

# STRETCH WINDING TENSIONED MOTORS

by Bill Henn

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Much has been written about stretch winding motors such as stretching to seven times motor length, winding in half the turns, walking in as you wind, etc. This may be fine for the relatively short, untensioned or minimum tensioned motors that are used in most endurance models, but what of the long, braided motors that many FF flyers use in scale models?

At last year's FAC Nats I switched to longer motors in all my models, at least double the prop hook to rear peg distance, braiding them sufficiently to prevent bunching and to prevent the nose block from falling out of the model. For determination of max turns, I used the charts (Sherman's?) and John Barker's estimates on turn reductions/braiding. Even with the reductions factored in, I was only getting about 85-90% of the calculated turns. Unfortunately, I did not bother to use my torque meters. Nevertheless, I blew several of the 6 x 1/8" motors that I was using in most of my models. Upon reflection, I concluded that my winding procedure was at fault, per haps because the rubber was not stretched sufficiently.

I have never actually measured the distance that I stretch my motors before beginning to wind, but it is considerably less than the 7X hook to peg distance, maybe only 5X. However, it feels very tight even at this lower point, enough to alarm my son who usually holds my models for me. Not knowing if there was a theoretical solution to my problem, I put out a call on the internet for practical advice from anyone who had actual experience winding braided motors. Mike Woodhouse from Norwich in the UK responded with the following:

"My advice would be to go with what you are comfortable with. 7X seems OK to me, but if you feel that's too much, then pull back a little bit less. Put in half the intended turns, then pace the rest in evenly. What is important for getting the motor to wind, and thus knot correctly, is to keep an even pull all the way through the wind up. Also, the model must be held very securely in a decent stooge. Your son might be a good holder but an inanimate object is better. Counters and torque meters are a *help* but not essential."