R/C REPORT ONLINE!

April 2011
Issue 297

GWS MT-1 Servo Tester

Sundowner 36 ARF

Saito FG-57T

RC REPORT ONLINE

OFFICE NOTES

I've been a busy girl this past month and April has snuck up on me with a vengeance! I guess it's payback from last month when I was finished early and sat around for a minute or two (more like a week!) waiting on Tony to finish his article and the PTRs. Cass and I will be out of town at the end of April, to attend the SRVA Regionals, but I will return calls and emails once we are back in Huntsville.

Don't forget to send your pictures in for Photo-ops!

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.

Here are some Smiley clues for all of you followers!

- ☺ Clue#1 = This smiley does NOT count in the total number of smileys; nor will any others that you see in similar fashion.
- ☺ Clue#2 = There are less smileys this month than last.

Don't miss the "Way Back Week Subscription Specials" this month!

Wishing all of you a blessed Easter!

Bye for now,

Julia

Smile! You could be the next Winner!

Smiley Face Contest #4 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 April 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 #4 2011

US Mail: Smiley Face Contest #4, 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.

Received a request back in January for hints about where the Smileys are located. Continue to look for hints this month – they are out there in various columns throughout the magazine.

Of course, you know this will cause me to have to make this little game more difficult. You absolutely can't have your cake and eat it, too!

Julia

Dear Julia,

You made things harder by making them easier! It's a challenge to follow up on the clues and try not to miss any of the smiley faces, and I'm not sure that I found them all. I did find three in Ed Moorman's column and two in Mail Call but I might have missed a couple elsewhere.

I would keep looking but I'm still packing for a trip to Florida (it's still frozen snow up here in Maine) and our ride to the airport is coming in less than an hour so I'll settle on what I have.

Frank Maguire

Fourteen!

Dan Yaeger

Fourteen!

Jaime VanDiver

Fifteen!

Manfred Decker

Fifteen!

DanSchaller

Fifteen!

Larry Slowaik

Now, I have to wonder, how many of you read the last clue, and just did the math to determine the number of smileys and how many of you actually found ALL 15 smileys! Told you I wasn't going to make this easy for you!

Smiley entries were way down this month, so either you all don't like the clues or you're out FLYING!!! Another puzzler…

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

Total Smileys for the March 2011, issue was 15.

February's winner is Ian Forbes from Durham, Connecticut!

Thanks for your submission, Ian!

Julia Coberly

Mail Call

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

Here's a little gem from my buddy, Mel! Enjoy!

A cowboy, who is visiting Wyoming from Montana, walks into a bar and orders three mugs of Bud. He sits in the back of the room, drinking a sip out of each one in turn. When he finishes them, he comes back to the bar and orders three more.
The bartender approaches and tells the cowboy, "You know, a mug goes flat after I draw it. It would taste better if you bought one at a time."
The cowboy replies, "Well, you see, I have two brothers. One is in Arizona, the other is in Colorado. When we all left our home in Montana, we promised that we'd drink this way to remember the days when we drank together. So I'm drinking one beer for each of my brothers and one for myself."
The bartender admits that this is a nice custom and leaves it there. The cowboy becomes a regular in the bar and always drinks the same way. He orders three mugs and drinks them in turn.
One day, he comes in and only orders two mugs. All the regulars take notice and fall silent. When he comes back to the bar for the second round, the bartender says, "I don't want to intrude on your grief, but I wanted to offer my condolences on your loss."
The cowboy looks quite puzzled for a moment, then light dawns in his eyes and he laughs.
"Oh, no, everybody's just fine," he explains, "it's just that my wife and I joined the Baptist Church and I had to quit drinking. Hasn't affected my brothers, though."

I can always count on Larry Slowaik for a funny, and he's brave enough to even send me one like this! ☺

After 40 years of marriage…

A married couple in their early 60s was celebrating their 40th wedding anniversary in a quiet, romantic little restaurant.

Suddenly, a tiny yet beautiful fairy appeared on their table. She said, 'For being such an exemplary married couple and for being loving to each other for all this time, I will grant you each a wish.'

The wife answered, 'Oh, I want to travel around the world with my darling husband

The fairy waved her magic wand and - poof! - two tickets for the Queen Mary II appeared in her hands.

The husband thought for a moment: 'Well, this is all very romantic, but an opportunity like this will never come again. I'm sorry my love, but my wish is to have a wife 30 years younger than me.

The wives, and the fairy, were deeply disappointed, but a wish is a wish after all.

So the fairy waved her magic wand, and poof.....the husband became 92 years old!
The moral of this story: remember that fairies are female!

PHOTO-OPS

Here are a few pictures from recent events that have been featured in Tails From the Other Side! Enjoy!

Wilson Low writes:

Hi Julia,

Here are some pictures from Johnson County RC Flyers Swap Meet held March 12, 2011. Thank you for the subscription cards. We gave some out as door prizes for our vendors and some out to general admission guests as a door prize for coming out. We had a good turnout; a little lower then past years, but still a decent turnout.

Thank you again for the subscription cards!

Wilson

Looks like they had a decent turnout and lots of items to browse through, and even a few to take home! If you missed it, mark your calendar for next year!

Next up, is an email from Paul Klahn. They battled Mother Nature at their last event. Head up, young person! You managed the hard part – you showed up despite the rain!

Julia,

RC Flyers Unlimited Swap Meet: ☺ur Swap meet was held March 26, 2011. Sadly our event was dampened by rain. California has had a very wet past few weeks. As it was too late to

cancel we held it in the rain. As the attendance was poor we decided to not hold the raffle.

I can either return your donation of RC Report subscriptions or add them to the raffle at our next event "The Relay for Life fun fly", which is a fundraiser for cancer that will be held on May 7, 2011. Please let me know.

Attached are a few pictures of our soggy event.

Regards,

Paul Klahn

☺ #3: Clues will be in unusual places this month!

SEND IN YOUR PICTURES FOR PHOTO-OPS AND BECOME FAMOUS!

~It's Classified~

Non-Commercial Ads

Ads from subscribers are published free of charge for one month on a space available basis. Free ads are limited to one per subscriber per month and may contain up to ten items. Add $1.00 per each item over ten. Add a photo for $5.00. Please email your ads to juliac@rcreport.net. Include your name and email address. Phone numbers are optional. Modeling items only!

Commercial Ads

Commercial Ads are those offering a service, more than one of the same item, soliciting business, etc. If in doubt, call or email for details. Commercial rates are $.25 per word and must be prepaid. Please contact the office for special multiple-month discounts. Cancellations will be accepted by mail, email or phone, but are non-refundable.

RC Report Online Classifieds

P☺ Box 12051

Huntsville, Alabama 35815

WAY BACK WEEK SUBSCRIPTION SPECIAL

Way back in JANURY 2009,

RC REPORT WAS SELLING

for $21.00 per 12-month Premium subscription

Well, welcome to 2009!

From now until April 8, 2011, you can renew (or purchase a new subscription) online or send a check into the office, postmarked no later than April 8, for this way back price!

This offer is not available through PayPal.

This special price will automatically renew or begin your subscription with a PREMIUM SUBSCRIPTION, regularly priced at $29.95. A premium subscription allows you to download a PDF version of the magazine, allowing you to view articles without going online. A Kindle version of the magazine will also be emailed to you each month, upon request.

To renew your subscription, please login and click the "edit my account" link at the bottom left of the Home page. Please note, that if your subscription has expired, you will need to contact the office, as you will not be able to renew in this manner.

Mail payment via check to RC Report Online, Way Back Week Special, PO BOX 12051, Huntsville, Alabama 35815.

SPRINGFIELD RC CLUB'S
SPARKY WESSELL'S MEMORIAL

SPRING EVENT

FLOAT FLY

1st ANNUAL

WHERE: Springfield Lake

WHEN: April 16th and 17th, 2011

ENTRY FEE: $10.00 per day - $15.00 for both days*

Come join the fun flying off water!

There will be concessions, shuttle service to and from flying site, ample parking and a raffle on the opening day.

Raffle tickets will be sold from event commencement until the drawing at NOON.

***Fee includes one free meal per pilot registered to participate.**

All participating pilots must show valid AMA card or receipt of dues paid. All pilots will acquire frequency pin before turning on transmitter. All standard AMA and Club rules apply. All participating aircraft MUST be marked with pilot info.

HUNTSVILLE HELI FLYERS

April 15, 16, and 17th
8:00a.m. Friday to 6:00p.m. Sunday

- New Pilots Welcome
- Great Pilot Raffle
- Camping Permitted
- Set-up Clinics

2011 Fun Fly

$25 Landing Fee for Pilots, Spectators Free!

- Night Flying
- Contests
- Fun & Food
- AMA Required

World Class Pilots!

