

# THE FLYER



Middlesex County  
RC Fliers, Inc.

May 2015



**Great Planes Easy Sport MKII** Living room photo before its maiden flight (notice the CG stand) of the prototype model for the MCRCF Second Trainer Flight School. See additional info throughout the Newsletter. *Photo by Jim Orsborn*

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## President's Message, *by Jerry Crowley*

Time seems to fly (no pun intended) this time of the year. It's the beginning of May and the snow has finally melted, but the days are still rather cool due to the windy conditions. I expect that it will be a couple more weeks before we can drive into the pit areas, so please be patient. We need to seed the area and try to recover some of the grass or weeds before we start driving on it.

This weekend is our annual field cleanup day. Due to the amount of snow we had this year we delayed the event until May 2nd. We have a lot of work that needs to be addressed this year, so please come to the field with tools such as rakes and maybe a shovel. Picking up trash lying about might be easier if you have (or can make) a stick with a nail or screw in the end of it. If you are interested in painting, it would be really helpful if you have a disposable paint brush and/or roller that you could bring for painting the Gazebo and benches.

We will have Coffee and donuts available to supply needed energy. Cont. Pg. 2

## President's Message (Cont.)

Paul Sullivan has learned that the Equestrian group will have approximately 8 events this coming season. Check the Calendar of Events where we've listed known activities such as this. We will keep you posted as schedules are updated.

As a reminder, the following paragraph is repeated from last month's newsletter:

I would like to bring to your attention an area that seems to lack the attention it deserves and that is "SAFTEY". We have a set of rules in place to help insure the safety of our fellow modelers and those using the nearby facilities. We continue to see fellow pilots violating these rules jeopardizing not only our safety but potentially the future existence of our Club. We ask each and every one of you to police the area when activities at the Soccer Field or the Equestrian Arena facilities are in use to not fly over the parking lot or the horse arena.

**RULE: If both facilities are being used then flying is limited to Park Flyers or Helicopters which are confined to areas of the airstrip and not to be flown above tree top height.**

I want to point out that these are Club rules and are not alterable or waved by anyone either in the club or outside. In addition to the above it is recommended that you always fly with another person, in the event of an accident.

As a point of information, a new RC Club, "River Bend Flyers" is being formed in Tyngsboro near the bridge that crosses the Merrimack River. Bob Forgione attended

## Construction Derby Update

At the April meeting it was decided that the Club would proceed with plans for the 2015 Construction Derby. The date has been moved to June 14th due to a conflict with plans for a Road Race on our previous date.

The Club will be purchasing six (6) motor kits (including ESC and battery), so we will be contacting Team Captains shortly to confirm that they will be providing the additional supplies needed for each team.

If you have questions or need additional information, please contact Jim Orsborn.

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their last meeting and received a response from the President of the Club, Ken Pappas.

"The property is owned by the town and governed by the Conservation Commission. The property was designated as multi-use meaning anyone can go down to that field, walk their dog, ride a horse, etc. ... We agreed that we would ask for two days a week as the club having priority of the field (designated days) on Wed and Sunday. Non-designated days we can still fly, provided other activity is not taking place. ..."

I talked with John Yassamets and he indicated that initially it would be limited to electric planes only but pending noise analysis it may be opened to restricted noise levels.

Try and make our Club meeting on Wed., May 13th, we need your inputs.

I hope to see everyone at the field this Saturday, good safe flying.



## Construction Derby: Teamwork, Executing a Plan

The MCRCF Construction Derby is open to all Club members and guests. There is no requirement that team members know how to fly or how to build a plane. So how does the event work?

Several Team Captains have been selected before the event, with the understanding that they will bring a radio and some basic construction tools. Everyone else who shows up for the event will be placed in a pool, and the captains will draw names to complete their team. The result is typically a mix of novice and more experienced members; making a even match across the teams.

Construction will start with each team needing to inventory and verify the contents of their construction kit. This affords the team an opportunity to see how they can interact and delegate things to get them done efficiently.

Once the inventory is complete, someone on the team (not necessarily the captain) will start to define a construction plan. Parts are changed from year to year, and this year we will be using an electric motor. Kit contents are changed each year and no advance plans are allowed, so each team will definitely need to develop their own construction plan.

With only 90 minutes to build the model, the team will need to work on small projects that can be put together as an assembly. The wing, engine mounting, tail feathers, main fuselage are some examples of these projects. Weight and balance is al-

ways an issue that needs to be addressed throughout the design.

When the team is ready to work with the radio setup there are a couple safety items to consider. Don't put a propeller on the motor until you know that the throttle is not reversed, that the motor is turning in the correct direction and that the ESC failsafe is working on initial startup.

If you need to adjust the servos (EPA or servo reverse) after the motor has been installed, then disconnect one of the motor leads before turning the receiver on. This will act as a failsafe and avoid an incident if the throttle is moved accidentally.

