THE CASE FOR SINGLE LOOPS

by Bob Isaacks (from the May/June 2004 issue of the Flying Aces Club News)

No, this is not a treatise on beginning aerobatics or fly-fishing! It presents my case for rubber management in a rubber powered aircraft.

All gum-banders are aware that rubber motors break; the problem is that the break sometimes happens at the most inopportune time. Here is a different way to think about the problem and a suggested solution.

Assume that you are flying in a WWII combat event; you may have to fly four or five heats to come out a winner (Assuming you have a potential winning aircraft.) By rule, you cannot repair the aircraft, or change motors. To be safe, you only wind to 80% of possible potential in your motor and live with the reduced performance of the aircraft. Each time that you wind the motor, friction causes it to abrade, increasing the chance for disastrous results!

Let's assume you are utilizing a four loop motor (8 strands) with a single knot. If the motor fails, you are finished. Now consider that you make up a motor of four individual loops of rubber, each with its own knot. One loop fails, but you still have 75% of power remaining. Which is better? Out of the running, or still available to compete. I think that you know the answer. Lets look at the downside of the extra knots; first there is the aggravation of tying more knots, second, knots add extra friction to a rubber motor and third, it is a little more difficult to get a really smooth braiding job, with the extra knots to contend with. The upside? You become a better knot tier, your friends will want to know why you have all the extra knots in your motor, AND YOU CAN ELIMINATE/REDUCE THE CHANCE OF A MOTOR FAILURE DESTROYING YOUR AIRPLANE AND OR PUTTING YOU OUT OF THE RUNNING IN A FUN EVENT!

My rubber guru, Fred Pearce, is one of the foremost authorities on rubber testing, and has been the primary tester for FAI rubber for many years. He has made some interesting observations on our FAC techniques that make some sense. By braiding our motors we increase friction in a wound motor. The twisted edges of a braided motor, abrade against each other, creating more friction than a Wakefield motor where the strands simply slide against each other. Per Fred, no one has made a definitive study or comparative analysis of braided vs nonbraided motors in terms of potential for breakage due to friction differences. I just might make up a few motors and see if I can determine an answer!