Alan, Bert, Bobby, Matt,
Jason, Todd, Nick and more!

Grand Prize!

Align Trex 700E complete
w/Futaba CGY-750 Flybarless Gyro,
Futaba 8FG Transmitter w/Receiver,
and a pair of Voltz Batteries!!!

Huntsville Heli Flyers
www.huntsvilleheliflyers.org

Daniel Wesnor, HHF President;
256-542-1447; dan.wesnor@gmail.com

Bill Harden, CD; 256-350-1372;
flyinbill1@bellsouth.net

Steve Helms, Futaba Representative;
shelms@futaba.com

Event Location: Huntsville Heli Flyers Field
Chase Road - Huntsville, AL (Map on Website)
GPS Coordinates: N 34 ' 47.122 W 86 ' 33.4012

AMA SINCE 1936
Sanction Number 11-0324

SANDERSON FIELD R.C. FLYERS

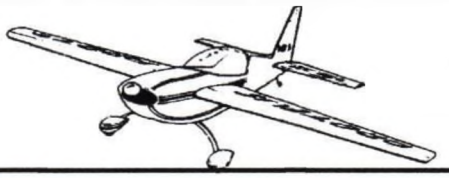
Static Display

Static Display

17TH ANNUAL Swap Meet

Located at Shelton High School, N. 3737 Shelton Springs Rd. Shelton WA , 98584. Just North of downtown Shelton. Take Hwy 101 North to Wallace Kneeland Blvd. Turn right on Wallace Kneeland Blvd. Turn left on Shelton Springs Rd. The Shelton High School will be on the left. The Swap Meet will be located in the Sub.

FREE ADMISSION



Lot's of great stuff!

SATURDAY, APRIL 16TH

Tables

$5.00

or

2 for $8.00

9:00 AM TO 12:00 PM

WITH ITEMS FROM THE BOWCUTT ESTATE

Reserve Your Tables Now!

For more information call

Bob Beatty at (360) 426-5601

email: bigbird06@earthlink.net

SWAP TIL' YOU DROP 2011

Radio Control Swap Meet

Sponsored by: Suburban RC Barnstormers Inc.

April 23rd 2011
8:00 AM thru 12:00 PM

Table Set Up and Check In at 7:15 AM
General Admission at 8:00 AM

Planes – Boats – Cars – Helicopters – and More

Held at the DuPage County Fair Grounds
2015 West Manchester Lane Wheaton, IL 60187

Tables $17 pre-registered/$15 (3) or more - $20 at door
One Adult admission with each table
Admission Adults $5 - Children under 12 Free
Coffee – Donuts – Pop Available

For Info Call: Debbie or John Howe – (630) 541-3054
Mail Table Reservations to: 6204 Stable Road Woodridge, IL 60517
Email - RcWife2@comcast.net -Web Site: www.suburbanrcbarnstormers.com
AMA Chapter #640 IMAA Chapter #194

Radio Control Club of Detroit

www.rccd.org/WOW.htm

Watts over Wetzel

(6th Annual RCCD Electric Fly-In)

TWO BIG DAYS!!!

Date: Saturday May 14th 2011
Sunday May 15th 2011

Times: Pilots' Meeting at 8:45 am
Flying Starts at 9:00 am

Location: RCCD Flying Field in Wetzel State Park (see map below)

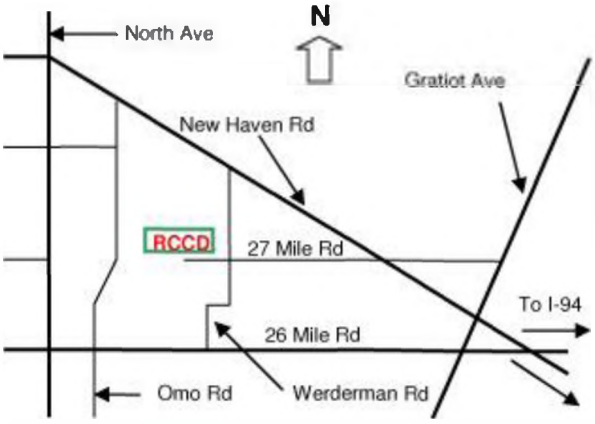
Format: Fly-In: **Electrics only, any size**
(110V power available for charging)

Landing Fee: $10.00/Day or $15.00 for both

CD: Mike Pavlock (586)-295-3053
John McCormick
wattsoverwetzel@gmail.com

Event Updates at: **www.rccd.org/WOW.htm**

Ample parking, Refreshments, Raffles, Limited bleacher seating available. Sun Shades Suggested, Vendors on site.



NEW THIS YEAR

- **TWO BIG DAYS!!!**
- **No Parking Fee!!!**

If you're into electric flying, this is the event to be at! All your friends and fellow electric flyers will be there, **and so should you**.

RCCD's Annual Electric Fly-In has grown leaps and bounds over the years boasting a large number of pilots, an awesome flying site, great food, 50/50 raffles, plane raffles, vendors and a ton of prizes donated by Castle Creations and others! And now W.O.W extends over two days!

Contest Directors, Mike Pavlock, and John McCormick along with all RCCD members invite you to a day of fun, filled with electric flying, friends, and plenty of prizes to take home!

AMA Sanction #:

(Gus is going to devote his column this time around to a recent event in which he was involved. Julia)

First off we would like to thank all the following for helping us host our very first heli fun fly event. Without you all this would not have been possible.

A very special thanks goes to Bob Cox, AMPS president, for being our CD, and for being one among several folks to plant the idea of hosting a heli fun fly event in the first place, and for encouraging and supporting us heli guys with our event.

To the man we heli guys at AMPS find so much delight in jesting with, we extend our gratitude to Vicar Hernandez, AMPS treasurer, and thank him along with the staff of volunteers that ran the kitchen and concession station for our event in such a fine and efficient manner. Thank you all for the great job of keeping our guests, visitors, helpers, and pilots well fed.

Vicar Hernandez, kitchen overseer and event bookkeeper.

Abraham Marques

Pablo Moscoso

Mauricio Figueroa

Joe DeJesus

Kayla DeJesus

Paul Giardelli

We thank our parking staff led by Chris Hogan, AMPS secretary, who did a commendable job with this assignment, and for all the hard work our volunteers did in keeping traffic flowing throughout our event.

Chris Hogan, parking overseer

Tony Melendez

Jimmy Atick

Robert Miele, and his cousin Ray (non AMPS member that helped out too)

Santiago Escobedo

Steve (new AMPS member that came to help us out as well)

Our registration counter volunteers did a wonderful job of helping our guest sign-in and fill out the AMA required forms, and helped

keep order at the flight line. Both Mike Rodriquez and Steve Krause AMPS members did an excellent job with this assignment, and we thank them for their efforts.

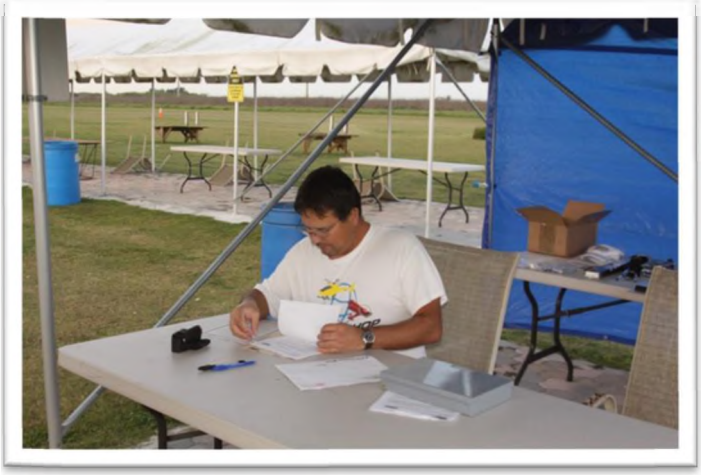
Richard Ojeda, AMPS member, kept all well informed with the MC duties, and he did a fantastic job with this assignment.

Karel and Andre Van Grieken, AMPS members, were just absolutely great at selling raffle tickets, and watching little Andre, junior AMPS member, go up to everyone without any hesitation was a real treat to watch. I think all us heli guys at AMPS have in one way or another taken Andre under our wings (rotor wings of course), and taken delight in seeing how he continues to improve all the time.

And speaking of our junior members, it's great to see our youth get involved and participate. A very, very special thanks to both Kayla DeJesus and Andre Van Grieken for helping us out with our heli fun fly event.

We thank Boris Gonzalez, AMPS member and our resident photographer, for all the excellent photos and aerials of our event, and for donating his time in doing so. Very nice, and one day all us heli guys will need to get together for an AMPS group shot taken by Boris the man himself.

