

FlightLine

A Monthly Publication of Collins Model Aviators

June 2004

President's Corner

By Dave Shema

Wow! It's nearly June 1st already, and time for yet another meeting. If we don't get washed out, blown away, scattered by tornadoes, hailed on, or chased away by thunder and lightning – the meeting will be held at the flying field, Thursday, June 3rd, starting at about 5:15 PM, followed by flying till the sun goes down.

I've not gotten a whole lot of flying in so far this season. It seems that the weekends have pretty much just been plain terrible for this sport. Has anyone else been able to venture out on a regular basis this year?

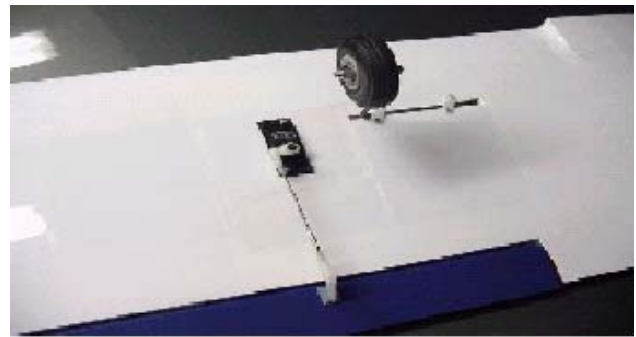
The saga of my Goldberg Tiger 2 continues. This was the kit that I won last fall at a CMA fun fly. I started building it soon after getting the kit, and when I got it ready to fly last fall, the weather turned nasty and stayed that way until earlier this Spring. On its first flight, the stabilizer split down the middle. I was able to land safely. The wood supplied in the kit was way too soft for the application, and wasn't up to the task. I rebuilt the stab, sheeted it with 1/32 balsa, and had another go at it. On the second flight, there were more nasty flutters out of a high-speed turn. I landed again, and decided that the flutters were coming from the vertical fin. Not wanting to destroy the rudder, I stripped all the MonoKote off, sheeted the fin with 1/64 ply, recovered the thing – and went out to fly. This time, I had barely gotten airborne when the plane did a couple of snap rolls on its own. Again, I landed, and this time discovered I had almost NO range with the JR R600 receiver. Went home, replaced the receiver (sent to Horizon for repair, they later call and say there is nothing wrong with it, tweaked it, and sent it back to me). Next time out, once again, nasty flutter occurs in high speed straight flight. Land, assess the situation, and decide that this time, the torque rods for the strip ailerons are just way too spongy for the job. Instead of cutting up the trailing edge, ripping out the ailerons, and re-installing new torque rods, I cut a couple of gaping holes in the bottom of the wing, and modified the wing to add two servos, connected by a Y-harness. Each servo now has its own aileron, connected by a short, stiff, pushrod. I await decent weather to see if this bird will be able to fly

without falling apart in the sky. Maybe by the meeting I will have had the chance to find out. Except, the weekend is forecast to be very windy, and wet.

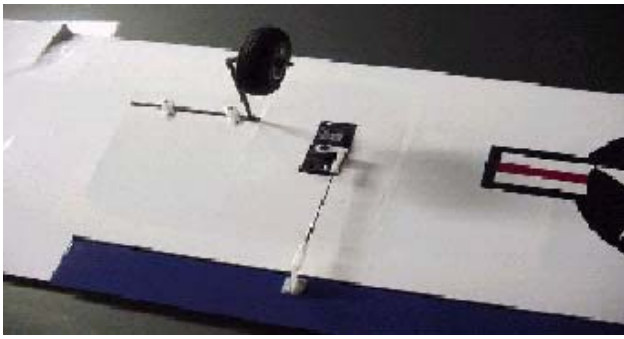
Tiger 2 Aileron Mod:



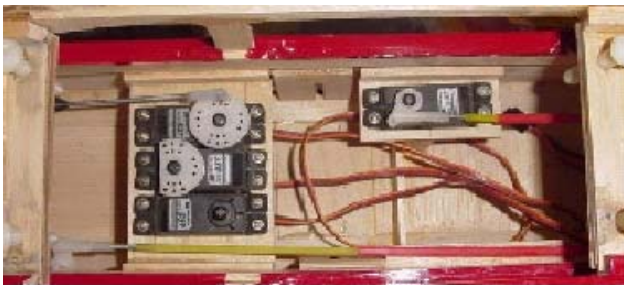
This picture shows where the original servo went. A nice, simple torque rod installation. Now, it's just a large hole in the center of the wing, and the ends of the torque rods have met their maker – well, at least my Dremel tool and cutoff wheel. The MonoKote didn't escape unscathed – if you look closely, you can see a mark where the wheel ground off part of the covering, just above the right-hand torque rod.



