Re-Engineering a Shrimper Mast Collar

By Rod Young, Shrimper 619 (*Topaz*), (August 2010)

I wasn't aware of it when I bought Topaz, but I now know that the tops of Shrimper masts are prone to rot. The first I knew of the problem was when, in doing winter maintenance, I noticed signs of water penetration under the varnish, by the stainless steel mast collar. I cleaned it up, re-varnished, and hoped for the best. That was a couple of seasons ago. This winter, the signs of rot were unmistakable, and I sought the advice of Thornham based yacht restorer Nick Gates about whether a repair was possible. He took a screwdriver to the wood to check the extent of the damage and I winced as half the thickness of the mast disintegrated. It was either a new mast top, or a new mast. I opted for a new mast.

Nick was familiar with the problem, and explained that, because the mast collar was secured to the mast with a stainless steel through-bolt, water could penetrate around the bolt. Unless the hole through the mast was unusually well protected when new, the eventual outcome was inevitable. His advice was to re-engineer the collar to do away with the need for a bolt. The existing collar should be cut through on each side of the bolt-holes, and flanges welded on to the four cut edges. The flanges could then be drilled for stainless steel bolts, and, instead of bolting through the mast, the collar could be clamped on.

A local steel fabricator took on the job, at a cost of around £60. As the photos show, the result looked good, and the collar clamped neatly into place. It has not budged so far, and I need not worry about my smart new mast rotting as the old one did. I recommend the solution to other Shrimper owners, preferably before rot sets in and an expensive new mast becomes necessary.

Mast Band after modification

Top view of modified mast band

Modified band fitted to mast

Technical Comment – Mast Band

By Keith Thatcher (SOA Technical Web Sec)

Rod's experiences are by no means unique. The design of the band and its method of attachment inevitably result in a gap around the mast, particularly at the upper edge (See fig. 1), so water will always find its way in.

Fig 1: Mast band from above

The area most likely to be affected is where the securing bolt passes through the mast. Both bolt and band must be allowed some clearance so that they can be fitted and removed easily and whilst the exterior of the mast under the band is usually varnished or sealed from new, this protection rarely extends into the bolt hole. Any water entering around the bolt is therefore able to penetrate the timber, with obvious consequences.

As Rod has demonstrated, one very effective way of resolving the problem is to remove the bolt and plug the hole, but this obviously requires a modification to the band. If the standard arrangement is to be retained then ideally the surface of the hole within the mast should be sealed and this can be achieved in a number of ways.

Most effective would be to over-bore the hole and glue in a sleeve, but the danger here is that enlarging the hole on a Shrimper mast risks breaking through into the internal cable duct, which could create its own problems. Almost as effective would be to seal the internal surface of the bolt hole using a resin, water-resistant glue or similar. The seal can be applied using a short length of dowel, small enough to pass along the hole, around which a rag has been wound and tied (a piece of old towelling is ideal). Apply the seal from both sides to make sure there is a good coating over the whole length. The job is rather messy and it can be difficult to see whether the whole surface has been well coated, but even coating the outer few centimetres is better than nothing as this will help keep water out of the most critical areas. Once the resin or glue has hardened check that the bolt will still pass through. It is more than likely that the hole will need to be cleaned out, particularly if using resin, so if the bolt was originally a tight fit it might be sensible to enlarge the hole slightly before starting to avoid the chance of undoing all your good work during the clean-up process.

For those not wishing to take such drastic action, or seeking ways to prevent the problem occurring in the first place, here are a few other suggestions.

1. Prevention is always better than cure, so it is a good idea to remove the mast band at regular intervals to check for any signs of damage, such as softening of the timber. Surface damage is usually repairable, especially if caught soon enough, but if in doubt,

seek professional advice. On older boats with galvanised steel fittings (i.e. prior to sail No 500), rust on the inside of the band might also indicate that water is getting trapped.

2. A galvanised band will originally have been held in place with a galvanised or zinc plated steel bolt. Even if still in good condition (and few will be after almost twenty years), it is sensible to replaced this with a stainless steel equivalent to avoid any possibility of rust in the future.

3. Whilst the band is off, check for fit on the mast. Although not specifically mentioned within the text of the Assembly Notes (See Owners Handbooks section), the mast fittings diagram contains the note, “mast band – trim mast to fit”, implying that the mast diameter as supplied is oversize and needs to be reduced to provide a snug fit for the band. How well this is done depends on the person carrying out the work, but there is likely to be some variance, even on factory built boats. Although there is no actual proof, some believe that to leave a small clearance between mast and band might actually allow water to pass right through.

4. Even if the bolt hole has not been permanently sealed (as mentioned above), it makes sense to apply some marine sealant to the mast around the bolt hole before re-fitting the band. With the band in place more sealant should be applied inside the entrance of the hole at both ends before inserting the bolt. Although not a permanent solution the sealant will prevent the worst of the water getting in and help reduce water absorption in the timber. I use an oil-based sealant and would advise against the use of silicone or dedicated marine compounds, such a Sikaflex. Although obviously these do the job and will probably last much longer than oil based products, getting the band off once these have cured could prove extremely difficult due to the tenacity of the adhesive. There is also the not inconsiderable problem of cleaning the mast and band once it has been removed. Oil based compounds come off easily with white spirit.

Whilst this list is by no means exhaustive, it is hoped that these suggestions will provide food for thought. I would welcome further ideas or solutions, particularly those with a proven track record, which can be sent to me via the contact links shown on the SOA website.