Hinged mast bases are designed for deck stepped masts to be used to help in the stepping process using a gin pole or on smaller masts, by hand. They are not designed to be used as tabernacle bases for temporarily lowering a mast to pass under a bridge or obstruction. For that use, we can custom make tabernacle bases that, along with mast and rigging modifications and using the boom as a gin pole, can make "on the fly" lowering possible.

We produce several sizes of hinge plates. The size is defined by the flat area of the plate that is available to mount the mast step or plug and mast section. The sizes follow:

HMB E27	5" X 3.5"	Punched flanges 5 holes each side.
HMB SC27	6.75" X 4.25"	No flanges.
HMB M30	6.5" X 4"	Punched flanges 5 holes each side.
HMB 8055	8.0" X 5.5"	Punched flanges 5 holes each side.

As you can see, the largest hinge plate has a flat area of 8" x 5.5". This will usually accommodate extrusion up to 8" x 5.5" and that is what we consider the largest section that can be safely stepped with a hinge plate. Larger sizes can use a custom tabernacle.

The top plate of all of the tabernacles have fastener holes predrilled and countersunk. The base plates of all but the HMB E27 are left undrilled so that the existing bolt pattern in the deck can be match drilled. The holes will also have to be counter sunk.

There are several methods of attaching the mast extrusion to the top plate. If the existing mast step casting is in good condition and with enough inherent strength to do the job, it can be attached to the top plate by machine screws , either with nuts or tapped into the step casting. The mast would be then attached to the mast step by drilling and tapping through the mast wall.

The second method is to make a plug out of thick aluminum (min. 3/4") that fits into the mast reasonably tightly. Small masts can use thick (3/4" +) Delrin or UHMW or similar plastic. The plug can then be attached to the top plate and the mast using the same method as with a casting. It is best to drill and tap all attachments since it usually works best to install the plug in the mast extrusion first and then attach it to the top plate.

With all methods of attachment , it is strongly recommended that thin plastic is installed between the mast , mast step or plug and the stainless steel top plate to inhibit galvanic corrosion. This is especially important if the boat is sailed in salt water. We can supply this material, optionally.

The base plate should be mounted on a flat on the boat deck that is at least as large as the base plate. It is important that the base plate is fully supported. Hard epoxy filler can be used if the buildup is not thicker than about 1/4". Thicker buildups should be done using fiberglass and resin laminations. G10 can also be shaped and glued to the deck with epoxy . The base plates are preferably bolted through the deck although long screws or lags can be used if the deck has sufficient thickness. Short screws or screws used in holes that are not close fitting and free from rot should not be used. Many manufacturers used

plywood under the mast steps and through the years water may have penetrated the wood causing rot. This should be checked and repaired. The screws must grip very well if they are to be used instead of bolts.

After the mast is stepped, the two hinge plates should be in full contact with the alignment pin fully engaged with the top plate. If this is not the case, the mast step under the bottom ss plate should be leveled. The alternative is to trim an angle in the butt of the mast extrusion. Many mast butts are not cut at 90 degrees in order to compensate for deck angle. If this is the case on your mast, this angle should be maintained and the plug or casting should be attached at that angle. In other words, if the mast is sitting down properly on the step before the hinging process is started, do not trim the base of the mast at a different angle. If you build up the boat under the step, be sure not to change the angle. If you do, the mast may need to be trimmed to accommodate the new mast/step angle.

There are a number of methods of raising the mast with a hinge base. Some use A frames, others step by hand and I like to use a gin pole set up. I believe that the gin pole method is the safest and fastest method to step a mast. The method employs a dedicated gin pole (some people use their spinnaker pole) which attaches to the mast and has a couple of lines that go from the deck to its tip, athwartships to support it side to side. A dead ended halyard goes over the tip of the gin pole an attaches to either a block and tackle attached to the bow or to the trailer winch in the case of a trailer boat. The mast needs a sideways support line from each side of the boat go keep it from falling sideways during the lift. These support lines or wires should attach to the boat at about the same vertical height as the hinge pin so that their lengths remain the same over most of the lift.

To lift the mast, usually the upper shrouds are not attached since they do not have enough range to go through the arc of the lift. The backstay should be attached and the aft lowers (if the boat has them) should be attached along with the gin pole guides lines and mast lifting wires. The halyard that is over the gin pole is tensioned, after clearing all bystanders from the fall zone of the mast, and the lift begins by cranking the trailer winch or pulling on the block and tackle. The mast will come up and it is important to clear all of the shrouds as it does. Never should anyone stand or sit in the fall zone of the mast. As the mast reaches its full up postion, the upper shrouds and forward lowers can be attached and tightened, and the headstay attached and tightened. When the mast is up and the wires tensioned, the lifting gear can be removed.

Safety tips:

1. NEVER< NEVER<NEVER allow anyone to be in the fall zone of the mast when raising the mast.

2. All parts of the raising gear should be first class, fully rated hardware. No cheap hardware store clips or other parts that can bend or break. Rated screw shackles are the best to use. Galvanized is fine and less expensive than stainless. No snap hooks, use rated snapshackles or rated locking carabineers if quick release is desired.

3. Extreme care should always be used. Go slowly and stop if something does not seem right. Watch the rigging as the mast is raised to be sure that nothing has snagged or that turnbuckles are leading properly.

4. Inspect all of the raising gear before attempting to step the mast. Inspect all connections before lifting.

5. Never try to catch the mast if it starts to fall. It may seem counterintuitive to say this, but the natural reaction is to try to catch the mast. Stay out of the fall zone when lifting.

6. Attempting to step the mast in high winds or on the water when the boat is rolling due to wave action is not safe.

No one set up will work with all boats. I have outlined a method that has worked on a number of boats that I have set up. It allows for the operator to be at the bow of the boat, in the safest spot. There are other methods that use the boom for a gin pole and lift the mast from the bow. The boom must be fixed in position and not on a sliding gooseneck. This method works well and is the preferred method when a tabernacle step is used for "on the fly" mast lowering for bridges. The tabernacle system uses a custom designed mast base and requires that the bottom of the mast be modified . The standing rigging has to be modified as well so that the rigging can remain attached and relatively tight as the mast is lowered. Again, the hinge base is not designed for this type of mast lowering. The hinged mast base can, however, be reversed with the hinge forward so that the mast can be raised from the bow using the boom as a gin pole. This is not for lowering the mast on the go, but for mast stepping under controlled conditions.

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