

TAMING THE REAR MOTOR PEG

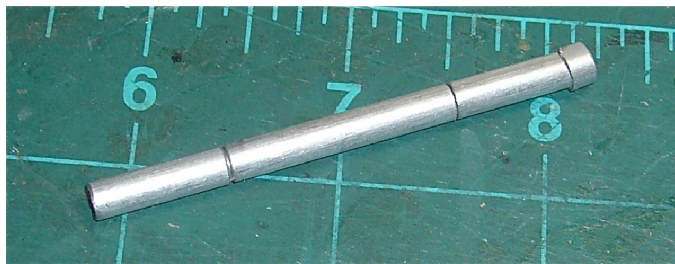
By George White

I recently received an e-mail from Les Esquilant, who lives down under in Australia, asking for clarification of the article in the January 2010 issue of this rag concerning Clive Gamble's "Revolutionary Camel." The article mentioned the concept of a "wobbly peg" or "rotating rear motor peg." Les also asked about an article written by Tom Arnold in 2005 about very long motors.

Les's questions sent me on a quest in which more learning took place than I anticipated. I found that a lot of experimentation had been taking place in the DC Maxecuters club, and that the rotating rear motor peg I'd been using for the past three or four years was not the most effective solution to the bunched-motor-in-the-tail problem. This discussion will be based on a combination of an article by Dave Stott in the November 2004 issue of Flying Models, discussions with Tom Arnold and Buzz Trabbic and the advise and generous contribution of photos by Stew Meyers to illustrate the method he uses.

There's obviously a need to prevent the rubber motor from getting into a bunch at the tail and creating what is sometimes referred to as an FAC DT, as the airplane stalls out of a perfectly good flight. Just don't expect an explanation from me of why the rotating motor peg works—that's further up the intelligence food chain than where I stand. It's obvious from the photographs in Dave Stott's article that it indeed works. As the motor unwinds it wants to squirm about and flex up and down at the rear peg. The use of a solid peg interferes with that and the motor has a gathering at the tail.

Several years ago I saw a simple drawing of a "rotating" motor peg and started using them on all my models. The photo below shows the method I use, which I've found to be somewhat successful. It consists of a solid piece of aluminum tube which will extend about 3/8" on either side of the fuselage. Then another piece of aluminum tubing which is the next larger size up—cut into three pieces. The length of the center piece is the same length as the interior width of the fuselage. The outer pieces are carefully CA'd to the solid inner tube piece, leaving the center section to rotate freely.

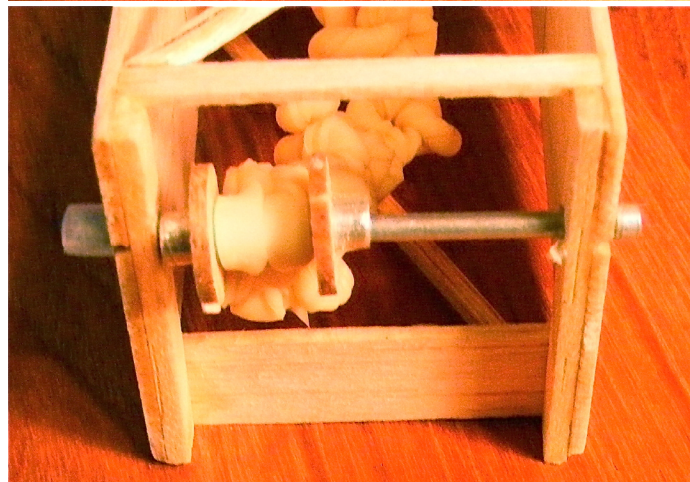
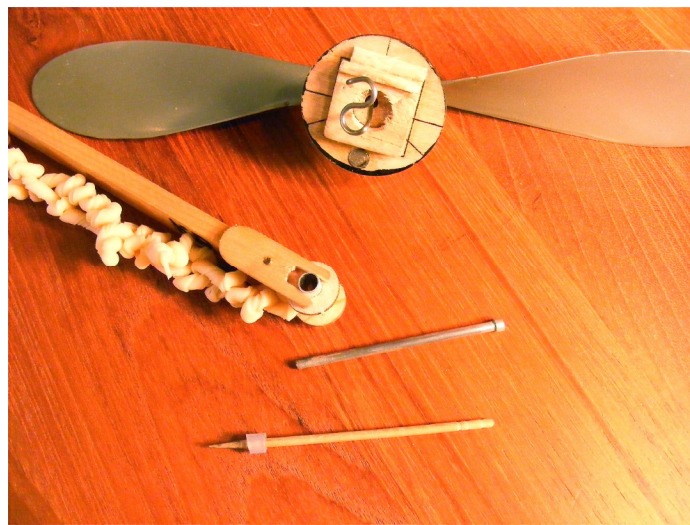