OK, flip the wing over, here's what you see. Looks like I'd better remember to put a few more screws in to hold that servo down before I fly!



Look at the other side of the wing, there's the other servo. The plus side of this mod is that there is now all sorts of room inside the fuselage where the servo and torque rods used to be. The down side is that this mod would have been easier to perform while building the wing, and there is a bit more current draw on the flight pack battery. Good servos aren't that expensive these days for a sport plane. If you really plan ahead, you can install smaller servos to do the job. The Y-harness is an effective way to get two servos to work from one channel. I think that in the future, as I build more airplanes, I'm going to use this kind of aileron control over using one servo and torque rods.



I've used the multiple servo treatment in the Goldberg Skylane 62 kit that I've been working on here and there over the past winter, and into this spring. Here is a peek inside the fuselage. There are four servos. In this case, there is a steerable nose-wheel. Normally, it would be connected to the same servo that controls the rudder. In this installation, that would be the servo in the middle of the group of three. I'm planning on using a pull-pull cable system on the rudder, and that, plus the placement of the servo, made connecting to the nosewheel impossible. The solution was to mount a single servo ahead of the three, and dedicate it to the nosewheel. I still have plenty of room here for the receiver (a JR R700 micro receiver), and the battery pack.

For the wing, the original aileron installation was downright bad. Two bellcranks located out in the wing at the point where the leading and trailing edge break for the typical Cessna taper. A long, bent pushrod connecting the two bellcranks, with a servo mounted on its side, in the center of the wing. I remembered from my early flying days how much I hated that installation, and how difficult it was to get the servo mounted and connected to that long



pushrod. Enter a new era, and the purchase of a couple of Hitec micro servos. The next picture shows the installation of one of the servos on the bottom side of the wing. There is a second servo for the other aileron. This installation was planned, and built into the wing during assembly. Much cleaner, and no patches in the MonoKote. This installation uses a total of six servos, but the airframe has plenty of room, and the added weight is not a problem. I

just need to keep a closer watch on the batteries while I fly, so they don't go flat in the air.

Hope to see you all at the June meeting. Keep those fingers crossed for decent weather next Thursday. If the weather is bad, the meeting will be held at the Main Plant cafeteria at 5:00 PM.

Maybe next month I can bore you all with pictures and words about one or more of my helicopters!

Dave Shema
CMA President →

Throw Meter

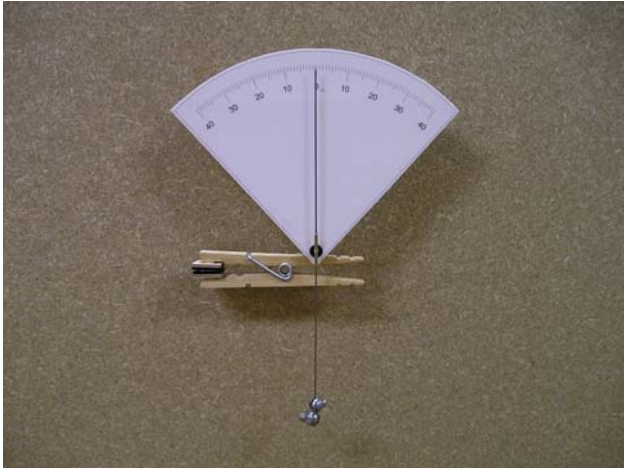
By Steve Plantenberg

When preparing to set up the throws on the control surfaces of my Rubin, I knew I needed a better way to do that than my usual method. The way I usually do it is I assemble the plane and then set it on the kitchen floor, which is the only flat surface that I have that is large enough for an assembled airplane. I then lie there on the floor for hours while I carefully measure the up and down or side to side throws of all the control surfaces and try to get them to throw the proper amount and get the ailerons and the elevators to throw the same on both sides. This method is somewhat inaccurate because the floor is uneven and I have a tendency to want to tip the ruler in as the control surface deflects which results in inaccurate measurements. It is also somewhat awkward and you have to be a bit of a contortionist to get a good reading on the ruler. For the Rubin to fly well, I needed a precise method to measure and set the control surface throws.

