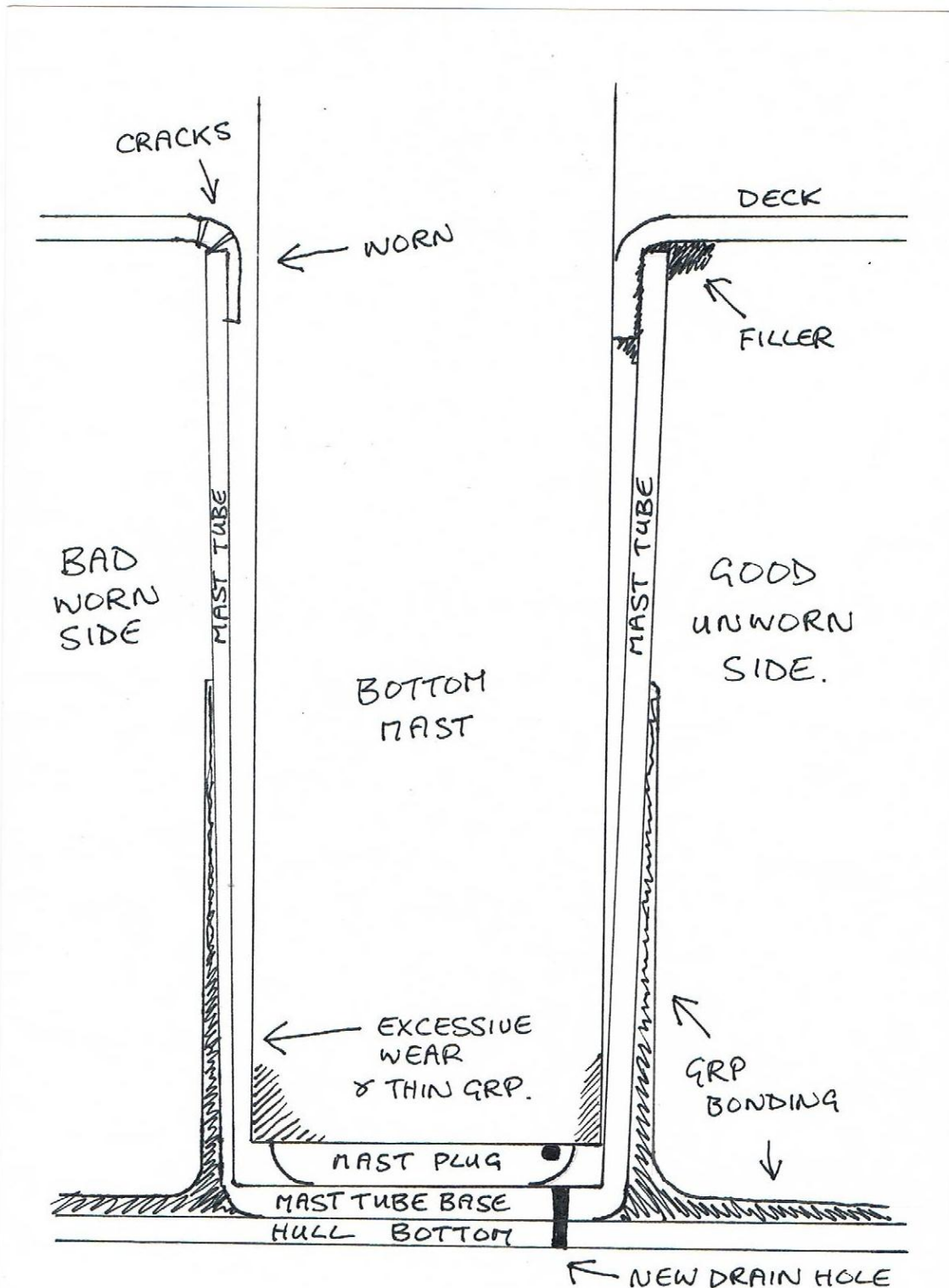


## COMET MAST HOLE July 2023 Andy Simmons.

With the vast majority of Comets being built way back in the late 80's and into the 90's we are beginning to see a few age-related problems on some of these older Comets.

The most important one of these is the mast hole at the deck and the bottom of the mast tube. The drawing shows a cross section of the mast tube in a Comet. It's actual size in width but not in height! One half shows, in theory, how it is when new, the other shows how it wears.

### How they are built



The bottom of the mast tube is bonded into the bottom of the hull with a jig when the hull is still in the mould. When the deck is bonded on to the hull, there is an overlapping join with filler at the deck hole. On later boats 450? onwards there is a flange on the top of the mast tube for extra bonding area plus the front screws of the downhaul and outhaul blocks pass into this flange as well.

## HOW IT WEARS

Depending on how clean the mast tube is kept, the mast will always wear through the anodizing at the bottom and around the deck hole area. This shouldn't cause alarm as the metal mast tube is 4mm thick. If a Comet is here for repair and even if the mast deck hole isn't damaged, I will often paint a new coat of gelcoat around the deck hole if it looks worn with the GRP showing instead of gelcoat. This sometimes needs a bit of sanding to get the mast back in! Don't forget there will always be a bit of play as the unworn part of the mast has to go through.

