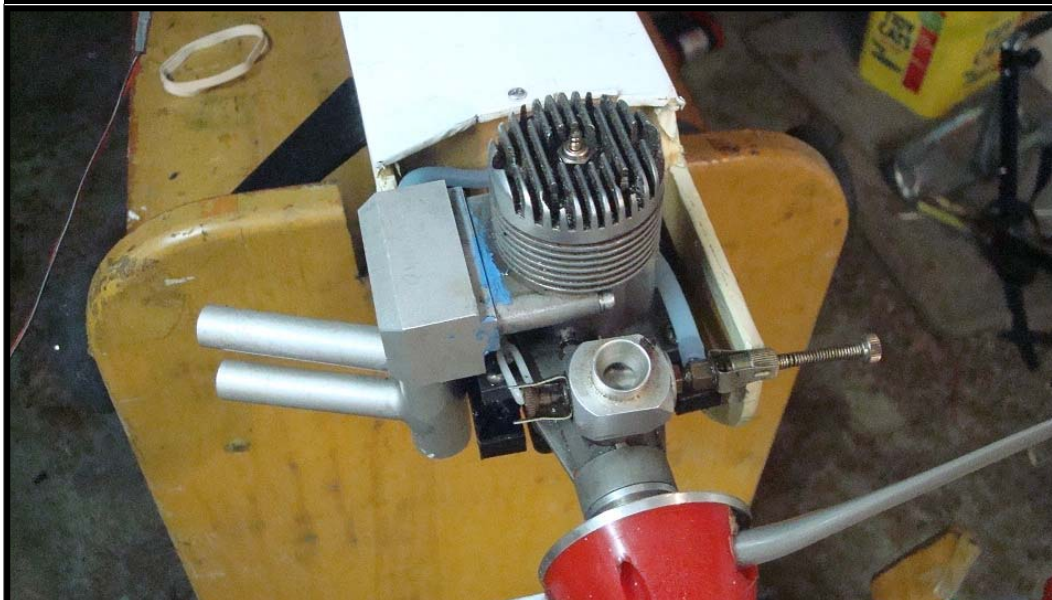


THE FLYER



Middlesex County
R-C Fliers, Inc.

August 2011



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10 CCM by Weber.

Bob Forgione has had significant problems getting this engine to run in his new Hybrid Kadet. Perhaps you would like to offer Bob some advise on what to do.

President's Message, by Jerry Crowley

Time is certainly flying (pardon the pun), It's the end of July with August quickly approaching. We had a good Family Day gathering with lots of food to be had by all.

Thanks go out to all that assisted in making this day a good one. The weather was great but the wind prevented or minimized flying ac-

tivities for the younger participants. Hopefully next year will be a perfect day for the event. Some of our members flew larger aircraft that flew well in the stiff breeze and provided entertainment for our non-flyers.

For August we have a couple of events to consider attending and or participating in. On August 7th we

will host a Fun Fly Competition for all classes of pilot ability who are Club members. Ray Capobianco and Jim Orsborn are formulating events for the Fun Fly. So bring your planes so you can pick the type that best fits the competition that you will participate in. Details of the fun fly will be presented in a separate column in this

publication.

Remember that no matter what your proficiency in flying we will likely have an event for you to compete in. Some good maneuvers to practice are climb and glide, loops, rolls, stall-turns, and touch and goes.

August 28th we will once again host another Fun Fly. At this

A Combo Hybrid *by Bob Forgione*

Here are a few pictures of the hybrid airplane built from a LT40 Fuselage and a Tiger 60 Wing. After both airplanes in their native form, lost wing and fuselage respectively, I decided that I would check wing area of the Tiger 60 and found that it the same cord and area of the LT40 wing. There was one hitch, however and that was the symmetric airfoil would not sit on the fuselage of the LT40. So I transferred the airfoil shape to the fuselage and cut out the airfoil. I used elastic bands to hold the wing onto the fuselage however I did provide locating dowels to interlock with the fuselage and provisions for wing hold-down bolts. The intention is after the first flights to transfer back to the locating dowels and hold-down bolts. Note also, the use of two servos for the ailerons.



Fig 1. Fuselage contoured for Tiger 60 wing airfoil .

