Vertically Lifting Rudder fitted to A89 Colchide

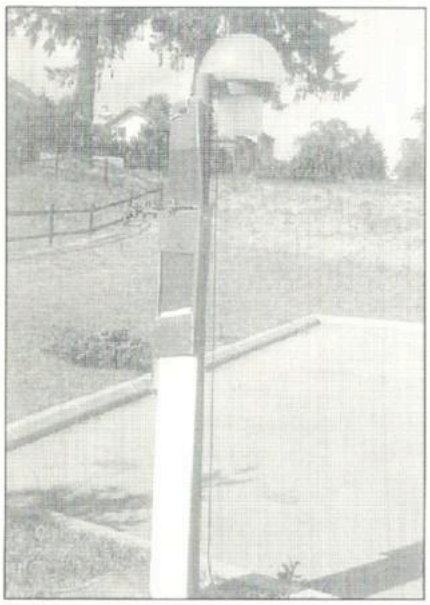
See drawings and photographs on following pages. All measurements are in millimetres. Rudder stock in stainless steel 316, or mild steel galvanised. The pieces are pre-cut and welded, spotting first and continuous to finish. Thick black lines in the drawings are the welds. The weight is 8 kgs stock, 12 kgs wood rudder, total 20 kgs. Fairey original is 30 kgs. No alterations to transom, skeg, top and bottom pintles, or steering wires. Cushion plates 1/2 mm duraluminium, plastozote 5 mm, BX plastics.

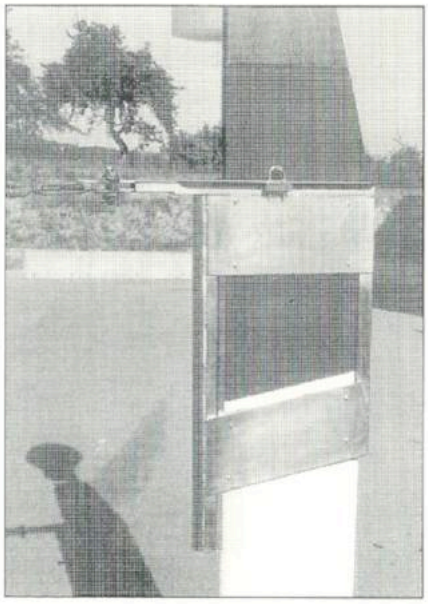
Observations

- Balance not included in designs. Skenes "Elements of Yacht Design" page 152, states not necessary for sailing boats. The performance is as C W Bishop describes in Journal 87/88 to which I can add that no excessive weight is felt on going ahead or astern; no balance, therefore less drag.
- When motoring rudder raised to propellor level. If rudder damaged a jury can be rigged using back rest boards from cockpit seats.
- Emergency tiller - gaff or length of wood lashed to rudder top easily steers boat.

Perhaps this idea may be a contributiuon to broken or ageing rudders and will keep the Atalantas going a title longer. But I will add that I also agree with Comdr Lovelock's and David Walworth's twin rudder solutions which have additional advantages. In this case I was influenced by the long distance the boat is wintered from home and I did not want to do any alterations to the hull as a consequence of this problem.

