FARMAN 1000

By WALT MOONEY . . . Of the many Walt Mooney Peanuts to appear in RCMB, the Farman 1000 is the second one built to the Miami 9-inch-fuselage rule. Text includes much valuable flight trimming info.

• I've been known to get lucky and be able to write that a model flew off the drawing board without requiring adjustments. I've also made poor choices that would not fly well no matter how they were adjusted. The Farman 1000 is a third level of success. It would not fly as it was originally built and originally drawn; however, after a comprehensive flight test program and some modifications to the size of the horizontal and vertical tail, the model has become a very enjoyable project that flies in a smooth, stable fashion. As a consequence, after a paragraph or two about construction of what is a fairly simple model, this article will be devoted to flight testing a recalcitrant (hard to fly?) model.

Starting at the front, this model has a four-bladed propeller. The propeller is made up of two Sleek Streek plastic propellers. Note that the propellers are not notched into each other, but rather are stacked so that one is in front of the other. Cut the front of the propeller hub off of one and the back off the other. Drill a 1/16-inch hole through the prop shaft hole so they can be slipped over a short length of aluminum tubing for alignment and bond them together using Hot Stuff or equivalent.

The fuselage side frames have considerable curvature along the bottom at the front, so this area is made from 1/16 sheet. The top of the fuselage is slightly above the longerons and is constructed from 1/32 sheet.

The wing is constructed using sliced ribs. The upper caps are located just inboard of the lower caps of the ribs. They are thus doubled where they are cemented to the trailing edge member, which adds to their strength. The top of the wing between the root ribs and from the front to the rear spars is covered with 1/32 sheet to match the rest of the fuselage top.

Finally, I recommend that you build the tail surfaces to the suggested-by-flight-test tail enlargement size if you want a model that flies nicely. Why? The rest of this article will explain.

The model was built as shown in the photos. The scale tail was ridiculously small, so it was enlarged to some extent on the first try.

Bill Hannan, my son Curtiss, and I decided to have a Sunday morning flying session and the Farman 1000 was one of the models taken out for a flight test. The day was perfect . . . absolutely dead calm, dry, and about 68 degrees F.

We put about 200 turns in the rubber motor, checked the model one last time for warps, and launched it over the grass of the playing field. Good thing the grass hadn't been mowed recently! The model did a diving right turn into the ground. It appeared to be somewhat erratic, as well as out of trim, so thin sheet balsa horizontal tail extenders were added to give more tail area as well as some up elevator. This eliminated the dive, but the model did an erratic spin entry which indicated that it would benefit from some more vertical tail area.

The horizontal tail extenders were about 1/2 inch wide. The vertical tail was extended in span about an inch above the rudder. This made the model stable enough, but the added weight at the aft

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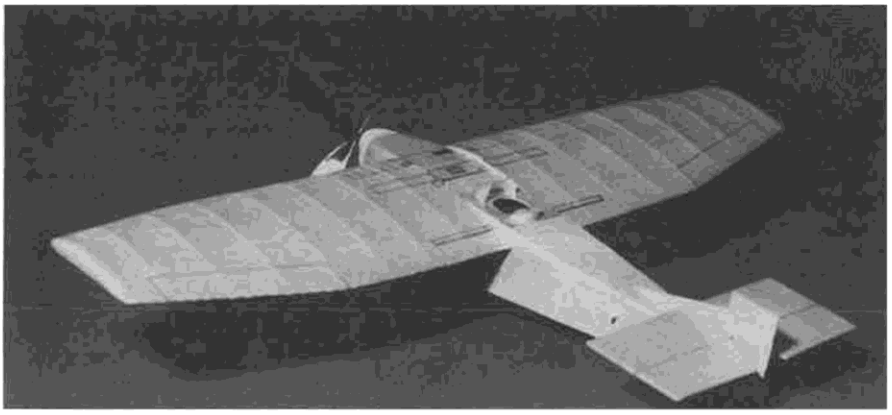
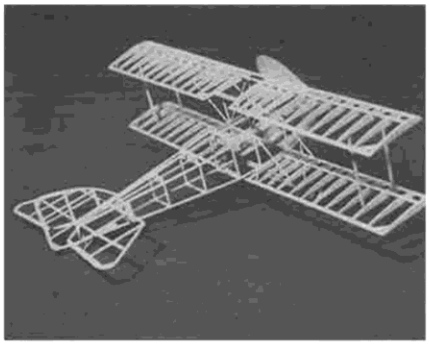


Upper photo shows the Farman as originally built with the scale size (i.e., almost nonexistant) vertical tail, which gave problems. Enlarged vertical surface (lower photo) was the answer.



Soon to be published is Walt's Hanriot H-19 Peanut. Similar to the popular DH-6.

end resulted in a stall under power and in the glide. The up elevator trim of the extenders was reduced and the model dived straight ahead, so we knew it needed some up elevator to counteract the nose-down pitching moment of the large undercambered wing.

We wound the motor to about 600 turns and got a beautiful, smooth, circling flight with the now somewhat grotesque-looking "Farman 1000+." The dihedral was just about right as built, but the tail surfaces were obviously too small.

With the modifications the model was very stable and it appeared to both Bill and I that the tail areas were now larger than necessary. The horizontal tail extenders were cut down to about 1/4 inch in width and the model still flew smoothly. It was slightly nose heavy, so enough ballast was removed to compensate for the elevator extender removed. Would it be possible to reduce the height of the vertical, which was almost 1-1/8 inches taller than the drawing? We cut off 1/4 inch, rebalanced the model and it flew very nicely, so off came another 1/4 inch. It still flew fine, although the wide, smooth left circle had changed to a straight power flight with a steep right gliding circle. A little left turn was put in the rudder and the model was back to flying smooth left circles.

Obviously the helical slipstream has a large effect on a tall vertical, resulting in a left turning moment. As the vertical was shortened this effect disappeared until the right rolling moment imparted by an unpowered four-bladed propeller (even though it was windmilling) caused the model to go into a steep right gliding spiral. A little left rudder corrected this problem.

The addition to the top of the rudder was reduced to 6/10 of an inch and the model still flew satisfactorily.

Bill joked, "How will we feel if you remove all of the modifications and the model still flies?" Well, it won't fly well at the small size shown on the plan, so if you aren't a real expert, build the tails to the largest size.

If you build your model very light and intend to only fly it indoors, the horizontal tail as originally drawn is quite probably adequate. The vertical tail is another matter. If you stick with the four-bladed propeller, it will need to be bigger than originally drawn. A two-bladed propeller will be less destabilizing and may allow a scale vertical, but I wouldn't bet on it. One nice thing about tail surfaces, they are simple and small and easy to build, so it's a small effort to make some scientific experiments.

Now, lest I get some letters commenting disparagingly on my model adjusting efforts, which happened when I said I couldn't make the Fokker Triplane Prototype model fly satisfactorily, a final statement. "I'm sure there are a batch of modelers out there who can make this model fly well with the small tail surfaces, and at least one will probably be a Junior." •