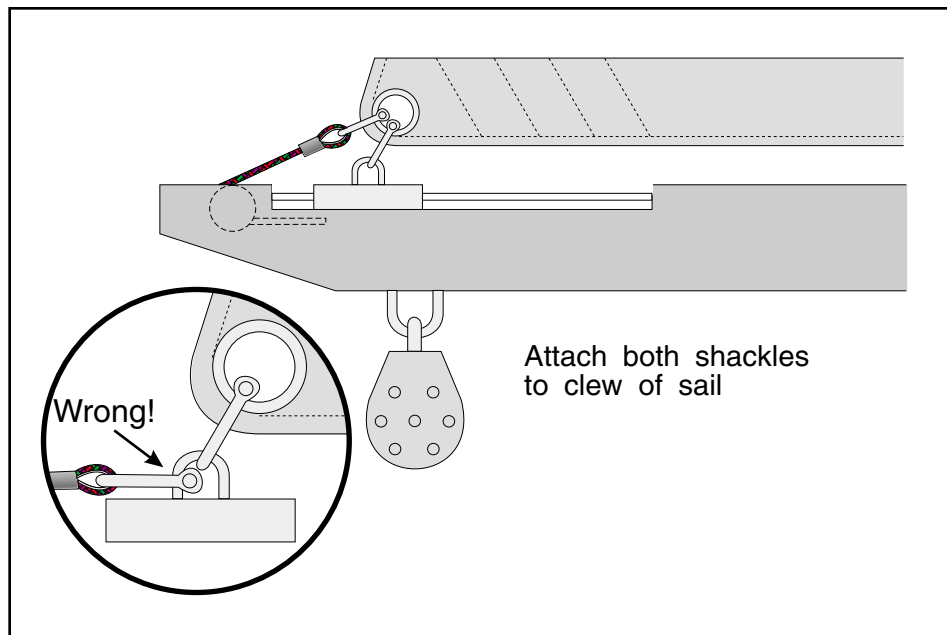


Boom Assembly

Inboard End



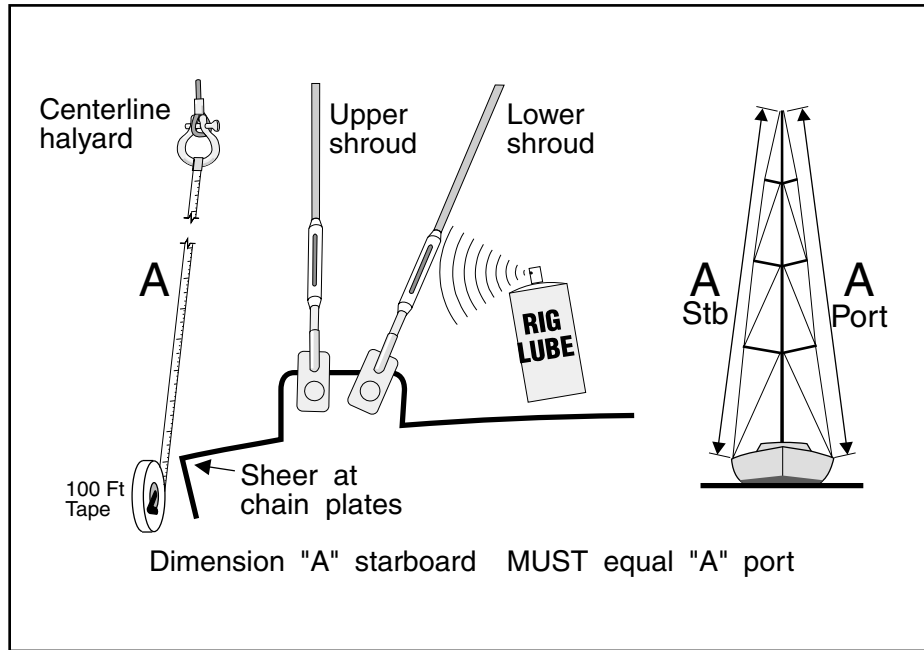
Outboard End



Tuning

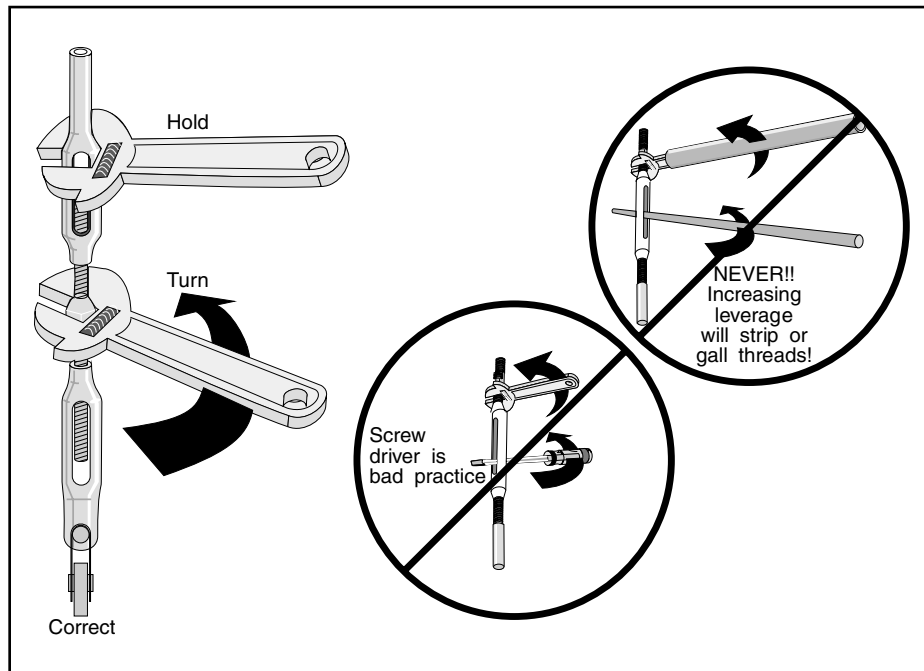
Dockside Tuning

Center mast in boat. The mast is centered when dimension A is same Port and Starboard. Make sure mast is firmly held in partners with chocks or hard rubber.