Even if the deck hole looks fine, it's a good idea to check the wear at the bottom of the mast tube as serious wear here can have disastrous results! Basically, the mast wears the GRP tube so thin that the tube becomes detached from the bottom of the hull and the mast tilts over maybe 10 or 20 degrees causing a lot of damage to the deck.

The hull side can also be damaged if the mast falls sideways 45° or even more.

Excessive wear in this area can be weakened by the boat blowing off the trolley with no apparent damage, but the final "break" usually happens after a slamming capsize or even a very hard gybe.

If a boat is left all winter, or more, nose down, with a gallon or two of water in the bows, this water seems to "stew" going stagnant and slowly softens and weakens the hull/mast tube bond.

If your Comet stays dry inside, then fine but it can get in around the hatch if nose down, so I would always prop the nose up to allow a bit of drain out of the drain bung.

## CHECKING MAST TUBE BOTTOM WEAR

Put bottom mast in and using a couple of thin wooden wedges, a disassembled wooden springy clothes peg is ideal, jamb them in the gap between mast and deck to take up any play. With your hand on the mast 15" above the deck, check how much the mast moves side to side and fore and aft. The movement of the mast 15" above the deck is the same as the play or wear at the bottom of the mast. Even on a new boat there has to be some play but if the mast can move more than 6mm or ¼" total side to side etc. then I might worry.

Don't forget that if the bottom 3 – 4" of the mast is worn then that will show as play as well.

The mast can also wear downwards especially if it's lost its mast plug. Eventually the mast can wear a hole right through the bottom of the hull. This can give a false reading when checking for wear as the mast has effectively worn a new tighter hole. The standard depth for the hole is about 15", so if it measures 15 ½", lift the mast up ½" when checking for wear.

## REPAIRING THE WEAR

The boat must be levelled so that the mast tube is dead vertical. Using a 2' piece of wood, say 1 x ½" with a piece of rag wrapped round the end, the bottom couple of inches of mast must be cleaned. The rag can be wet but use kitchen paper to make sure it's thoroughly dry.

To repair this, you can pour a small amount of gelcoat resin neatly down the middle of the mast tube trying not to get it on the sides. This makes a new mast base (put a bit of masking tape on the hull if you actually have a hole through).

Use a 1" "throwaway" paint brush taped to the stick to paint a thin coat a couple of inches up the sides of the tube. Ideally this renews the bottom of the mast tube taking away most of the play and delaying further wear.

Rather than paint the resin in the bottom up the sides, I would paint the sides first dipping the brush in the jar of gelcoat outside the tube and painting it on like painting rather thick gloss paint. Then pour the rest in but don't let it touch the sides at the bottom.

Sometimes too much resin is put on the sides, or the resin sets too fast, and the bumps don't flow out. The day after, check the resin has set hard and see if the mast goes fully in. It should be obvious when it's properly in but if it's tight to twist and not fully down it needs to be sanded in there. We have and can supply pieces of tube with sandpaper on or a "cutter tube" to sort this.

Another ideal would be to fit a 6" hatch in the foredeck, clean the inside around the bottom of the mast tube and surrounding hull and add an extra layer of GRP on the joint area. This isn't as easy as it sounds but can be done. I could make up a "kit" with all the materials, even protective gloves.

## REPAIRING DECK MAST HOLE

When the mast tube breaks away from the hull, the damage around the deck hole is usually so large that after grinding back to sound GRP on the deck the hole exposed is big enough to get your arm in with an angle grinder to clean the inside of the hull before a new mast tube back in. Great care needs to be taken on getting the position and rake spot on.

I used to avoid putting an inspection hatch in the deck but nowadays a white one put on the foredeck forward of the mast hole could help a repair. With the boat the right way up new GRP is added to the new mast tube and hull join, and with the boat upside down, new GRP could be put around the deck and mast tube join.

## ANOTHER HOLE IN A COMET

In the past, Comets have taken their masts down when derigged. Invariably there is usually a bit of water in the tube, and I always recommend you wash it out with a hose now and then. Nowadays with the introduction of Zippers on standard sails and the Xtras more masts are being left up, some all year round. Water from rain running down the mast and whilst sailing never goes away. Weighing up the pros and cons I have started drilling a 4mm drain hole in the bottom of the boat dead central or alongside the keelband on older boats exactly 2664mm from the transom with a tape measure end hooked on the transom and the tape running

alongside the keelband or down the centre. Pieces of masking tape can hold it in position. The hole will emerge towards the side of the mast base when viewed down the hole. An off-centre hole helps the mast hole drain away from the bottom mast plug. When sailing, only a bit of clean water is in there lubricating the mast swivel. As soon as the boat is out of the water it drains away and stays dry. We are also drilling a 4mm hole in the side of the mast bottom plug just below the end of the tube to drain water in from rain and capsizes. RS Aero's have a similar hole in their hulls.

I apologize if this article has caused any panic but like me and you the majority of the fleet are getting on a bit and cracks are starting to appear!

If you're worried, feel free to send me some sharp photos of your mast hole but even if it looks OK, I would check your wear in the bottom of your wear in the bottom of your mast tube using your bottom mast as described. Or even get me to have a look if you see me at your club.