



REPORT

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***Offering unbiased product reviews and
informative articles for radio control
aircraft enthusiasts around the globe***

No May Issue, but
June is here!

GP Syncro
EDF

Quantum
Battery
Downlink



RC REPORT ONLINE

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OFFICE NOTES

Well, it is June and we are back! Thanks to all of you who offered up prayers, well wishes and offers of assistance following our recent battle with Mother Nature. Thanks, too, for understanding why we were unable to publish a May issue. Neither May nor June will be deducted from your subscriptions, by way of compensation. Tornado recovery continues in many areas across the state. While there is much devastation all around us; in the end, our family, many of our friends and business associates were spared the worst of the storm.

On a personal note, it felt strange to deviate from my normal routine last month, but now as I am working with the June issue; I am finding it difficult to get back into the groove. Maybe by the time the July issues rolls around, I will be back to my normal self.

About a week after the tornado swept through, which happened to be around the time that electricity was restored; I came down with some nasty bug. I think most of you know that I am the only one in the office and because of the “dreaded bug”; the office was basically closed for about two weeks. I tried to answer emails from home as my body would allow, so I apologize for the late replies. The phone didn’t get as much attention. So, if I missed your call or didn’t reply to your email and you still need assistance, please try again. I am much better now and back in the office during normal hours.

You will notice that Ed Moorman is missing from this issue. We have been unable to reach him for some time now. The last time he and I corresponded via email, he had recently experienced some health issues. If any of you have any information regarding Ed, please send it to me via email. In the meantime, prayers are appreciated.



A couple of you have recently emailed me asking about Smiley Face Contest prizes. I am well aware that we are terribly behind with getting these prizes out. I apologize. The prizes are not donated as they were in the past. By past, I mean prior to RC Report Online. We have always had to purchase our prizes. We also must purchase any items we review in the magazine. Often, these items are purchased with personal funds. For any who might think that “personal funds” are derived from a salary from RC Report Online; please don’t think that

way. Tony and I still do not receive any monetary compensation from the magazine. Our family supports itself by operating a small IT company, which shares an office with RC Report Online. Quite honestly, we are still working towards operating in the black after several bumps in the road during the last two years. In a perfect world, you would each have your prizes, we would still be offering engines as Smiley Face prizes and extras would be in storage waiting to be shipped to the next smiling winner! While I can certainly understand your frustration; I would very much appreciate your continued patience. We are still plugging along and fully intend to honor our commitment to the Smiley Face winners.

Many thanks to all of you who have recently sent in items for Photo-ops! I have even gotten a few written reports that I hope to share with you in the coming months! Pictures and write-ups are always welcome, whether it was your event or one you participated in at another club.

In case you missed it before, here's a little technical news for you. Some subscribers have been experiencing some issues with Adobe X. At the moment, our site is not compatible with this software. We encourage you to stay with Adobe 9 for the time being

Communication is still the key word for 2011! If you don't contact me about a problem; I can't correct it. It seems that the main issue people have is the inability to login. It's a simple fix. An email is normally all it takes. On rare occasions, a phone call might be needed. The next biggest complaint is regarding the PDF download. Again, I can help you with this.

There is no reason, if you have a premium subscription, that you would not be able to download the PDF. I can't stress enough, if there is a problem; please contact me. I want you to be satisfied and be able to enjoy RC Report Online.

We are still socializing on Facebook. Join us! Click the Facebook icon to go directly to our home page!



Kindle users; email me if you would like to receive the Kindle version of the magazine via email. Nook users, the Kindle version is not compatible with your reader. We have yet to look into the Nook, but promise to try and do so soon.

Bye for now,

Julia

A black and white advertisement for Precision Cut Kits. At the top, the text "PRECISION CUT KITS" is written in a large, stylized, italicized font, flanked by horizontal lines. Below this, a silhouette of a biplane is shown with four landing gear points. Underneath the silhouette, there are three columns of text: "★ Pro-Line Aerobatic Aircraft", "★ Exclusive Distributor of Palmer Plans and Instructions", and "★ Exclusive Distributor of Don Smith Plans and Accessories". To the right of the second column, it says "★ LASERLINE Giant Scale Aircraft Series". Below these columns, the text "PUTTING PRIDE BACK INTO BUILDING, ONE KIT AT A TIME" is written in a bold, sans-serif font. Further down, there are logos for VISA, MasterCard, and "Checks or Money Orders". To the right of these logos, it says "24/7 Online Ordering. Free quotes & prompt delivery." Below this, the phone number "609.538.1388" and the website "www.precisioncutkits.com" are listed. At the bottom, there are three small images of model airplanes. The middle image has the text "Symbol of Excellence" written below it.

Smile! You could be the next Winner!



Smiley Face Contest #6 2011!

Throughout this issue we have placed five or more Smiley Face Figures like the one shown here (☺), but as before this page doesn't count. Write us and tell us where at least five are, and you'll be eligible for a random drawing in which the winner will receive a free 12-month Premium Subscription to RC Report Online. The subscription may be used as a renewal or be gifted to someone else. Winners will be selected by a random drawing from all the correct entries received no later than June 30, 2011. No entries will be accepted after this date. Entries must be sent via US mail or E-mail only, and reference the correct contest number in subject line or address. Hobbico employees, RC Report Online employees, columnist and advertisers are ineligible for prizes. No Purchase Required. Valid in USA and Canada only. smileys@rcreport.net Subject line: Smiley Face Contest #6 2011

US Mail: Smiley Face Contest #6, 2011 PO Box 12051 Huntsville, AL 35815

All terms subject to change without notice. This contest is void in any area, state, or locality where taxed or prohibited.

To make the Smiley Face Contest even more confusing for me, these submissions are from the April issue. ☹ Sometimes, my head just hurts when I am trying to layout this page. This month, I have had to prepare myself a cheat sheet so that next month I do not have to think sooo hard!

Julia

Hi RC Report

I have found 6 small smileys and I can see one big one on the front cover of the magazine. It looks like the front cover is inside a big smiley or do I have Smyleylousis (new word): a new magazine sickness. I didn't see a clue #4; is that a side effect of smyleylousis. I need treatment for this disease.

Thanks for the read

Larry Slowiak

I would appear that Larry, our very first Smiley Face winner and word master (smyleylousis) is the only one who found the GIANT smiley on the cover! Good job, Larry!

Julia

SIX!

That is all for this month and greetings from North Dakota.

Manfred Decker

SIX!

Daniel A. Yaeger

FIVE!

Anthony Kostanko

Still loving the smileys! The winner will be contacted and announced in the August issue. The winner will receive a 12-month premium subscription to RC Report Online. Keep searching those articles and columns.

Total Smileys for the April 2011, issue was SEVEN.

March's winner is Jaime Van Diver, of Camden, New York!

Thanks for your submission, Jaime!

Julia Coberly

LIGHTER, **STRONGER**, FASTER

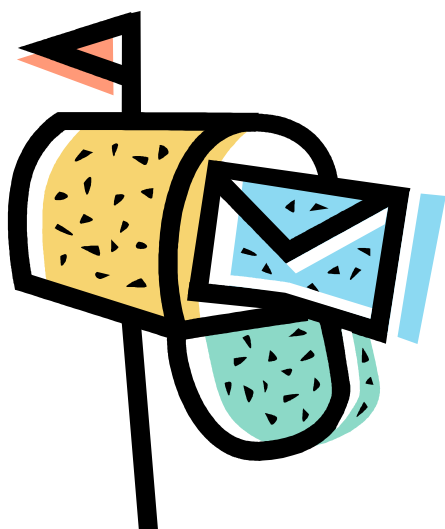


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Mail Call

Well, folks keep your questions, comments and jokes coming.

Here's some Perma-Grit and battery information for you and following that, the real reason why RC should be the only type of flying allowed. Some of those pilots and air traffics controllers should really go into stand-up!

Hello Tony.

Your article about Perma-Grit Tools in the RC Report Online #294 is so true. I have been using them for about 15 years and they are the number one tool in my shop. They are like remote controls or electric screw driver, if one ever uses one, it would be hard to live without them. You are right, the flat ones can bend easily, but if you glue (Epoxy) a wood 1 x 2 on the back it is stiff and easy to handle, your hands will thank you. On the picture you see that I used some old sanding blocks as handle to try it and never changed it. (I am cheap.)

*Yours sincerely,
Manfred*



I train new flyers for my club. I have 40 years experience with glow and gas. Most of my new students fly electric and ask me questions I can't answer so I decided to get into electrics to learn and hopefully be able to answer their questions. I have a problem with a recent conversation I had with "experienced" electric flyers. Situation: Motor pulls 30 amps, 40 amp speed controller, 2200 mah batteries. The part I can't get my arms around is they say a 30C battery will turn more rpm's than a 20C battery. What I don't understand is that if both batteries are capable of delivering more amps than the motor requires why would 30C turn more than 20C?

Mike Klintworth, Cape Coral FL

Thanks for the email Mike. I have found the easiest way to explain the C rating of a battery to a newcomer to electric from GLOW is simple. The C rating of the battery is a lot like the Nitro content in glow fuel. If you normally run 15% fuel, and you go to 30% fuel, you will usually get more power, but NOT double the power. The battery C rating is the batteries ability to output its battery power. The higher the C rating the faster the battery pack can release its stored energy.

Warning though! I have by testing and experience that MARKETING usually gets a hold of the C ratings and inflates them a bit.

I tested three different C rating new packs from Hyperion a few months ago. Check out Sparky revolt in September issue 2010.

Tony

Actual exchanges between pilots and control towers sent to me via Dick Sprau and Baby in Montana!

Tower: "Delta 351, you have traffic at 10 o'clock, 6 miles!"

Delta 351: "Give us another hint! We have digital watches!"

Tower: "TWA 2341, for noise abatement turn right 45 degrees."

TWA 2341: "Center, we are at 35,000 feet. How much noise can we make up here?"

Tower: "Sir, have you ever heard the noise a 747 makes when it hits a 727?"

From an unknown aircraft waiting in a very long takeoff queue: "I'm f...ing bored!"

Ground Traffic Control: "Last aircraft transmitting, identify yourself immediately!"

Unknown aircraft: "I said I was f...ing bored, not f...ing stupid!"

O'Hare Approach Control to a 747: "United 329 heavy, your traffic is a Fokker, one o'clock, three miles, Eastbound."

United 329: "Approach, I've always wanted to say this...I've got the little Fokker in sight."

A student became lost during a solo cross-country flight. While attempting to locate the aircraft on radar, ATC asked, "What was your last known position?"

Student: "When I was number one for takeoff."

A DC-10 had come in a little hot and thus had an exceedingly long roll out after touching down.

San Jose Tower Noted: "American 751, make a hard right turn at the end of the runway, if you are able. If you are not able, take the Guadalupe exit off Highway 101, make a right at the lights and return to the airport"

A Pan Am 727 flight, waiting for start clearance in Munich, overheard the following:

Lufthansa (in German): "Ground, what is our start clearance time?"

Ground (in English): "If you want an answer you must speak in English."

Lufthansa (in English): "I am a German, flying a German airplane, in Germany. Why must I speak English?"

Unknown voice from another plane (in a beautiful British accent): "Because you lost the bloody war!"

Tower: "Eastern 702, cleared for takeoff, contact Departure on frequency 124.7"

Eastern 702: "Tower, Eastern 702 switching to Departure. By the way, after we lifted off we saw some kind of dead animal on the far end of the runway."

Tower: "Continental 635, cleared for takeoff behind Eastern 702, contact Departure on frequency 124.7. Did you copy that report from Eastern 702?"

Continental 635: "Continental 635 cleared for takeoff, roger; and yes, we copied Eastern. We've already notified our caterers."

One day the pilot of a Cherokee 180 was told by the tower to hold short of the active runway while a DC-8 landed. The DC-8 landed, rolled out, turned around, and taxied back past the Cherokee. Some quick-witted comedian in the DC-8 crew got on the radio and said, "What a cute little plane. Did you make it all by yourself?"

The Cherokee pilot, not about to let the insult go by, came back with a real zinger: "I made it out of DC-8 parts. Another landing like yours and I'll have enough parts for another one."

The German air controllers at Frankfurt Airport are renowned as a short-tempered lot. They not only expect one to know one's gate parking location, but how to get there without any assistance from them. So it was with some amusement that we (a Pan Am 747) listened to the following exchange between Frankfurt ground control and a British Airways 747, call sign Speedbird 206.

Speedbird 206: "Frankfurt, Speedbird 206. Clear of active runway."

Ground: "Speedbird 206. Taxi to gate Alpha One-Seven."

The BA 747 pulled onto the main taxiway and slowed to a stop.

Ground: "Speedbird, do you not know where you are going?"

Speedbird 206: "Stand by, Ground, I'm looking up our gate location now."

Ground (with quite arrogant impatience): "Speedbird 206, have you not been to Frankfurt before?"

Speedbird 206 (coolly): "Yes, twice in 1944, but it was dark..... and I didn't land."

While taxiing at London's Airport, the crew of a US Air flight departing for Ft Lauderdale made a wrong turn and came nose to nose with a United 727.

An irate female ground controller lashed out at the US Air crew, screaming: "US Air 2771, where the hell are you going? I told you to turn right onto Charlie taxiway! You turned right on Delta! Stop right there. I know it's difficult for you to tell the difference between C and D, but get it right!"

Continuing her rage to the embarrassed crew, she was now shouting hysterically: "God! Now you've screwed everything up! It'll take forever to sort this out! You stay right there and don't move till I tell you to! You can expect progressive taxi

instructions in about half an hour, and I want you to go exactly where I tell you, when I tell you, and how I tell you! You got that, US Air 2771?"

"Yes, ma'am," the humbled crew responded.

Naturally, the ground control communications frequency fell terribly silent after the verbal bashing of US Air 2771. Nobody wanted to chance engaging the irate ground controller in her current state of mind. Tension in every cockpit out around Gatwick was definitely running high. Just then an unknown pilot broke the silence and keyed his microphone, asking:

"Wasn't I married to you once?"

Hello Julia - I think I broke the gum bands in my first successful model (Pacific Ace 30) in '42 when told this historic fact.

