SILHOUETTE **MAKE & MEND** Sheets
No.2 **RUDDER STOCKS & TUBES**

Editor: Ian Rodger

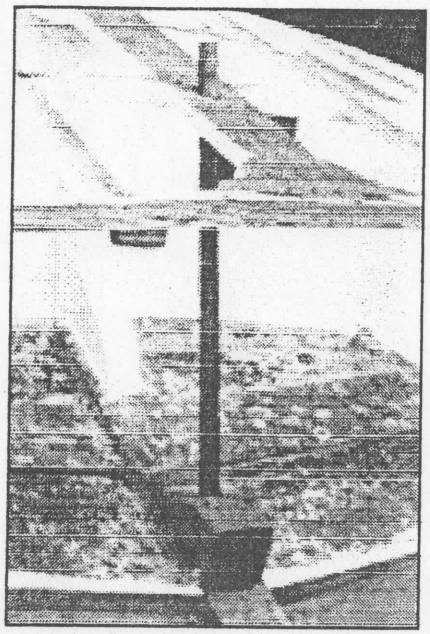
The rudder stock & tube

In the marine ply, and in some grp Mk II boats the rudder tube is threaded at its lower end, and crudely screwed tight into the wooden block attached to the hog plank, although the drawings show a flange and sealing gasket at the junction with the hog plank. There is no bushing for the rudder stock at its lower exit from the tube, and the assembly is therefore vulnerable to upward jolting which can easily occur on a drying mooring, or if the boat is suddenly set back onto the rudder blade.

If the boat has been wintered outside with any water in the aft locker, this may have frozen and expanded, damaging the stock and tube assembly in the process. Consequently, more water will get in next season.

It is very common for the rudder stock to corrode and waste away at its bearing points, just inside the tube at both ends. Sometimes you can get away with building up the areas with weld, but more often it is necessary to replace the whole length, and to re make the rudder hangings at the same time. Removal of the stock and/or the tube can be difficult if it is seized. The only way may be to saw through both in the centre and pull the bits out from above and below.

If the rudder tube has become seized against the stock, the whole



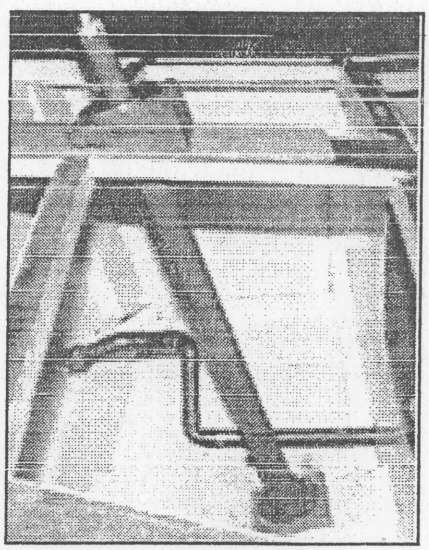
assembly will have turned in the lower block, working the tube loose and allowing water in. The block will very likely have become rotten and should be replaced. GRP MkII's have a fibreglass boss moulded on the outside of the hull to accept the lower end of the rudder tube, in place of the wooden block on the marine ply boats.

A new rudder tube can be made from about a 30" length of 1.25" O.D., 1" bore steel tube. A brass or nylon bush should be fitted inside the upper end to suit the diameter of the stock (usually 0.75") though the top end of the stock usually bears against the brass plate let into the top of the tiller block.

A more satisfactory method of fixing the upper and lower ends of the rudder tube is to fit flanges to top and bottom as shown on the right.