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

CAUTION:
Never use excess force tightening turnbuckles. 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.

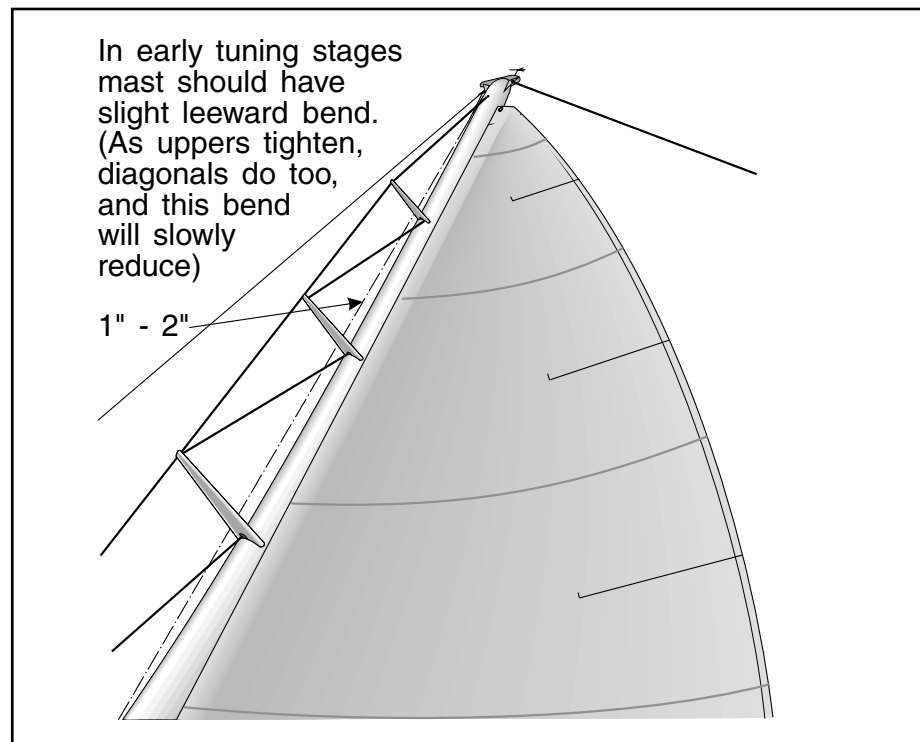
Under mainsail alone, check vertical shroud tension and transverse straightness of mast.