In the '20s a flying feller got a new job that required commuting across Lake Michigan to get to work. He wanted to take the floats off his plane to go faster but they had saved him several times when the engine quit. Talking with other pilots that were having the same problem he set about finding and solving it for all to benefit. Didn't take long to find it was dirty fuel in all cases. Using a Mason jar and adding material from his wife's slip he made a winner that cured the ills. After making a few for friends he went into business and found there was a large market for the device. Still on the market today.

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RC Report Online Classifieds

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FOR SALE

Goldburg Sukoi: New never flown. 72"WS powered with a Webra 120-2 stroke engine. Complete with radio Fill the tank and fly. New engine must be broken in. Multicolor covering. \$600.00

Ace 4-120: This is a big bi-plane. 72" top wing. Bottom wing is 60". Powered with YS 120 4 stroke engine. Plane has never been flown. Engine has less than 1 hr. running time. Model has been modified with a tapered top wing and a taller rudder for more rudder control. Complete with radio. Fuel it up and fly. \$600.00

Goldberg Extras (2): #1 is the older version. #2 is a newer version.

#1 has a YS 4 stroke engine. #2 has a ST 2000 2 stroke engine. Neither has ever been flown. Complete with radios. Fuel and fly. Multicolor covering on both. \$600.00 each.

Thunder Tiger Trainer: Never flown. ST.60 engine. 72" WS. Complete with radio. Fuel up and fly. \$200.00

Leo L. Humenick Sr. Email at leosr@pa.metrocast.net.

I have some magazines from the 60's and 70's and on thru the 90's that someone might like to have at a fair price. They are American Air Craft Modeler, R/C modeler Magazine, Model Airplane News, Flying Models, and even some Model Boating magazines. I also have a 1965-66 World Engines Catalog. Would say their condition runs from fair to excellent. If interested, call or email me at 406-227-5924 or rsprau2@msn.com and we could work something out.

Dick

Classified Humor

FREE YORKSHIRE TERRIER

8 years old.

Hateful little bastard.

Bites!

FREE PUPPIES

1/2 Cocker Spaniel,

1/2 sneaky neighbor's dog.

FREE PUPPIES

Mother is a Kennel Club registered German Shepherd.

Father is a Super Dog, able to leap tall fences in a single bound.

COWS, CALVES: NEVER BRED

Also 1 gay bull for sale.

JOINING NUDIST COLONY

Must sell washer and dryer \$100.

WEDDING DRESS FOR SALE

Worn once by mistake.

Call Stephanie.

**** And the WINNER is... ****

FOR SALE BY OWNER

Complete set of Encyclopedia Britannica, 45 volumes.

Excellent condition, \$200 or best offer.

No longer needed, got married, wife knows everything.



2011 NARCA SWAP MEET



The North Alabama Radio Control Association's 2011 Madison County R/C Swap Meet held on March 19, was very successful in terms of seller and buyer turnout. Most of the tables were pre-sold and we had to add a few tables to accommodate some late arriving sellers. Set up started before 7:30am and, as the photo shows, was still in progress when the doors opened to the buyers.

Each attendee received a door prize raffle ticket, and tickets were drawn every fifteen minutes. Door prizes included a variety of small building and alignment aides, as well as such things as glue, glow plugs, and free premium subscriptions to RC Report Online.

This year's main raffle was limited to one prize: a Spectrum DX8 radio system. You can see the happy winner, Bill Zinger, on the right, in the photo. The smile says it all! Tim Batt,

NARCA's Events Committee Chairman is on the left.

As with most swap meets, the items for sale ranged from brand new, still in the box kits, engines, motors and airborne lighting systems, to a very large collection of well used items such as flight boxes, starters and airframes. If you didn't see at least one item you would like to have, you were obviously in the wrong place.

The event ended with a voluntary auction to provide sellers a last opportunity to move more items, and buyers an opportunity to buy an item at a better price. It was a good event all around.

Rich Lawrie

VP North Alabama Radio Control Association

PHOTO OPS

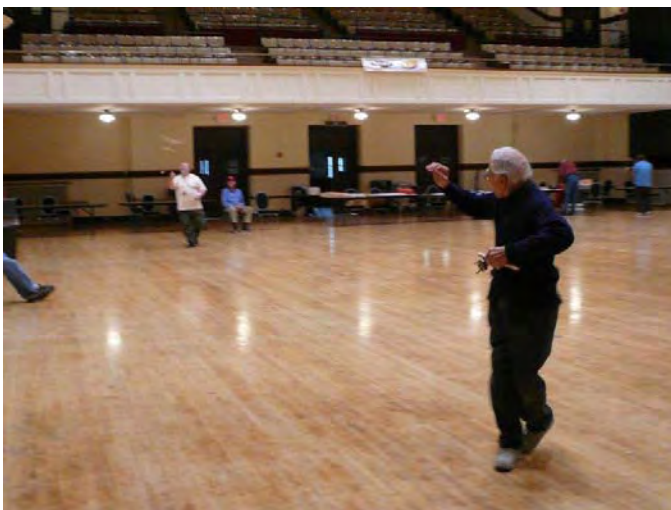
Thanks to Jack Boone for pointing me in the right direction to find these great pictures! The Bong Eagles held their Annual Spring Indoor Rally on Sunday, March 13, 2011, at the Racine Memorial Hall, in Racine, Wisconsin. From all the smiles, it looks like a good time was had by all! Photos by Ken Miller and John Warren.



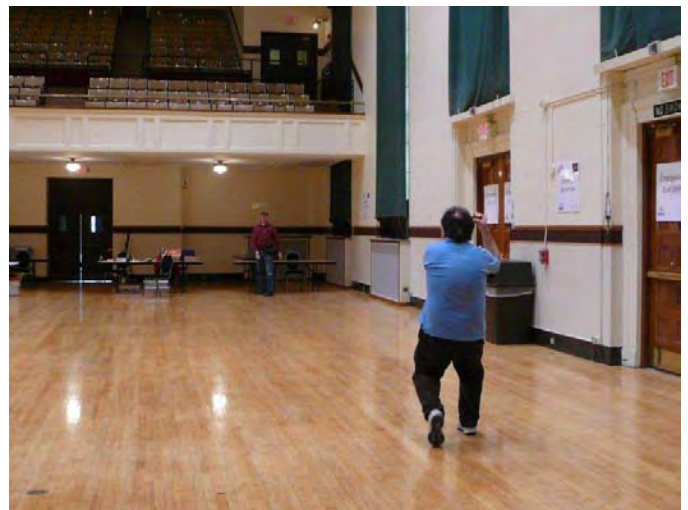
Jim Gerszewski helping Tony Italiano launch his indoor towline glider.



Jim Gerszewski releasing glider as Tony Italiano runs pulling it up.



Tony Italiano running to launch his towline glider while Jim G. releases it.



Kurt Krempetz launching his towline glider while LeRoy Cordes aids him.



Close up of Kurt's towline glider.



Bill O'Dell works on his Mini Stick while son, John looks on.



Cousins Anne Miller and Del Johnson.



Bill O'Dell adjusting his Mini Stick.



Del Johnson's Penny Plane hanger.



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John Warren with his nest of Catapult Gliders.



Closer look at John's Catapult Gliders.



Tony Italiano and Jim Gerszewski on lunch break.



Jack Schnobrich widening the motor for his beautiful Phantom Flash.



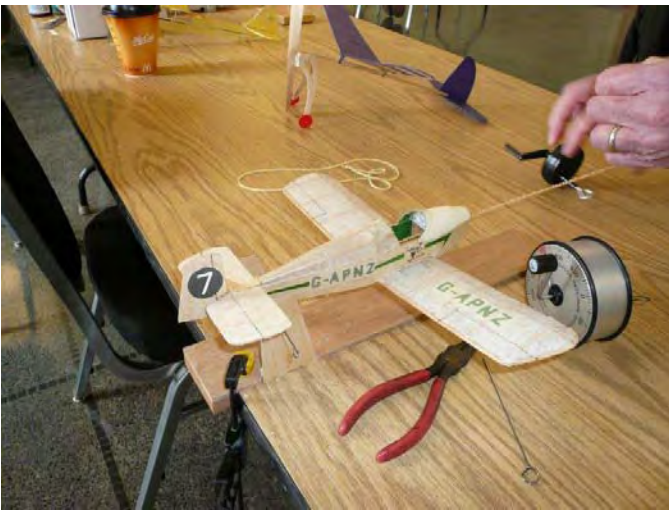
Henry Schnobrich adjusting his Scale Model, "Druine Turbulent."



Henry Schnobrich winding the motor on his Druine Turbulent.



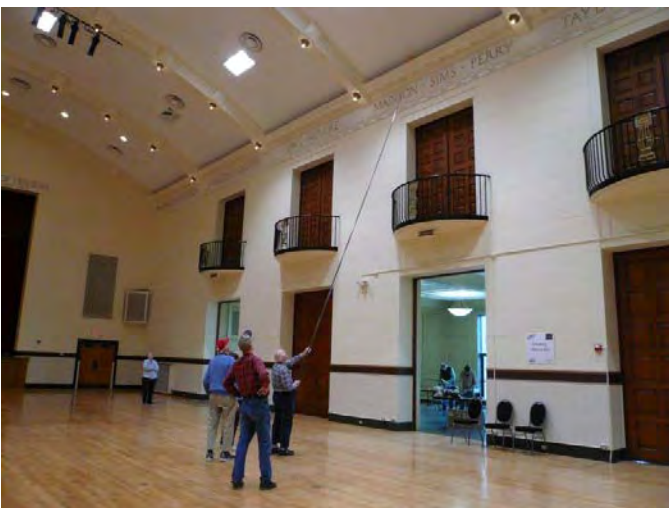
Delta Dart Mass Launch.



Close up of Henry's model.



John Warren launching his Cat Glider.



Jack Boone with long extension pole rescuing model from the ceiling ledge.



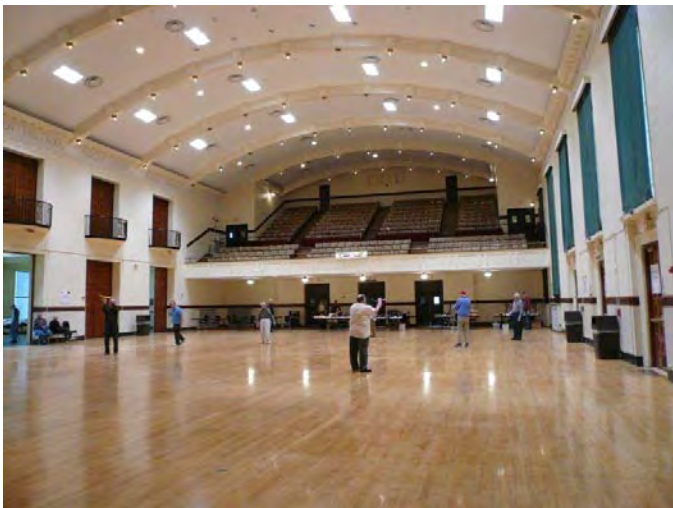
Winners of Delta Dart Mass Launch. Del Johnson, 1st, Kurt Kremetz, 2nd and Ed Konefes, 3rd. Jack Boone presented the awards.



Bill O'Dell launching his Catapult Glider.



Close up of LeRoy's Profile Model.



Mass Launch of Cash Bash models.



Close up showing prop offset.



LeRoy Cordes attaching prop to his No Cal Profile model.



Joe Bartek with his Cash Bash Model.



Cash Bash Mass Launch.



Winners of Phantom Flash Mass Launch, Left to Right: Jim Hall, 1st, Anton Telford, 2nd and Ed Konefes, 3rd. Jack Boone presenter.



Cash Bash Winners: Left to right, Kurt Krempetz, 1st, Del Johnson, 2nd, and Ed Konefes, 3rd. Jack Boone made the awards.



Jack Boone judging the scale models.



Phantom Flash Mass Launch.



Bob Kumferman with his Cash Bash.



LeRoy Cortes, sitting and Jim Hall timing LeRoy's Phantom Flash in a duration flight.



Jack Tisinai, left and Jim Gerszewski recording their flight times.



LeRoy Cortes winding the motor of his Profile model.



Jack Tisinai with his Scale Model.



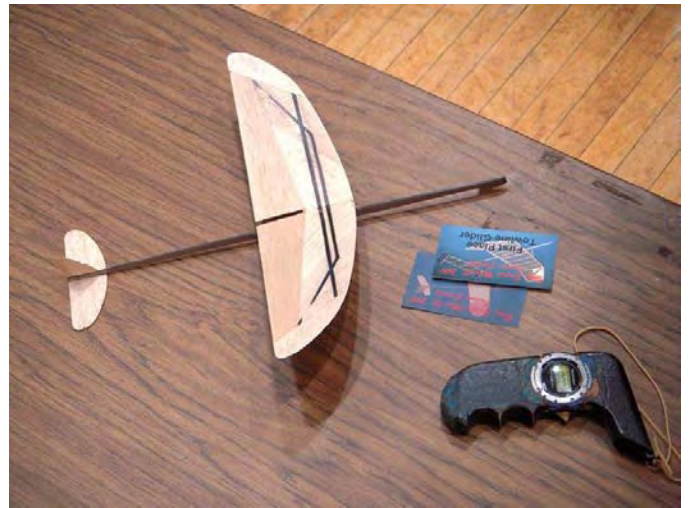
Jack Boone helping LeRoy Cortes with his profile model.



Jack Tisinai launching his scale model.



Jack Tisinai's model flying just under the ceiling.



Kurt Krempetz Catapult Glider and Launching Handle



**Anne Miller on the left with Ed Konefes's support group:
Left to right: Karen Scheffner, Margaret Scheffner,
Kristal Nobel and Henry Scheffner, nephew of Ed.**



Delta Dart Mass Launch

SANDERSON FIELD RC FLYERS SWAP MEET

On April 16, 2011, the Sanderson Field RC Flyers (SFRCF) held its annual swap meet. Planning for the event began early in the year by reserving space at the local Shelton, WA, high school: the event was held in the cafeteria. The venue was just right for a swap meet as there were plenty of tables and chairs, and lots of room.

Participants arrived at the swap meet at 8AM to unload merchandise and set up the tables. The early birds greatly appreciated the coffee and doughnuts. The doors were opened to the public at 9AM.

component for their new project—at bargain prices.