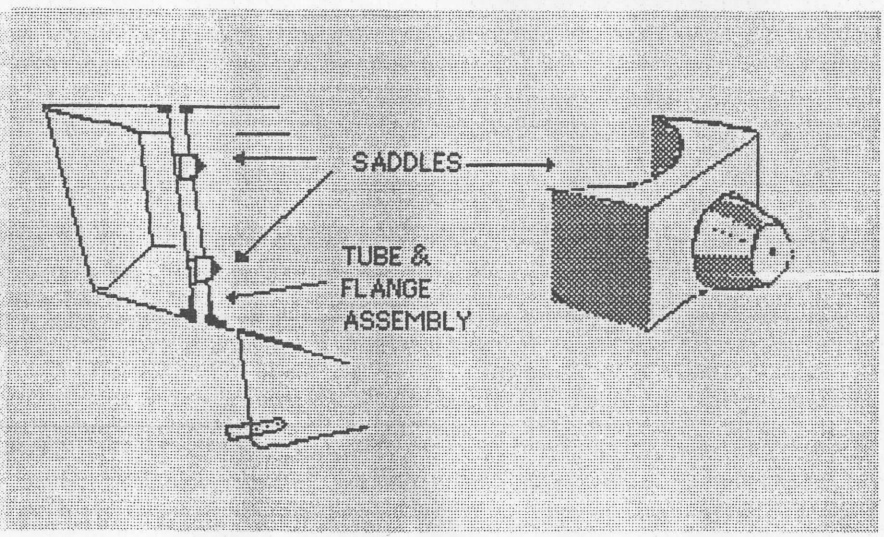
Welding both flanges on may make it difficult to insert the new tube - it has to pass through the small hole in the deck, so it may be better to weld one flange on and screw the other. The flanged tube arrangement can be applied to both ply and g.r.p. hulls.

To prevent any subsequent rusting or seizing up it is a good idea to fit a couple of grease nipples (facing forwards) on to the outside of the rudder tube as in the drawing. If shaped saddle blocks are welded on first, they can be drilled through, and then tapped to accept standard nipples.



Sealing tip

Where a watertight joint is required between components, you can use a gasket made from 2 or 3 inch wide 'Seelastik' bandage- - made of hessian impregnated with sticky linseed putty. Trap a layer or two between parts before bolting up and it will outlast the boat. Also useful for fixing bilge & ballast keels.



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Rebuilding the Tiller assembly

The feel of the tiller is probably the most important factor in giving us information about thebehaviour of the boat. If its movement is not sweet and precise, and its connections with the rudder blade not tight, we are less able to gauge the the more subtle adjustments needed in response to wind changes and so on. Consequently, if it is not in the best working order, it can be the beginning of a whole chain of gripes and frustration with the boat.

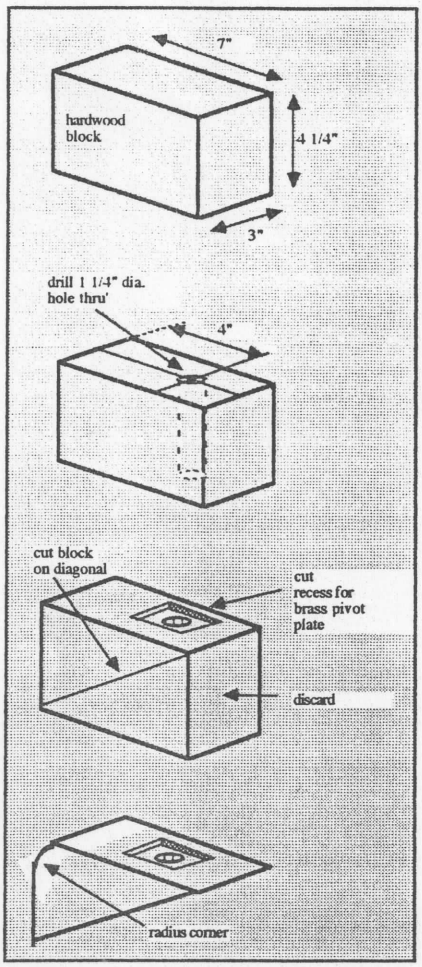
The upper assembly of the rudder tube and tiller tends to get just as much wear as the bottom end, and can be the cause of much frustration. The bearings are pretty crudely engineered, and when they get worn, result in a lot of 'slop' in the tiller movement.