I always reinforce the motor peg holes in the fuselage with a piece of 1/64" ply which has been hardened with thin CA, so that the peg assembly fits snugly in the fuselage and won't become a sloppy fit with use. Based on advice of some older boys, I CA'd onto one end of the assembly a short ring of aluminum tubing of still the next larger size than the rest of the assembly. I've found that when inserting the motor peg

assembly into the port side of the fuselage, the added larger ring prevents it from being pulled through as the motor unwinds. It is my understanding that as a motor unwinds, it will tend to pull the motor peg from port to starboard, and without something stopping it, you could have a very bad day. A smart move would be to move the small outer ring inboard to a distance from the center section equal to the thickness of the fuselage—but I've been known to be only marginally smart.

The above description of my version of the rotating motor peg was initially going to be the total substance of this article. However, after starting to write and talking to the older boys Arnold, Trabbic and Meyers, I've learned that my method is far from optimum. So—here's the better way, with photos from Stew Meyers.

The basic components of the better scheme are shown in the next photo. The "S" shaped prop hook has been described in many articles, both in this rag and others, so only one point on that will be discussed later in this article. The rear motor peg consists of a single piece of aluminum tubing of whatever size you consider capable of taking the load. Most of us (including me) tend to make that peg larger than necessary. For most medium size scale models, 1/8" is plenty, but you be the judge.



The critical part of Stew's scheme is to cut a short piece of aluminum tubing, at least two sizes larger than the motor peg.

On that piece of tubing, two round 1/32" plywood flanges are CA'd at a distance apart about equal to the width of a couple of strands of rubber, although that isn't critical. It can be just slightly more than the width of one strand if interior space or nose block opening is restricted. That basically creates a bobbin, as can be seen in the two photos below. The short piece of tubing extends outboard of the flanges to serve as a hold point for the stuffing stick as seen above and below. This means that you may need custom-sized stuffing sticks for airplanes with different size bobbins. Stew uses the round toothpick as a tool to slip a small piece of tight fitting fuel tubing onto the portion of the starboard side of the motor peg extending outside the fuselage. He inserts the motor peg from the port side and the fuel tubing piece ensures that the peg will not come out. The very loose fitting the motor won't pull the motor tube from port to starboard against the metal ring shown, so this is an essential safety feature.



On an endurance model, a motor that's a couple of times the length of the hook-to-prop distance is considered long. However, most scale model have the glide ratio of a brick, so many scale modelers use rubber motors 4-6 times the length of the hook-to-peg distance. When those long motors get stuffed into a fuselage, it would be useful to know ahead of time what goes on inside as the plane flies through the air.

As a consequence, Stew and the Maxecuter guys have done extensive testing in the development of the combination "S" hook/motor peg bobbin concept. In the process, Stew made a

number of surprising discoveries. To do the testing, Stew built a "box" as seen in the photos at left, that replicates the interior of his 18" Bristol biplane. The purpose was to witness the action of a fully wound motor in that airplane. One of the first things he discovered was that unless the "S" shaped prop hook is carefully centered on the prop shaft there will be much more vibration and flailing of the motor against interior parts of the model and a significant loss of power. The next thing he discovered was that the degree of braiding of the motor has an influence on the size of the "knotting," and hence internal bashing which takes place with a wound motor. When asked how many turns he puts into the motor when braiding, Stew said "it depends." When pressed for an estimate, he said (using a highly technical term) that he braids the "snot" out of a motor. That means that when the motor is crowded into a small fuselage, it might just pay dividends to make a box like Stew's and do some tests on the braided motor before expecting max performance.

To further reinforce this point, Stew says he's found that different batches of (Super Sport) rubber seem to have different bunching characteristics. Geez— there's no end to the variables!!

One last point. You might wonder how difficult it is to get the rear motor peg through that bobbin inside an opaque fuselage while sitting on a hot flying field with sweat running down your nose. Stew's response is that if the fuselage is opaque, the best way to avoid frustration is to build a small hole in the bottom of the fuselage which allows you to see what you're doing. If the fuselage is translucent, holding the fuselage to the light will do it and it won't be any more difficult than any other type stuffing-stick/rubber configuration. Tom Arnold described one highly skilled modeler who always loads his motor through a hole in the bottom of the model, allowing him to see what he's doing, and then pulls it out the front with a long wire hook.

I don't know about you, but I believe I'll start redoing my motor pegs.