Burton Dagget Hunting for Treasure



Something for Everyone



Need a Trainer?



Morning Coffee and Doughnuts

This year, there was a huge selection of RC goodies from complete aircraft to balsa and covering. Swap meets are great places for wannabe pilots to find a complete trainer—ready to fly—or for the experienced pilots and builders to find just the right engine or other

Burton Dagget, an SFRCF member, and his wife brought a beautiful, handmade quilt to this year's swap meet and offered raffle tickets for a chance to win the quilt. The tickets are being sold elsewhere, as well, and the drawing will be held later in the year. Money from the raffle will be donated to the club.



Handmade Quilt Raffle

SFRCF has now held the swap meet enough times for returning participants to become friends. It is great to visit and exchange news and ideas about the RC hobby.



Old Friends

This year's event was a great success and all participants are looking forward to the next regional swap meet.

Special thanks to Chuck Kentfield, Bob Beatty, Burt Daggett, Gordon Osberg, Richard Robb, Robert Mason, and Jay Lowe for their help in putting on the event.

Royce Tivel

Many thanks to Royce for the information and great pictures! Looking forward to hearing from you again in the near future! If you would like to email Royce, you may do so through the office. I will be sure to forward any correspondence along to him. Julia

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(rain date July 17)
9 a.m. to 4 p.m.
PUBLIC WELCOME

Astrowings will be partnering with local Boy Scout troops to host the annual Fun Fly. Every year the Boy Scouts have been a tremendous help by managing the parking for our event. We will be donating a portion of the Fun Fly proceeds to them.

Scale planes ♦ Jets ♦ Warbirds
Acrobatics ♦ Helicopters



SCHEDULE

8:00 a.m.	Pilot Registration—\$5 Fee
8:30 a.m.	Pilots' Meeting
9:00 a.m.	Open Flying Begins
Noon	Flying Demonstration
3:30 p.m.	Pilots Raffle Drawing

PILOTS:

Registration Fee: \$5
AMA Membership required to fly
Pilots Prize Raffle

For more information contact:

Jim Hendrickson, VP Astrowings
414-358-9501

Or visit our Web site:
www.astrowings.com



Directions:
From Milwaukee take I43 north to
Exit #93 (Hwy. 32 East)
First road on the right will take you
to the parking area.
(Approximately 22 miles from
downtown Milwaukee)



AMA Sanctioned Event

Don't miss our Electric Fun Fly & Swap Meet August 27, 2011

AstroWings of Grafton Wisconsin All Electric Fun Fly and Swap Meet

Saturday, August 27- 9am to 4pm

Rain Date: August 28

Flying Open to all AMA Members
Concessions and Facilities on Site
Free Admission and Parking
Public is Welcome



Pilot Registration: 8:00 am Pilots Registration Fee: \$5
Pilots' Meeting: 8:30 am AMA Membership Required to Fly
Open Flying Begins: 9:00 am Electric Planes Only
Swap From Your
Trunk or Tent: 8 am-2 pm
Raffle Drawing: 3:30 pm **Grand Prize: E-flight P51B!**

50/50 Raffle Every Hour

This is an AMA Sanctioned Event

For More Information Contact
Steve Tamey, AstroWings President
at 414-351-5015,
Jeff Thompson at 414-704-5900,
Mark Koerner at 414-254-6355
or visit us at AstroWings.com



Directions:
I43 exit 32 east
First road on the right will take you
to the parking area.
(Approximately 22 miles from
downtown Milwaukee)



Radio Control Airshow



Saturday - Sunday

**June 11th & 12th,
2011**

10:00 am - 4:00 pm

FREE

Admission & Parking

**Also: Sanctioned Combat
Control Line**

Saturday: 80 mph

Sunday: F2D 90 mph



New York Reservoir State Park Lewiston, N.Y.

I-190 at Witmer Road Rt. 31 Exit #24

Information: Charlie Incorvaia—lazyace1@verizon.net ; 716 837-6128



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Saturday May 21-22, 2011

Come join us and bring your VINTAGE RC, CONTROL LINE or FREE FLIGHT model for some great flying and fellowship. All models welcome both nitro and electric. Huge flying field with plenty of room for all. No Competition, Just relax and fly. AMA is required.

Landing Fee \$10.00 Kids under 18 FREE!!

Let's bring back those memories of days gone by. Bring your models that were designed, flown, kitted before 1976 to this vintage model airplane event and have some fun!!

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Spirits of St. Louis R/C Flying Club, Inc.

Helicopter Fun Fly

Saturday June 25, 2011

Open Flying Starts at 9:00 a.m. till Dark
AMA Sanctioned - **AMA Card REQUIRED**

See <http://spiritsofstl.com> for Maps to
Flying Field, Flying Site pictures, etc.

Electric outlets along pit area
and in the pavilion

Concessions Available

Landing Fee \$10.00
with Lunch Provided

Pilots Raffle Prizes

Contacts:

Tom Foster 636-244-2655,
Kevin Cordell 636-329-1918,
Pete Stephans 636-926-3087



Iron Range Radio Control Club

2011 Annual Summer Fun Fly



When: Saturday August 13th, rain date: Sunday 14th

Where: Thunderbird Field
Sheldon Jct. Road (CR 372)

Time: 9am until the fun stops

Food and pop on site, drawings for donated & purchased items.

\$5.00 landing fee for pilots, AMA required to fly. All aircraft welcome.

Come and see the impressive lineup of warbirds, aerobatic, and sport planes.

Spirits of St. Louis R/C Flying Club, Inc.

Four-Star 40* and WARBIRDS*

Pylon Races

Saturday, June 4, 2011



Spirits Field on Amrein Road, ½ mile south of Greens Bottom Road, St. Charles County

ENTRY FEE: NONE. Novice & Expert Classes for both Four-Star 40 and WARBIRDS Race for "Bragging Rights", and 1st, 2nd & 3rd Place Certificates

Registration starts at 9:00 a.m.

Racing starts at ~ 10:00 a.m.

***Class rules are available on our website:**

<http://spiritsofstl.com/contest.htm>

For more information call: **Paul Geders at 314-838-1350**
or e-mail him at: **pgeders@charter.net**

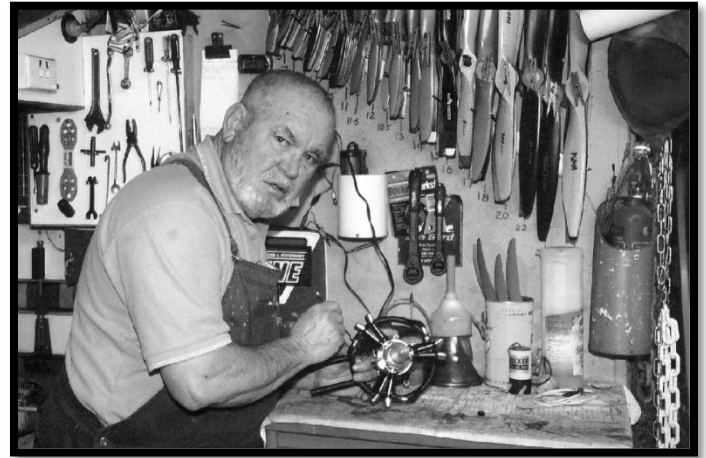


THE OILY HAND: Covering engine topics and working with metal for models. Send your comments or questions to: oilyhand@bigpond.net.au or write to Brian Winch, 33 Hillview Pde, Lurnea NSW 2170. Australia. International Response coupon (Post ☺ffice) required if you want a written reply.

A FEW POTS TO TIME

From our last article about timing four stroke engines, we now move on to the timing requirements for multi cylinder engines and here there are a few traps for the unwary.

For starters we will delve into the radial engines, but before we start rattling the spanners, it is important that you fully understand the FIRING SEQUENCE - a very important factor for all multi cylinder engines but particularly so for a radial. Ever wondered why a single row radial engine has an odd number of cylinders? There are 10, 14, 18 (for example) cylinder radial engines, but these are twin row engines. In each case of our example there are two 5 cylinder, 7 cylinder and 9 cylinder radials joined in tandem - one behind the other, but each single engine has an odd number of cylinders. There are several reasons for this and most reasons stem from the firing sequence. To gain an appreciation of a reason for the uneven cylinder numbers we first consider a brick on a string and a control line model aircraft. Tie a fair size brick on a long string and start swinging it around you in a horizontal circle (until you get giddy, fall over and the brick falls on you - no - that's just a warning for old farts). Why does the brick remain at the end of the string as it follows a circular path? Mostly it is being acted on by centrifugal force forcing it outwards. Now, and



here we come to the very grey area...almost black area...is the brick flowing smoothly in a circular track or is it trying desperately to fling off (out of the circle) in a straight line to use up the force which is acting upon it? Does it perform countless numbers of attempts to fly out of the circle, but continues the circular path due to the restraint of the string and maybe even a little centripetal force? Let the string go and see what happens. Out it goes in a dead straight line - in alignment with the center of the circle - and clobbers your mate who is watching your weird antics from the sideline.

Okay...remember what the brick did when it was released.

Now we consider a control line model. Similar to the brick on a string (that will generate hate mail), but it has an engine pulling it as well as the natural desire to fly out of the circle. As well, many of these models have a bit of rudder



A double throw crankshaft, but this one has a slight offset for the Saito inline twins.



You've got a tray full of engine 'bits' on the bench and the engine has to be timed correctly...

APPLYING THE EXAMPLE

With the above information in mind, we now consider a radial engine. In place of you standing in the center of the circle we have a crankshaft that is fixed in the center position and it rotates freely within the support of the crankshaft bearings. Now we get to the 'dark' area and that is in the form of the counterweight - a large lump of metal off to one side of the round crankshaft and a smaller lump opposite with a crankpin attached - a totally unbalanced



....so you can end up with this and you want it to run.

load that, if rotated, it tends to want to fling the excess weight off one side out of the smooth

running circle. ☺kay, a bit of balancing here as we add a large mass of conrod to the crankpin and, attached to this conrod is an even number of slave rods to make up the odd number of cylinders designation...one master rod plus two slave rods for a 3 cylinder engine, four slave rods and we have a 5 cylinder engine - similar arrangement for a 7 and 9 cylinder radial.



Radial engine crankshafts have quite a substantial and wide counterweight...



...Due to all the parts spread out on the opposite side.

The off hung weight is now building up so let's add fuel to the fire by adding pistons, gudgeon pins, circlips and piston rings. Now we have a really substantial mass to mix up with the centrifugal force. The crankshaft rotates and all the extra weight bits fly out, in turn, to break

free of the circle like the brick and the model on the string. Think about it, as the internal mass rotates, each piston is shooting out from the center in a straight line to break free of the circular path. The 'escape attempt' of the piston is being restrained by the connecting rod which is backed up by a very considerable force. Just as the piston heads up to the top of the cylinder and the rod is moving with it, there is a very powerful explosion - combustion - (the force) which dissuades the piston from trying to break free of the circle by sending it back down to from whence it came. Here we consider a drop of pure Sir Isaac Newton - 'every action has an opposite and equal reaction' - the force applied to the top of the piston sending it back down the inner liner is the same amount of force trying to push the cylinder head out of the circle (and off the engine). This force is considerable (commensurate with the size of the engine) and its energy is transmitted through the engine to the (our main concern) engine mounts. So here we have the engine itself straining to break free of the circle of configuration (design of the engine) with the first bang of cylinder number one.



Gear train for a 5 cylinder radial - note the common style timing marks.

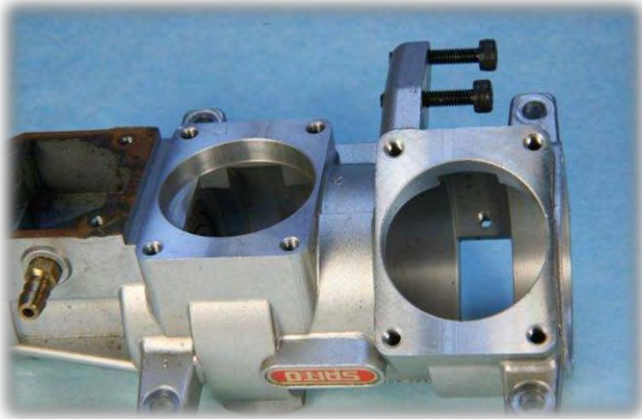
Let us consider here a 5 cylinder radial for an example and that the firing sequence is one cylinder after another...1-2-3-4-5 (We will see further problems with this later.). Righto, number 1 cylinder has fired and set up a fair bit of internal force as it tries to pull away from the crankshaft and has been blown (by explosion) back and set up an opposite force on the crankshaft. While the poor engine and shaft is still quivering from this, number 2 cylinder fires followed in rapid succession by 3 - 4 - 5 and again, number one - every 72 degrees of rotation. Remember the 'Spirograph pen' craze of a few years back when you used plastic gears and the pen to draw all types of geometric patterns? One effect was any number of circles all on the same plane but all with different centers - an effect sometimes used to show astrological patterns of planets rotating around suns, moons and other sky type things. Well, this is what the poor engine is now doing, and in engineering terms, this is known as a 'rocking couple' that can occur with almost any multi cylinder engine configuration. It will often manifest itself in a manner similar to a harmonic period - brief period of excess vibration. Well now, how do we prevent the radial engine from self destruction, or at the very least, tearing off the mount and going into a wild and wobbly orbit? Simply, we 'knit one-miss one' - one cylinder fires and next misses out.



More counterweight mass on the shaft to counteract the extra weight of 5 sets of parts for the 5 cylinder radial.

To be correct in this, the operational process is - one cylinder on the combustion (firing) stroke - the next cylinder on induction stroke (finishing off exhausting and then sucking in fuel) - next cylinder on combustion stroke and so on ad infinitum until the cows come home or the tank runs dry. The effect of this 'hit and miss' arrangement pours oil on troubled waters and smoothes out all the ripples. It is so effective that, as many modelers know, a radial engine runs almost as smooth as an electric motor (and sounds so much better). The simplest example of this firing configuration is seen with the Saito range of 3 cylinder radials. Firing order is 1-3-2-1 and on - a very nice spread of a firing stroke every 120 degrees and super smooth operation.

GETTING EVEN



For timing purposes, consider the rear cylinder as the RHS cylinder of a horizontal twin - it is already leaning that way.

