

Chainplates

All S80 owners are highly recommended to regularly check the conditions of their chainplates. There has been a few cases of them cracking and eventually breaking. For the safety of your rig, check them now!



This from a West Australian S80 owner:

Speaking as a mechanical engineer of 55 years of experience with the last 35 years specialising in providing Expert reports for litigation, it is my opinion, based on the information apparent in the two photographs sent with your message, that the failure is likely to have resulted from one or more of the following likely causes:

1. The welding procedure possibly having being carried out by a welder who was not suitably qualified under Australian Standard AS 1554.
2. The weld being poorly carried out such that it did not comply with the relevant parts of AS 1554.
3. The heat-affected zones of the parent metal adjacent to the weld not being 'passivated' with appropriate reducing agents after the welding procedure.
4. The effects of 'stress cracking corrosion' in the welded joint.

5. A poorly-executed fillet weld being used to establish the joint when a properly-executed, full-penetration weld should have been used.

I would need to examine the failed parts to determine whether or not the failure resulted from 'metal fatigue' but it is my opinion that one or more of the above 5 likely causes of failure is/are the culprit.

'Metal fatigue' usually results from the stress in a ferrous material exceeding about 50% of the tensile strength of the material but not the yield strength of the material, over a particular number of cycles which can be determined by 'endurance limit' calculations. It is a much-maligned and little understood term!

It is my opinion, without having carried out any stress calculations on the weld, that had the fillet weld been properly carried out in accordance with the relevant parts of AS 1554, the joint would not have failed.

I offer these comments so that the Victorian S80 owner can ensure that the joint is repaired properly and that all other owners can examine the welds in the chainplate assemblies of their boats having regard to the above possible cause(s) of the failure shown in the photographs.

It is my opinion that all stressed welds in chain plate assemblies should be full-penetration welds which have been carried out in accordance with the appropriate parts of AS 1554.