

# Soverel 33 Keel Sump Repair

by Peter J. d'Anjou

x-Gryphon, SVM # 31, with updates 11/2000

*Early Soverel 33's were constructed as lightly as possible and over the years a pretty common problem was the keel sump needed stiffening and or repair especially if you had ever run aground. The following is an excerpt of several e-mail conversations between Ted Wise, Mark Soverel's design engineer from 1975 to 1986 and myself. The Sump diagram and additional explanation come from Dick McGilvery who repairs race boats from his US Marine Services company in Charleston SC.*

Ted Wise:

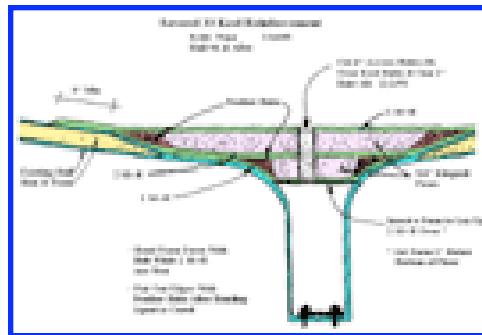
Stringers were added up front to prevent the bow area from oil-canning. I believe those were added around hull #17 or so but don't quote me on that. The sump problem "was" a problem up to about hull #30 or so when an additional laminate schedule was applied and the flexing problem was solved.

Repairing the keel sump, as you can appreciate, is somewhat of an undertaking. Naturally, the repairs are performed on the inside so accessing the sump area is where most of the work lies. Without being a part of a repair but have heard of how some have been done, the first procedure is to level the boat athwartships and relieve the weight of the keel sitting on the ground. In other words the keel should be hanging from the boat in its natural state rather than being shoved into the boat. Distribute the pads liberally so you don't put dimples in the hull. Next is to relax the rig tension on the shrouds and back stay. Then, remove the flooring around the sump up to the edge of the settees. This is done using a diamond wheel cutter around the perimeter and carefully prying up the floor panel away from the bonding agent glueing it to the hull. The bonding agent used was micro-balloons and should crack away fairly easily. Next is to remove the foam sandwich cover over the sump itself by either using a diamond wheel or jigsaw which ever's easier. After all is removed all rough areas should be ground smooth in preparation for new glasswork. Obviously, any additional laminates will strengthen the sump so choosing which type of glass is fairly wide open. One approach I know of is the placing of two layers of unidirectional S-glass perpendicular to the radius from approx. halfway between the settee's to the bottom of the sump. That is followed by two layers of biaxial E-glass covering from the edge of the settee's again to the bottom of the sump. I can't recall if the aft part of the mast step extends down into the sump all the way to the bottom. If it doesn't, fabricating a 1/4" thick piece of solid fiberglass as a gusset and laminated in place under the mast step will further strengthen the sump considerably. Finishing the job requires cleaning up any burs, re-laminating the sump cover in place and re-bonding the floor panel to the hull with liberally wetted-out 1-1/2 oz. mat. The sump cover is needed to prevent the sump walls from coming together at the radius. Cosmetic working of gelcoat finishes off the cut mark.

The modification to the laminate schedule during production consisted of, I believe, two layers of S-glass around the forward third of the sump and an additional two layers of biaxial E-glass around the entire sump on top of what was already in the hull lamination. I haven't heard of any further keel sump problems since that change was implemented.

As a footnote to what I wrote you yesterday regarding keel sump repair, obviously take care when cutting the perimeter of the floor panel with the diamond cutter. Make sure the cut doesn't go too deep through the floor panel itself otherwise you'll risk cutting into the inner hull laminate. The other note was, depending on how severe the keel movement is, most of the flexing can be solved from behind the mast step. If the movement is fairly excessive, it may necessitate opening up the floor in front of the mast step as well. As I recall, the sump extends just a little forward of the mast step but not by much. However, that area takes most of the abuse especially when running aground. Check for cracking around the radius on the outside of the hull in and around the forward portion of the sump.

One particular incident I recall while in Hamlet was Tartan's first production 33 coming off the line was destined to their test tank for evaluation. With the boat fully rigged and floating, "their" engineers wanted to see how the boat would hold up when heeled 90 degrees, especially the keel sump. They had their doubts. It was quite a sight to see the boat heeled completely on her side and be able to "walk" around it and on it! The keel was completely out of the water and, yes, the sump was as solid as a rock, much to their amazement!



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