We thank Glenn Erne, AMPS member, and his all out assault at promoting this event and for all the other odds and ends that needed to be done. We sincerely did appreciate his unstoppable drive to make this event happen, and for everything else he does all the time for anyone that needs help when it comes to model helicopters. With Glenn as your friend, you can't lose.



Certainly our hobby would not be what it is today if it was not for our dedicated members, the industry behind it, and for an organization that tirelessly promotes all segments of model aviation in general. But for us at AMPS, we are grateful for all the help we received in hosting our very first heli fun fly event, and we would also like to acknowledge and thank the following for supporting our event, and for helping us make it the success that it was.

- Ron's HeliProz South
- ReadyHeli
- Great Planes
- HeliDirect
- AirAge Media
- Boca Bearings
- RC Report Online
- HobbyShopWorld
- Curtis Youngblood
- HeliProz
- Esprit RC

We would also like to thank the following for expressing an interest in helping us promote our event, but due to the short notice given were not able to do so.

- A Main Hobbies
- Byron Originals
- HobbyKing
- Outrage RC

We had the man himself, Bert Kammerer, come to our event, and as usual he did not disappoint with his mastery of piloting skills. Danny, from Esprit RC, flew the new Shape 90-size electric heli and the performance was incredible. That helicopter was eating up air like nothing I've seen before in a model helicopter. We also had many skilled pilots come to our event, and for sure it was awesome to see these guys do their thing throughout the day. Even though we only had about 26 registered pilots, many that came were pilots themselves, but for one reason or another chose only to be spectators, which tells us the more of these events we host, the more registered pilots we'll have in time, and from observing the number of spectators at our event we certainly did surpass well over 100 attendees. We only had one reported crash for the day, and even though the weather was not the best, it did get better as the day went on. Overall the turnout was better than anticipated

for our first run, and although our event went surprisingly well without any major complications or incidents, we now have a very good idea on what to improve on for future events.

We at AMPS can all certainly be proud of what was accomplished, and for the success we had, but all due to the selfless efforts of our volunteers, our board members, and all the great folks that generously donated towards our event. Without a doubt this would not have been possible without them. So until next time keep polishing up those piloting skills, and see you all at the field, AMPS of course.

Gus Garcia


HOBBYSHOP
www.hobbyshopworld.com


Heli-Max
ARMY 518

☺ Clue #5 There is a smiley in a "feature" of the magazine. I can't recall there ever being one in this particular area before. Bonus points for who can find this unique smiley! It looks the same as the others, but is special because of its location. Props to those who can prove me wrong about a smiley never being in this area before, too!

THE OILY HAND BRIAN WINCH

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 Office) required if you want a written reply.

A SLIGHT DEVIATION

We were going to continue the engine timing discussion this month, but…I erred off the straight and narrow so it will have to be next month to finish the article so….if you have a multi four stroke in pieces on the bench, cover it with a cloth and we will look at it soon. Now, my 'erring' is in the form of a new engine. When the glow version of this engine came out many years ago I had one to review and it was a very powerful monster that breathed fire and smoke throughout my workshop. A mate saw it running and had to have one for a 1/3 Spacewalker he had been promising himself for a long time. The engine, a Saito FA300 (5☺cc horizontal twin) was a perfect match to the model and he went on to win quite a few scale competitions with it as the power of the Saito gave it mastery of the air. After a fair bit of use the engine was fully run in and reasonably docile so his starting procedure was down to a fine art. He used a very nice laminated propeller that I had balanced for him and he flick started the engine for a first or second hit start every time. He had MacDaniels onboard glow and 10% nitro fuel and the engine was religiously flushed and oil injected at the end of every flying day. I calculate he has no less than 200 hours of flying that model with the Saito until he retired it and sold the model, but kept the engine. I always enjoyed the sound of that

engine and the way it ran even though I never got around to using mine as I sold it in a weak moment to a friend who said his need was greater than mine. I was sorry after the sale and I had considered buying another one, but the need faded in time. However, when the latest version was announced and that it was spark ignition for petrol fuel, I knew one would just have to end up on my test bench, and hopefully, later in a model. I had a great time running and testing the engine, and really, it is to me, better than the glow version due; mainly, to the ignition, lower compression, lower fuel consumption and the magnificent pump/carby. An absolute delight to hand start and an idle so reliable and steady (and very low), it has inspired me to do a beaver job - start collecting wood to build - not dam - a large model just for this engine. All I need is a bit of spare time and a large bottle of CA. In the meantime, I will

Nest month, I will also share with you my further tests of this engine using TurboHeader mufflers from RCSPECIALTIES.

share my review with you and you can read why I give this engine the thumbs up. Oh yes, I am also having a bit of a break from the 'frute lupe' as he has locked himself in the old chicken shed way up the back of the property where he is 'developing' his latest great idea. He was reading something about generated gas propulsion that was used in various forms as an experiment in the past WW2 race for air superiority. I don't know what he read, but I am a bit worried about what he is going to try. Before 'hibernating' in the old chicken shed he brought in great loads of tinned baked beans, cabbages, onions, strong cheese, hard boiled eggs and many packets of Indian curry microwave meals. All these are well known 'gas' producers, but surely he is not going to eat them and…then again, maybe he is knowing how he comes up with these wacky ideas. If that is the case, I do not want to be close by when he starts 'producing'; so I am going to slip downstairs to find my supply of nose plugs while you read up on the engine.

SAITO FG-57T

BRIAN WINCH

ENGINE	SAITO FG - 57T
CONFIGURATION	Horizontally opposed twin four stroke. Spark ignition.
DISPLACEMENT	57.0cc
BORE	36.0 mm
STROKE	28.0 mm
WEIGHT	2,435 g with mufflers and ignition system.
STATED POWER	6 - 8 kg thrust
R.P.M. RANGE	1,500 - 7,000 stated.
PROP" RANGE	21-23 x 10-11
FUEL	unleaded petrol - oil 20:1 ratio (4.76%)
SHAFT THREAD	M10 x 1.25
SUPPLIED WITH	Comprehensive tool kit, 2 spark plugs, muffler tubes, mounting hardware, engine mount (integral), instruction book, decals, Saito information booklet.
AVAILABLE FROM:	Distributed by Horizon Hobby

FOREWORD

I feel like I am on familiar ground here with this engine. Its predecessor (many years back) was the first large capacity twin four-stroke I reviewed. Actually, it was the largest four-stroke of any configuration. That engine was the Saito FA300T-TDP, glow version. Twin carbies, twin plugs third needle valve controlling the pressure to the tank from the crankcase that had two valves - one in - one out. You tuned the needles on both carbies as usual, then the third needle and that was used for all future tuning changes. The engine had a 34 mm bore - 28 mm stroke (capacity 50 cc), swung propellers from 18 x 10 to 20 x 10 and slurped 80 cc per minute of fuel. I remember being a bit wary of the first start. I was hand starting with a thick glove and I spent a bit of time setting the propeller in the best position for a good swing and getting my hand away as it swung. I held the prop as I turned it and felt the bump then, the moment of truth, a swift and positive flick for an instant start that sent me back a bit with relief and awe at the power I had just released. I"ve had a fair bit to do with those engines over the years with crash repairs, the odd bearing job and a few „set up and test" jobs for modelers who had purchased one but were a bit wary of the first start.

So, when I opened the box for this latest version, I saw an old friend with a bit of a makeover. Certainly bright and looking

spanking new - different cam cases, a few changes to the crankcase, one (spark) plug per cylinder and, instead of the twin and one carburetor setup, a very nice manifold to both cylinders coming from a superb pump type carburetor with an updraught air intake. The original steel mounts were gone, replaced with cast integral aluminum alloy mounts and, one thing I picked up on rather quickly - a single prop nut on the crankshaft....no locknut. On the glow engine, it is fool"s play to not use the locking double nut system as a kick back from the engine will throw a very large propeller at you. Here we have controlled timing, lower compression and very nice manners - ergo - no kickback so - one nut tightened correctly is quite adequate. There is a second nut in the accessory bag that mates in with the main nut (taper insert) but it is used with a spinner - the end is tapped for a spinner bolt. Another unfamiliar sight in the box was the CDI unit - power for the spark plugs.

Unfortunately, the instruction manual is - how do I say it...a bit of a cat"s breakfast? It surprises me that the company makes such excellent engines - on the cutting edge every moment - but the instruction manuals leave so much to be desired. Generally speaking, you can work most of it out but there are a couple of points that I will address to help matters along. One bit of information that will surprise some modelers is that it is written in the instructions, several times, that the engine can be started manually - that is - by hand...no starter needed. As most readers will know, I do almost all starts by hand - have been doing so since 1946 so it is no concern to me. However, if you are not accustomed to hand starting, you can certainly use an electric starter, but if you have flicked a few props, you will find no surprises starting this engine...so easy.