Righty, let's look at a radial engine with an even number of cylinders - say 8 for an example. We know that the sequential firing (one after another) is not a good idea so we use the proven method of 'fire one - miss one' as described above. Here we go - firing order is 1-3-5-7-1....err...hold on, we seem to have missed something here - what about cylinders 2-4-6-8? They missed out altogether. Okay, let's try another method and fire off cylinder number 2 first so, now, the alternate firing order is 2-4-6-8-2. Bugger! We missed the other lot this time. ☺ Only one solution - either remove or add one cylinder so we end up with an uneven cylinder count or....one consideration - have a great number of cylinders like, maybe 20 so the firing is spaced close at 18 degrees. Probably would work, but it would be crowded with very skinny cylinders. So, if you insist on an even cylinder number for a radial - it will be a twin row radial with an uneven cylinder count on each row.

HOW ABOUT TIMING THEM?



Inside the crankcase is one throw of a twin throw shaft and its position will be set when you use the timing marks.

The cams requirement of a radial engine is dependent on the number of cylinders and this is done in conjunction with the gear drive off the crankshaft. Typically, due to 3 firing strokes per crankshaft revolution in a 5 cylinder engine, the gearing is 3:1 - the cam plates (discs with 'lumps' on them) rotate at 1/3 engine speed. This is not a concern to you other than general interest as the gears have timing marks on them so it is simple matter of aligning the marks.



The cams are 'bumps' on the two plates - note the number of cams - 3 for a 5 cylinder radial.

Sounds all well and good until we come to the Saito engines and here we have a camgear and cams as a separate assembly for each cylinder - 3 cylinders - 3 cam assemblies (in cam cases). Number one cylinder is the one behind the Saito nameplate on the front crankcase housing and opposite the breather nipple underneath. If you have assembled any Saito engine in the past you will be familiar with the timing dot on the camgear and this is set at the vertically down position - 6 o'clock position. There is a simple timing tool for holding the gear in position and this is shown in the instruction book. Actually, I showed it to you in the first article of this series. I find it much easier to set the timing on the Saito radials before the cylinder is fitted as it is very easy to visually locate the conrod in the center of the case aperture in the Top Dead Center (TDC) position. Set the conrod in position then fit the camcase and secure it with the holding bolts. Make sure the crankshaft does not rotate after the first timing procedure is carried out as it is easy to lose the timing sequence. Now, turn the crankshaft anti clockwise (normal direction of running) until the conrod for number 3 cylinder is in the TDC position and repeat the timing procedure. Now, turning the crankshaft in the same direction, bring up number 2 conrod and repeat the timing procedure. The engine is now timed to fire in the order 1-3-2 -1(and on) which is the correct timing. To save a lot of frustration (and swearing) later on when the engine is completely assembled, I test the timing before I go any further. Using two of the push rods in the position where they operate - on top of the cam followers - I place my left thumb on the ends of the rods and bring the engine up to an induction stroke on number 1 cylinder. Rock the crankshaft a few degrees left and right and

you should feel the movement of BOTH rods pressing into your thumb. Timing is correct for that cylinder. Repeat this now for number 2 then number 3 cylinder and you can then finish off the assembly satisfied that you need do it once only... provided there is no funny little bit you don't recognize left on the bench when you have finished.

Now we come to the Saito 5 cylinder radial and this, again, has a cam assembly for each cylinder. but this time, inside the engine. Obviously, some modelers could carry out the assembly work of the timing of these engines, but...not for the casual engine fixer. There are very small ball bearings and O rings to replace as well as setting all cams correctly. Saito uses an assembly jig for this job and they strongly advise that the engine be returned to them for any internal service. Good advice, and...it might just work out a lot less expensive than a home workshop job.

TWIN AND FOUR ACROSS



For a single throw twin the crankshaft is of the common style except for a slightly longer crankpin.

Let's look now at the horizontal twins and the horizontal four from OS - the Pegasus. We have the OS engines, Saito and the Chinese (ASP/SC/MAGNUM) engines to consider here and there are some tricky little traps for the unwary. Let's get the easy ones out of the way first and that is the OS and Chinese range of twin and four horizontal engines.



The longer crankpin is due to the size of the clevised conrods - one in between the fork of the other.

Very simple - mark on the pinion (smaller gear on the crankshaft) and a hole or mark on the cam gear. Align them and you are in business - end of story.



Twin cam Saito engines have on camgear with the 'scratch' timing mark. Note the normal dimple mark about 90 degrees to the right. From the 100Ti inline twin.

Now for the Saito twins and here we consider types of crankshaft throw. A single cylinder engine has a single crank throw - one crankpin onto which the big end of the conrod fits. The engine in your car has a multi throw crank - a

'crankpin' (as part of the crankshaft) for each cylinder or, in very rare cases for high cylinder number engines - two conrods on one crank section, but the norm is one on one and so it is for the multi throw model engines such as the Geminis, Pegasus, IL300, Saito 6☺T and 90TS, 100Ti and 200Rti (inline twins), the 300T and the latest 57T ignition engine. The very first 80, 90 and 130 twins and the (current engines) 100T and 182TD are all single crank twins and here is the other (main) difference. With the multi throw crank engines, both pistons are at Top Dead Center simultaneously (not both firing though) whereas the single throw twins are one cylinder at a time...when one piston is at TDC the other is at BDC (Bottom Dead Center) and this to me is the real definition of a Boxer engine. Imagine (if you must) two pugilists standing toe to toe trading blow for blow - one throws a punch at the other then the other throws one back - tit for tat. It is also similar to an old method of mixing concrete (before concrete mixers) where a box had the dry mix in it (sand, cement, lime) and it was poured into another box and then vice versa and so on until the mix was uniform and this was called - wait for it - boxing and the person who did the mixing (specialist in the job) was a 'boxer'.

Okay, you now have the description so let's see about timing the Saito's - double crank first. First we have to orientate the cylinders - which is left or right and from what view point - front or rear. For any reference regarding a Saito horizontal twin engine, viewing from the back gives the normal orientation, that is, left cylinder is left and right cylinder is right. This does not change when ordering parts but it does change for VIEWING from the front where,

again, the orientation is normal so, the cylinder that is left from the rear is now the right cylinder. Repeating, this is for VIEWING only as it is still the left cylinder of the engine as far as the layout description of the engine. Now that that is clear (I hope), let's time the engine. The camgears for a Saito engine have the dot as previously described but, in the case of the twins, one cam gear has, also, a straight line (scratch) and this is the timing mark for the first cylinder (first as in timing order). Looking from the front we set the right hand side cylinder at TDC and insert the cam gear with the scratch (line) on the face in the timing position, that is, 6 o'clock. Do not move the crankshaft of the engine. Now fit the other cam gear with the dot at 6 o'clock and tighten all securing bolts. I put a dab of castor based grease (red Castrol) on the teeth of the gear and on the cams to give the parts an oily start. A generous dose of synthetic oil (as is used in the fuel) will do a good job but do not use an oil or grease that will not mix with the fuel. In many cases the use of an incorrect oil or grease can form an emulsion with the fuel and actually prevent moving parts from being lubricated.

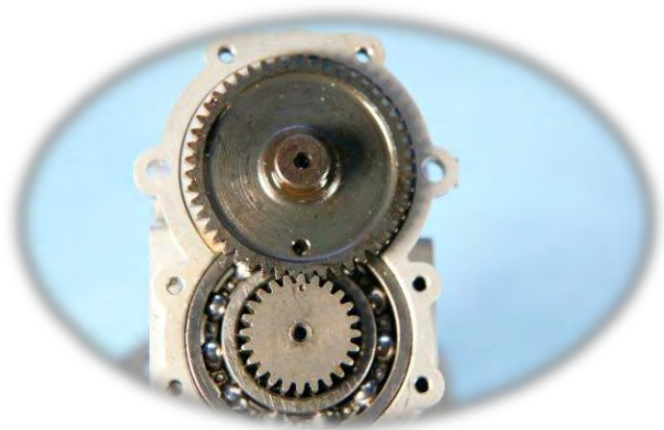
Now for the single crank engines which, if you consider it, can be treated, for purpose of timing, as two separate engines other than that we need to consider running balance so the timing must be set to provide that balance. As with the reference above we use the same procedure - cam with the line (scratch) to right hand side cylinder from the front. Now, here's the difference, carefully turn the crankshaft to the left - direction of normal rotation - 180 degrees - $\frac{1}{2}$ a full rotation - to bring the left hand side cylinder to TDC then you fit the cam with the dot and the job is done. Just a

reminder here - refer to the first article in this series to remind yourself of the manner of securing the gears (pin tool or slotted card) for timing. You can imagine the frustration of finally getting a twin all assembled and then finding that the timing is one tooth out (moan, bugger, damn and poop.)

THE ODD ONES OUT

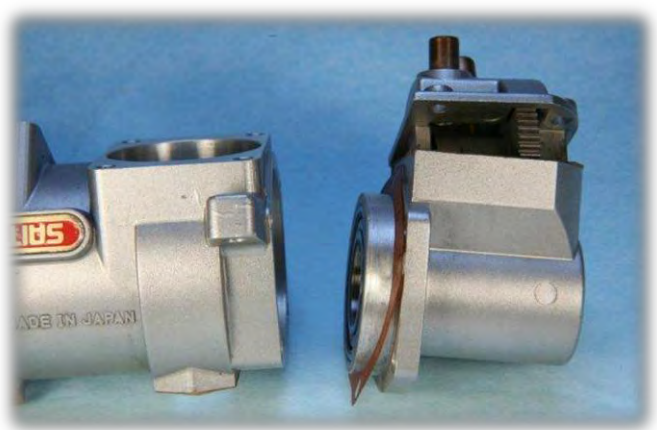
The 60T and 90TS are both double crank twins (both are really a model engine gem) and a complete departure from the usual style of cam layout in that they both have a long shaft on which the cams are machined - quite similar to the O.S. Gemini twins. Timing is quite simple as both the camgear and the driver pinion have reference marks that align with each other through an idler gear.

The 100Ti and 200Ti inline twins are somewhat different in their layout having a separate rear housing that is also the mount for the camgear housing. Here's a simple way to consider the job, treat these engines as the Saito double crank twins and imagine that you have 'modified' the engine by twisting? pushing? relocating? The cylinders in a horizontal pattern - the rear cylinder is now (from the front) the right cylinder and this is the first cylinder timed using the gear with the scratch (line) and, without moving the shaft, the left (front) cylinder is timed with the dot on the camgear. Done, done and done.



Single camshaft twins and fours are simple to time using the timing hole and dimple.

The final challenge is the OS IL300 - four inline engine and here we need to have a care. The engine is timed with cylinders number 2 and 4 at TDC. With these set as such there is a reference on the rear end of the crankshaft. The pinion - smaller gear - is held in the correct position with a small parallel key which aligns with one tooth of the pinion. This alignment continues across the rear face of the crankcase and aligns with the center of a bolt hole in the case - the line through all points is horizontal. The drive from the pinion to the cam gear is via an idler (position of this is irrelevant) which, as is the case of an idler gear, it has no bearing on the 2:1 gearing ratio. The cam gear has a hole drilled in it just behind one tooth and this hole is set at the 6 o'clock position - vertically down. The tooth to the left of it is in alignment with the center of the smaller bolt hole in the crankcase. Incidentally, the next hole in the case to the right is a locating hole and it has a tight fitting steel sleeve through which a bolt and nut fits as part of the case assembly.



The timing case and rear support for the crankshaft is a separate part.

FINAL WORD

Regardless of how careful you are with the timing of any four stroke engine - keep in mind that EVERYBODY makes a mistake or two at times - yes...even you - so check the timing as I set out in part one of this article before you fire up the engine...it might save a lot of angst and loud wailing.

IT'S THAT TIME...

APRILWUN.ROT.CON where we look at strange happenings, weird things, absolute nonsense as edited by Julia's Office Dog and my pet rattlesnake. Nothing is real - everything is rot and there is nothing you can, should or attempt to do unless you are completely mentally incompetent or absolutely stupid and have the permission of your mental health consultant and somebody's pet Gila Monster Lizard. Things described here are carried out by a person with no scruples, morals, sense of decency, sense of fair play, reasonable consideration for others and, definitely, no sense at all.

The person lastly described above - the workshop 'Frute Lupe', is out in the far paddock wailing and weeping, beating his brows and kicking his own rear end. He 'borrowed' my new Saito 57 gas engine and built a huge model for it - used up a year's supply of my balsa, a pint or so of glue, a gallon of tautening dope and enough covering material to wrap up a new Chevy Wagon. Unbeknown to me, he had this bright idea of assisting the lift of the model after he had been reading about the Montgolfier Brothers and their experiments with hot air balloons. The worst part was that he then went on to read the history of Count Von Zeppelin and his rigid frame airships. Well...consider hot air, rigid frame structures and covering and see what you come up with. The Beetle Brain considered engine exhaust and covered wing structures. He made up two extension manifolds connected to the exhausts of the big Saito and fed them into the wings of the model. His idea was that the hot exhaust gas would provide lift for the wings and this would be a great aid in flying the model. Forgot about the dope fumes in the wing, didn't he? No sooner was the engine started when the wings went up in a muffled explosion and a wall of flame. Set the gas in the tank alight as well and the whole lot was a blazing mess. I raced up and pulled my engine out with a long wire rod then I gave him a marshmallow on a stick and told him to get, at least, a little enjoyment from the model - toast the bloody marshmallow and eat it (And I hope you bloody well choke on it.).

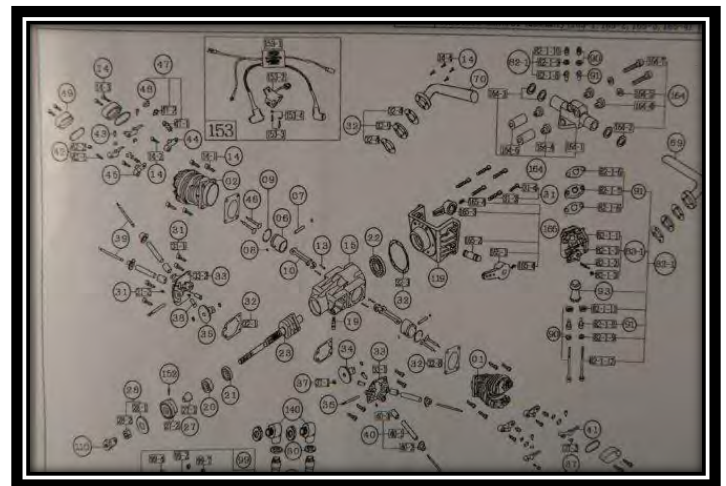
I'm off downstairs to polish the soot off my engine and contemplate the value of a solitary life in a desert island workshop.

