

## THE RHODES 22 MAST HOIST SYSTEM

*If you ordered the Mast Hoist with your boat, no assembly will be required. If a Mast Hoist was shipped to you, you will have to tackle the assembly instructions. Bowing to human nature, we will take "Operation" first, then "Installation" followed by "Assembly".*

**OPERATION**     The spars are already on the hoist which is already on the boat.

Undo all the traveling tie downs except any that may be bundling the mast, boom and genoa as one unit. Disengage the mast from the bow pulpit and move the bundle aft – not hard to do since the other end of this bundle is on a roller on the transom carrier.

When the 3/8" cross hole near the mast bottom lines up with the slot in the mast step, lower the mast into the mast step and install the supplied 3/8" X 4" mast pivot bolt and wing nut. *Do not tighten nut as the bolt must be free to travel in the mast step slot.*

Winch out enough of the crane brake winch line that is made fast to the deck cleat, to either allow the supplied line with shackles on each end to connect the bail on the mast to the bail on the crane / or to be able to attach the turnbuckles on the aft lower shrouds to the brackets on the aft upper side of the crane, depending on which hoist system you have.

Connect the back stays to their chain plates. Keep all the slack in these two stays. inside the cockpit to avoid the stays snagging the motor or carrier as the mast comes up. An easy way to do this is to lightly tape each stay to the stern rail. As the mast raises, the stays will pull loose from the tape. You must monitor the slack back stays as the mast rises to insure that they do not develop kinks or are about to rip the rudder of the transom.

The two forward lower shrouds are to be connected to their cabin top chain plates – but they will not reach. So connect the two chains, supplied, to each turnbuckle and, using the two shackles, supplied, attach the chains to the chain plates using the link that takes as much slack out of the these two stays as is possible. Once you have established the link that takes out all the slack from these forward lower shrouds, leave each shackle in this link forever. It is the secret weapon that will automatically center your mast into the carrier when you are ready to lower the mast.

Connect the two upper shrouds to their chain plates with their turnbuckles almost fully open so these two stays are very slack.

For the scientifically curious, here is what is happening:

A mast would much prefer to swing sideways rather than move upwards against gravity so a mast hoist must be designed to limit this lateral movement. In the Rhodes system, an accidental discovery handles this: The tightened, chain-extended forward lower shrouds keep the mast from moving sideways during the early stages of the raising arc and, as these two stays start to slacken, the two slack upper shrouds start to tighten during the latter part of the raising arc, automatically taking over the mast stabilizing job.

Satisfy yourself that everything you have done up to now is OK and you are ready to single handed raise the rigging. THIS IS A MECHANICAL TOOL SUBJECT TO HEAVY LOADS AND ALWAYS FRAUGHT WITH THE POSSIBILITY OF A BOLT OR PIN THAT MAY HAVE BEEN SET LOOSE, GOING UNNOTICED OR ROPE OR HARDWARE ON THE VERGE OF FAILING, SO BE CERTAIN THAT NEITHER YOURSELF OR ANYONE STANDS IN HARM'S WAY SHOULD ANY PART OF THE MAST OR HOIST SYSTEM FALTER.

Turn the brake winch handle in the direction that causes the line from the winch to the deck cleat (or deck eye), to shorten. The mast will start to lift off the mast carrier roller. The winch provides great mechanical advantage which can mask any mechanical hang ups so stop winching as soon as you feel the slightest resistance. Examine stays, turnbuckles, everything. There will be good cause if the operation does not go smoothly. The winching effort gets easier and easier as the mast approaches vertical so be careful to stop the winching action once the mast is visibly vertical. Don't override any complaints from the rigging by simply winching harder – something will end up damaged.

With the mast vertical, disconnect the chains and attach the forward lower turnbuckles directly to their respective chain plates. With back stays and upper shrouds connected before raising the mast, once the forward lower shrouds are connected, the mast cannot fall side-ways, forward or backward. From here on, you can get creative. The hoist can be removed from the boat or the crane can be left on until the jib is connected in case you need to use the winch to close any small space between the jib stay and its chain plate. This might be a good place for a quick review of mast tuning:

Take slack out of the upper shrouds so mast is not leaning. Spacing between mast sides in hinge step is a guide. With jib stay connected, use back stay adjusters to take all slack out of back stays, then use the rapid tension line to make back stays super taut. Then take the slack out of the four lower shrouds. Finally, sight up the extruded groove along the front edge of the mast to establish that the mast is not hooked off to one side. You can take it from here – like in the days before mast hoists and covered in detail in the Rhodes 22 instruction booklet.

“To lower the mast just read the above backwards.” That is what we wrote in our first printing. But this turned out to be absolutely frightening to those who have not had bar mitzvah training. So we have dedicated additional pages to those bright owners who have not had the opportunity to learn to read backwards. And we start off with an experience that should remind us all that, when all else fails, read the instructions.

The phone rang one bright and late spring day. The voice, which sounded like it was coming from Chicago, said, "You will be hearing from my lawyer in the morning".

"What's up?" was my common response to such common notices.

"Not the mast" the voice assured me. "Me and two helpers were putting up the mast and it fell down. We are in the water up to our earlobes, holding a mess of wires like we are treading around a fallen May pole".