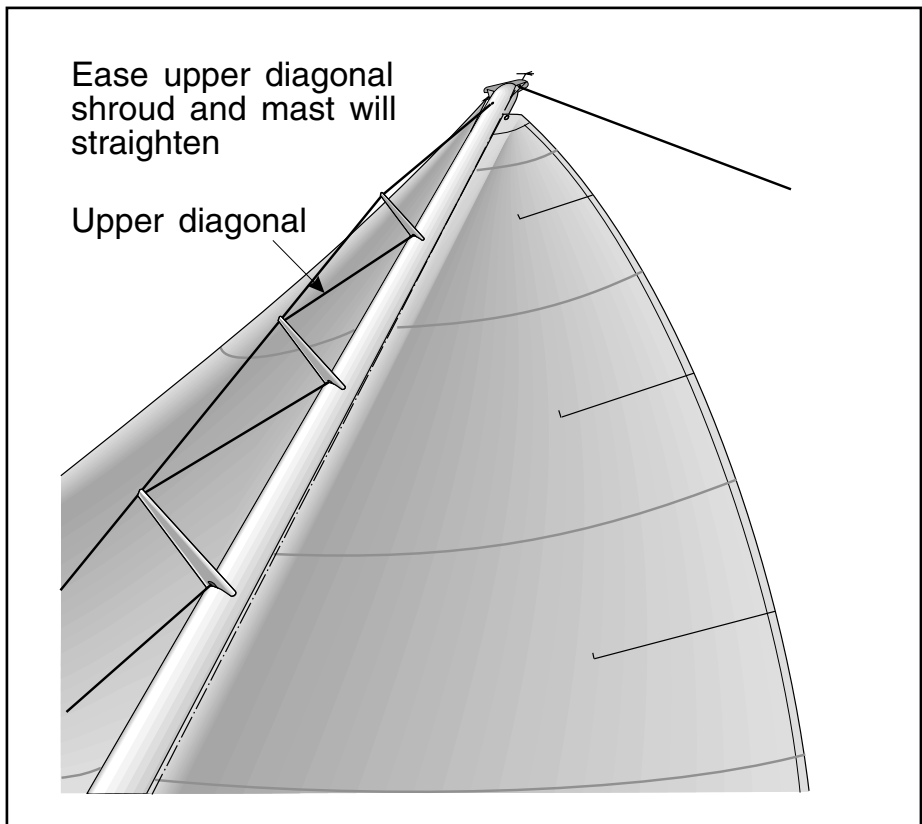
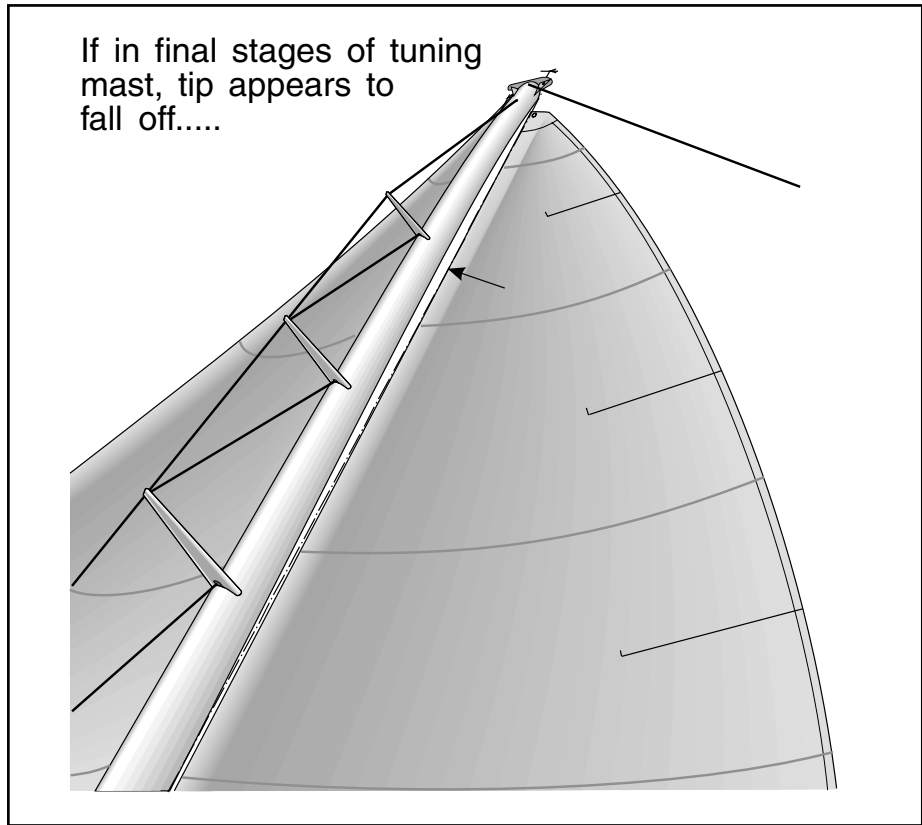
On one tack, tighten leeward vertical shroud as tight as possible counting turns. Then repeat on opposite tack with an equal number of tightening turns. Hand tighten lower (D1) to hold mast sideways centered at first spreader. Unless mast is bending sharply, do not adjust upper diagonals (D2 and up)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





