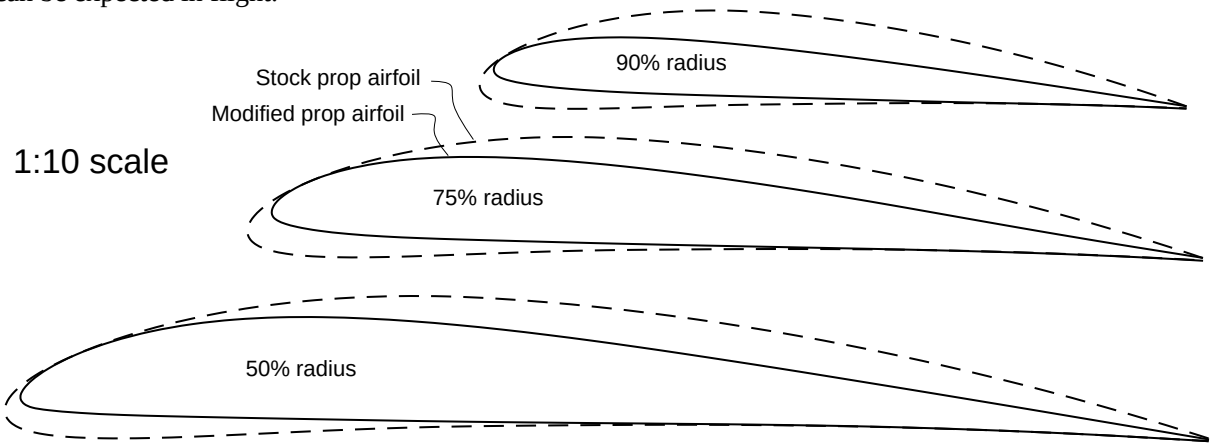
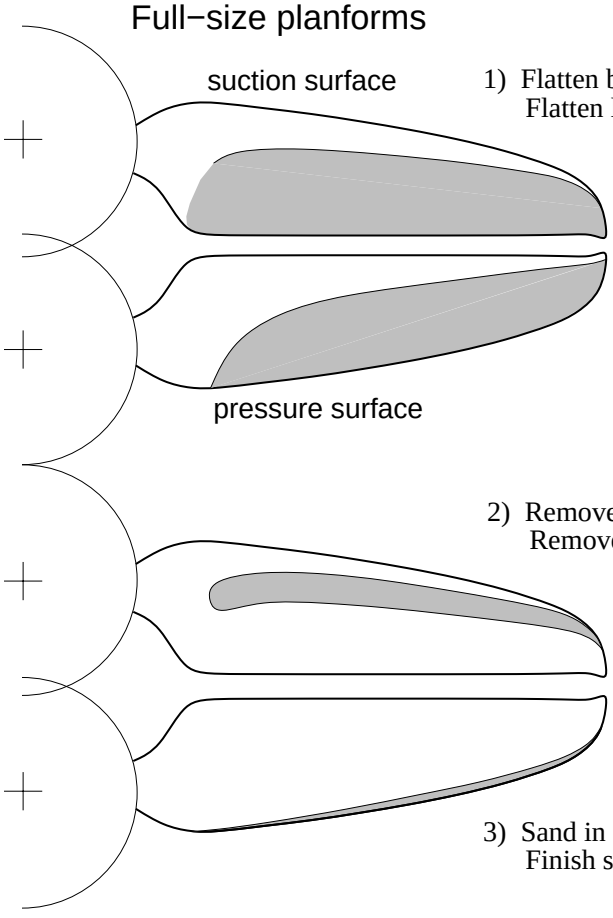
Improving the Performance of 6x3 Graupner CAM Prop

The 6x3 Graupner folding prop often used on direct−drive Speed−400 motors has rather poor airfoils, especially on the critical outer part of the blade, apparently from injection molding limitations. They have far too much thickness and too much camber for the section CL's and Reynolds numbers seen in typical operation. The modification described here cuts the outer−radii profile drag nearly in half, with minimal effect on the prop's motor−loading characteristics. A 5−10% increase in prop efficiency can be expected in flight.

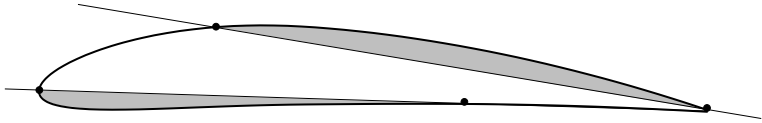


The modification is accomplished by systematically sanding, filing, or scraping "facets" in the blade in the 1,2,3 sequence. The slight remaining corners are smoothed by eye. This is not precise, but at the small Reynolds numbers involved, small thickness and camber are more important than the detailed airfoil shape. The blades are not compromised structurally.

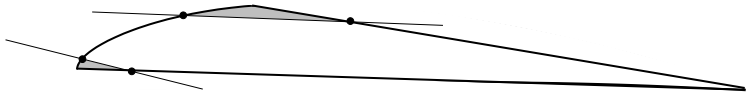
Full−size planforms



1) Flatten back upper camber from indicated high point to TE.
Flatten lower surface from LE nose point to TE..



2) Remove high point corner with facet of indicated width, parallel to bottom.
Remove sharp LE corner with facet of indicated width and angle.



3) Sand in LE facet about 0.015" high, and round off all corners.
Finish surface by fine wet sanding and using a polishing paste.

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