I got the picture. "Stay where you are", I said, "I will hop a plane and be right there".

A dry lady met me at O'Hare. She obviously was not one of the helpers. When we arrived at the disaster scene I asked, "How many stays did you have pre-connected?".

"Stays ? Connected ? None of course".

After resetting the break-a-way mast step and raising the mast for them. they did have the decency to take me to dinner as penance for, at least, not reading the instructions and, at worst, for not using common sense. But you already are past this lecturing and have your mast up. Should you ever want to put it down, here is how to start:

STOP:

Disconnect the pop top slider from the mast. The theory (which actually works) is that you cannot pivot around two points at the same time (without doing tremendous destruction). Move the pop top slider to its up mast hole. Close the sliding hatch (slide it fully aft). Install the mast carrier over the stern rail, the mast hoist crane to its cabin top base plate and the crane winch line to the bow deck cleat or eye.

1. Release the back stay tension line from its transom cleat but leave the back stays connected to the adjusters on the transom chain plates.
2. Disconnect the main sheet from the boom by removing the boom block from its tang at the end of the boom. The traveler bar, with its main sheet assembly, can now be removed from the back stays' sockets. Or, you can, as some owners have found workable. leave the traveler connected to the back stays.
3. Standing along side the mast, pull on the topping lift so the boom rises up against the mast. Secure the boom in this up position by securing the topping lift to one of the mast side cleats.
4. Disconnect the jib stay and secure the jib furling system the way you normally do depending on whether you have a GB furler or a pro system like a CDI, Harken or others.

5. The mast, boom (and jib furler if using a GB type) are now bundled into one unit that cannot fall forward since the back stays remain connected. It cannot fall sideways because the upper shrouds remain connected. And it can not fall backwards because forward lower shrouds are still connected.

5. Set up the crane on its permanent cabin top fixture so that it becomes self supporting by leaning slightly aft. Then, depending on your model, either connect the bail atop the crane to the bail on the mast with the double ended snap shackle line or, connect the two aft lower shrouds to the two "U" brackets atop the aft side of the crane pole. Connect the winch line to the foredeck cleat or eye and remove any slack in this line.

6. With the crane connections now preventing the mast from falling aft, the lower forward shrouds can be temporarily disconnected from their chain plates for the insertion of their chain extenders, being careful to have the shackles from chain to chain plates in their same links used on the way up. Done correctly this step automatically directs the lowering mast to the center of the mast carrier. (Check these shrouds as the mast lowers. If they get too taut, your turnbuckle settings, or chain links used, have been changed and you will have to open the turnbuckle to avoid damaging the chain plates.)

7. Start cranking the brake winch so it feeds out line. If the mast insists on standing tall, humor it with a little nudge. The mast will lean but not fall thanks to the braking action of this type winch. Now start winching and note how the upper shrouds will start to relax while the forward lowers begin to tighten. Thus the name, "Rhodes Cross-Over Mast Hoist system".

The forward lower shrouds' chain adjusters are a key factor in the ease of using the Rhodes mast hoist and that is why determining the pre-setting for this tool is worth the time. If they are set too long, the stays remain too slack to center the mast as it lowers onto the carrier roller. If they are set too short, they will put excessive strain on the chain plates as they tighten as the mast lowers. Properly set, you will have the fun of looking at nervous onlookers watching a mast coming down off mark, magically center itself.

8. With the mast at rest on the carrier roller, pull the 3/8" pivot pin from the hinge step and return the bottom end of the mast to the bow pulpit connection. With the top end of the mast on the high carrier roller, gravity will help you with this trip to the bow. If it appears difficult to pull the pivot pin, physically move the mast to the center of the roller if it is too far to one side and/or back off on any shrouds that may be applying pressure on the pin. When the two holes in the mast and the slot in hinge step are aligned, and forward pressure on the mast is relieved, pulling the pivot bolt pin is an easy step.

Making the boat road-ready per the Rhodes' instruction booklet, or per your own ingenuity, should include a safety line from the mast bundle to the bow deck cleat (even a second safety line to the mast step – none needed at carrier end), lines from spreaders to handrails to keep mast from rotating and the mast carrier support lines each taut to their respective aft docking cleats.

## INSTALLATION:

*Four elements make up the Rhodes Cross-Over Mast Hoist System: The transom mast carrier; the crane, the deck crane mounting block and a set of extenders. Note: some systems for boats with a bail on the mast and one on the crane, have a 5<sup>th</sup> element in the form of a line with snap shackles at each end.*

### THE TRANSOM MAST CARRIER:

This lightweight double pole assembly fits over the stern rail and has an opening in its horizontal plate that on most boats locks onto the stern rail lamp. Depending on the stern rail on your particular boat, you may have to reset the height of this horizontal plate. Plastic plates at the bottom of each pole pivot to attach the carrier bottom to the top of the boat's transom. Lines from the top of the carrier go to the aft deck docking cleats to provide additional lateral support. Once any one time adjustments are made and the carrier has been secured in its trailing position, you have the one time job of lifting the mast bundle so it rests on the carrier's roller. The beauty of the system is that, once the mast bundle has been lifted onto the carrier's roller, it never has to be lifted again. The mast rests on the carrier while trailing, winches off the carrier when sailing (the carrier is off the boat) and goes back onto the carrier when ready to trail. The only time you would ever have to hand lift the mast again would be if you wanted to work on an element of the rigging that would be too awkward to do with the mast in its trailing location - a rarity.