The Club CD will perform a safety check, but each team should check a few items first. These checks might include: proper CG, screwed (not glued) servos, tight control rods (no flexing), secure battery, control surface movement, failsafe (low throttle) radio setup.

If all of this is done, then it's time to put things away and get ready for the noontime Bar-B-Que lunch. Plans include Italian sausage, hamburgers, soda and chips. What more could we need to get the energy for an afternoon of maiden flights for our 90 minute wonders.

Regardless of the outcome, everyone who attends will have fun, learn something and get a good meal on the Club. Please plan on attending; the event is scheduled for June 14<sup>th</sup> at the Club field.

## Notes from the Apr. Meeting

Jeff reported that the Club began February with slightly over \$9,600 in the bank. Deposits included Auction income plus advance "bank" money for the auction, \$200 in raffle and \$480 in dues income. The only expense was a final \$100 bill for the Holiday Party; so the Club checking account had an ending balance for February slightly over \$14,000. Auction expenses for the custodians and hall rental will be paid this month.

MCRCF membership rolls stand at 70 paid members, including 5 Junior members.

There was some discussion about the prison police having plans to hold a road race on the day that we planned to hold the Construction Derby. So it was agreed to move the event to June 14<sup>th</sup> with a June 28<sup>th</sup> rain date. The membership did motion to approve funding for the purchase of motors and prizes for the Construction Derby.

A Fun-Fly competition was scheduled for Aug 15<sup>th</sup> in support of the AMA's Model Aviation day. Jeff suggested that we might want to do something more in line with a fund raiser, if we want to support the AMA. Plans are to return next month with more details.

John Yassemedis (former MCRCF Member) is working with some other flyers to finalize approval for a new AMA club (River Bend) that will be located on River Rd. in Tyngsboro, MA near the Merrimack river. More details as they become available.

Neil Crombie showed the group a device that can split S-Bus signals out into individ-

## 2015 Calendar of Events

### Next Month

Construction Derby	Sun. Jun 14th
Family Day	Sun. Jun 28th

### Regular Activities

Student Training	Tues. 3PM to Dusk
War Birds	Wednesdays

### Our Future Events

Club Mtg. at Field	Wed. Jul 8th
Open Fun Fly	Aug (date is tbd)
Yankee Doodle Day	Sat. Sep 12th
Xmas Party	Sat. Jan 9th 2016
25th MCRCF Auction	Sun. Jan 31, 2016

### Other Events in the Park

Sherriff's Road race	Sun. Jun 7th
Horse Activity	Sun. May 17 (31)
Horse Activity	Sun. Jun 14 (21)
Horse Activity	Sun. Aug. 16 (23)
Horse Activity	Sun. Sep. 21 (O 4)
Horse Activity	Sun. Oct. 25 (N 1)
Bocce Ball Activity	Sun. 5 to 10 PM Apr. thru Oct.

ual servo channels. Available from Park Scale Models, he plans to use the unit in his next model to help manage the distribution of servo signals.

(BTY, S-Bus is used to distribute power and data for up to 16 channels over a single cable. Servos are programmed to receive a specific channel. Spektrum's satellite receivers apparently use S-Bus to pass data over to the main receiver module.)





## News From the Field

We've had three weeks of training at the field, even though the temps have been a bit cooler than desirable. At the moment we have three students taking training lessons.

**QUESTION** — Is anyone missing a model? Paul found an Escapade, complete with glow motor and Futaba radio. Please let us know if this is yours, or if you know who it might belong to. No ID inside the model.

No ID inside your model? Everyone has an AMA sticker inside their plane; don't you? The AMA (and our Club) recommend that everyone put a sticker inside their models with your name, AMA number and a phone number.

### **Using the rudder when inverted.**

Okay, so many of us don't use the rudder when flying upright; what's with the rudder when inverted?

I was recently reading an article in a Pattern magazine that offered an interesting suggestion on using the rudder. Basically the suggestion was Fly the Nose when right side up, and Fly the Tail when inverted!

This is just a teaser, so I'm going to leave the idea on the table with plans for more at a later date. Let me know if you are interested.

## Second Trainer Flight School by *Jim Orsborn*

As I mentioned last month, I decided to go ahead with construction of a Great Planes Easy Sport MKII with plans to use it as a Second Trainer.

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Interested in following along? If you are interested in this series and would like to follow along, please let me know and I will make more information available. If you would like an Easy Sport for yourself, I do know the location of a model that is available, including servos and an OS .46 engine. Good deal.

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So the construction is finished, and this past Sunday I took it to the field for a maiden flight and initial setup. We had a bit of trouble getting the OS .55 to run, so there were several hands needed before we got airborne. Even then, we ended up with 2 of the 4 landings being dead stick.

The .55 does have a bit of a reputation for being harder to start than the older .46 engines. Actually the motor started on the first flip, it just would not keep running for the whole tank. There were so many re-starts, that I almost wore out the starter battery (and the glow ignitor) on the first two tanks of fuel.