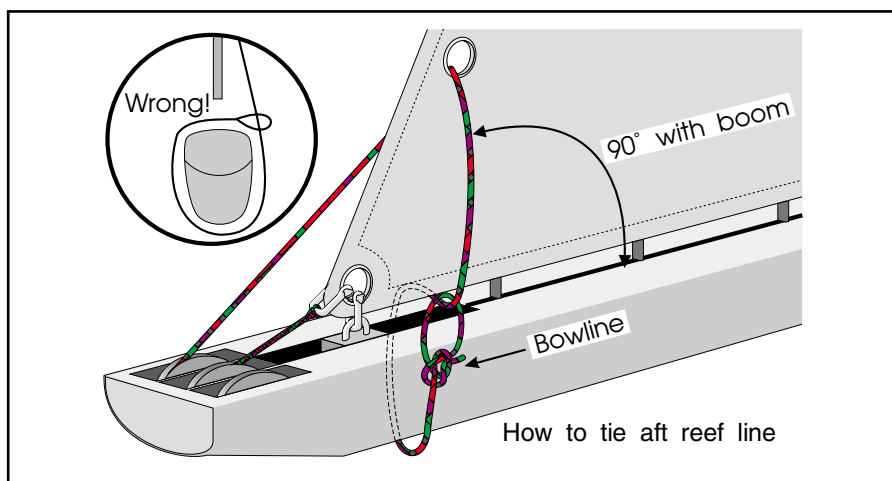
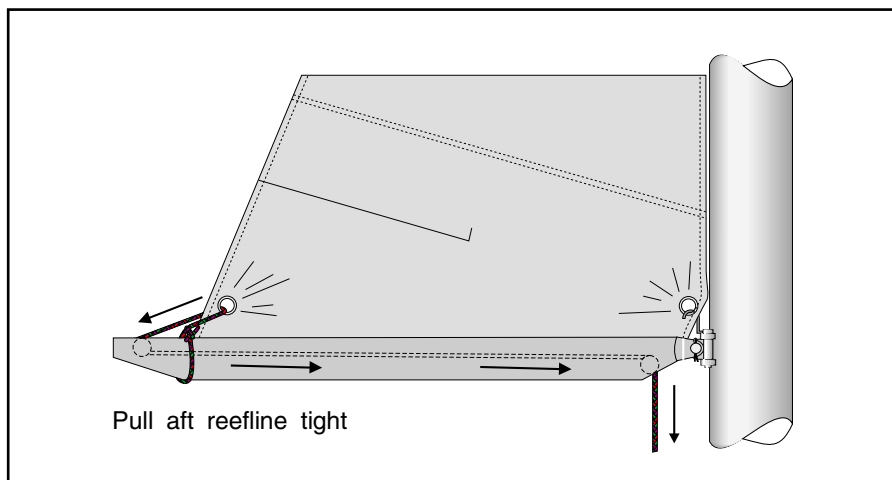
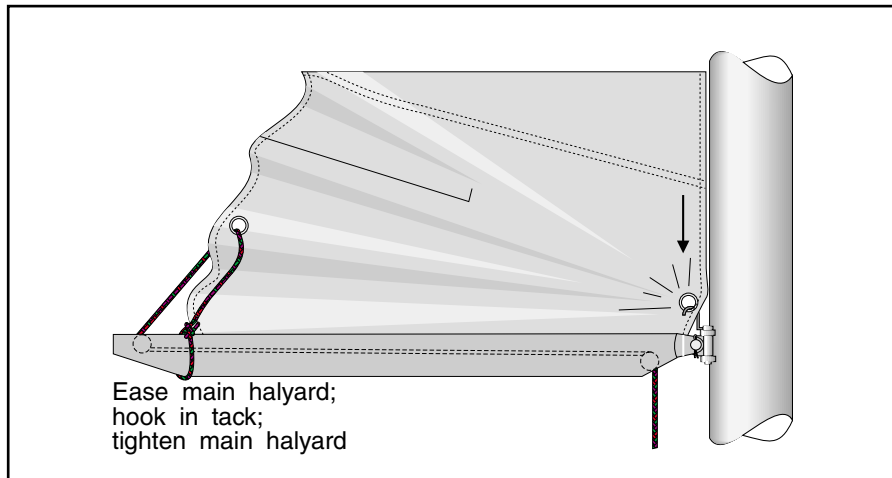
Repeat for other diagonals. At this point your Hall Spars rig is ready.