### THE CRANE:

This pole has a brake winch at its top end front side and a pivoting assembly at its bottom. The winch has a line with a loop end or shackle. The loop goes around the bow docking cleat (if a shackle it snaps on the deck eye). Opposite the winch, the top end of the crane pole has two small "U" brackets with bolts in them for attaching the aft lower shrouds. On the sides of the pole bottom are two pivoting plates with two sets of bolts and nuts for fastening the crane to the cabin top plate. At the bottom end of the tube is a rocker shaped fitting that allows the crane to be upright and leaning slightly toward the stern so as to be held in this position by gravity so that your hands are free to make necessary connections. (Make sure gravity is on your side so the winch does not fall on you.) With the lower shrouds connected to the upright crane and the winch line fast on the deck cleat or eye, the crane is in position to raise the mast. Note: If you have the mast/crane bail set up, instead of the lower aft shrouds connecting the mast to the crane, the line with the end snap shackles connects the mast bail to the crane bail. A beauty of the Rhodes hoist is that no tools are needed. Hand tightening of fasteners is all that is required.

### THE CABIN ROOF PLATE:

If your boat does not already have this plate mounted atop the forward cabin roof, you will have to install it. Its location should be centered and an inch or two back from the front edge of the cabin top roof. Drill two 3/16" holes being careful not to go through into the cabin. Tap the holes with a 1/4-20 tap and mount the plate using the two machine screws supplied and a 5200 type sealant. An alternate is to drill through the cabin top and bolt the plate to the boat – not as attractive inside the cabin but a bit easier to do for most owners. This mounting plate of course becomes a permanent boat fixture never to be removed.

### THE EXTENDERS:

For the system to work, the forward lower shrouds must be connected to their respective chain plates. With the mast in its down position, these shrouds cannot reach their chain plates and so must have their lengths extended. This is accomplished by having a chain (or metal plate) connected to the bottom of their turnbuckles, using the turnbuckles' clevis pins. The free ends of the extenders are then connected to their respective chain plates with shackles provided, where the shackles are inserted through the chain link that takes as much slack out of each shroud as is possible. Once this link is established, the shackle should never be used in any other link so it is good practice to just keep this shackle in this link from then on. With the mast up, the forward lower shrouds can now reach their respective chain plates without the extenders; so these chain extenders and shackles are stowed in a coaming compartment or cabin drawer until ready to lower the mast.

*If you were brilliant enough to have had the foresight of ordering your boat with the Rhodes Mast Hoist as one of your options, forget everything under "Assembly".*

**ASSEMBLY:**

The only part of the Rhodes Mast Hoist System that becomes a permanent part of your boat is the small rectangular  $\frac{3}{4}$ " thick, pre-drilled plastic cabin top plate. Hopefully we remembered to send you the two  $\frac{1}{4}$ " x  $1\frac{1}{2}$ " machine screws that fasten this plate to the cabin top (centered and approximately an inch or two – not critical) from the widow's peak of the front end of the front of the cabin trunk). Using this plate as a template, drill two  $\frac{3}{16}$ " holes into, but not through, the cabin top (which is about 1" or more at this point). Counter sink the holes slightly to avoid chipping the gel coat and tap the holes with a  $\frac{1}{4}$  - 20 tap. Put 5200 type caulking in the holes and mount the plate.

If your stern rail carrier is unassembled, the  $\frac{1}{2}$ " stainless steel rod inserts through the roller followed by a large washers at each end of the roller. This axle will extend beyond the ends of the roller so the axle can extend into the holes at the upper ends of the two 6' long anodized aluminum tubes.

Two diagonal spacers are bolted to the two aluminum tubes using the pre-drilled holes located below the roller. These diagonal straps space the tubes and lock in the roller axle.

The pre-assembled plastic stern rail shelf has two 2" holes. With the smooth side of the shelf up (the ridge side down), insert the two aluminum tubes into the two shelf holes and move the shelf part way up the parallel tubes.

The last assembly step of the Carrier is the mounting of a pivoting plate at the bottom of each tube. These pivoting plates are contoured to mate with the shape of the deck at the transom and attach to each tube with a single bolt through pre-drilled holes in each tube. These pivoting plates provide support for the Carrier bottom and protect the transom.

The Carrier can now be lifted up and set down over the stern rail so that the opening in the shelf will fit over the stern rail lamp and the two lower pivoting plates can be pivoted to fit over the transom. At this point the shelf can be eye-leveled and a hole drilled through the pre-drilled hole in each of the two lips on the underside of the shelf and through the respective tubes so that the shelf is made fast to the tubes with the bolts provided. Additional lateral Carrier support is provided by lines coming down at an angle from the upper sides of each tube and made fast to each of the aft docking cleats.

HELP is reached at 252 482 4372