See the following page for some notes on the construction. Future articles (and more detailed student notes) will deal with the radio installation and flight trimming. I'm also considering a future article on engine setup and tuning. Again, let me know if this topic is of interest.

## Using Ball Joint Links

This article will take a look at one example of how to use Ball Joint links to improve the structural integrity and strength of control links. Ball Joints provide a strong yet flexible connection. In this case we will use the Ball Joints for the servo connection and a high strength clevis for the aileron linkage.

Both the Ball Joint and Clevis were selected with 2x56 threaded connections. So we need a double ended push rod with threads on both ends. This is a change from the normal situation where we use a fixed connection at one end with threads needed only at one end.

A obvious plan might be to purchase a 2x56 threaded push rod, cut it to length and then thread the cut off end. I will caution you that this usually does not work well; because pre-threaded rods use “pressed” threads. A thin rod can be used, because the press creates raised threads when material is pushed out of the thread grooves.

So the problem comes when we try to use a die to cut threads at the base end. The die will remove the groove material; but with no way to add the raised material the result is a thread with less than adequate holding power. Metal clevis in particular will simply slip off the rod when pulled hard.

So the answer is to use 4x40 rods and use the die to cut new threads on both ends of the rod. The result is a strong push rod

with full holding power for the 2x56 threads at both ends.

So here are my step by step procedures:

1. Using a 4x40 rod, use a die to cut 2x56 threads over the threaded end.
2. Install the 2x56 Ball Joint, threading it at least 15 complete turns onto the rod.
3. Measure the “hole to hole” length between the servo and the aileron control horns.
4. Cut the rod to length, less the portion that will be threaded into the clevis.
5. Use the die to cut 2x56 threads on the end of the rod.
6. Install the Heavy Duty clevis, and adjust it to the exact length needed.

Take a look at the pictures below. The round servo horn has been used. Rather than a straight servo horn, the round one allows the Ball Joints to be connected to the moderately wide offset holes. The heavy duty clevis is connected to the aileron torque rod. The Ball Joint provides a very solid connection to the servo horn, with no slop in the connection as the servo rotates.

So the final result here is ailerons with differential throws. Using full stick movement (100% servo travel) the ailerons have 15° upward and 10° downward deflection.

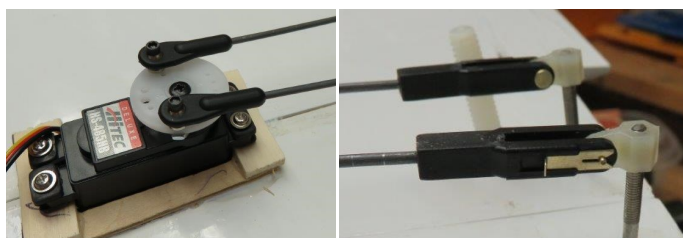
The bottom photo on the right shows how I used a ball joint for the elevator linkage. The problem here is that the elevator pushrod did not line up directly with the elevator control horn. It's not easy to see in the photo, but the control horn was mounted perpendicular to the elevator hinge line, so the horn points straight ahead. But the pushrod

exits the fuselage at an angle. The rod actually has to bend out to reach the control horn. As a result it connects to the horn at about a 20° angle to the horn.

By using a Ball Joint for this linkage the push rod can flex as it moves, but there is no slop in the linkage.

Conclusion:

Ball Joints are clearly the way to go if you want a tight linkage, but need to include some flexibility and movement in the control rod geometry. Double end ball joints are used almost exclusively in helicopters because both ends are easily accessible. Here we've used a HD clevis at the other end to make the joints easier to adjust.



## MCRCF Park Flyer Def.

The AMA has a pdf on their website that defines a Park Flyer as a model that weighs less than 2 pounds, is incapable of reaching speeds greater than 60 mph and uses a “quiet” means of propulsion.

Similar discussions on RC Universe and Watt Flyer have proposed additional restrictions such as a 38” wing span limit, a 250 W power limit, a 3 channel radio limit, and even a hand launch only limit.

In recent years, our Club has seen a wide variety of models at our field. The Mini Extra is a small glow powered plane that might be considered a Park Flyer. Some of the electric gliders are also pretty quiet, but quite capable.

In the last year our Club has also agreed to accommodate some electric flyers by allowing them to solo on a small, electric plane. These pilots now have Frequency Pins that say “Electric Only” in the box where we usually stamp the pin.

The MCRCF Flight Committee is considering the following as a definition for planes that may be flown at our field:

Planes meeting the AMA's Park Flyer Guidelines (< 2 lb., < 38” and < 60 mph) may be flown by visitors / club guests with and AMA membership even if they have not applied for full MCRCF membership.

MCRCF Electric Only pilots may fly a model aircraft that weighs less than 4 pounds, has a wing span less than 50” and uses less than 350W of power. Models that exceed any of these limits should only be flown by a stamped, solo pilot.

## 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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**Next Club Meeting**  
**May 13th, 2015**  
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