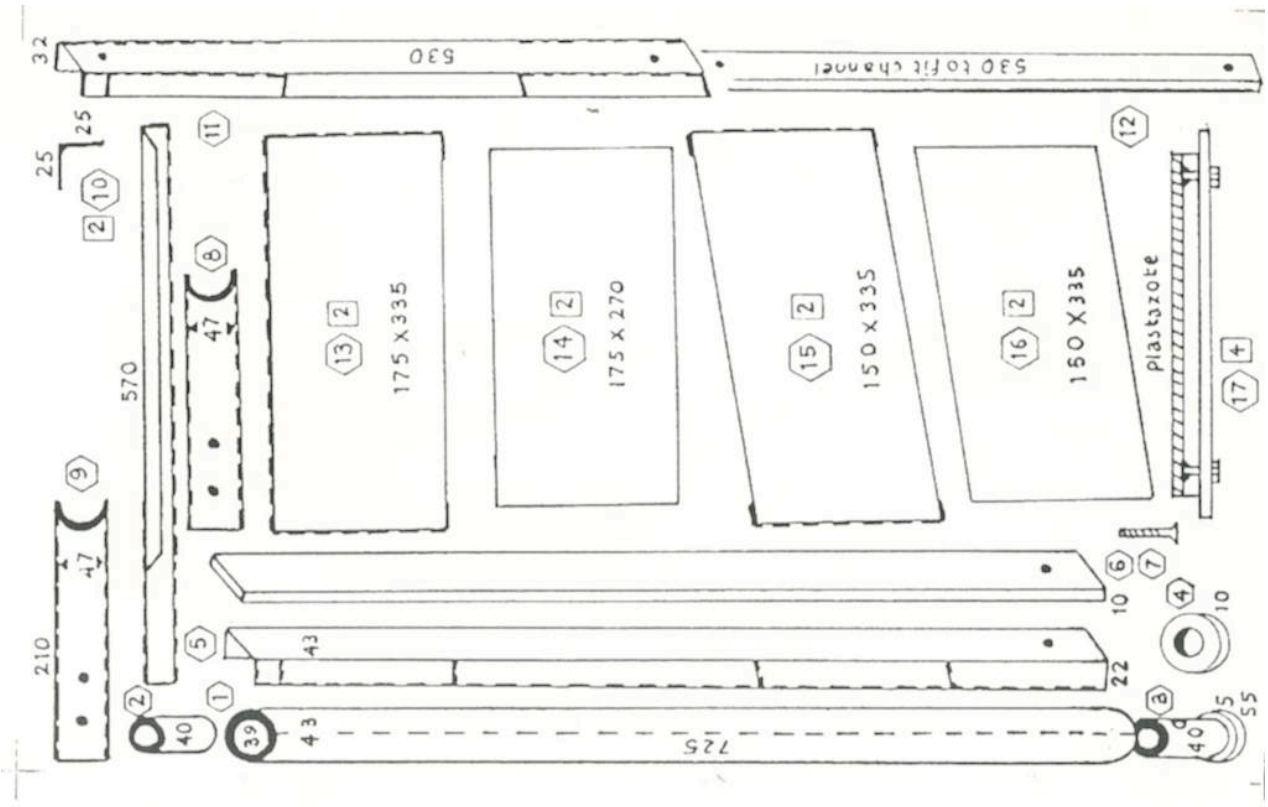
My acknowledgements to Donovan ex A 184 (MDL) for plastozote. Comdr D G Lovelock RN, Twin Rudders A 102, Journal 92/93. David Walworth A 146 Twin Rudders. C W Bishop A24 Sliding Vertical Rudder 87/88 Journal. The late Michael Joughin A87, Journal 92/93. Plus many other owners who have contributed to the rudder discussion.





Numbers refer to parts in the diagram overleaf.

1) SS tube
2) Top Nylon bush, flush with top of tube; tight fit, gap at top 3/4 mm.
3) Lower bush, the bearing area 5 mm thick extends outside tube diameter, hole for retaining screw.
4) Nylon bearing ring for lower bush 10-11 mm thick, also determines that tiller arm is clear of up/down rollers.
5) "U" channel same length as tube to which it is welded down centre lines.
6) Iroko wood spacer to fit outside of channel held in position at bottom by a 5 mm screw c/s. threaded into tube. This prevents rudder from touching heel of skeg.
7) Screw of spacer also penetrates lower bush to prevent it turning.
8) "Tiller arm lower strengthening plate" (5 mm) welded to top of tube and tiller arms sides.
9) "Tiller arm top strengthening plate", 2 holes drilled to take yoke, outer one new position, inner Fairey position.
10) Two 25 mm 'L' angle tiller arms, one side of each cutaway on cabin side to reduce arm width and pass the entry port; cut is angle 40 degrees.
11) After channel same as 5 but sides 30mm.
12) Iroko spacer, secured by 2 c/s screws and nuts, top and bottom.
13) Top side plates 2 mm thick, drilled 4 holes in corner to carry cushion plates.
14) Top cushion plate, fixed inside 13, drilled 4 corner holes to register with 113 covered in plastozote. The front ends butt up to 6 spacer to avoid 2nd screw in this piece.
15) Lower side plates, cut to same line as underwater of hull, reduces stock submerged area.
16) Lower cushion plates as 14. Cushion plates hold rudder firm and give easy sliding.
17) Cushion plate construction. 5 mm plastozote 'epoxied' to duraluminium: 1/2 mm, 4 mm, screws/nuts.
18) Stock, rudder in lower position. Draught of 4 positions: 0,80 cents, 0,90 cents, 1,10, 1,31.
19) Rudder minimum width 30cms, 2 metres long, 35mm thick, contains three 15mm square ss tubes.
20) Tiller arm of rudder.
21) Rudder: two slices of 15mm ply. The centre 5mm ply. 5mtn grooves cut in outside larger ply to take tubes mentioned in 19. The sandwich is epoxy glued, no screws or nails.
22) Aerofoil form, round entry, fine exit. Treated Burgess Woodsealcr, five coats epoxy paint.
23) Tiller arm yoke, viewed in cabin. Fairey yoke plus washers. NB. Welding places.



See "An Alternative Rudder for Colchide"