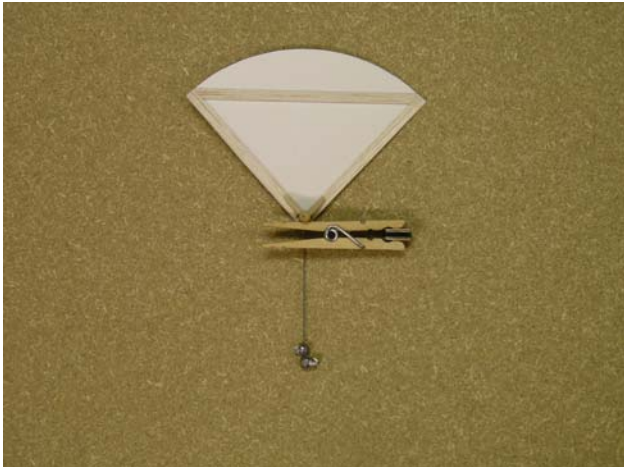
Central Hobbies sells a throw meter for \$24.95 that isn't much more than a scale marked off in degrees mounted

on a clothespin with a pointer. I didn't really want to spend \$50 plus shipping for two of these things, so I decided to build my own.

Here is what I came up with:



I made a paper scale marked off in degrees on my DeltaCAD program and then glued it to a piece of posterboard with 3M-77 spray adhesive. I put the glued paper and posterboard between two pieces of waxed paper and then set a large sheet of particle board on top to hold it flat while the glue set up. I was impressed at how well this worked since the result was something that felt a lot like a piece of plastic.

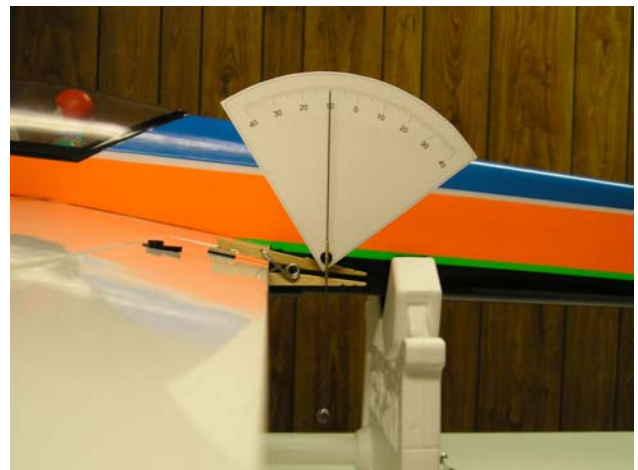
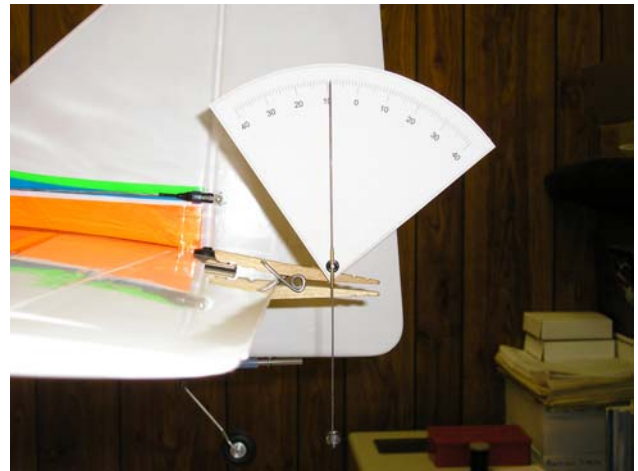