With the engine mount for a moment or two, this is a robust cast aluminum alloy unit that incorporates the back plate (rear cover) of the engine. The first impression is that it is too short - part of the carburetor is exposed beyond the mounting face of the mount. To increase the mount the extra length would incur a considerable weight penalty as it would have to be just as robust - maybe more so - than it is as fitted. As you extend a section such as this there is a problem of structural integrity - it becomes weaker as it is made longer. To make it of sufficient length you would end up with a heavy casting that would look ungainly - even ugly as it would have to be able to tolerate the forces imposed by the engine and extra vibration. As it is, it is a very neat and sturdy mount that allows you one of two options for mounting. You can cut an aperture in the firewall or mounting box for the protruding section of the carby or use a set of short standoffs as I did for the test running. That the mount is quite strong and not subject to vibration is borne out by the holes for the mounting bolts - 4mm bolts are used, and at first, they do look a little small for an engine of this size. They are quite adequate for the job, but I do advise that you use good grade caphead (socket head) bolts for the job - not the panhead or roundhead screws that are commonly seen in the „engine mount screws" packets. For readers who are aware of the problems that can occur when an engine with a rear mounted carburetor is mounted with the carby very close to the firewall, no problems here (more later on this) as you can have the carby just clear of the firewall quite safely.

START UP

For the first start you can mount the engine on a test stand or directly into a model. Whatever you chose, do the setting up and running in with the engine well up off the ground as the long running procedure (as opposed to a start up in the pits before flight) will introduce a lot a foreign material (dust and grit etc.) from the ground, particularly considering the air intake of the carburetor. I used 25 mm long standoffs and mounted the engine to my large engine test bench, a heavy brute of a thing that will tolerate very large engines. For the ignition power I used a 5 cell NiMH pack (more later) and the fuel was, as per instructions, 20:1 unleaded petrol and Coolpower oil (1 liter of petrol and 50ml of oil). The throttle connection is extremely accessible (nice to see as some I have found in other engines required keyhole surgery to connect them), as is the choke and tuning for high and low RPM which is done with the special supplied tool. The throttle rotor is closed completely, the choke rod (another special supplied tool) is used to pull the rotor outwards which moves the needle back from inside the jet tube (almost full RPM position), but as the throttle is closed, only fuel is introduced to prime the pump in the carby. The choke rod needs to be restrained to hold it out and for this you can use a peg or a paper type spring clip (as is shown in the instruction manual). Obviously, if you have a helper, he/she can hold the rod while you turn the propeller to draw the fuel into the pump. I was on my own and I didn"t have a clip on hand so I used the time honored method of blanking off the intake with my thumb and turning the prop with my other hand. As soon as I heard the carby was primed (read this in the instructions) I noted a dribble of petrol out of the inlet so I knew I was on a winner. A few flicks to prime the engine, open the throttle a fair way to ¼ open -check this visually yourself when you are first examining your engine - switch on and prepare for a flick. Please note: the Saito CDI has a safety feature that prevents the generating of a spark charge under around 200 RPM. You can safely turn the prop while holding it without it firing, but a good flick will get some action. I set the propeller at around 3 o"clock position with the magnet around the 7 o"clock position. This gets the magnet moving quite rapidly past the sensor with a good flick. One flick and it was off and rumbling, but...not as nice as I thought it should as it was misfiring and running roughly. I gave it a short time to see if it would clear itself, but, as I advanced the throttle, the backfiring and dropping out (one cylinder stopping running) was worse. I was not happy with the thought that the mixture needles were not set correctly as Saito are always spot on with these details on engines such as this. Anyway, I decided to check the needles and make sure they were set to the default setting. I set the main needle as the mean default, but the instructions for the idle needle seemed strange as it is set out that you set the needle four turns from the open position. If you kept turning the adjustment the needle would fall out in my opinion. Relying on a gut feeling, I opened the idle needle from the closed position 6 turns (safe). The engine still coughed and dropped out, so it was time to look into the ignition. The CDI worked a treat on testing so the plugs became the suspects. Both plugs were gapped as supplied by the manufacturer - about 0.5mm which is way too close. The best idle and running comes from the maximum gap of any plug so I opened the gaps to 0.71 (as per

instructions) using a dedicated plug setting tool (hence the odd setting of 71). Ready to go again, one flick and that is about all it takes after the initial prime. You would only use the choke again on another day as it is well advised that you drain the carburetor at the end of the use of the engine each day. Okay, one flick and it was away - smooth, even and a magnificent sound. Open up a little and it hesitated a little so, I opened the low end needle to find that 6 - 1/3 turns open was spot on. Now it was instant action - as fast as I could push the throttle rod the engine responded. I was enjoying it so much I almost forgot I had to give the engine a run in procedure. Okay, sometime later I finished the disciplined bit, the engine was holding full RPM without sagging, head temperatures were excellent so let"s give it a few rips. The idle sound is so realistic - just like a full size aircraft engine, but the full song is like an uncaged beast - a high performance car or motorcycle really burning rubber. I tell you, I was really enjoying just running it up and down the scale - full song and super low steady idle. Okay, back to business, so I then went through the selection of propellers, more temperature checks, consumption check and, all too soon, it was over. Shirley, dear wife, came with my afternoon cuppa and rock cake and remarked, "You sounded like you were enjoying yourself." Certainly was and I wasn"t finished. I gave it a flick for an instant start, set the throttle for about 2,000 RPM and sat down to enjoy my cake and cuppa while I watched the prop spinning and listened to the music of the exhausts. It"s hard to beat the sound and rhythm of a multi cylinder four stroke.

After the break, I then did some testing with the engine fitted with another muffler system which I will tell you about later.

THE NOTE PAD

Referring to the notes I recorded during the testing period, I made reference to the updraught carby (we will discuss the further on), the fuel pump is very efficient (tested with a „mobile" tank on a long fuel tube by moving the tank up, down and around), You must tune the high speed RPM before you can tune the idle setting, very easy to hand start - no kicks, no surprises, very even at low idle, quite responsive to tuning, realistic sound, very rapid transition, cooling all over is very good, no stress under load, super clean after a long day of running (finished at 1900 hrs). One other note I made as an observation was that this is a large engine that is not going to shake your model to pieces with vibration - it is extremely smooth from low to high speed and I could not detect any noticeable harmonic level.

Testing was carried out on 15.02.11 with the temperature (mean) at 25 degrees C and humidity at 72%. On 20:1 mix I recorded 34cc of fuel consumed per minute at 6,500 RPM.

LET'S CHECK THE MAKEUP

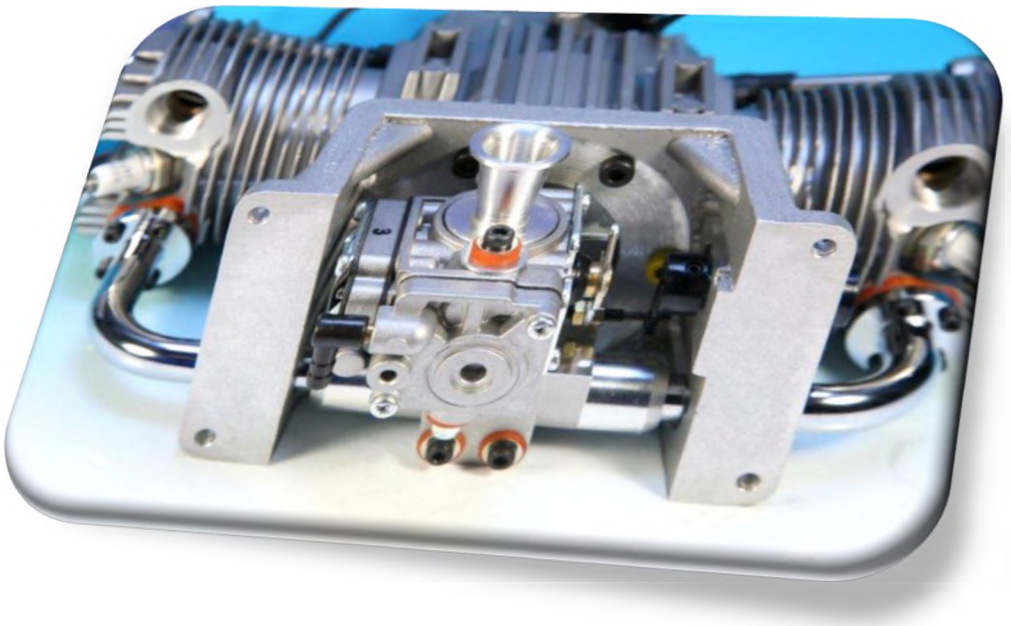
Briefly for a moment, the cylinders are standard Saito style, one piece barrel and head, chromed inner liner surface, aluminum alloy piston (tough, controlled expansion), one iron ring, pent roof chamber in the heads, heat stable valves seating directly into the allow head material and bronze valve guide buttons for the stems. All high quality, time proven designs and final products.