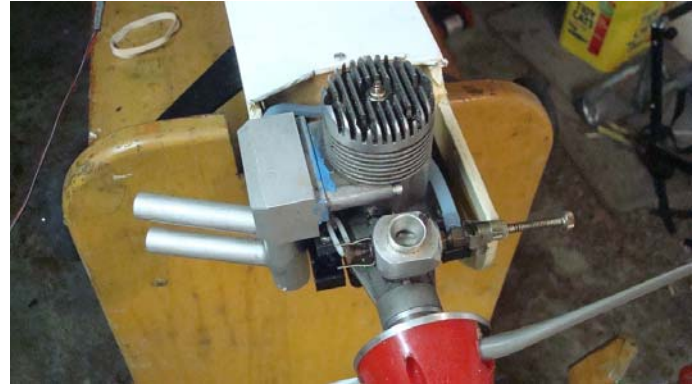


Fig 2. 10 CCM Motor installed. Cut away end of fuselage to receive muffler.

I am assuming here that the result of this combination will give similar performance of the LT40 but with better stunt performance due to the symmetrical wing air foil.

It also results in a plus 4 wing incidence (1.5 for the standard LT40) which may also effect the flight performance in the lift characteristics of the airplane. The motor installed is a 10CCM Webra which is equivalent to a 60 size engine which should give it a 20-30% increase over the OS FX 46 in power .

Notes from the field:

The hybrid flew well. It needed little trim according to Jerry Crowley. It seemed a little bit under powered but I will go to a larger prop pitch to see if it helps. Also, the plane was nose heavy per Ray, and the CG needed to be adjusted. Overall, a good flyer with the Tiger wing and LT40 fuselage. I hope to be able to fly it at the fun fly.

Bob



Fig 3. Ready for maiden flight.

point we are in the process of formulating what events will be presented. If you have any suggestions as to what you might want to compete in please let Ray C. or Jim O. know your ideas.

As with most of our events our standard food fair will be offered to all attending.

Keep the following dates in mind for upcoming events.

August

7th — Fun Fly

10th — Monthly Meeting

28th — Fun Fly In

September

14th — Monthly Meeting

17th — Yankee Doodle Day

January

14th — Holiday Party

29th — Club Auction

So in closing, I wish everyone a great SAFE flying and see you at the field.

Jerry Crowley
President MCRCF

Tail Heavy Exploration by Peter Lu

Although many text books explain how air foil provides lift to a plane, they have problem to answer a simple question from a kid (<http://xkcd.com/803/>): Why airplane can fly upside down? Why air foil does not suck the plane down, since the curvy side has less pressure than the flat side? The correct answer is that the air foil does not keep the plane up, but the angle of attack does. The angle of attack throws air molecules downward. According to Newton's Law, the reaction force pushes the plane up. Please read more about this topic:

Airfoil Lifting Force Misconception Widespread in K-6 Textbooks

<http://www.amasci.com/wing/airfoil.html>

AIRPLANE FLIGHT ANALOGY

<http://amasci.com/wing/rotbal.html>

In this year's Construction Derby, our team (Bob, Neil and I) had built a plane with flat wings. Wings are installed parallel to the fuselage and the engine pointing straight forward. The plane did fly. Thanks to our excellent pilot Neil, she completed all suggested maneuvers and landed at the bull's eye. However, Neil complained that she was tail heavy and he pushed the elevator trim to the max and still cannot compensate the nose up tendency. He had to keep pushing the elevator to keep the plane fly level.

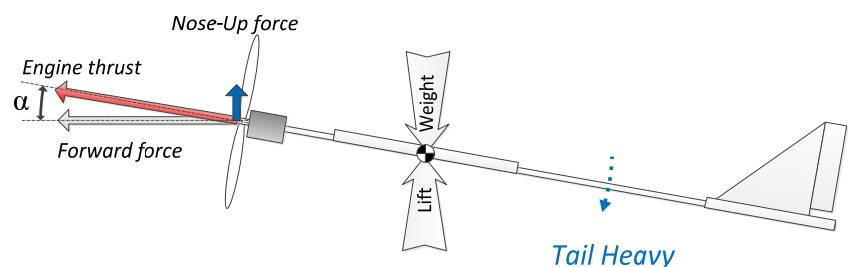


Fig 1. Tail Heavy

Let's take a look at our plane (Fig 1). In order to fly at a level path, an angle of attack must be maintained. Since the wings are installed parallel to the fuselage, the propeller is tilted upwards. This creates a small upward force at the nose and it generates a torque to make the tail down. So the pilot feels tail heavy.

