



Hoerner Wingtips for the Sonerai - Part 2

[Jeff Lange](#)

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This is the second installment of Jeff Lange's Hoerner wing tip conversion article for the Sonerai. This article is the first video based article on Sonerai.net. Thanks Jeff for taking the time to produce the video and for making it freely available.

Visit the following link to view the movie.

<http://www.youtube.com/watch?v=sDHynvw9Ozo>

Addendum from author...

I want to take a moment to further define a few things about the Sonerai's landing and stall speeds. Its easy to get the misconception that lowering the stall speed of a Sonerai will lower the landing speed. In actuality, it is the gear geometry that limits the landing speed. You can only "tail hook" Sonerai landings so hard before you start bending things.

When I began considering the wingtip project, I had a few concerns. The stock Sonerai wingtips add about 5 inches to the span of each wing panel, depending on how you mount and trim them. While it is possible to construct a Hoerner style wing tip that are about 6 inches, it will (in theory) add effective span to your wing. Any added span takes you into fairly uncharted territory as far as loading goes. To simply add 10" Hoerner tips to a standard wing could add as much as 18 inches of effective span to each wing. The shortest the new tips could be is based on the thickness of the wing at its thickest point. The shortest Hoerner tip that can be constructed for a Sonerai is just over 6 inches, but that is only if you have internal counterweights. If your counterweights are external, you have to add about 2 more inches to accommodate the weight or move your counterweights.

What would this added span actually do for you? It could do a few things. It reduces the stall speed, but not the landing speed. This reduction of stall speed is going to help in a controlled crash. The other issue that it might quell is the debate over whether or not the Sonerai meets LSA standards. The danger is that you now have a wing that no longer follows the published V speeds or G loading limits.

In considering the changes to my own wings, I pondered this for some time. I came to the conclusion that I was going to remove 8 inches of span from each wing panel and use 10 inch Hoerner tips. With my new tips, my geometric span is now only marginally shorter than it was, but in theory my effective span slightly exceeds the stock wing.

My mission is efficiency and speed, but not at the sacrifice of safety and reliability. In the air, I hope to have a higher cruise and top speed while maintaining the stall speed. Time and testing will tell if the new tips perform as planned.

In summary, changing our wingtips does not come without an element of danger. You are the sole person that will determine if you are willing to make changes to the design and assume the risks of doing so. I do not make any recommendation on the safety adding new tips other than responsibility is yours to decide. I chose to retain my stock wingspan.

[Jeff Lange](#)

Sonerai I - N1463J

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