Another winner and whine from WINCH - THE WILL'O'THE WISP WIZARD.

LATE EXTRA ITEM



Since my first review of the TurboHeader mufflers I have been receiving excellent feedback from modelers who purchased the mufflers for their four stroke engines. Every report has been very positive citing subdued exhaust sound and increased power. As well, many users have indicated how pleased they are with the quality of manufacture, neatness of design and how well the muffler fits in with the style of the model.



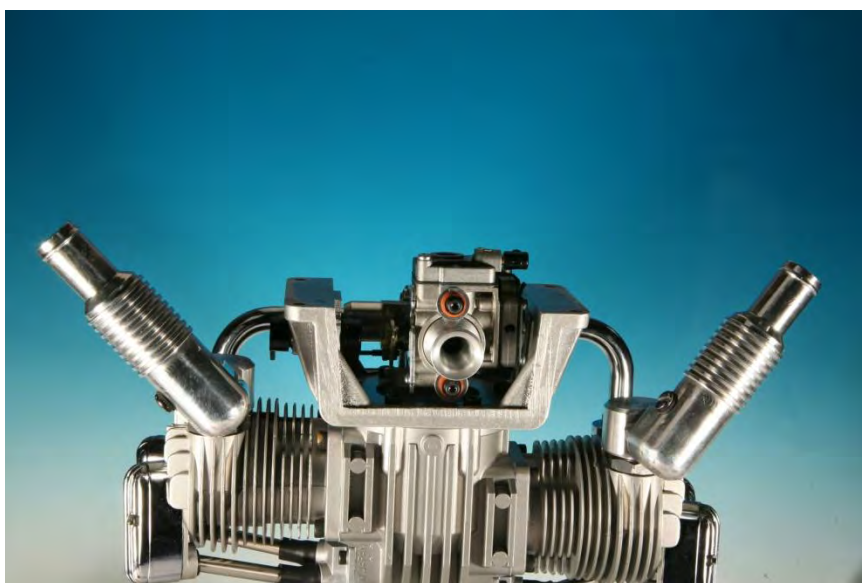
Think and check before you start. These are the parts for the Saito 57 twin and....it is not a good idea to have parts left over when it is assembled.



motorcycle (horizontal twin engine) on full song going up a hill under full load.

The main reason why these mufflers are efficient in reducing the sound is due to the method of construction. They are machined from high tensile aluminum alloy, have a very thick wall, adequate expansion area, smooth flow and a small outlet. They reduce the sound volume but not the RPM as I have recorded a slight gain of 2-300 RPM each time I have tested them on various four stroke engines. Very well made, no sections to fall off, simple and positive method of attachment, good appearance and much smaller than most supplied exhaust systems. A full range of the TurboHeader mufflers and 90 degree adaptors to suit almost all four stroke engines is available at <http://www.rcspecialties.net/index.php>.

I am pushing hard to convince modelers that we need to reduce exhaust (and other) sound, but that does not mean I have moved over to the 'league of silent flight' - I still enjoy a good sounding exhaust at reasonable sound levels and that is exactly what I enjoyed with the TurboHeader mufflers that came on special assignment for the Saito 57T spark ignition engine. Used with the TurboHeader 90 degree adaptors (you can also use the supplied Saito adaptors) I was able to place the mufflers in a quite a variety of positions to have the exhaust outlets to the sides, pointing down, up and in a sort of folded position that would keep them inside a cowl if you wanted to enclose them and fit extensions for the outlets., I imagined a sporty type model with the two outlets angled out each side of the cowl and pointing towards the back of the model. I set them up like this on the bench and gave the engine a full RPM run while I moved around the test stand checking the sound volume. From all points the noise was very acceptable - no bark or metallic rattle - and from the rear the noise was still quite low (comparatively) but of such a great sound - a real solid engine sound like a BMW



FOR THE COMBAT ENTHUSIAST and FIGHTER PILOT WANNABEE

The heat is on, at least here in sunny, south Florida, and the combat season is well under way! Things are warming up all over and the contest calendar is full this year! What's that, no contest in your area? Well get off your parachute and drive to one! Then bring that enthusiasm back home and get something started yourself. It's the only way to create a new group of active combat pilots!

BE THERE ☺R BE SQUARE

Events for June are: 6/4 "Red Barron's Turkey Shoot", Open B and 2610, Blackfoot, ID. 6/4,5 "Tundra Terror III", SSC and Limited B, Green Bay, WI. 6/12 "Battle for Beaver Dam", SSC, Beaver Dam, WI. 6/18 "Texoma Summer Scorchers", SSC and Open B, Sherman, TX. 6/18 "SSC Combat in Iowa" SSC, Hartford, IA. 6/18 "Spring Street Brawl" SSC and 2948, Street, MD. 6/25 "Desert Storm of Victor Valley", SSC and Open B, Hesperia, CA.

Don't forget that July, as always, is the month for RC Combat at the national headquarters in Muncie, Indiana. Get there if you can!

The contest calendar is filled up with numerous events from now until fall all over the country. Sign up, suit up and show up! Here's the link to go to the RCCA's event calendar and sign up: <http://rccombat.net/events/index.asp>



Signing up online prior to the contest date should be done as soon as possible. This helps the event coordinators and contest directors get all the needed supplies, manpower and club resources to make the event run smoothly. Also the scores of those who pre-register are recorded more easily by the National Points System (NPS) score keeper, Randy Hodges, when you sign up online before the contest. Seeing the names of other pilots you may know or want to compete with is a good draw to encourage participation, so don't be shy! Sign up early!

Be there or be square!

EVENTS DEBRIEF

6th Annual "BUSHWHACKED" Spring Fling

The contest took place in West Palm Beach, Florida, on April 9 - 10. It was attended by 12

pilots from as far away as Ohio and Georgia, as well as from all over South Florida. Beautiful weather with a high temperature in the mid to upper 80s made for near perfect conditions but a bit on the warm side.



Open B Group Photo including volunteers. Pilots L-R Kneeling; Kenny Clements, Bob Loescher, Chris Handegard, John Harding, Jim Nadaskay, Rick Valdes, Standing L-R Don Grissom, Matt Chontos, Craig Buttery, Glenn Gellat, and Rick Engel.

Ten pilots registered to compete in Open B, which limits the engine displacement to .30ci and a maximum weight of 3-1/2lbs. There are no other restrictions so this is what might be described as the “unlimited class of Radio controlled combat with speed to match!

Hosted by the RC BUSH PILOTS, club members turned out in excellent support of the event. Providing sufficient judging manpower to enable the event to be “all up” every round in each of 3 different classes. Open B for the speed junkies, Scale 2948 for the true fighter pilot wannabee, and SSC the “Slow Survivable Combat” class.

The action in Open B was fast and furious with Craig “Big Dog” Buttery claiming the victory

cup by a wide margin. His new design called the “Zapdos” is proving to be a formidable combat platform for him.



Scale group with club volunteers, Pilots (the ones with a plane) are L-R; Kenny Clements, Bob Loescher, Ted Cwikel, Chris Handegard, Rick Valdes, Jim Nadaskay, John Harding, Craig Buttery, and Matt Chontos.

When the volunteers equal or outnumber the pilots it makes for a smooth running competition that moves along quickly and gives the pilots a better chance of getting up for every round. Scale combat generally has a more subtle tactic of pursuit but there was no shortage of turn and burn this time as the 8 pilots registered tore it up!

There were plenty of mid-air and unfortunately my twin engine Gekko took a hit and plowed into the ground pretty hard doing a lot of damage. I may start from scratch this time rather than do another repair on it. After a few major repairs they get heavy and it's better to throw another one together if good flying characteristics are important to you.



Aerial action- Oscar vs. Thunderbolt

Once again it was Craig's day to come out on top by a couple hundred points. He flew a consistent day of scoring and used good defensive tactics to hang onto his "money" streamer most of the time.

Day one saw 10 rounds of Open B and 5 rounds of scale 2948 completed in record time and we cleared the field by around 2:30. Sunday's weather was a carbon copy of the previous day and we really enjoyed the clear skies. Five more rounds of scale were flown to wrap that up and we moved right into SSC.



Twin in action for the last time

Ten Pilots registered for SSC and once again we had enough volunteer support to go all up. SSC is the most limited of combat classes. 15 is the engine size limit, 17,500 rpm with a Master Airscrew 8-3 "combat" prop is the limit and they have to weigh at least 2-1/2 lbs. Slightly heavier for electrics. It's a lot of fun but can be a real carnage fest due to the furballing and tight turning. I'm beginning to think SSC stands for Super Severe Carnage.



SSC group pilots L-R Are: Don Grissom, Glenn Gelatt, Craig Buttery, John Harding, Chris Handegard, Kenny Clemants, Ted Cwikiel, Bob Loescher, Jim Nadaskay, and Matt Chontos.

We flew 1 ☺ rounds of SSC and the field was vacated by us at 2:30 again, some kind of speed record! This was truly the day of the "Dog" as Craig came in first in SSC for a clean sweep of the event! Congratulations on an outstanding day, some big scoring, (one eight cut round) and a well earned trio of victories!

And also be sure to check out the Palomar Flyers Combat Forum at <http://pfcombat.hyperboards.com/index.php> for some cool combat tips, event debriefs and discussion forums.

FROM THE BENCH

One last reminder that parts and new engines from Norvel, now called NV, are a reality! I have received my parts order from Alex Frish in California klondike17@juno.com and he indicates that they are going to continue to get organized for distribution in the US again. For now e-mail Alex to get a complete list of parts with pricing.

At this year's Bushwhacked event I was reminded of a problem encountered before once or twice; string wrapping around the back plate or drive washer of a .15 size glow engine. The O.S. FP.15 I run is no problem. The Drive plate just slides off and you can clear the obstruction.

Magnum .15XLS on the other hand, is a pressed on wedge fit that is extremely hard to remove. In fact, after wrapping a string on one of them in an SSC round, killing the motor in flight, I found I could not remove it at all even with a crude 2-jaw wheel puller that Bob Loescher keeps in his tool box for that very purpose.

After several of us struggled with it until time ran out I was forced to give up and fly a back up. On the very next flight the same thing happened again and there was no removing this back plate either! I was forced to finish the contest with a sagging .15 or it would have been the end of the day for me.

One problem with trying to use a 2-jaw wheel puller is that it tends to slide off to one side or the other when you crank the bolt in that makes it work. I just got a 3" 3-jaw gear puller to try out on the 2 motors which still have string problems.



A 3" 3-jaw gear puller to remove stubborn back plates

It's going to require some modification in the form of grinding down the hooks at the end of the 3 arms so they will fit into the groove on the back plate. Then I can see if it will do the trick. If successful I'll have a full report next month.

Well, that's it for this month gang; I hope you enjoyed it and am looking forward to hearing your comments at chandegard@peersonaudio.com. Don't forget to clear your guns before you engage and check your six o'clock frequently!

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UTILITAS EFFECTIVAS.....(LATIN FOR COOL TOOLS?)

Howdy folks! Welcome to Cool Tools. This monthly little snip-it will give you tips on my most recent little garage sale, swap shop and closeout finds. Now these may not be things you will find at the local hobby barn, or the two big online RC superstores, but rather items you can find that will fit that little rinkychink to make your shop more usable! Let's see!

This month I found something that will help to keep those Allen's and blades that we use all the time from wandering off. At the local Harbor Freight in Tulsa, I ran across a tool holder for a paltry \$5.99! (Item # 65489) This metal holder can be affixed to most any surface or just set on the bench whilst building most anything. Since its magnetic, any ferrous metal, and even some stainless will stick to it and not fall off the bench or counter. I use single edge razor blades quite a lot and I got quite a scare

one day when my little one was walking around the house with one in her mouth!!! It's a wonder the poor old blind dog didn't cut her mouth. Poor little Peachy, she's priceless...sorry...wandering a little...The magnetic tool holder holds those loose blades so they don't become Peachy fodder anymore!

'Til next month

Latin Prof. Post Hole Digger



So did you miss me last month?

Things were very much up in the air for us in North Alabama following those nasty storms in April. My family and I are all okay, but lots of others were not. Please continue to pray for those still in the process of tornado recovery.

I am sure there were many events that I missed telling you all about that will be going on in the month of June. Since we missed out on what's happening during June; it will be up to you to help us out! Send in your pictures for Photo-Ops, please! Many of the freebie cards we offer for events didn't make it out for the May events either. If we did miss your event; send mom an email with information on your next event and we will be sure to help out!

Several of you even emailed and mentioned that your events had been cancelled or postponed due to weather. So it looks like Mother Nature is acting up all over. Just like a woman my dad would say!

The only non-flying event I could locate for July is on July 7, in Brooklyn, Michigan. The 28TH ANNUAL OPEN AIR SWAP will be held at club field. Contact Gary Adams for more information. His email is gadams@frontiernet.net. Event time: 8:30AM to 12PM, admission \$5, under 12 free. Concessions on site. Bring your own shade and table. Sponsor: IRISH HILLS RC

The 21ST ANNUAL WATER N WHEELS will be held in Fairbanks, Alaska, on July 2-3, 2011 at club



field. Michael Davis is the man with the answers and can be reached at mike.davis@dcsol.com. Visit: www.midnightsun.us. Events include: 401-415(O), Alaska state championships IMAC and pattern. The IMAC on Saturday including unknowns and freestyle. Pattern on Sunday. Camping allowed at the field.

Join Anthony Grillo for a NIGHT FLY in Castaic, California on July 1, at club field. Email with questions: anthonym19861@sbcglobal.net or visit: www.canyoncrosswinds.com. \$10 landing fee. Current AMA membership required.