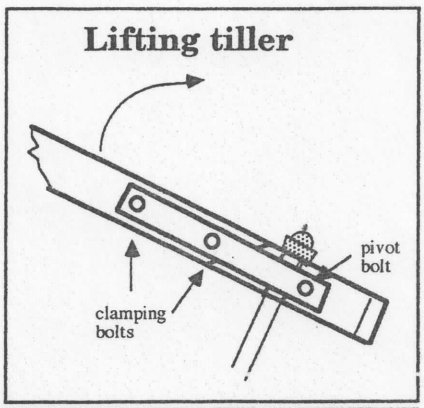
Firstly, the triangular hardwood block which houses the top end of the rudder tube is likely to have weathered and cracked over the years, and will look a mess. The brass plate let into the top face of this -forming the rudder stem bearing may be loose, and the hole will almost certainly have worn oversize. Similarly, the brass plate with the square hole fixed to the underside of the tiller will also be worn, allowing play against the squared shank of the rudder stock.

It is best to cure all these problems at once, starting with the hardwood block. The original is likely to be fixed to the deck by one screw from above (found beneath the pivot plate) and two screws from underneath the deck at the other end. A replacement block is fairly easily made as shown in the drawings, the awkward bit being drilling a hole to allow the stem tube to pass through at the right angle This can more easily be achieved if the hole is drilled at right angles through the block before it is cut into its triangular shape. If the dimensions are followed, or taken from your original block, there should be no difficulty. After sawing the diagonal, the discarded half may be used to fashion a replacement block to locate the lower end of the rudder tube against the hog plank.

The hole needs to be 1 1/4" diameter to fit snugly over the rudder tube but check that your boat's dimensions are the same. If you make a new pivot plate, it may be worth making it thicker than the original - say 1/ 4" so as to give a greater bearing surface against the rudder stock. The recess for the plate is easily gauged out so that the plate fits flush with the surface.

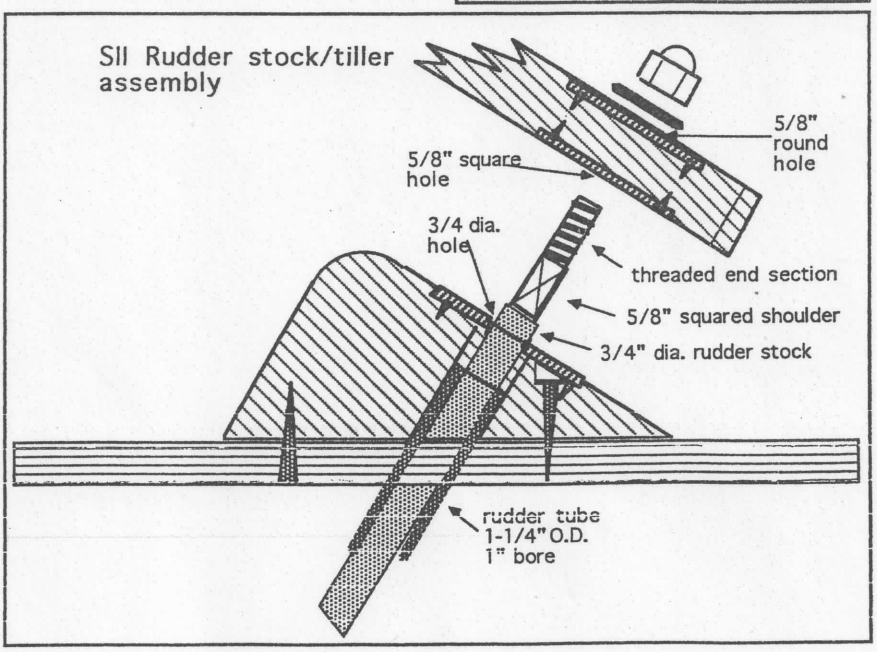
The cheek plates on the tiller are treated similarly. The lower one needs a 5/8" square hole (or whatever size will fit closely over the squared stock), and the top plate is drilled 5/8" round to take the threaded part. When the washer and dome nut are tightened down, the tiller should seat firmly against the shoulder at the bottom of the square section. If this has become worn, it may need filing true again, or the tiller will tend to waggle vertically, even with the nut tight Finally, it is worth converting the tiller to a lifting type by simply cutting it at an angle and fitting cheek plates as shown below, allowing it to pivot upwards immedietly behind the domed nut. This arrangement allows much easier helming, particularly if you are standing up in the cockpit.





What materials?

Rudder stocks and tubes on the MkII & MkIII are typically made from thick walled steam piping and most of these have lasted upwards of 30 years, so if you replace them there is no advantage in using any more exotic materials such as stain - less steel.



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