The crankcase is a modified version of the original FA 300 glow engine with the newer style camcases (low profile); standard stainless steel pushrod covers with the rubber boot seals top and bottom. The rear cover is different in that it is part of the engine mount plus the holder for the crankshaft rear bearing (more on this later).

There are more (thin paper) gaskets fitted to this engine due to the incredible ability of „petrol" (petrol/oil mix) to seep through the finest case joints of an engine. The thin gaskets keep the engine clean as a whistle as I found after a full day of test running.

The crankshaft is machined from chrome molybdenum steel (very tough material) in one piece the comprises the three counterweights, two throws (for the connecting rods) rear support section, front journal section for the main bearing, pinion (gear teeth cut into the shaft) for the camgear drive, second journal for the front bearing then the section with the thread for the propeller mounting. The rear short journal provides support for the extra length (over a standard single overhung shaft) and the overhung counterweights. In all, three ball bearings support the shaft. The shaft being one piece requires the big ends of the super tough aluminum alloy rods to be split - two half circle sections - and joined by two high tensile caphead bolts…the same design as the conrods in your family chariot (car). Since the very first version of this engine (as the FA300 glow version) I have only ever seen one incidence of rod damage. The modeler did not secure the propeller tightly so the engine had a shaft run - running with no propeller load) and it reached - probably (a guess) - 20,000 RPM before a piston seized and one conrod had a damaged big end. Only a super tough rod would take that punishment.

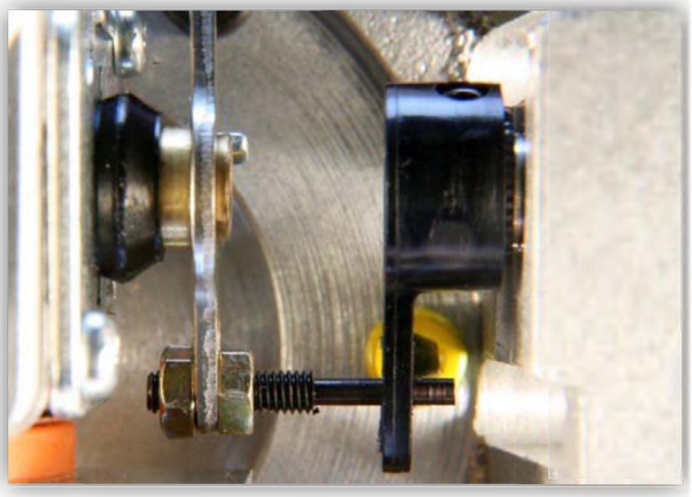
Okay, that"s a general overview so now let"s look at specific sections as in the photographs.



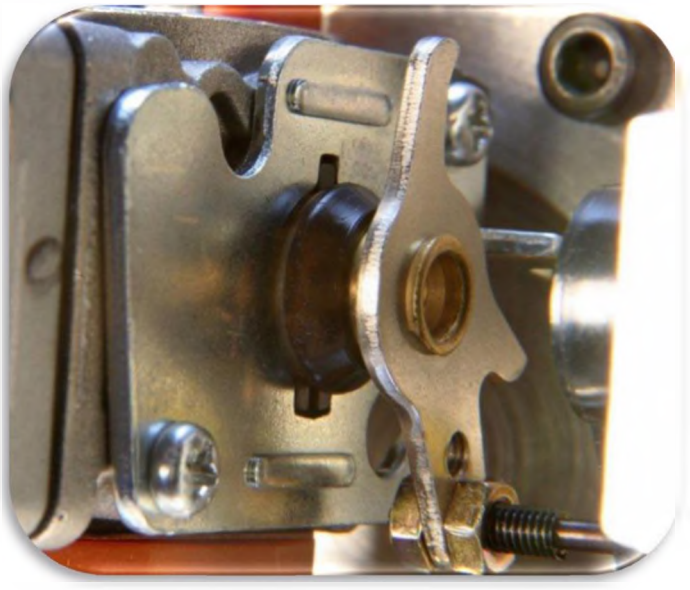
The custom built (for Saito) Walbro carburetor is safely enclosed (most of it) within the walls of the very sturdy engine mount. This is a very high quality carby (with built in fuel pump) that is going to perform quite nicely for you for a long time provided you feed it clean fuel and don't fiddle with the mixture controls. I was particularly impressed with it performance and I see it as a first class contender for fitting to converted glow engines (home projects) due to its versatility, reliability and ease of operation.

I particularly liked the downdraught air trumpet intake. Excellent air/fuel ram effect (no fuel drips either) and the intake end down in clean, fresh and cool air. No problems with close proximity to the firewall as with straight rear intake carbies.

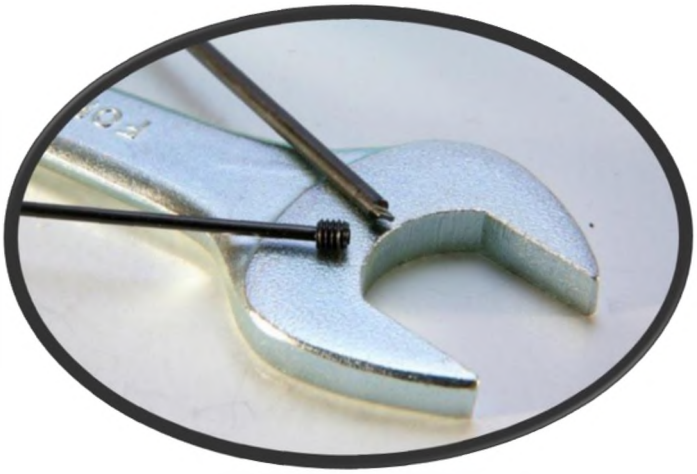
The connecting throttle arm (for linking to the servo) is totally unaffected by the choke movement and is very freely accessible outside the engine mount.



Here's a very nice bit of thinking and design. The throttle rotor is pulled partly out to operate the choke and this would be a problem with the link to the throttle servo if it was connected directly. The threaded rod is an easy fit in a slot in the internal throttle arm so it moves to and fro without binding or straining connections. Very nice engineering.



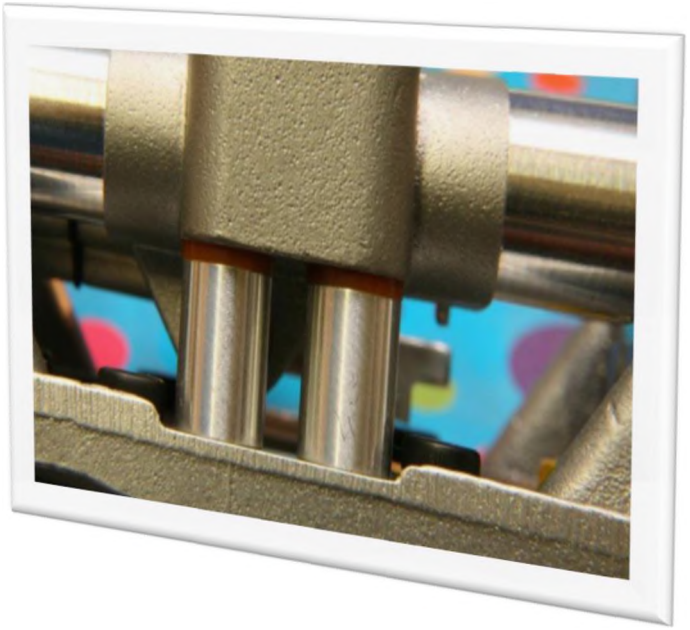
Within the first throttle connection is a threaded hole for the choke rod and it is also the access for the special tuning tool for the main mixture control.

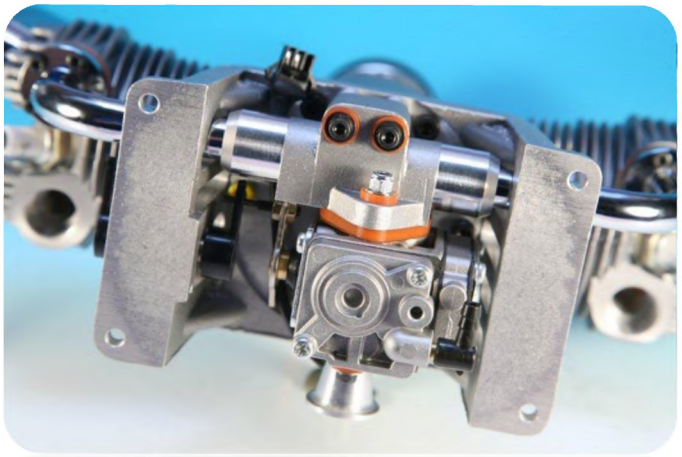


With the propeller nut spanner, is the two dedicated carby tools. The thread end tool is the choke rod and the blade end tool is for adjusting both mixture controls. All these tools are supplied.