Travel to Terre Haute, Indiana on July 3, for the THRCC ALL SCALE DAY. Mitchell Baker can tell you more about what's going on when you email him at mdbaker@mdbaker.org. Visit www.thrcc.org for more information. Anything scale, sport scale, might be scale, at one time might be scale. Gates open 10AM. Raffle, \$20 landing fee includes one lunch for each pilot.

Yes, I realize this next event is not RC, but you guys have got to intermingle. Think how much more fun you would have. Play with some gliders in Sudbury, Massachusetts, on July 9-10, at the CRRC HANDLAUNCH GLIDER CONTEST at Davis Field. Richard Williamson will be there to show you the ropes and can be contacted beforehand at williamson@alum.mit.edu. Visit: www.charlesriverrc.org. Event 441(O).

That same weekend in Baltimore, Maryland, the CHARM CITY IMAC CHALLENGE will take place at club field. Email Nir Schweizer for more information at nir.schweizer@verizon.net. Events include 411-415(O), IMAC contest and freestyle competition. Relaxed open flying on Friday July 8. Prizes, food, camping available, no hook ups. Freestyle is not mandatory, but encouraged. Art Vail is also available for questions at artvail@verizon.net.

Back in Michigan on July 9-10, the SPORT SCALE FUN FLY will be held in Maple Grove Twp, at club field. Contact James Breidenstein at foundryratjim@charter.net. Also visit www.chesaningrcclub.org. This event is for RC sport scale models of powered planes, gliders, helicopters and control line models of the same. Must meet 98lb at 25'. Non competitive event, landing fee is a canned food donation.

On July 16, head to Blue Spring, Missouri for a 3D POKER FLY IN at Flemming Park. Email Lawrence Smith at hobbyhut@sbcglobal.net.

East Bend, North Carolina will be the site of the (C-Restricted) RAMS DRAGONFLY HELICOPTER FLY IN on July 16-17 at the Club Airfield. Rod Stauffer can help you with directions, etc when you email him at rgsfllrs@windstream.net. Visit: www.riversiderc.com. All helicopters!

Open flying, obstacle course to test your skill. \$15 two day, \$10 one day landing fee. Registration 10AM, concession stand, restrooms and overnight (no hook up) camping at the flying site.

That same weekend in Fargo, North Dakota, the (C-Restricted) VALLEY BIG DOGS ANNUAL RALLY will be held at Kragnes Field. Email Jeffrey Stremick at strem@aol.com. IMAA membership required, available on site. \$10 landing fee includes lunch both days. Overnight camping available, full electrical hook ups for RVs. 800' grass runway with no obstructions.

Have some fun at AIRSHOW 2011 on July 23-24, in Phelps, New York at Ford Field. David Reid can tell you about the show. Email him at dreid@fltg.net or visit www.skyrovers.com. All size aircraft welcome, scale or sport planes. Sorry, no turbines. Registration 9AM daily, flying 10AM to 4:30PM daily. Free picnic supper for pilots and helpers Saturday evening. No registration or parking fees. Free primitive camping on site, RVs welcome, no hook ups.

Get hot on July 22-24, in Tulsa, Oklahoma, at the HEATWAVE IN THE HEARTLAND at Club Field. Edwin Gross knows the hot details and can be contacted at nomadokie@windstream.net. Visit www.tulsagluedobbers.com. Be part of one of the largest events in the area. All jumbo aerobatic and warbirds welcome. 400x50' paved and adjacent grass runways. \$20 landing fee.

Cool down (maybe) in Quakertown, Pennsylvania, on July 23-24, during the (C-Restricted) WARBIRDS OVER PA/JIM SIMMONS MEMORIAL at Club Field. Travis Moyer can be reached at tsmdmm@comcast.net. Visit: www.buc-le.org for more information. 1000x250' smooth grass runway. Plenty of primitive RV

parking. Huge open flying site, food concession, hotel lodging close by. Landing fee \$10. Any size warbird allowed to fly after 12 noon on Sunday.

Close out the month in Lake Dallas, Texas, on July 30 with a fun-filled FLOAT FLY. Email Gerald Sanders at geraldsanders@tx.rr.com. Come fly with the Falcons at their annual float fly. Landing fee \$15, pilots' meeting 9AM. Camp sites available bring a plane and lunch and have a lot of fun. Frequency board and impound, bring your AMA card.

Bellingham, Washington will be the site of the 6TH ANNUAL WARBIRDS OVER WHATCOM on July 30-31. Gerald Becker is running the show. Email him at gerab3@comcast.net or visit www.bellairrcflyer.com for more information. Landing fee \$15 per day or \$20 for both, includes lunch ticket. Registration and pre-flight inspection. Early registration on Friday, from 1PM to 3PM. The field will be open for flying.

Registration will be on Saturday at 8AM. The pilots' meeting will be at 9AM. The event will end at 4PM. Sunday is the day for the all bird fun fly-in and swap.

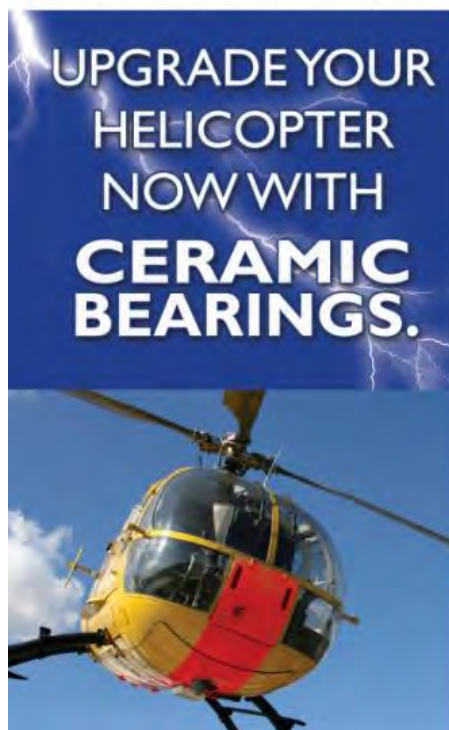
Registration is at 9AM and the pilots' meeting at 10AM. Overnight camping, no hook ups. AMA rules and use of spotters strictly enforced.

Travel to Lawrenceville, Illinois, on July 30, for WARBIRDS OVER THE WABASH held at the Mid American Air Center. Steve Stoll will know all the answers to all of your questions when you contact him at sstoll60@gmail.com. Visit www.tricountyacoclub.com. Open to any size WWI thru modern jets and classic aircraft. Military paint/scale schemes required. Turbine flyers need AMA waiver. Flying off grass runway. The pilots' meeting will be at 9AM, flying at 10AM, landing fee \$10.

Let me hear from you! Send in your event information by email, via the office: juliac@rcreport.net, with information concerning upcoming events that you are aware of – no matter how big or small! Attach a flyer, too! If you don't tell the RC world about it, the RC world will never know to visit and fly with you in your part of the country!

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First, I would like to thank all the subscribers that showed concern for the staff of RC Report Online during the storms in Alabama at the end of April. Everyone on the RC Report staff was fine, but north Alabama was hit with a power loss for a full week. The lack of power and devastation caused us to delay the May issue of RC Report Online, and eventually cancel the May issue. As a reminder, all subscribers will be credited one month for the loss of the May issue, as well as an additional month credit for your inconvenience. Now on the agenda for this June issue. I am going to talk about the best way to optimize our transmitter programming to take full advantage of the entire power available from the brushless motor and electronic speed controller setups. Additionally I will talk about some more advanced programming to help control some aerodynamic problems that come from using a large motor and propeller setups on glow to electric conversions. Let's get started

I would venture to guess that everyone that flies an electric plane of any kind has experienced a phenomenon where the motor runs fine, but you do not have the full range on the throttle. What I mean is when you advance the throttle stick on your transmitter, the motor will not run until you have moved the stick several clicks. So you may have to move the throttle forward beyond the $\frac{1}{4}$ throttle setting before the motor will begin to run. Alternatively the opposite will happen as you reach full throttle. As the throttle is advanced the RPM of the motor will increase



until a few clicks above $\frac{3}{4}$ throttle. Once the throttle stick moves beyond the $\frac{3}{4}$ position, you will see little or no change. Most folks do not worry about this, and just fly the plane, but this lack of linearity in the throttle leads to a lack of throttle management, and generally a lack of flight time. Now why is this? Well what I have experienced over the years is a lot of newer electric flyers just nail the throttle on takeoff and get into the air. Once in the air they tend to pull the throttle back to about $\frac{3}{4}$ throttles or so and just fly. Well if you are actually reaching maximum power when the throttle stick is at $\frac{3}{4}$ position, then you are effectively flying the entire flight at full throttle. Now I shouldn't have to say this, but I will, it is generally not good practice to fly an entire flight at full throttle. Motors, speed controllers and batteries get hot when pushed hard, so they need time to cool down during flight, so throttle control is key. If your plane needs full throttle to fly, then it's time to look at a larger power system, a higher cell count, or both! Okay back to the throttle stick position.

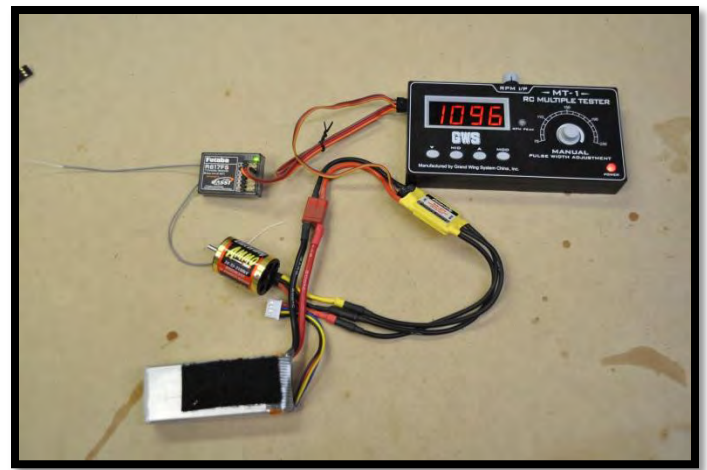
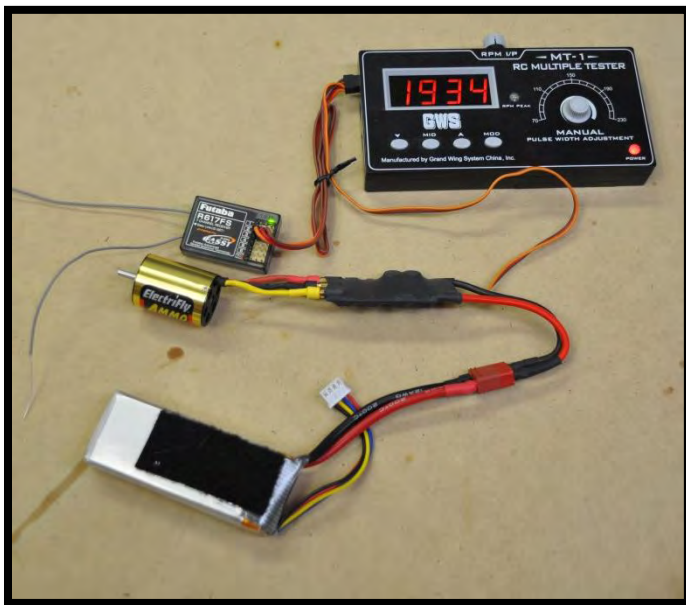
The first question is “Why does the throttle stick behave this way?” Well the electronic speed controller is listening to the signals from the transmitter via the receiver. The firmware in the speed controller is programmed to listen to these signals and interpret them as a basic percentage. The transmitter signal is pulsed continuously with the position of the throttle is based a range in pulse timing. Speed controllers are built to be universally used between all popular radio systems, so they are generally sensitive to a transmitter pulse between 800-2200 milliseconds. So if the speed controller sees a pulse from the receiver that is 800 milliseconds in length, the speed controller will take that 800 millisecond pulse width (pulse timing) and translate that to a zero power state being sent to the motor. Now this 800 millisecond pulse width is the lowest possible output by most radio systems. NOW ALL COMPUTER RADIO SYSTEMS THESE DAYS have options for sub trim as well as endpoints. The transmitter can be adjusted to move above or below the factory default settings. This is why the most transmitters actually output a pulse width in the range of 1000ms at the low end and 2000ms at the high end. Now I am saying most, but my Futaba 12FG defaults at a low setting of 1096 and a high setting of 1935 on a given receiver with no throttle trim, subtrim or extended endpoints. . Now, your JR, Spektrum, Airtronics or Hitec will vary in the 1000-2000 range as well. There is no such thing as a perfect electronic circuit in our transmitters or receivers. This allows us to adjust the endpoint settings an additional 200ms above and below the defaults. This additional amount of movement assist us in model setup because a small adjustment of a control surface can be done by a few clicks on the transmitter,

rather than adjusting a clevice, servo arm or bell crank. (It’s been a long time since you have used one of these, huh?) This differential or adjustability of the transmitter means that a speed controller has to be somewhat loose on its interpretation of what the transmitter is asking. This is usually referred to as fuzzy logic in the electronics world. Depending on your choice of speed controller, this logic may or may not be accessible or adjustable. (Thus the reason I stick to brand name speed controllers whenever possible.). All brushless speed controllers are what are referred to as plug and play because of this imbedded fuzzy logic.

Any speed controller that you find that is rated for something like three LiPo cells and a 20 Amp current rating can just be plugged in and it will work. All you need to do is plug this speed controller into your motor and receiver and it will function. You may have to reverse a throttle channel, or swap two of the motor leads to get the motor rotation, but it will work. When the ESC is first powered up it looks at the signal from the receiver and begins to interpret it. If the signal from the receiver is within the low throttle stick range programmed into the logic of the speed controller, there will usually be a set of tones from the motor of some sort. As I mentioned before, the ESC has to make a decision whether or not to arm. If the ESC did not have any logic, it wouldn’t arm until it could see exactly 1000 milliseconds coming from the receiver, but instead the ESC will monitor the signal for a few seconds and make a decision. Here are a few numbers from some signal response testing of several speed controllers I have on hand.

