

Mast Raising for Large Trailerable Boats

Notes and Comments

A gin pole or some sort of elevated lift point provides necessary mechanical advantage when the mast is near horizontal.

The boom is most widely used as a gin pole, attached to the mast in its regular position if the mast folds forward, or attached to a special track, ring, or pin in a hole on the forward side of the mast if the mast folds aft. Special poles with a saddle to fit around the mast, or a bipod pole arrangement pivoted to fittings on the side deck, are also used. A pole attached to the trailer can be used as an elevated lift point, but this is subject to large bending stresses and cannot be used on the water.

Both the mast and the gin pole should be guyed to prevent sway.

Guys are especially important for the gin pole when the mast is near horizontal because for some geometries the pole is unstable and will snap over under load. Guys are also necessary with any sort of wind loading or rolling of the boat as when raising or lowering the mast on the water. We had raised the mast for years with no guys on the mast other than the shrouds, but the shrouds are very loose when the mast is near horizontal. Recently, we have installed temporary baby stays on the mast, which greatly increases our confidence in the process and has allowed us to raise the mast on the water.

The guys for the gin pole and the mast should pivot about a line through the mast pivot point in the tabernacle.

The presence or absence of a proper pivot point is where various methods for mast raising differ greatly. Factory systems, such as for our Balboa 8.2, often fail to provide this feature. It came to our attention the first time we lowered our mast after purchasing the boat with the mast up in the boatyard. With the gin-pole (boom) guys not too loose with the mast up, the guys became tighter and tighter as the mast was eased down until the gooseneck broke with a bang under the extreme compression loads from the guys with the mast about 8 feet above its resting place on the bow pulpit. If one starts with the mast down, it is still possible to place large loads on the gooseneck with snug gin-pole guys if the end of the pole is forward of the mast pivot point when the guys are set up and adjusted.

Even if the gin-pole guys are properly set up, but pivoted at the chainplates, they become looser and looser as the mast raises, allowing the pole to swing alarmingly sideways, particularly if there is some friction in the tackle used for raising the assembly. If the mast is guyed with the shrouds, the guys will be very loose with the mast near horizontal, and it is difficult to avoid placing damaging twisting loads on the tabernacle, especially on the water. The problems with an offset pivot becomes larger as the offset between the pivot line and attachment point becomes larger, as it is for cabin boats such as Romsø with significant height of the mast step above the side decks and chainplates.

It is safer to use auxiliary guys for the mast to maintain the integrity of the shrouds.

One can lash rings to the shrouds on the pivot line, come up with two-piece shrouds, or use extended chainplates that meet the requirement on the location of the pivot point. All of these schemes increase the risk of shroud breakage. If temporary, removable guys are used, they will have less of a mechanical advantage on the mast than the upper shrouds because they need to be short enough to be reached from the cabin top for removal. Some sailors suggest using extra halyards as guys from the masthead.

Mast guying is a judgment call. On Romsø, we have chosen to use auxiliary guys that are attached to a plate that mounts in the sail track and can be reached from the deck for removal once the mast is up. We use the main halyard as the strongest line to attach the mast to the gin pole, but the halyard needs an extension pigtail to reach the end of the boom. We don't have two spare halyards, and I don't trust the strength of the topping lift to serve as a guy and certainly not to connect the mast to the gin pole.