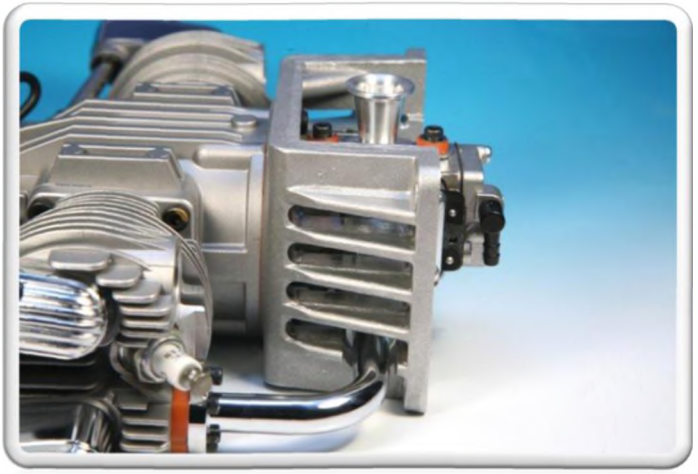
All petrol engines can, due to heat transferred to the fuel system is subjected to a vapor lock problem when the heat converts the petrol to a vapor that will not flow through the carburetor. Isolation of metal parts is the answer and here we see the intake manifolds isolated (and insulated) from the head.

The carburetor and manifolds are quite substantial and would be prone to vibration if it weren't for the very substantial pillar mounts.



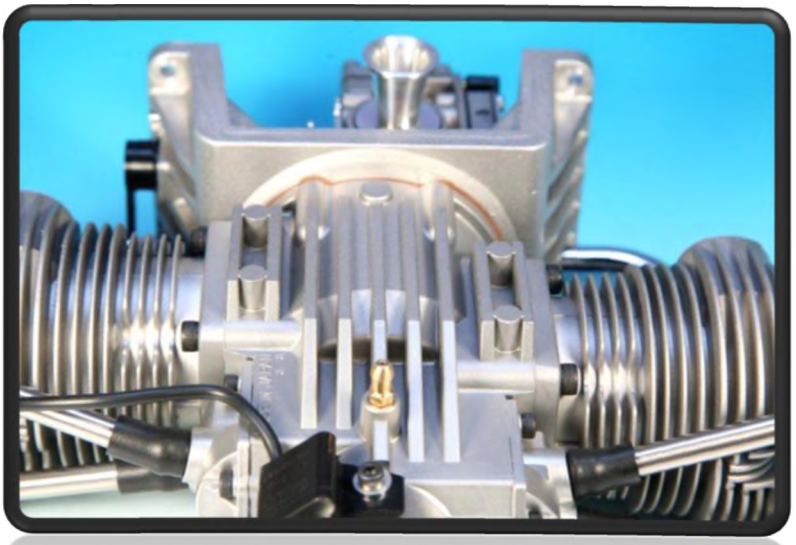


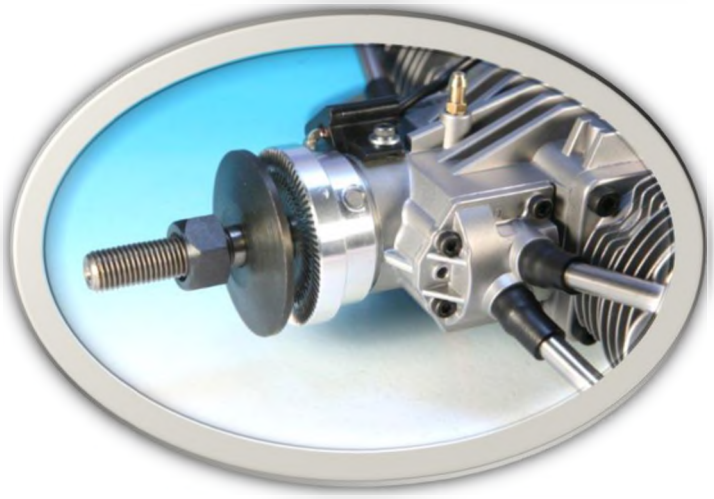
The same applies to all other parts of the fuel system and here we can see the total isolation of all contacts - belt and braces and….very affective according to my test running.



The combination backplate and engine mount is also designed for dissipation of engine heat - note the slots - with the added bonus of a reduction in weight without sacrificing strength.

While we are on heat protection, these are the added fins to the bottom of the crankcase, another area that certainly does not want to be overheated.





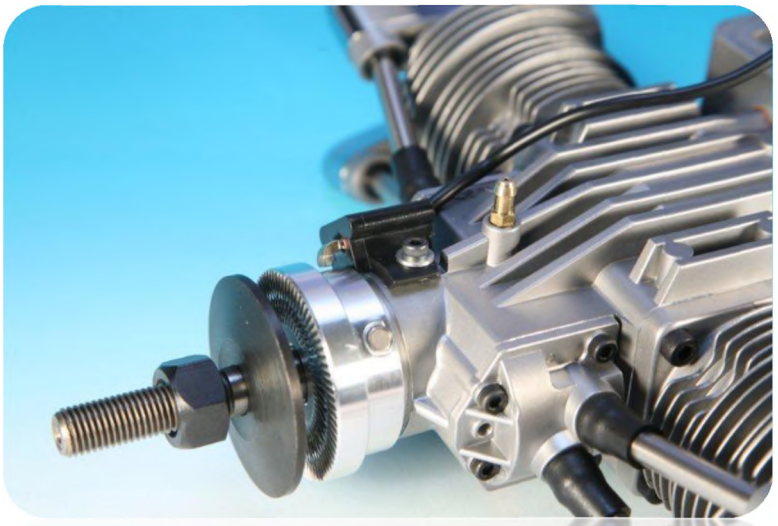
Looking at the business end of the engine there is the large, solid propeller drive hub with a taper cone fitting and a locating screw for timing, a very heavy duty tapered face steel propeller washer and the solid single propeller retaining nut. The usual lock nut assembly is not required due to the good manners of this spark ignition engine - no kick backs or prop flinging (in anger).

Heart of the spark: this is the CDI unit (Capacitor Discharge Ignition) that has all the 'jellybeans' for generating the high tension spark for the plugs. It requires a supply of 6 to 8 Volts to drive it and that means the use of a 5 cell NiCad, NiMH pack or you can use a LiPo (etc.) which must be controlled by a voltage regulator. It is not a hungry beast - 500 mAh will supply it for quite some time. Use a little care handling the 'hot' ends - note the output of 30,000Volts. Remember…8 Volts is absolute maximum (unless you want to generate some destructive smoke).

Actually, there is a second (lock) nut included in the accessory bag. This nut is for the attachment of a metal spinner. It still locks into the conical of the main nut (acting as a lock nut) and the far end is threaded for a spinner bolt.

Make doubly sure you push the stainless steel plugs caps right down over the hexagon section of the plug. The wire around the base is the spring retainer.

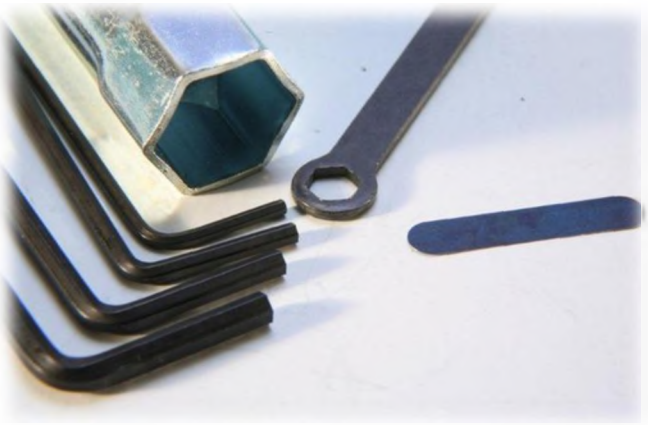
Quite an improvement over the first used top hat style sensor pickup (used on the first spark engines). This neat, low profile sensor is much less vulnerable to damage in the event of a cowl scraping landing.



Now for the out bits - these are supplied 90 degree aluminum headers for the exhaust pipes. Nice quality and finish.

The exhaust pipes are flexible convoluted tubing. In view is the in and out end. Very neat system that can be kept well back in the cowl area.

These brackets secure the ends of the exhaust pipes to the firewall according to your requirements. Don't neglect to use them as the pipes can fracture if left to vibrate freely.



With the prop nut spanner and two carby tools, this is the complete tool kit for all the general maintenance jobs you will need to do to the engine. All good quality and worthy of keeping together as the kit for this engine.