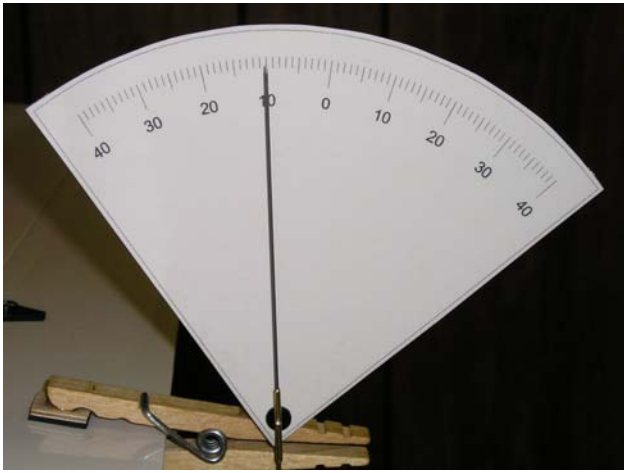
On the back of the meter I glued some strips of 1/16" balsa to give some support and hold the meter flat. I again placed the particle board on top while the glue dried to make sure everything stayed flat. On the bottom of the meter is a piece of 1/4" dowel to attach the meter to the clothespin and to hold the pin that I used as a pivot point.

On the jaws of the clothespin I epoxied some squares of plywood to each side and then glued on some squares of neoprene that I cut from some large diameter 1/16" neoprene washers.

The pointer is two pieces of 1/32" music wire joined together with a piece of 1/16" O.D. brass tube with a small hole drilled in the center. A stick pin is inserted through the hole in the brass tube and in to the dowel for a pivot point. I used a Rocket City pin clamp as a spacer to keep the pointer away from the meter face so it doesn't rub on the meter face and mess up the measurements. One end of the music wire assembly is sharpened to make a nice pointer and lead split shot sinkers are attached to the other end for weight. The trickiest part of this whole thing is trying to drill a hole the diameter of a stick pin in the exact center of a piece of 1/16" brass tubing without the drill bit rolling off the side and breaking. That took me several attempts (and drill bits) to get right.

Here's some pictures of the throw meter in action on the Rubin:





When using the meter, I prop up the airplane with magazines to get the pointer close to zero. The clothespin is then adjusted slightly up or down to get the pointer exactly at zero.

Most of the manufacturers give control throws in inches or millimeters. To figure out how many degrees that is, I roughly set up one aileron or one side of the elevator with the old ruler method and then put the throw meter on and measure it. I can then fine tune the both the up and down movement of the surface with the throw meter and the travel adjust settings on the radio. I then set up the opposite side control surface with exactly the same throws.

The accuracy of this meter is very good. A 1% change in the travel adjust setting on the radio makes a significant difference in the meter measurement. It is much better than using a ruler or a Great Planes Accuthrow. It is also much more comfortable for me since I can do this up on the workbench instead of lying on the kitchen floor. I spent about \$1-\$2 for the supplies to make each one.

If anyone would like to make these for themselves, contact me and I will send you the meter face. →

Heads Up, CMA Activities

June 2004

3 June 5-6 PM Meeting

July 2004

1 July 5-6 PM Meeting

CMA voice bulletin board 295-8888

Send your input for FlightLine to:

Steve Plantenberg
MS 137-152 x5-9625
scplante@rockwellcollins.com

AMA web page:

<http://www.modelaircraft.org>

For an AMA membership application:

<http://modelaircraft.org/Mem/Memapp.htm>

CMA Web Page :

<http://www.collinsclubs.com/cma/>

Send your input for the CMA Web Page to:

Dave Shema 295-9543
dkshema@rockwellcollins.com

For membership information:

Contact: CMA Secretary Tom Gorman

2004 CMA Officers

President: Dave Shema
(319) 295-9543
dkshema@rockwellcollins.com

Vice President: John Michael
(319) 295-2914
jjmichae@rockwellcollins.com

Sec./Treas.: Tom Gorman
(319) 295-6059
tjgorman@rockwellcollins.com

FlightLine Editor: Steve Plantenberg
(319) 295-9625
scplante@rockwellcollins.com

Continuing from 2003

Field Marshal: Mark Woytassek...295-4332
Safety Officer: Crist Rigotti.....295-0612
Web Page Editor: Dave Shema.....295-9543

Senior Flight Instructors and Test Pilots

First flights of new airplanes
Mark Woytassek

First flights of new helicopters
Crist Rigotti

Flight Instructors
Steve Plantenberg
Dave Shema

Flight Instructors in training
Jamie Johnson