

ISERMANN DT SYSTEMS

By George White

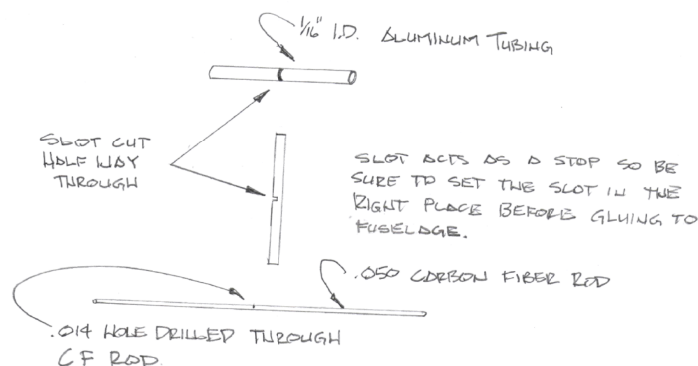
No sooner do we think we've seen every possible piece of engineering to create effective dethermalizers for our models, when sure enough, still more arise. These from Mike Isermann shows just how far our imagination can take us.

His first one is suitable for the scale perfectionist which Mike is, and allows all but the pull-down line to be invisible to the outside of the model.

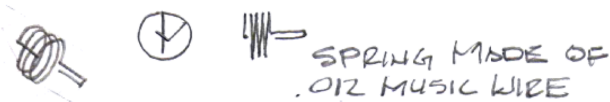
He starts with a piece of .050 carbon fiber long enough to extend through the fuselage and a significant distance inside the stab halves on each side of the fuselage. He drills a .014" hole through the carbon fiber rod at the midpoint.

He then cuts a piece of 1/16" ID aluminum tubing to the exact width of the fuselage to form a bearing for the carbon fiber rod. Where you measure the that width will of course depend upon where the stab joins the fuselage and where in the stab you want to mount the carbon fiber rod. Slightly forward of the mid-point of the stab cord is a useful location in that the airstream pressure on the stab won't create excessive resistance to the rotation of the stab into the DT mode.

As seen in Mike's diagram below, he cuts a narrow slot in the aluminum tube at the midpoint. Be careful to cut the slot only half-way through the tubing. At this point, none of this makes sense, but stick with me — it's ingenious!



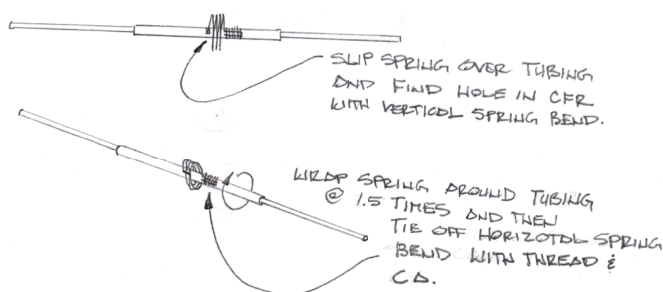
Now for the explanation — in order to create a driving force to rotate the stab (i.e. the carbon fiber rod which is glued inside the stab halves on each side, he makes a spring as shown in the next drawing.



The carbon fiber rod will be slipped into the aluminum tubing and the hole in the carbon fiber lined up with the slot in the tubing. One end of the spring will go through the slot and into the carbon fiber rod and the other end will be CA'd to the aluminum tubing as shown in the next drawing.

You then twist the spring around the aluminum tubing 1 1/2 times, wrap the tag end with thread and adhere it with CA. The