Final Inspection

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

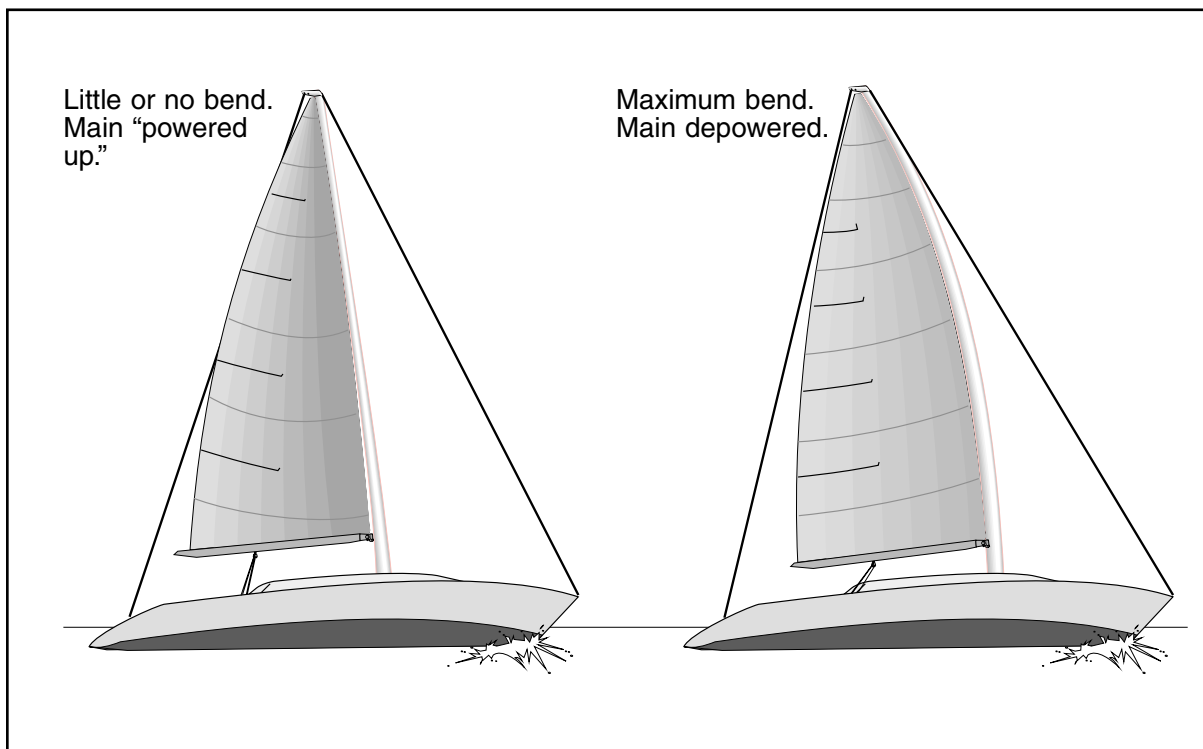
It is good practice to inspect your rig after a race, passage, or cruise.

