RUBBER MOTOR LENGTH, ESTIMATING

By Mike Moskow

In the September 2009 issue of the Thermalier was an article by fellow Maxecuter Don Srull concerning estimating rubber motor cross sections. (Ed note, in the unbelievable likelihood you threw that issue away, it's on the PFFT website articles index under "Rubber Motor Size, Estimating")

Of similar concern is how long a motor should be and how many turns it should take. For the SAM type model, the motor should be 30-35% of the gross weight. This is not 1.3 times the empty weight, but rather 100-30, or 0.7. For a 100gm (empty) model, 100÷0.7 = 143 gm gross weight. 143gms minus 100gm gives a 43 gm motor. At 1gm per foot for 1/8" rubber, the motor would be 43 feet long. From Don's chart (reproduced below to save you from having to look it up — one of the many services of this rag!), a 143gm model needs a 2" or 16 strand motor. Then, 43"÷16 strands gives a 32" motor

A good rule of thumb for winding is 50 turns per inch of length for a 1" (8 strand) motor. For other widths, divide 50 by the square root of the width. For the 100gm empty model, the motor will take 50÷√2 = 50÷1.4 = 35.7 turns per inch. Thus, 35.7X the 32" motor would handle 1142 or about 1100 turns to reach about 80% of breaking turns. Pretty safe, yet competitive.

(Ed. Note: If you want to get more exact about the breaking turns on a given width of motor, you can make a 10" long motor of the width you want to deal with and wind it until it breaks. The number of turns at which it breaks ÷ 10 will give you the breaking turns per inch. With that information you can normally crank in 90% of the tested breaking turns without excessive fear.)

Rubber Width VS Model Weight