Choosing a Motor Size for a New Model

by Rich Weber, President of the Cleveland Free Flight Society, published in issue # 112 of Crosswinds, Russ Brown Editor

One of the great mysteries for beginners in rubber powered FF models can be choosing a motor for their new model. How Long? How wide? What color? Forget that last question. Stick with Tan.

Chris Parent gave me this "rule of thumb" formula some years ago and I have found that is works pretty well to find a good starting point. It assumes a model with a wing loading of somewhere near .5 grams per square inch.

Here's how it works: Figure all up weight of the model. This includes the weight of the motor. Most models fly happily with a motor that's around 25% of the empty weight of the model. If you have a light wing loading, you can use some of that carrying capacity to haul around more rubber. If your model is heavy, you may have to use less rubber to the keep the wing loading reasonable. Adjust accordingly.

Now, take your all-up weight and multiply it by 1.1. That will give you the total motor cross section in 100ths of an inch. Example: 28 gm. empty model x .25 = motor wgt. of 7 grams.
All up weight of 35 grams x 1.1 = 38.5 or .385". Multiply that by 16 to get a conversion factor to 16ths if you like to think in a non decimal way. In any case, you'll want a motor that is around 6.16 16ths.

A loop of 3/16" will be close. Make up a loop with that cross section that weighs around 7.5 grams and you're in business.

Now, the fudge factors. If you have a short nosed model, you'll probably have to add ballast to balance. Aim a little high to allow for the weight of the ballast. Bigger models (over 24") often fly with motors that are closer to a 1.0 factor. Peanuts usually need more more. 1.2 is marginal in some. Very clean models can get by with narrower cross sections. Draggy bipes and such may need a bit more oomph.