Reefing

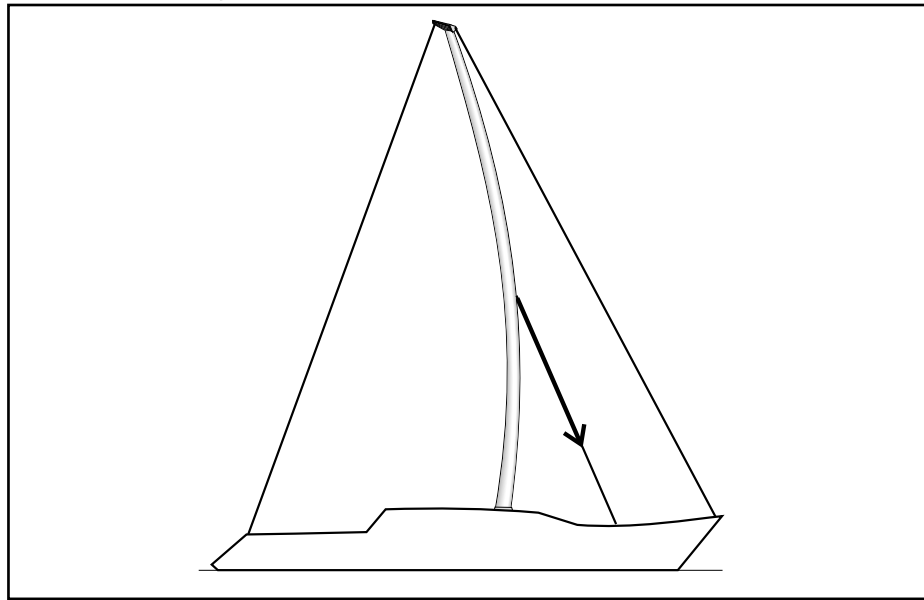


Sail Control Bend

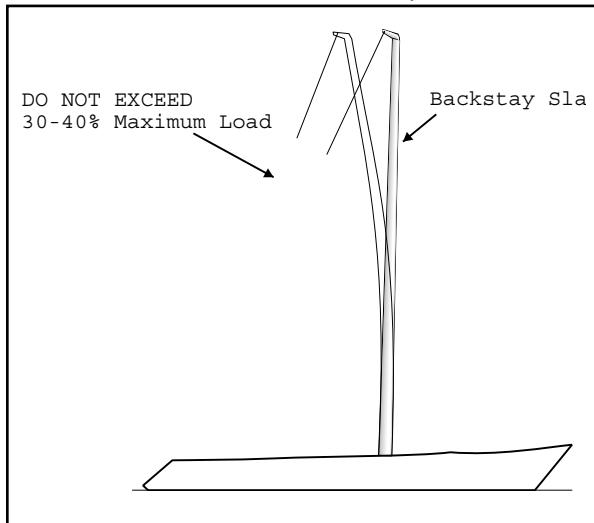
Mast bend is used for sail control. All mainsails have luff curve which creates sail shape. With the mast straight the sail will have shape. If you bend the mast to exactly fit the luff the sail will be almost dead flat. In light to medium air especially in a chop use only a little bend and “power up” the main. In heavy air, bend the mast more and the sail will depower allowing the boat to stand up better and be easier to handle. A good rule of thumb is to limit mast bend deflection to amount equal to the fore and aft dimension of the mast. (On extreme racing masts, this number is regularly exceeded.)



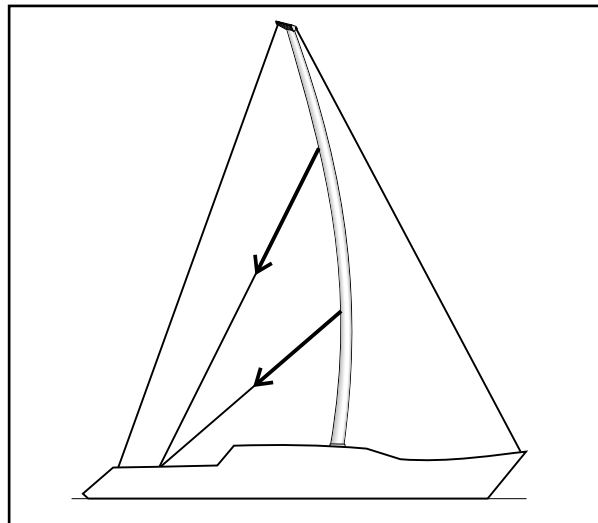
Controlling Sail Control Bend



Backstay



Babystay



Running backstays and checkstays

At this point your 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.

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. Turnbuckles: Note tuned position, remove cotter pin, totally loosen. Spray threads with RIG LUBE.[®] Retighten to tuned position, insert cotter pin.

Note: Easing and tightening turnbuckles 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 or tape 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.

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