If you are mounting the engine direct to the firewall, this supplied hardware kit will do the job for you with the high grade caphead bolts. If you elect to use standoff mounts you will need longer bolts.

NOW FOR SOME PERFORMANCE

Well, we"ve had a good look over the engine, and more than likely, like me, you consider it a worthwhile acquisition, so now we will see how it performed on the test bench.

PROPELLER TESTS

APC Propellers.

21 x 10	6,824	1093 Idle.
22 x 8	7,225	
22 x 10	6,675	
22 x 14	5,820****	

TZB WOOD PROPELLERS

23 x 8	5,671	840 Idle
23 x 10	5,432	
24 x 8	5,611	

PROP CUTS — CHRIS HANDEGARD

FOR THE COMBAT ENTHUSIAST and FIGHTER PILOT WANNABEE

Hello, everyone! Chris is taking this month off from his column. And, no, this is not an April fool's prank. It seems that the Combat scene has been a little slow lately, at least in Chris' area. If you are still cuttin' tape in your part of the world, let us hear from you!

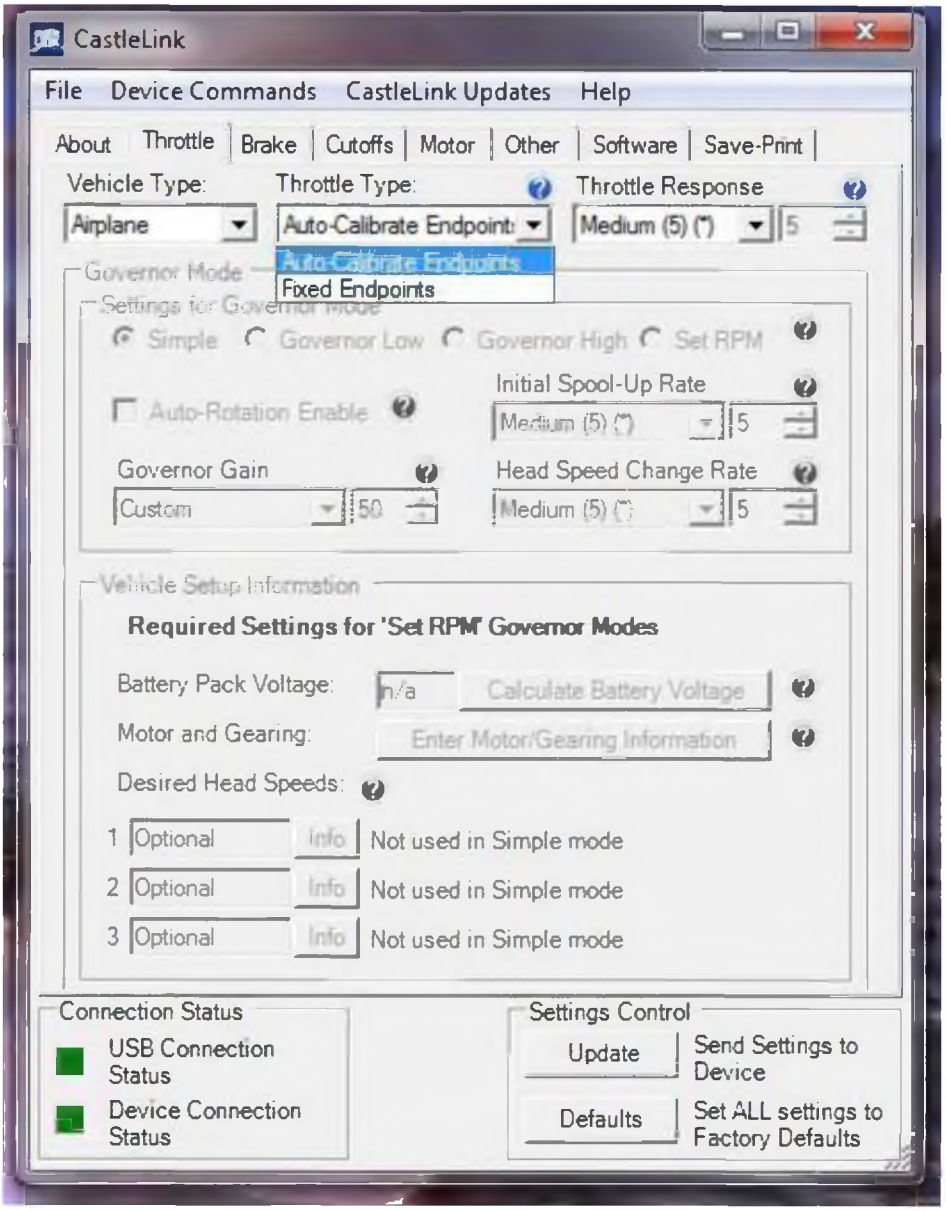
SPARKY'S REVOLT

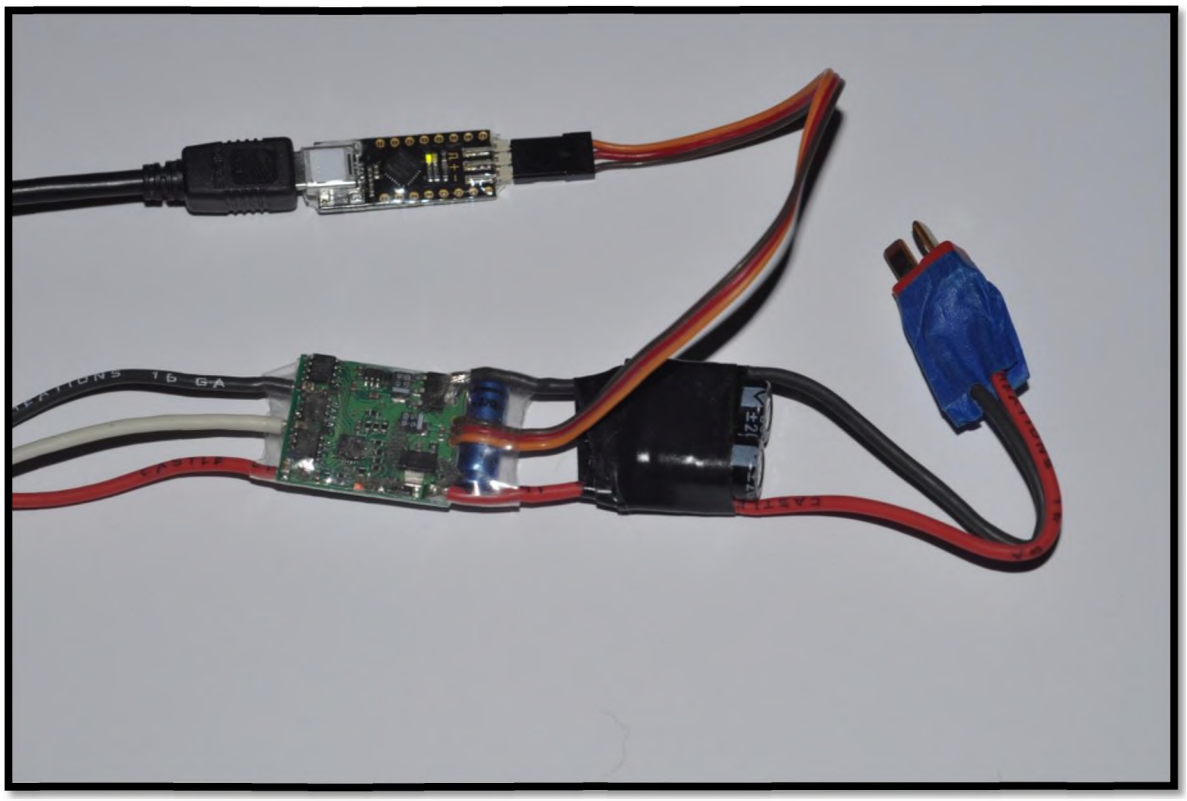
TONY COBERLY

Can you believe that it is April 2011, already? Amazing how time flies! This month I wanted to talk about optimizing transmitter setup for electric aircraft. I have talked to several club members at my local field about transmitter setup, and most of them had no idea want I was asking. Well, it is time that I explain what I mean, so let's get started.