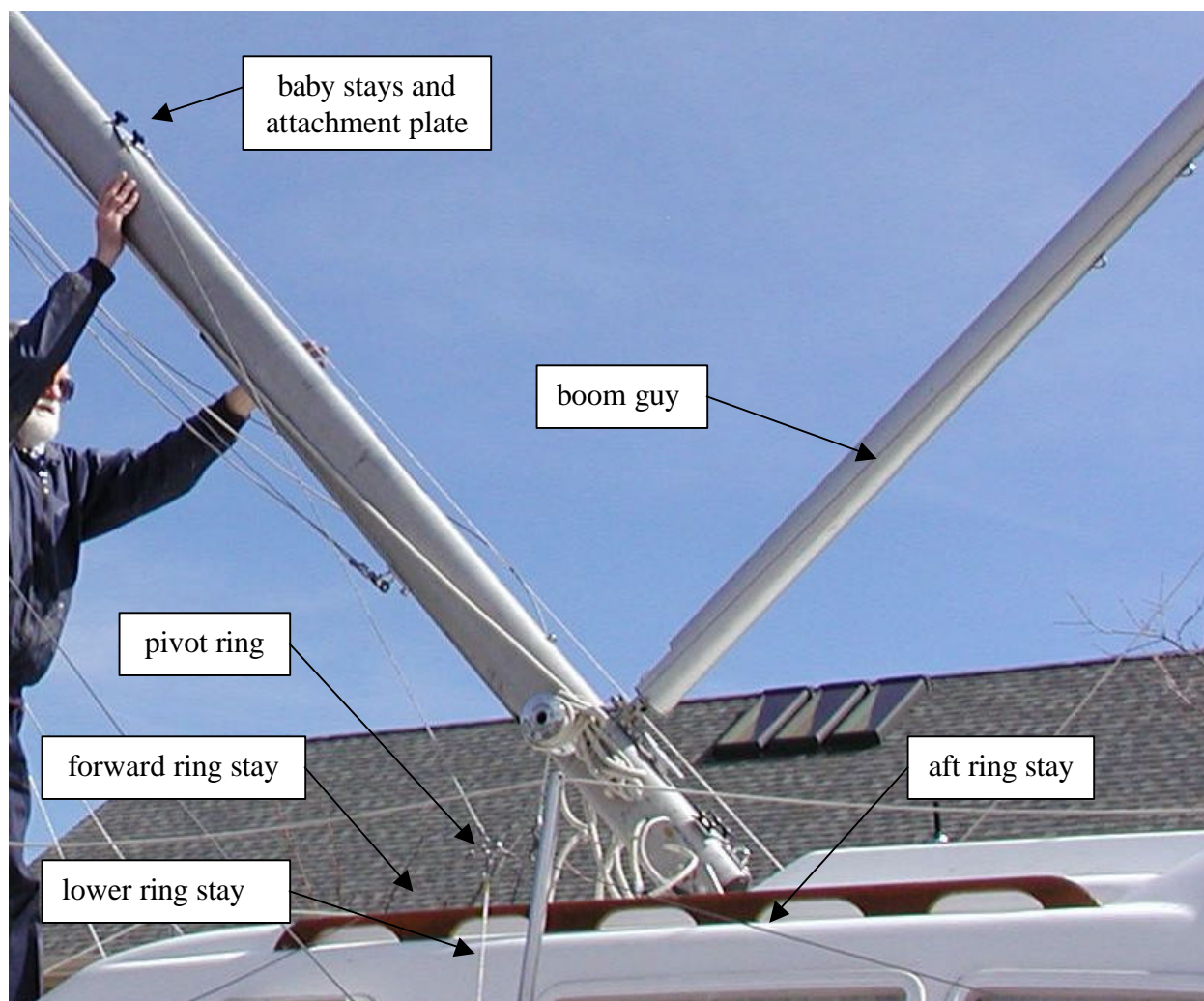
Reduced to practice, the guys are a five-leg "spider" on each side of the boat.

On each side of the boat, five guys radiate from a stainless-steel ring that is centered on the pivot line through the mast tabernacle. The guys are 1/8" 7x19 stainless-steel cable with ends formed by thimbles and nicropress sleeves. Guys are attached with 3/16" shackles except for the common attachment to the boom, which is a 1/4" shackle. Reading from forward, the guys go to the base of the forward stanchion, to the baby-stay attachment on the mast, to the padeye on the aft end of the boom, to the base of the aft stanchion, and to the hole for the lower shroud on the main chain plate. The three lower guys serve to locate the pivot ring fore and aft and to hold it down against the mast and gin-pole guys.

The following photos show the process in action.



