

REBUILD OF A RHODES 22 RUDDER

The previous rudder head on my R22 had been rebuilt several times. The previous construction was of some sort of HDPE plastic but after many years it seem to be deteriorating and on the advice of a plastic guy I replaced it with 3/8 inch Derrilin plastic. This was supposed to be “bullet proof”, they made timing chains out of the stuff. Five years later one of the side plates cracked on the last day of the season’s sail. Determined to make a solid and long lasting rebuild, I went to my local metal salvage place and located a sheet of 5/16 inch (.313) aluminum plate. This was an aluminum alloy called 6061 which is a very hard and extremely strong and corrosion resistant alloy made with magnesium and silicon. Because of these properties it is extensively used in the aircraft industry and the sheet I had came from a local aircraft restoration and rebuilding company. Lucky me!



Using the old “cheeks” as a pattern I drew out the shape I would need to cut. Using an angle grinder and going through about a dozen metal cutoff wheels I finally got the proper shape and size.

I clamped them together after the rough shaping and then ground them so they were totally congruent. I then smoothed the edges and corners and with the grinder and then with increasingly fine emery cloth.



I then clamped the pieces together again and again using the old cheek, I marked and drilled a number of holes. The lower pintles bracket's aft-most hole I had to drill and tap for a ¼ inch 32 thread machine screw which I cut to length.

The old rudder had a couple of small hardwood spacers so the rudder could pivot on a single 5/8 inch bolt, with the top of the rudder rotating inside the two cheeks. Since I felt that the spacers allowed too much flexing in the hollow "sandwich" I instead created a "sandwich" of full sheets cut down from the solid parts of the old plastic cheeks. This eliminated the flexing and torque of the old system at the cost of increased weight. Since I don't race it was a small sacrifice.



The finished Rudder assembly does look a bit "industrial" but it seems to be very solid and should last the next 20 years without a problem.