We have 3 ways to address the problem:

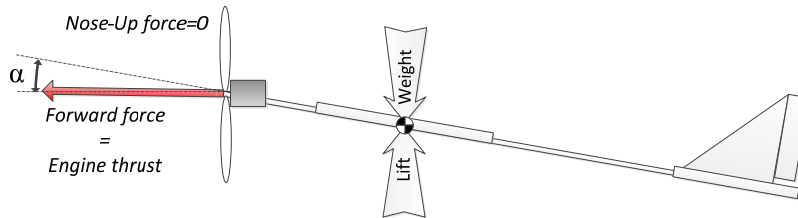


Fig 2. Use down thrust on the engine.

1. Mount the engine with down thrust to avoid nose-up force (Fig 2). We have tried this solution and Neil feels it flies better but still not perfect due to we had not optimized the amount of down thrust so the Nose-Up force was not totally eliminated. But this solution has a problem: When the plane flies inverted, she will be super tail heavy, since that Nose-Up force will be even worse than the straight-mounted engine configuration.

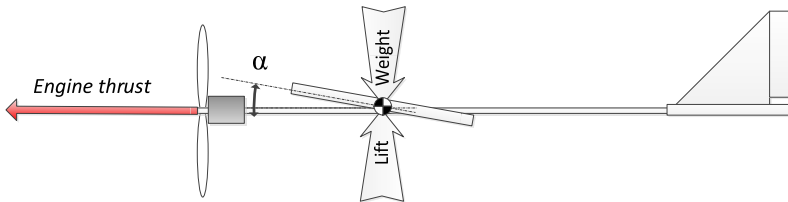


Fig 3. Install the wing with positive incidence.

2. Install the wing with positive angle of attack (Fig 3). GWS Slow Stick takes this approach. Its leading edge wing support is higher than the trailing edge support to have the angle of attack pre-installed. This solution has the same problem of the solution 1. It's not good for flying inverted. I had to push the elevator stick all the way to barely keep my Slow Stick flying level.

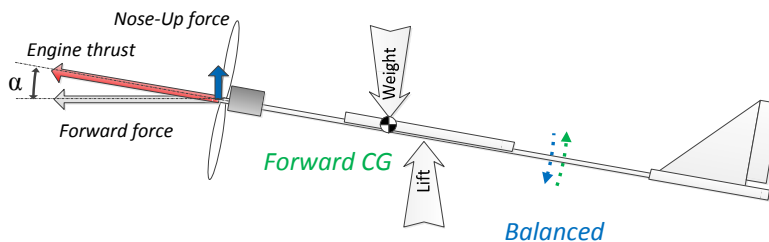


Fig 4. Change the CG.

3. Change the center of gravity to create a counter torque to balance the Nose-Up force (Fig 4). Either move the wing towards the tail or add weight to the nose. The goal is to put the CG before the lift center. We did try this solution and it worked. Due to the constraint of the push rods, we could not move the wing position. So Ray tied 3 pieces of rocks to the fuel tank to add weight to the nose. This moved the CG forward. Neil reported that the plane flew much better. This solution has couple advantages. First, it mounts both the engine and wing straight forward. Second, it has the same correction when the plane flying inverted (Fig 5). It's very important for acrobatic and 3D planes, since they fly inverted very often.

Competition Fun Fly:

A Competition Fun Fly is scheduled for this coming weekend. Cash prizes will be offered for MCRCF Club Members only.

For planning purposes we expect to have three pilot classifications:

- Novice: Pilots must fly any trainer or high wing plane.
- Intermediate: Pilots may fly any plane except a “Fun Fly,” profile, or purpose-built 3D aerobatic airplane.
- Expert: Pilots may fly any plane.

Pilots can expect to see three competition events that will be announced the day of the event. A fourth, “Winner Take All” event is also under consideration.

Pilot registration will be around 9:30; lunch at noon and the final event by 2:30 PM.