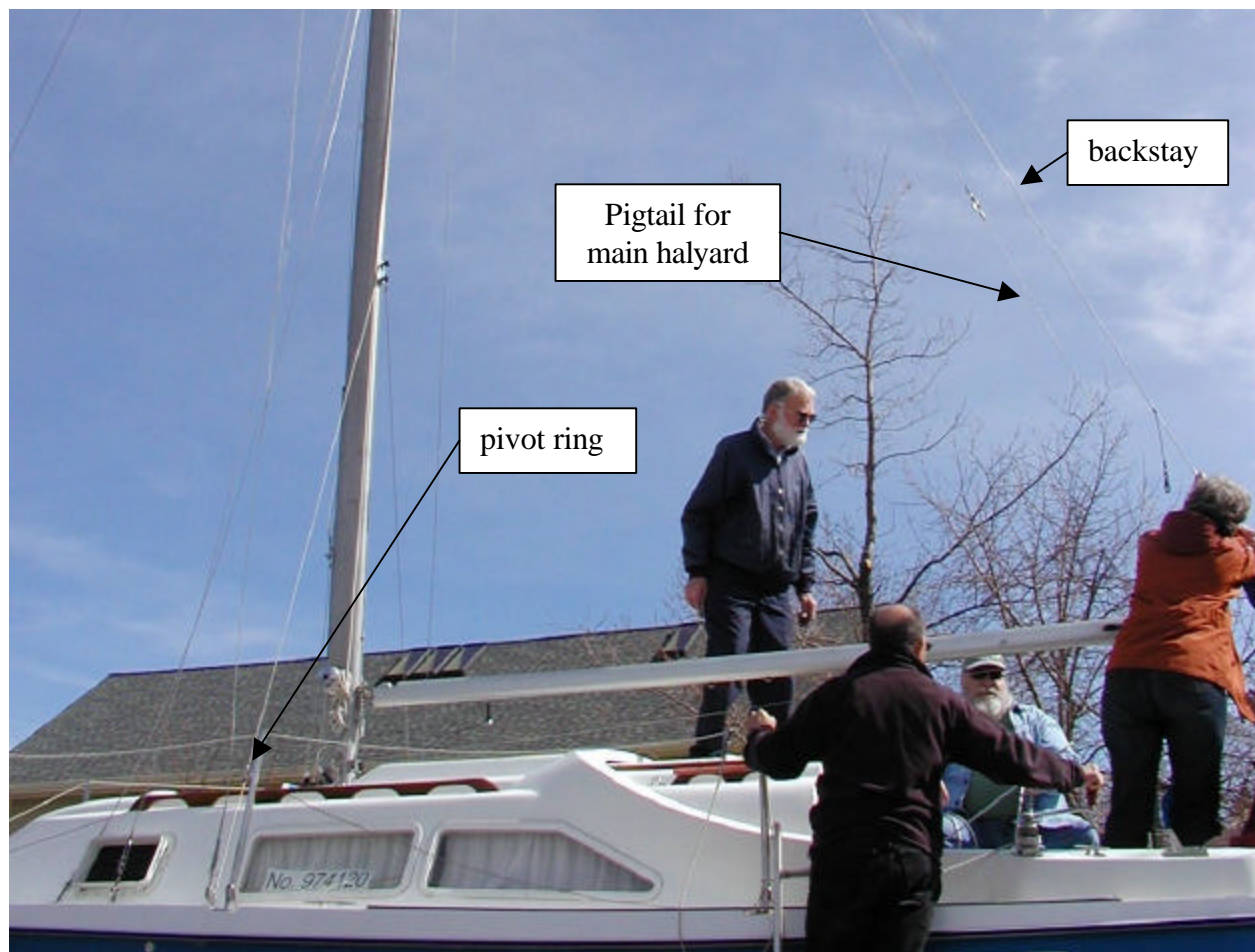
To reduce tangling, the spiders are packaged in 4 separate, but interconnected, components. They are: baby stays and mast attachment plate to the left, starboard ring and locating guys to the back, port ring and locating guys to the top right, and boom guys below right.



Mast part way up.



The line for the 4-part tackle leads from the aft port mooring cleat to the double block on the aft end of the boom, down to the starboard jib block, back up to the double block, down to the port jib block, and over to the port jib winch.



Mast up with backstay being attached, showing overall layout.

Bibliography

Bruce Bingham, **The Sailor's Sketchbook** (International Marine, 1983), pp. 32-36. Discusses a number of alternative fittings.

<http://www.boatus.com/goodoldboat/maststepping.asp>. Reprints a short article from Good Old Boat magazine.

<http://www.norseayachts.com/download/n27mastlowering.PDF>. Shows use of a double D shackle for the on-axis pivot point.

<http://www.boicey.com/sailboats/mastraising.jsp>. Shows the use of an A-frame bipod to support the gin pole.

<http://www.sailingsource.com/s279/pages/miscpgs/MASTUP.HTM>. Gives procedures for an S2 7.9 using halyards to steady the mast.