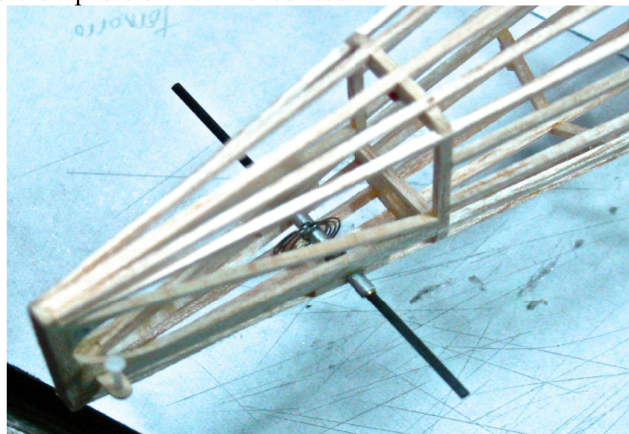
result of this is that the carbon fiber rod will rotate only 1/2 turn in the aluminum tubing, which is more than enough rotation to kick the rear of the stab up for DT purposes.



The critical decision you've got to make when you mount this system in the fuselage is that you've have to make sure the slot in the aluminum tubing is facing the correct direction and at the correct at the angle you wish to have the stab be rotated to. The slot, in effect is the stop for the stab rotation.

Now, before you give up and say you don't have a spring, here's how Mike made his. He simply used a cordless drill and a mandrel made of a piece of 1/4" aluminum tubing with a small hole drilled through both sides in one end. He then stuck the wire through the holes and carefully and slowly wound the wire until you've completed 4 full loops. Be sure the wire is wound tightly. Release the spring and bend the horizontal arm which will later be CA'd to the aluminum tubing. The other end of the spring is that part you stuck through the mandrel. Getting that part of the spring off the mandrel requires some care and a good pair of needle nose pliers. Once you have the entire spring off the mandrel, bend a very short 90° angle in the piece of the spring which had been held in the mandrel. See the illustration above. This short piece will be inserted through slot in the aluminum tube bearing and then into the carbon fiber rod. When you turn the aluminum tubing to tighten the spring and prior to attaching the long piece of spring to the aluminum tubing, you'll find that if you turn the aluminum tube in the correct direction, the small portion of the spring which is sticking into the carbon fiber rod will be held in place by the tension of the spring. There's no need to glue that part of the spring to the carbon fiber rod.

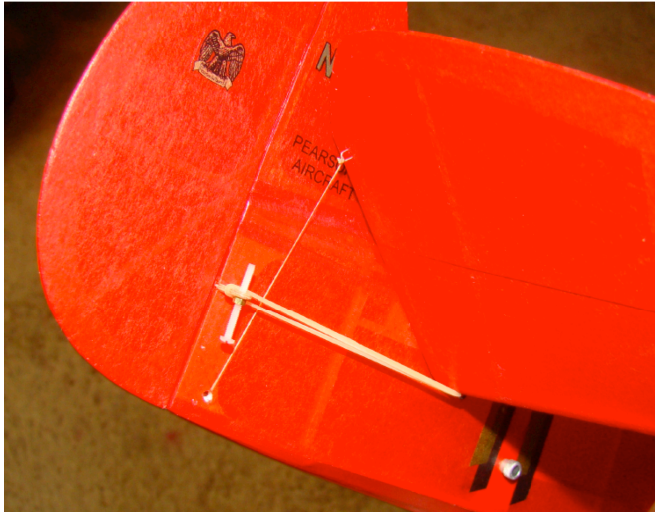
Here 's a photo of the finished result.



In discussing this with Mike, he says that he should have made the aluminum tube stop flush with the fuselage instead of

sticking out at you see in the photo.

Now that Mike has given us one of the most sophisticated DT schemes I can imagine, he then came through with one which is as simple as one could ask. Using the same aluminum tube and carbon fiber rod, he eliminated the spring. The photo below says everything without any further description.



I do have one recommendation for improving this scheme. Getting two pieces of line to exactly match each other to pull down both sides of the stab equally is extraordinarily difficult for me. I can't tell from the photo whether the pull-down lines run inside the fuselage or not, either way, I would prefer to make a single pull down line, both ends of which are attached to each half of the stab. Then, I'd attach, in approximately the center of that line, a single pull-down line using a bowline knot and run it to the timer. The bowline knot, by forming a loop, will slide as needed, allowing the two leads to the stab to self adjust.