

Sticking Centreplates & Ballast Replacement

By Steve Kane, Shrimper *Percy* (264), June 2011

A few thoughts on sticking centreplates resulting from expanding ballast to add to the excellent article by Robin Whittle (*Bumble Chugger*, 124).

We bought *Percy* (264) at the tail end of last year (2010). She had been sitting on a trailer, unused, for about 3 years. During our pre-purchase inspection I noticed that there were some rust streaks on the centreplate case from the centreplate pivot bolt and that a slight crack had opened on the port side up along the joint between the ballast floor and the case. Peering at this crack it was clear that it was a bit rusty, but nevertheless we bought the boat as nothing looked too bad. It is worth mentioning that, as the boat was on a launching trolley, it was impossible to lower the plate more than a few inches, but it was quite free over this limited range.

Percy was transported to Poole YC where we set to work cleaning and polishing. In mid April, after all the work had been done and the boat had been lifted off the trolley and onto blocks for antifouling, we found that the centreplate would only drop about 6 inches before jamming. Inspecting beneath the floorboards revealed that a 5mm wide crack had opened up along the starboard side between the centreboard case and the wooden batten supporting the inboard side of the floorboard. This was additional to the crack that we knew about on the port side.

Viewing the centreboard case from the cockpit a distinct curve could be seen in the starboard side and, lying under the boat looking up into the slot, with the aid of a torch, it was possible to see a bulge in the case that was the cause of the sticking plate. The forward edge of the plate is cut at an angle and so leaves a length of slot unfilled at the forward end when fully raised. In *Percy* the bulge was located forward of the raised centreplate, but would only allow the plate to drop a few inches before the front edge caught the distorted case.

I feel quite sure that the starboard side was not a problem when we looked at the boat, and I wonder if the ballast, being under pressure, "gave" when the boat was being moved? Whatever the cause, the fact was, it had to be repaired.

After speaking with the ever helpful Keith Thatcher (also a member of Poole YC), I read the excellent article by Robin Whittle posted on the SOA Website then rang Robin and spoke with him about his experience. For anyone contemplating a similar repair, Robin's article is well worth reading. The photos are extremely helpful as they show what to expect as you progress down towards the hull and it was with those images in mind that I found myself digging into *Percy's* floor!

To add my thoughts to Robin's, I found that, for me, the best way of tackling the job was;

Equipment

- Goggles, gloves and ear defenders (of some sort).
- A small angle grinder with a thin metal cutting disc.
- An SDS drill and with drill bits & chisels.
- A long cold steel chisel and club hammer.

- Dustpan and brush, a stiff bristle small brush or paintbrush, and a strong builders bucket.
- Something soft to kneel on.

I marked off the floor approx 5 inches out from and parallel to the case, coming well back behind any distortion in the case and rusty gap in the floor, and cut around the edges of the marked out area with the angle grinder & disc. I only used the angle grinder to cut through the top layer, which in *Percy* is a thin grey Flow Coat about 3 or 4 mm thick, and did not attempt to use it to cut into the ballast. The angle grinder provided a neat edge to the hole, after which it was fairly easy to break up the top finish layer with the small cold chisel. With the Flow Coat removed I roughly drilled through the 2" x 1" floor support batten and broke it off where the excavation was to end.

From this point on I used the SDS drill fitted with chisels to gently break up and ease up the ballast. At first you think it's never going to work, but eventually you get the hang of it. I soon found that hard whacks and lots of pressure on the drill do not work - best results are obtained by gently attacking at an angle to break away the ballast in small pieces, after which you need to sweep it up and chuck it unto the bucket. The photos in Robin's article let you know what you're aiming at. To my surprise it was easy to identify when I had reached the fibreglass of the hull and, once there, to follow the line of the hull down as far as you feel you want to go. With the marked out section of ballast removed you need to weigh the bucket (with ballast) and phone your local scrap dealer.

In my case I had dug out a total of 25kg of ballast (I also cut out a smaller section of the port side to avoid any problems in the future) and this I intended to replace with lead. Scrap Dealers tend not to get too much lead piping these days, but mine was offering lead sheet flashing, which seemed to be new, for £2 per kg, a total cost of £50. The first thing that struck me was how small a 25kg Roll of lead actually is when compared to the builders bucket of ballast I had dug out!

The 2 or 3 mm thick lead flashing could be very quickly and easily cut with garden hedge trimming shears and it was easy to zigzag fold quite long pieces and just hammer them flat into lead ingots about 2" wide. Lead pipe would probably flatten in the same way and might be even easier to work with as it could be cut it to length with a cold chisel. The ingots were laid into the trenches port and starboard making sure that everything remained below the original ballast floor line. This would allow space to apply new flowcoat.

With all the lead fitted it was time to add the resin. As a further assurance that the case was back in its proper position, I took a flat bolster chisel and tapped it up into the slot between the lowered plate and the case side in the area where the bulge had been. This I left in place whilst the resin was being poured and until it hardened. I'm not convinced it was really necessary, but it was easy to do and gave me peace of mind that I had taken all precautions against any movement whilst the resin was setting. I cut a couple of replacement floor support battens, pieces of 2" x 1" PAR softwood with the long edge vertical as per the originals, and these were laid in place as they are partly buried in the resin.

I bought 5 litres (about 5kg) of polyester resin, which comes with regular catalyst. I had concerns about pouring this quantity in one go, but checked with the supplier (in my case Blue Gee at Poole), and he assured me that there would be no problem as long as I kept to the recommended catalyst ratio.

I initially mixed 3 litres of resin and poured some of it into the trenches. I then added the lead ingots and the rest of the resin. This wasn't quite enough, so I mixed up a second batch of resin and poured this on top to bring it up to the correct floor level. Again Blue Gee had assured me that it would not be a problem if I had to do this. I then sat and waited. For a worryingly long time not much seemed to happen, but eventually, after perhaps 40 minutes, it was clear that the resin was starting to set and by next morning it was as hard as rock.

The finishing touch is provided by a coat of Flow Coat, which is the smooth grey polyester finish that you see on the floor and the centreplate case. This can also be purchased from your fibreglass supplier. Once the resin has fully cured you mix up the flow coat (again with catalyst) and paint liberally on the floor, wooden batten and centreplate case to make the whole repair look as good as new again.

With everything dismantled I also checked and repaired the area of the centreplate case at the pivot bolt hole as it seems likely that water leaking in here was the cause of much of the problem. In my case the hole had worn oval where I think the plate had been bucking back as it passed or was forced past the growing bulge. With the damage repaired the bolt hole was sealed by fitting a rubber pad under the steel washers and so far this seems to be working. My next plan is to check the forward anchor well drains as I'm concerned that water might be getting in behind the forward bulkhead and attacking the ballast in the area just forward of the centreplate case.

From my experience, although messy, this is not a job to be terribly worried about. Yes, it's a pain if you find you have to do it, but it is manageable and certainly within the capabilities of the average owner. Having the right tools makes things easier and it does take time to develop the correct technique - the starboard side took me a good two days to dig out whereas the port side, although a little smaller, was done in a morning!

Finally, it's worth remembering that resin finds its own level, so make sure the boat is level before you start. As a precaution, I chocked up under the hull in the area that I was working so that I was not banging against unsupported fibreglass. I'm not sure this was really necessary but it was easy to do and made me feel more secure.

I hope these notes help anyone who might be contemplating taking a section of ballast out and my thanks again to Keith and Robin.