

Renewal of chainplates on a Hurley 22 (700)

The chainplate design for the shrouds and backstays of the Hurley 22 is basically a sound one and cheap to produce as well. The chainplates are simple bars of flat steel bolted to a backing plate of plywood. They stick up through a slot in the deck and are heavily glassed over together with the hull-to-deck joint. The area of the hull where the chainplates are attached also has an extra layer of fibreglass for reinforcement. This design however depends on a tight seal at the deck to avoid any ingress of water as the fibreglass forms a pocket from which water cannot escape.



Original chainplate assembly glassed over in a cupboard (fwd lower shroud)

After 40 years of service, my Hurley 22 (No. 903 of SCM) showed some streaks of rusty discoloration on the deck next to the chainplates. What could be seen of the steel looked perfectly fine, however I had some doubts and decided to investigate. Some of the chainplates are not easily accessible and several cupboards and insulation needed to be removed. Holes were drilled into the lower part of the fibreglass pocket and, sure enough, water poured out of the ones which showed rust on deck. The smell of it indicated that rot had already attacked the wooden backing of the chainplates.



Chainplate pocket visible next to bulkhead on the right in the galley area after removal of cupboard and insulation

After draining the water, an oscillating saw was used to cut the pockets from the hull. This was not an easy task as you need to work in the cupboard and the main bulkhead is in the way. It was obviously installed after the chainplates were in.



After removal of the chainplates (and a cupboard)

The plywood was structurally still sound, however the steel showed clearly where corrosion had set in. Just below deck level it was pitted and some material had already gone.

As the original chainplates looked a bit flimsy to my engineering eye, and guided by the books of John Vigor [1], I decided to upgrade. Steel bar of the type 1.4751 (or AISI 316Ti) with a cross section of 40x4 mm was chosen. 1.4404 (AISI 316L) would have sufficed which is a little easier to machine but that was not available at the time. The chainplates for the upper shrouds were cut to 450 mm length and the ones for the lower shrouds to 300 mm. Three holes were drilled for the bolts which are M10, another for the shroud attachment, and the upper end was rounded.

After drying, cleaning, and sanding the hull area where the old chainplates had been, new plywood blocks were glued on with thickened epoxy, and covered with peel ply to give nice rounded edges. After curing this was glassed over with an overlap of about 50 mm to the hull. I always cover any fibreglass work in peel ply afterwards because it smoothes everything out, removes excess resin, and ensures there are no sharp edges or needles afterwards. It is also very satisfying to remove!

[1] John Vigor: The Seaworthy Offshore Sailboat, International Marine, 1999, p. 34



New plywood backing plate glued in (upper shroud)



Glassed over and covered in peel ply

As I wanted to be able to inspect the chainplates in service, I installed them on top of the plywood-glass-sandwich instead of encapsulating them as in the original design. This also allows any water to run off. I also wanted to make better use of the local hull reinforcement by bolting the chainplates through the hull.

First the original slots in the deck were enlarged to accommodate the larger steel bars. Pilot holes were drilled and enlarged to 10 mm diameter. The through-holes were then sealed with epoxy, and the bolt heads were also sealed with Sikaflex 291i (installed hand-tight until cured so the sealant does not squeeze out). The same was used to seal the slot in the deck. It sticks very well to a clean surface and stays flexible so it does not work open when the hull and deck flex a little.

The new chainplates are extremely strong. The cross section is large, there are three instead of two bolts which are M10 instead of M6, and care was taken to position the holes for the shroud attachment well away from the rounded edges. The whole operation is certainly not much fun but gives great peace of mind, especially in heavy weather.

To save a lot of work, it may also be possible to install new chainplates directly on the hull. The old chainplates would be cut at deck level and sealed. The pockets inside could then be dried out by drilling a few holes, and afterwards filled with epoxy (in several stages to let the wood soak it all up). The fibreglass pocket with the wood and the remains of the old chainplate inside could then be used as a backing pad for new chainplates to be bolted through the hull from the outside. This would be plenty strong but might look a bit old fashioned.

The chainplates for the backstays remain to be upgraded, but for now they show no sign of corrosion. As a precaution, I installed two backstays instead of the original one, so there is a backup in case one chainplate should fail.



Chainplate for upped shroud installed



New chainplate sticking through the deck



Bolt heads showing the chainplate attachment.



Larger cupboard and new insulation installed after painting