E-flite 40 Amp V2

The E-flite Brushless 40 Amp ESC has only basic programming options. My test showed that it would respond and arm in a range of 949 to 1278 milliseconds. This controller does not require it to be cycled to arm the motor, but simply does a double beep as arming tone. I measured a maximum rpm at 1870 milliseconds, but the transmitter moved up to a maximum of 1935 milliseconds; this differential reflects about 3 or 4 clicks of throttle movement. On the low range, the motor armed at 1097 milliseconds, but the motor did not start turning until 1165 milliseconds. Again this range accounted for an additional 2 clicks of throttle. So using this ESC throttle that has 5 to 6 clicks of zone that does nothing at all. The E-flite 40Amp ESC does NOT have an option to change the throttle programming setting, so if you use this ESC, you will just have to deal with it!



ElectriFly Silver Series 25

The ElectriFly Silver Series 25 showed an arming range of 949 through 1243 milliseconds arming range. This speed controller requires a cycle of the throttle stick to arm the esc and set the low and high throttle settings. Once powered up, motor will beep at the low throttle setting. With the throttle advanced to full throttle the motor will beep again in confirmation, and finally a double beep when the throttle stick is back to low position. With the motor ready I registered a setting of 1210 milliseconds before the motor began to turn, a stick movement of 2 clicks. I registered 1846 milliseconds when the motor reached full power, yet I had an additional 3 clicks of throttle stick left. Once again there is a full 5 clicks of unusable throttle throw with this speed controller. There are no throttle setting programming options for the Silver Series speed controller, so it's the nature of the beast.

Castle Creations Phoenix 25

Now the Castle Creations Phoenix series controllers come with a default setup of Auto Calibrating Throttle. Now when the controller is powered up it will look at the signal coming from the transmitter. If it sees a signal steady between 949 and 1260 milliseconds, the

controller assumes this is the low throttle setting. By default the controller will now wait for the signal from the receiver to increase. As the throttle is increased the controller will monitor the range until it sees a steady state signal for more than two seconds. Now this sounds a little funny, so I'll explain the fuzzy logic theory, it makes more sense. Basically the theory is AFTER the controller is armed; we are expected to run the throttle stick up to full power for at least two seconds. The action tells the speed controller logic that this is the maximum throttle setting available from this transmitter via this receiver. Once the speed controller has recorded this full throttle stick position, it can then respond to the throttle stick in a linear fashion. As the throttle stick is moved up, the amount of power being sent to the motor is increased until the throttle reaches the memorized stick position. This theory works very well, as long as you know how it works. The problem is that if you don't advance the throttle to full position for two seconds, you may not get full power. I have seen a problem with slow flying planes that are lightly wing loaded, when pilots will only use partial throttle because the plane will only need a little over half throttle for takeoff. If you takeoff at 60% to 75% throttle, the ESC can mistakenly assume that this is the maximum throttle signal output from the transmitter, therefore assuming a full throttle stick position. At this point you will only have a limited motor power and bad things can happen, so be aware. The Phoenix series of controllers have the option to change this Auto Calibrating setting via a computer with the Castle link, a standalone Field Link Portable programming board, or through stick movements in a programming mode of the speed controller.

I always change all my Castle Creation speed controllers to the Fixed Endpoint settings. The fixed endpoint settings allows a more perfect linear control of the throttle, and is adjusted the same way as you would with any other control surface. With the ESC set to fixed endpoints we just power up the system, with the motor attached BUT without a propeller. Go to your transmitter and select the throttle channel, and navigate to the end point adjustment (EPA) of your radio system. Now test the motor by moving to full throttle and back. Now one of two things will happen. First possibility is that the motor will not start to run at all because the speed controller never armed itself. If this is the case just change the EPA settings to a lower percentage until the motor makes the armed tones. If it does not arm, then change the percentage to a higher positive percentage until the motor arms. Now you should be able to advance the throttle just a click or two and the motor will start to run. I recommend going back about two percentage points below the arming of the motor due to make sure the motor will arm. So if you heard the motor tones arm at 72%, I recommend going up to 75% on the low setting. Now you can move to the high power setting of the throttle stick. Before you go to full throttle, move to the EPA setting of the high point on the throttle and move it down to 50%. With this done, you can move to full throttle on the stick and listen to the motor. Slowly change the EPA setting up from the 50%. As the motor speeds listen to it and increase the EPA until the motor does not change rpm anymore. Generally this is about 70% or so on my Futaba 12FG system. Now

run your throttle stick up and down slowly and listen to the motor for an RPM change for each click of the throttle. Now it can be hard to hear the motor at times, but I like to do this without a prop first, and then when it's close, I can put on a prop and fine tune the EPA while using a tachometer to measure RPM rather than listen. (If you have an ESC that is easy to get to, you can also look at the LED on the ESC to know when the ESC reaches full power. The LED will go from green to red at maximum throttle.)

I hope this information will help you make the most of your electronic speed controllers, and transmitter setups. These little changes may not seem like much, but they help to optimize all the power and precision that you have paid for! Next month we will talk about powered sailplanes and conversion issues. Have a good month, and don't forget to monitor those temperatures...it's getting hot out there!

Tony Coberly

Tonyc@rcreport.net



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With the introduction of its new brushless motor line, O.S. confirms its standing as R/C's most innovative and respected source for all model power needs. O.S. brushless motors will be the "gold standard" in electric power, offering the same legendary quality and reliability that have made O.S. nitro engines famous worldwide for

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Initially, the motors will be produced in four sizes, equivalent to .25, .30, .40 and .50 size nitro engines. Only O.S. brushless motors will include a ventilation system that increases efficiency and allows the motors to generate additional power. A unique centrifugal fan design is key to this system. The fan draws air through specially angled ventilation holes for greatly improved cooling. Other performance features include:

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- A back plate, prop shaft and gold-plated female plugs

RCReport Online Product Test Report



Availability: Hobbyking.com

Retail \$49.99

The Quantum RC Telemetry 2.4 GHz module is a small and light weight transmitter and receiver combination designed to downlink various pieces of data from your aircraft to a ground based receiver using the 2.4 GHz band. Let's have a look at what is included in the box.

First we have a receiver display unit. This unit has a 2.5 inch LCD screen that displays the battery voltage of pack that the receiver is plugged into. All the cells in use are displayed individually, and the full pack voltage is

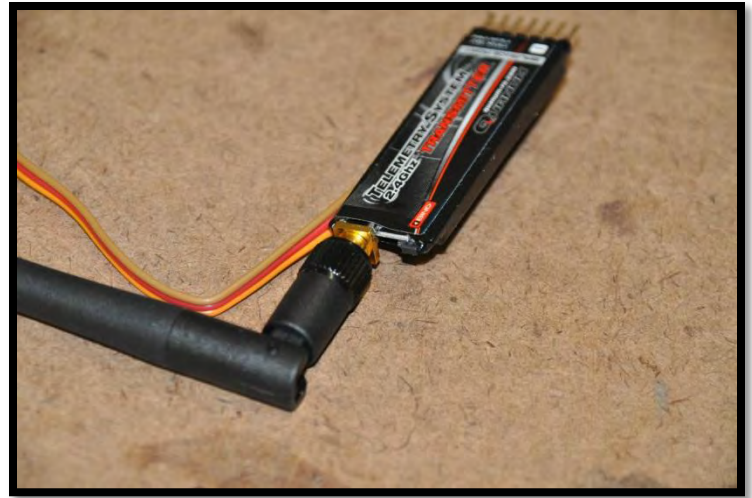
displayed at the bottom. The lower left of the display there is a battery voltage graph for the inter battery of the receiver, as well as a signal strength indicator of the transmitter on the right bottom. The receiver unit had a bind button and a

power button on top as well as a USB port on the side. Now this USB port is not for PC interfacing of any kind, it is just a charging port for the internal lithium battery. The back of the receiver has a bracket and a corresponding adapter to allow the receiver LCD to be attached to your RC transmitters handle for easy access. To charge the receiver we have a car cigarette lighter adapter that has a 5V USB port and a USB A to mini A cable. The antenna on the receiver is external and connected via RP-SMA connector. I don't have a way to test the antenna, but it appears to be about 2dB. Okay, enough with the receiver, now for the transmitter downlink unit.



The transmitter downlink unit is small and weighs only .6 ounces with the antenna on. Near the antenna on the top of the transmitter there is a bind button. The bind button is used to tell the transmitter what receiver it is supposed to listen too. Between the bind button and the antenna is a status LED that flashed green about every half second while transmitting. On the bottom of the transmitter there are seven pins spaced at the standard 1mm center spacing. This is the spacing for the majority of the balance ports included on LiPo batteries manufactured today. Notably, here is that Thunder Power and Flight Power batteries will NOT work with this connector and an adapter will be needed. Looking at the balance port connector from front, the side with the sticker, the negative pin is on the far left, and the positive pins of each cell follow to the right. The transmitter will transmit voltage from 2 to 6 LiPo cells.

I think the idea of this downlink is great, but I must say that I was more than a bit nervous about transmitting a signal from my airplane back to the ground on the same frequency that I am using to fly the plane with, not to mention that this transmitter will be fairly close to my receiver in most planes! Well the first thing I decided to do was just try it out in a powered glider!



The nose of this Syncro glider has plenty of room so I just stuffed the Quantum RC transmitter in the nose and plugged in the ElectriFly 3s LiPo pack. The connector fit just fine with no modification needed. I plugged in the transmitter downlink first, and then powered up the receiver display. The display was reading the three cells correctly with the combined voltage of 12.58 volts. Time to fly! I launched the glider and climbed up to about 400 feet or so while occasionally looking at the receiver I had hanging on the fence. The battery voltage dipped down while under power, and of course climbed back up while gliding. I tried my best to get the glider out of range for the downlink to no avail. I pushed the glider out to the far reaches of the allowed overfly area of RCRC in Huntsville, but the signal strength meter on the display never showed less than two strength bars. After about 15



minutes of climbing and gliding, I noticed that while under power the receiver displayed an increasing imbalance of the cells while the over voltage was getting down below 10 volts. I was still quite high in the air so I decided to head for home and land. At that time the voltage dropped considerably and the receiver began to beep at me. The display was flashing C1 and C2 showing that they were below the 3 volt range. I landed quickly and brought everything to the table to figure out what was going on.

The battery charger on the bench confirmed that indeed the cells were not balanced, but the Hyperion charger worked its magic and started the charging process. I know that the ElectriFly pack was very new, so perhaps it was not broken in as yet, so I decided to fly a few more packs and see what happened. I flew three more times with three other slightly older and varying capacity packs only to find the exact same symptoms. After every flight the C1 and C2 cells were much lower than C3 after a full flight.

I decided to get back to the shop for some testing.



On the shop bench I considered that since the Quantum transmitter was drawing its power from the balance connector, it would stand to reason that



perhaps it was not using all three available cells in the pack. The instructions were of little help considering that they were only on the back of the box! The box indicated that the transmitter module only draws 30mAh working current so I decided to verify that. I had to get a bit creative but I was able to get it done. I found that the transmitter did indeed only draw from the first two cells of the pack being used. Now I was also able to verify that the current draw was very low at .03 amps as indicated by my tester. So it is clear that the first two cells will have an overall higher capacity usage than the third cell causing an imbalance, I am just shocked that it was that high. If the transmitter draws 30 milliamps over one hour, that extrapolates out that in a 15 minute flight it should only consume 7.5 milliamps! I am admittedly a bit concerned with this fact. I suppose the best thing to do is not allow your pack to get very far out of balance before landing. I decided to do a couple more flights and see when the imbalance occurs during the flight. I found that during all three flights the cells remained close to balances right up to the point where the pack voltage while under throttle dropped down below 9.6 volts for the 3 cell LiPo pack. This voltage condition turned out to be at the 65% charge range of all the packs tested. What does this mean? Well simply put, I did not have the severe cell imbalance

if kept my packs above 35% capacity! So I recommended that if you use this transmitter to monitor your inflight voltage, then you monitor it carefully and NOT discharge your packs lower than 35%!

ONE FREQUENCY FOOTNOTE!

I had some very basic frequency testing done on the Quantum transmitter just to answer a question I had. Does this Quantum transmitter output in the same frequency range that my Futaba 12FG FASST system does? The quick answer is yes it does, but of course it does because it's a 2.4 GHz transmitting device, the question is how close to the same channel is it? Well I had Steve, a friend from an aerospace company, take a few minutes and look at the output of the Quantum transmitter as compared to the Futaba transmitter. Using his Agilent CSA Spectrum analyzer we had a look at the output of the Futaba and the Quantum and I was honestly shocked at the results. First was the Futaba 12FG and the scope was tuned into the 2.4 range and the inherent noise was adjusted to a low limit. When the 12FG was powered on we got a very clear spike right in the middle of the 2.4 GHz range as expected, with little to no additional noise added to the 2.4 spectrum. The 12FG was powered off and the Quantum was powered on. WOW....there were five different spikes within the 2.4 GHz range, and they were constantly spiking up and down all over the place. One of the five spikes was less erratic than the others and we can only assume that this is the base frequency of the transmitter. I immediately did not get the warm and fuzzies about this Quantum transmitter. Steve and I ran through several power cycles and binding sequences to see if the scope showed anything that was conclusive, but it did not! The best we could ascertain was that the other frequency spikes within the 2.4 range from the Quantum were harmonics

from the base frequency. Now harmonics are a fact of life in the world of RF transmission, but the problem is that these harmonics were as powerful as the base frequency! As a final FYI we decided to power on the 12FG with the Quantum transmitter on and have a look. The signal from the 12FG showed that it had grabbed a channel directly next to the base frequency spike from the Quantum, but with a slightly higher power level.

Conclusion

What bothers me most is just how "dirty" the Quantum signal seems to be at this point. Now having flown the module and had no sign of radio frequency interference or problems, will I use this module in the future? Based on what I saw on the scope in Steve's office, the answer is that yes I will continue to fly this Quantum in-flight battery status downlink module. I will use it in my gliders and small sport planes, but I will NOT use it in my 2 meter pattern plane or my upcoming giant SR-71! I just cannot justify using this module in a high dollar aircraft because of the "what if" factor!

Tony Coberly

tonyc@rcreport.net



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3002 N. APOLLO DRIVE

SUITE #1

CHAMPAIGN, IL 61822

Glider Wingspan: 55.5 in.

- Measured: 55.375 in

Wing Area: 400 sq. in.

- Measured: 395 sq. in.