August 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

- Aug 7th — Competition Fun Fly
- Aug 10th — Monthly Meeting
- Aug 28th — Fun Fly-In at the Field

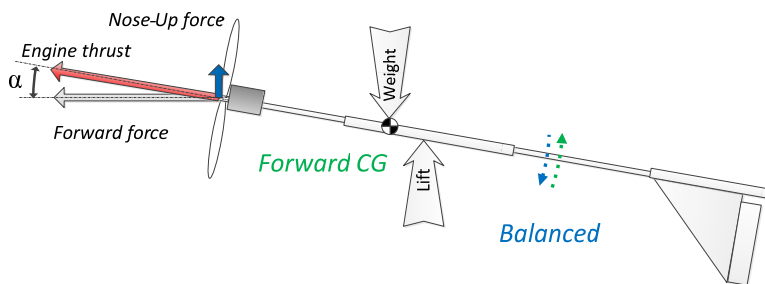
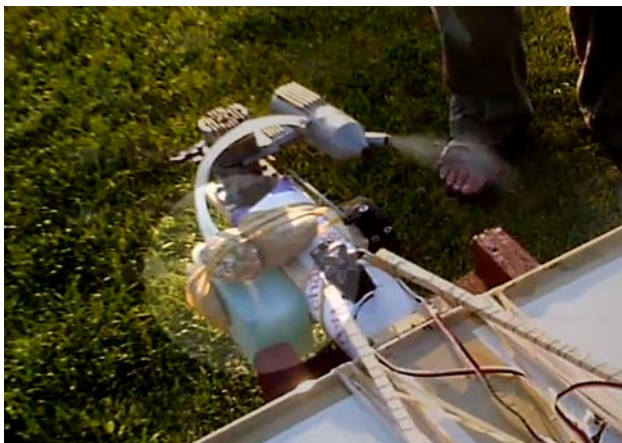


Fig 5. Change the CG, with plane inverted.



Notes From the Field *by Jim Orsborn*

July Meeting Notes

President, Jerry Crowley, opened the July meeting at 7:30 PM with 14 members in attendance.

Jeff Ward offered a Treasurer's report that covered May and June. Balances were reported to be as follows:

May 1st Balance \$6,732.36

Dues & Raffle + 130.00

Field, Website, other expenses totaled - \$499.71

June 1st Balance \$6,572.31

Clothing Sales + 130

Sound Meter - 57.89

Field Day - 129.17

Raffle - 90.00

July 1st Balance \$6,287.25

Pending expenses include Food and Grass mowing

Ray Capobianca reported that we currently have 62 paid members.

Jerry Crowley reported that he generally has the DB Sound Meter with him when he is at the field. He has made several measurements and reports that none of the planes tested had a problem meeting our noise guidelines. Pilots should continue to watch prop size as that

has significant effect on the noise measured.

Volunteers are still needed to support club events.

Cooks, tent setup, grocery shopping, soda, ice, cleanup all use volunteers.

Jerry thanked Paul Sullivan for painting the one bench as well as all of the Flight Stands.

Show and Tell included two presenters.

Peter Lu showed everyone how he built his Slow Stick. He used two servos for the ailerons. And with some help (suggestions) from Ray he was able to mount the battery very far forward.

This allowed him to move the wing forward while maintaining the proper CG. The forward wing opened up the space between the wing and the elevator. The plane flies much better with a longer tail moment.

Bob Forgione brought in his Great Planes Balance Machine and showed everyone how to balance a low wing plane like the Excapede that he was building. Low wing planes are best balanced by sitting them inverted on the

balance stand. Bob added weight to the tail until he was able to achieve the recommended balance point.

Jim Orsborn offered an impromptu demonstration of an alternative method that will determine the planes Center of Mass which will help achieve lateral as well as fore to aft balance.



Bob demonstrated this hanging model technique with his Construction Derby plane hung from the ceiling in his basement.

President Jerry Crowley won the monthly raffle which was a small Bind and Fly version of the Beast.

Official Publication of the Middlesex County R-C Fliers, Inc.

The FLYER is the official publication of the Middlesex County R-C Fliers, Inc., a non-profit organization chartered for the promotion of radio controlled model aircraft building and flying. The club operates a flying field located on Treble Cove Road, Billerica, MA. The club offers free flight instruction to any member provided they have a current membership with the Academy of Model Aeronautics. Contact any club member for details. Meetings are held on the second Wednesday of every month between September and June in the Billerica Recreation Dept building at 248 Boston Road in Billerica, starting at 7:30 PM.

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