Wing Loading: 10.1-10.6 oz. /sq. ft.

- Measured: 9.5 oz. /sq. in.

Length: 34.5 in

- Measured: 34.5 in

Weight: 28-29.5 oz.

- Measured: 26.1 oz.

Sport Wingspan: 31.5 in.

- Measured: 31.5 in

Wing Area: 219 sq. in.

- Measured: 213 sq. in.

Wing Loading: 14.8-15.8 oz. /sq. ft.

- Measured: 15.6 oz. /sq. in.

Weight: 17-18 oz.

- Measured: 17.4 oz.

Radio: 4-channel, 6 micro servos,
standard receiver

- Futaba R607fs 7 channel Rx, Six Futaba
Mini 3107 servos

Motor: 24-33-4040kV Ammo inrunner

ESC: 25 Amp Brushless minimum

- ElectriFly SS25 25Amp with BEC

Battery: 1800-2200mAh 11.1V 25C
LiPo

- ElectriFly 3S/11.1V 25C 1800mAh

Price: Suggested retail \$139.95

Typical: \$99.99

Cheers: Neat idea, very different look and sound in the air, fun in both modes

Jeers: lack of steerable nose wheel, cost to equip

The Great Planes Syncro Electric Ducted Fan is a foam sport glider for new pilots, and someone that wants to chase those thermals on these hot summer days! The Syncro could be considered a contradiction in terms since it is a ducted fan powered glider! The Syncro is made from a foam product that appears to be similar to the Elapor that multiplex uses, but I digress...Let's get into the manual and get to building.

Kit Contents

Included in the kit is a foam fuselage and tail section along with three wing sections. The Syncro has two wing options. The sport wing section is a single piece for a wing span of 31.5 inches. The bottom of the sport wing has precut slots for the two aileron micro servos and a wing spar. The glider wing is a two piece wing that again has slots for the two servos and a wing spar. Both wings have ailerons cut into the wings, and the foam forms the hinge the entire length of each aileron. The HyperFlow ducted fan unit is included, although there is no motor provided. The fan unit will sit in the provided foam pod that attaches to the top of either of the wings included. A set of landing gear is included along with some reinforcement plates to strengthen the center of the wings.

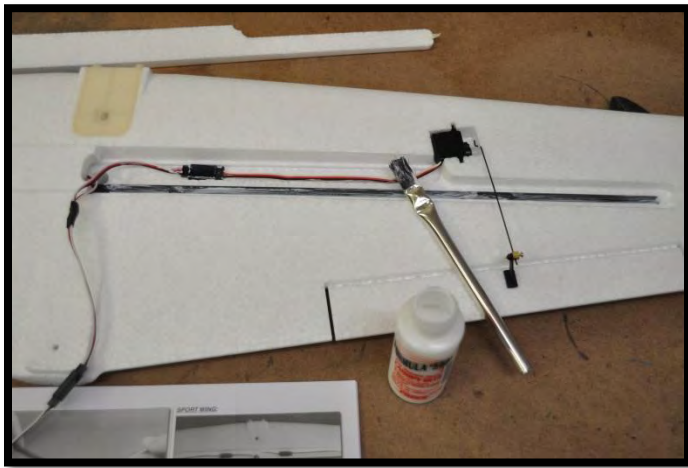


The instruction manual is comprised of 24 8.5x11 sheets that are staple bound. The first perusal of the manual yielded several blank pages. Pages 10 and 11, as well as 14 and 15 were blank so I had to go to the website and download the manual. I then printed out the four pages I needed and glued them to the blank sheets in the manual. Now we can get to building.

The first thing we need to do is setup the servos, receiver, esc and battery temporarily. I used the recommended Futaba S3107 micro servos, ElectriFly SS25 speed controller and Electrifly



1800mAh 3S LiPo battery. The manual has a good picture of the correct orientation to use for centering of the servos. We need to use the three hole arm for the aileron servos for both wings. It is important to have things oriented correctly because we are next going to glue the servos into the wing. According to the manual we are supposed to use canopy glue to hold everything together...Well I couldn't remember the last time I used canopy glue, so off to the local hobby shop I went. I ended up with Pacer formula 560 canopy glue. The servos fit in the precut slots very well, and the canopy glue is fairly thick so you want a decently warm shop area or it will take a long time to dry. The sport wing requires a servo Y-harness to be used. This Y-harness is permanently glued into the sport wing. The glider wing has one additional extension for each aileron. All total we are capturing two Y-harnesses and two aileron extensions in the wing when all is said and done.



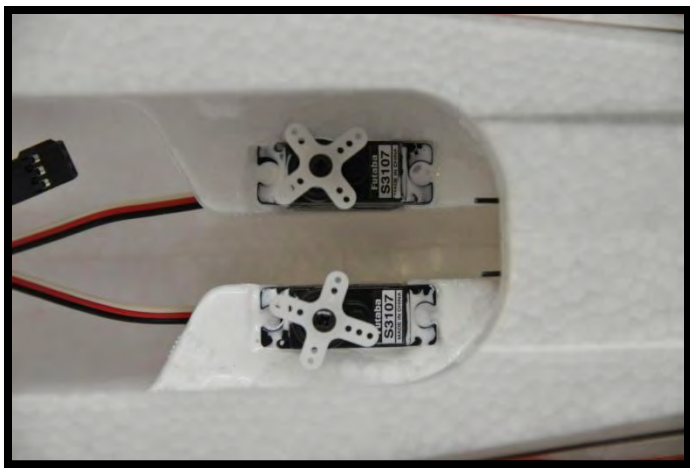
Next I recommend jumping to page 8 and 9 and completing the gluing in of the spar into each of the wings. Since the canopy glue is slow setting, it is easiest to get this over with. A light coat of glue on the spars and the foam wing and foam spar cover is held in place with some low

tack masking tape. Once the wings are glued, you can set them aside to dry and move on. (Now I suspected that this foam was similar to that used by Multiplex so I decided to do a little test. I used some standard Bob Smith Thin CA glue in the canopy area of the fuselage. I used few drops of CA glue to make a puddle. I then waited for two minutes and sprayed the puddle of glue with some CA accelerator. The glue hardened immediately, and the foam showed no sign of damage. No melting or anything. I feel confident that thin or medium CA glue would be fine to use throughout this build, but I will stick to the instructions and continue to use the canopy glue.)

The aileron servos in both wings are connected to the control surface with a micro EZ connector on the control surface and a Z-bend on the servo arm. The micro wire is precut and fits well without having to drill out the servo arms. Now we can move onto the fuselage.

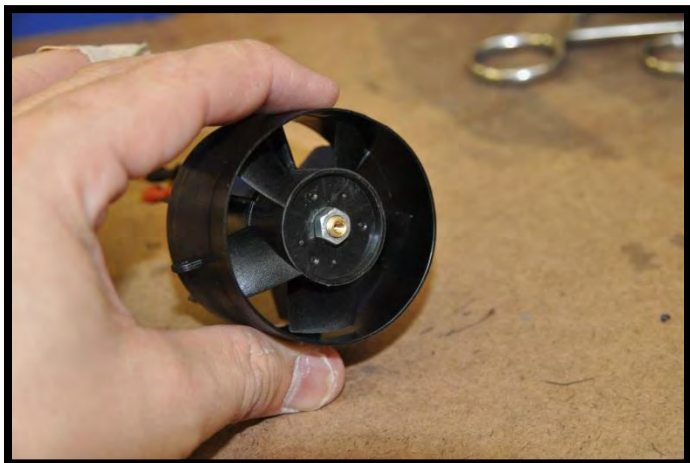
First, attach the landing gear. No problem here since it just snaps into plastic brackets already installed on the fuselage. Now, let's install the horizontal and vertical stabilizers. Temporarily attach the sport wing and toss the battery (for ballast to hold the nose down) in the nose and check the alignment of the stabs in the rear of the fuselage. My vertical stab was leaning to the left slightly, but otherwise everything lined up very well. I glued everything together with canopy glue but I pulled the vertical stabilizer to the right until it was straight and used a couple of drops of thin CA to hold it while the canopy glue dried. Now set the fuselage aside to dry for about an hour or so.

The elevator and rudder servos are glued into the fuselage the same as the ailerons were on

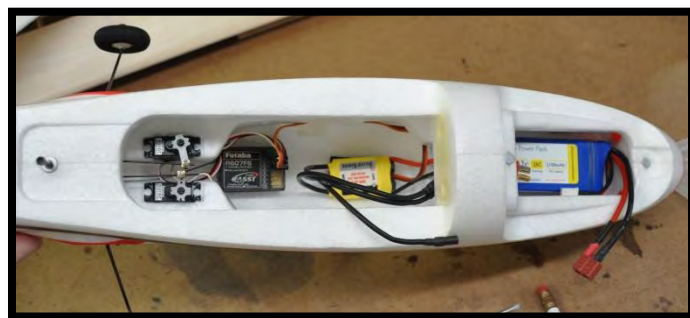


the wings. Once dry the pushrods can be installed into the preinstalled guide tubes. The pushrods connect to the control surface with fast-link 90 degree connectors, and to EZ connectors on the servo arms. These arms are quite close together in the fuselage so they had to be cut slightly to clear each other.

The HyperFlow fan unit assembly is next on the list. It has been some time since I had assembled one of these, but I remember there were some problems getting things tightened up where the fan impellor is connected to the motor. I'm glad to see the process has been made a bit easier with a standard nut rather than a spinner type adapter. The recommended Ammo 24-33-4040 brushless motor fits very well into the fan unit and is capped off in the rear with a tail cone to improve air flow. The



completed fan unit is held into the foam power pod with just two screws and the provided motor extensions protrude from the bottom. The instructions now have us hook up the battery, esc, receiver and EDF unit for testing. I got lucky and my fan was indeed blowing and not sucking, so I guessed correctly on the motor phase positioning on the ESC. I marked the phases on the ESC, since all the ESC wires are black, with the corresponding color wire on the fan unit. A test run of the motor was surprising with the amount of thrust and little vibration! The fan unit was drawing 20.6 Amps on the 3-cell 1800mAh LiPo with an output current of 236 watts. The fan attaches to either wing with four magnets.....oh yeah...and a single nylon bolt from the bottom of the wing. The motor phase wires pass through the wing into the fuselage bay to be hooked up to the ESC.



The receiver mounts with some Velcro fastener in the bottom of the fuselage as does the ESC. Now it is at least a little disconcerting that the receiver and ESC are only separated by about one inch, but I guess this is the new normal installation with the great 2.4 GHz systems!! (It is scary to think this is a good practice...remember the days of separating your receiver as far as humanly possible from everything else!)

A quick check of the balance point and I find I am right in the middle of the range at 2.625

inches on both wings. I referred to page 18 of the manual and set all throws exactly as listed. My low rate elevator throw is 75%, and the high rate is 110% to achieve the recommended throws. Rudder low rate is 95% and high rate is 120%. The glider aileron low rate is 100% and the high rate is 120%. The Sport wing aileron low rate is 90% and high rate is 110%. Off to the field.

At the field:

A cool cloudy day wasn't the best day for flying, but at least the field wasn't busy! For the first flight, I decided a clear runway was the best option, so I attached the glider wing and pointed the glider into the southerly wind. I ran the throttle up and off we went. Firstly I noticed that the lack of a steerable nose wheel meant that you needed some serious speed to be able to turn, but no matter. A power to weight ratio is more than 140 watts per pound allowed for a cross runway take off and into the air we went. At full throttle it wasn't long until the Syncro was up at three hundred feet and trimmed out. I chopped the power and decided to glide for a while. Now remember it was a cool overcast day so I wasn't expecting much, but the Syncro did well. One very odd thing I noticed after several climb out and glide sequences was that when the Syncro was trimmed out under power it would climb when the throttle was cut. In a normal plane this would be an indication of too much down thrust, and this is basically the same here. The thrust line power pod of mounted above the wing, so it acts like a lever as it pushes forward. The thrust tries to pitch around the CG of the glider, so it effectively pushes the nose down. The nose pitching down under power causes us to add up elevator trim to

compensate. Well when the thrust is taken away, the elevator trim takes over and pitches the nose up when the fan unit stops. This is not uncommon in pod mount power systems, so manufactures give a positive (up thrust) thrust angle to alleviate this problem. If the Syncro had less power, this effect would be nearly unnoticeable, but with 140ish watts per pound power system, I'm not surprised, nor am I complaining! The gliding characteristics are not bad, but it's defiantly not a soaring champion. The first flight was over 10 minutes long, and had probably 15 or so climb and glide sessions. The landing was not as slow as I would have expected for a wing loading of 9.5oz/sq. in, but that was just me. Later flights would show that as the Syncro gets slow with the glider wing you can bottom out the elevator and nearly stop in the air before landing! Now for the sport wing!

If you look back at the measurements at the beginning of this article you will see that going from the glider wing to the sport wing we lose about 44% of our wing area but only loose 12% of our weight! That sounds like a lot, but we are still at 15 oz. /sq. in, with 230+ watts of power so all should be good. The takeoff this time needed a bit more runway but we are off and flying. The sport wing is definitely sportier than the glider wing, even with less control throw! I suppose that we are about 15mph faster or so, but now we can pylon turn, roll and loop with ease! The Syncro sport wing is fun and rather funny to watch do maneuvers like a stall turn. At full throttle I ran down the runway at about 15 feet off the ground and pull up into a vertical climb out and wait for the air speed to drop off to nearly zero. Then with full power on, a simple flip of the rudder and the Syncro rotates

right on the power pod fan unit and down we come! Perfect stall turn every time! Landing the sport winged Syncro is smooth with just a few clicks of power on until the mains touchdown.

Over all I like the Syncro as a sport flyer and novice glider. The available power is more than enough to hand launch with the slightest flick of the wrist. The excess power can pull you out of a bad situation, but I don't think you will get there! The Syncro is definitely different and will get some strange looks at the local field as a glider is flying around sounding like a small jet! I will say that it is a bit pricey to get ready to fly with a total price for the plane and all required equipment (not including transmitter) costing around \$356.48. The Syncro is fun in both modes, and it does have the characteristics of two different types of planes. I think that most people that buy the Syncro will like one version or the other, but probably not both.

Tony Coberly

Tonyc@rcreport.net