Let's get started with a lesson on how a brushless electronic speed controller works with a RC receiver. When the receiver and transmitter are powered on, and link together, the transmitter is sending a signal out that the receiver is listening and decoding. The signal from the transmitter is decoded by the receiver and converted into a signal for the receiver to send to the speed controller, or servo, is a pulsed signal. This pulsed signal is generally referred to as pulse width. This pulse width is basically a measurement of time in microseconds. Since we are talking about an ESC, we will focus on the throttle stick. The pulse width range of the transmitter and receiver is generally between 1000uS and 2000uS. (1uS= 1.0 microseconds ☺ R 1.0 millisecond) The first 1000uS number refers to the minimum low position of the throttle stick. The 2000uS would represent the maximum throttle stick position. Now I mentioned before that the 1000us and 2000uS are the generally accepted and used pulse width timing, but we have to account for different equipment manufacturers, tolerances within electronics and even wear on the potentiometers in the transmitter and servos. You can take five new transmitter and receiver systems and they could vary in pulse width output by 50-150uS. Now this is not really a big deal because when we setup new glow or gas powered models, we just turn everything on and allow servos to center up. We then move the throttle servo stick and see it open from a fully closed position to a fully open position on a carburetor. If the fully closed position is 900uS or 1100uS, it really doesn't matter, because you can see that it is doing what you want by the movement of the carburetor. If the servo will not fully open or close the carburetor, you can use a longer or shorter servo arm to get the amount of movement you need. When we setup an electric model, we are not afforded the luxury of "seeing" the movement of the throttle. When the throttle stick is advanced, the receiver simply sends the changing pulse width signal to the ESC, and the ESC slowly raises the amount of voltage to the motor. We can see this work once the motor starts to spin, but that's it. ESC manufactures have taken this into account by adding some fuzzy logic algorithms into the chips on the ESC. Since I use mostly Castle Creations brand speed controllers, I'll start with them and talk about some others later.

All brushless speed controllers have a purely automatic plug and play mode. The basic Castle Creations default throttle stick mode is an auto setting mode. When the power is plugged into the ESC, it provides power to the receiver. (Remember this is in most general cases.) Once the ESC sees a stable and valid signal from the receiver with a pulse width at or near 1000uS, the ESC will give an arming set of tones. The onboard logic settings of the ESC can allow for a receiver that is outputting a slightly different pulse width. For example, the receiver may be seeing a stabile pulse width of 1080uS. Now the ESC will think that this is NOT a full low setting of 1000us, but it is very close. The ESC will monitor this unchanging 1080uS pulse width and decide whether or not this pulse width is within its lower tolerances. If it is within the internal tolerances, the ESC will use this new 1080uS setting as a zero throttle setting and arm the ESC. Now the ESC is ready to be used, but wait there's more. Now the ESC still doesn't know exactly where full throttle is, because it is in auto calibrate mode. The Castle Creations ESC, while set to auto setting mode, will decide where the full throttle point only after a few things have happened. The first requirement we talked about, the ESC needs to be armed, and then the ESC will wait until it sees a pulse width at or near 2000uS for duration of more than 2 seconds. Once these requirements have been met, we are good to go. The Castle Creations controller now understands the general idea where the end points are for your given transmitter and receiver system. Now, is there anything wrong this setup? Of course not, but we can do a bit better. A setup like this will usually end up with a throttle stick that will not start the motor on your plane until after the stick moves three or four clicks from the bottom. Additionally the motor will reach maximum throttle about the time the throttle stick reaches a little over ¾ throttle. This throttle behavior will not cause a problem, but it does not allow for good precise linear throttle control.





I like to set all of my speed controllers to a fixed end point setting, rather than an auto calibration. Now the easiest way to setup a Castle Creations speed controller is the PC based Castle Link adapter. The Castle Link adapter is a USB based device that is plugged into the ESC, and then into a computer. The free Castle Link software download interfaces with the ESC and several settings can be adjusted, including the end point settings we have talked about. A simple drop down box changes the endpoint setting from auto to fixed. There is a send button that sends the updated settings to the speed controller and we can move on to the required transmitter settings. The Castle Creations Phoenix, Phoenix HV, Lite and Lite HV controllers have dozens of settings can be edited, changed and saved within this software package. If you do not have one of the Castle Link programmers, you could get a programming board, or just use the stick movement option that requires no external interface or computer. Because we are only talking about end point adjustment for now, we will move on.

Once we have the ESC programmed for fixed endpoints we can finally get to programming of the transmitter. Needless to say you will need a programmable transmitter of some kind. Rather than walk you through my Futaba 12FG exactly, I'll try to use generic terms that can be found in most any brand of programmable transmitter. For now do NOT power up the airplane, but remove the propeller and have the flight battery ready! First thing we need to do is go to the ATV (the amount of travel of the servo-my 12FG term is AFR) setting for the throttle servo channel. Your default transmitter setting will more than likely be 100 on high & low side, so bring both settings in to around 50. Some radio systems require you to move the throttle stick to the low position to adjust the low ATV, and then advance the throttle to full and adjust the high ATV setting. With the transmitter ATV settings in place, move the throttle at to the high position and plug in your ESC to your flight battery. You will hear the speed control initialize, but you won't get the final tone for the programming mode via the transmitter. The indicator light should also be flashing rapidly. Increase your ATV from 50 slowly while pausing at each increment. Some transmitters will move at one increment at a time and others will move by

even numbered increments. When the controller sees full throttle, you will get the last initialization tone and generally the red indicator light will now have a slower steady flash. From here you want to increase the full throttle ATV an additional two points. So if you heard the tone at 70, then increase the ATV to 72. Now move the throttle stick to low. If the speed control initializes when you get to the low throttle stick, disconnect the battery & move the low ATV closer to zero. If you were at 50 and heard the initialization tones when the throttle was pulled all the way back, then reset the low ATV to 30, move the throttle back to full again. Power on the plane again and when you hear the first set of tones, pull the throttle stick back to low throttle once again. Now we want to slowly bring the low ATV up to a higher number again, pausing briefly at each increment until you hear the controller initialize with the armed and ready tones, then go 2 more points. The indicator light will flash steady amber. At this point, your Castle Controller now knows where zero and full throttle is within your transmitter and receiver. Now when you prepare you plane to fly again, the throttle should advance in RPM for nearly every click of the throttle stick, rather than having dead area at the bottom and top of the throttle stick. This is a much smoother and more efficient use of the power that you have available, not to mention a better feel as you are flying.

I hope you can put this information to use on your models, and it helps you enjoy your time at the local flying field just that much more!

Tony Coberly

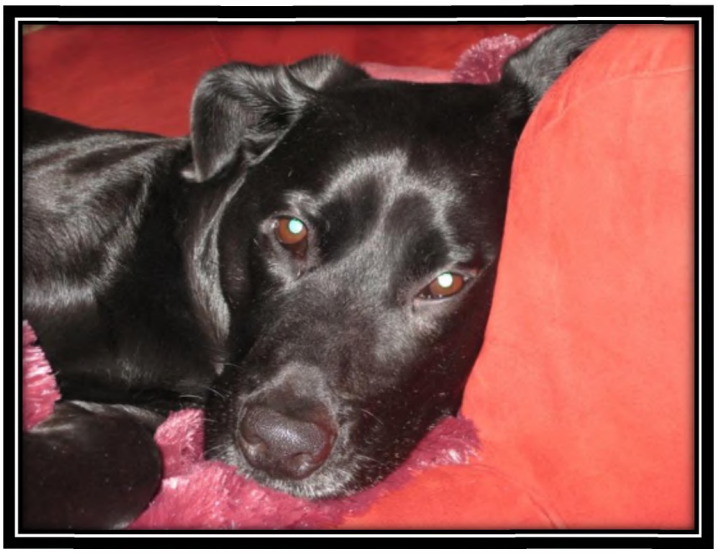
Tonyc@rcreport.net

TAILS FROM THE OTHER SIDE ISABELLE

I've been pondering a devious April fool's Day prank for all of you, but I think Mom jumped the gun and took the cake last month with her smiley clue trickery! You can't trust those Irish! They'll get you every time! So, I'll just say Happy 2nd Anniversary, RC Report Online (Many thanks to all you fine folks who have supported us during the past two years and are sticking around to see what the future holds!) and wish all of you a Happy Easter! I know it's early, but you can't blame me for Easter being in late April.

Happy Birthday to the twins, Moo and Ginger, on April 9. Mom brought them home and they changed my life! ☺

I noticed that Smiley Contest entries were a little down this month. The weather must be improving wherever you are; not here in Huntsville. The rain never stops, and I could start a band with all the thunder and lightning. So, we'll take a little trip or two and see what's



going on somewhere where it isn't raining! What do you think?..."Seems it never rains in Southern California, seems I've often heard that kind of talk before, it never rains in California, but girl, don't they warn ya, it pours man it pours…"

The only non-flying event I could locate this month is on May 15, in Lodi, Wisconsin. The 12TH ANNUAL TALGATE SWAP AND SWAP FLY will be held at Larcc Quarry Field. Lawrence Barnes is the CD and can be reached at larryb@itis.com. For more information visit: www.larcc.com. Open to public, swap meet starts at 9AM, flying starts approx 10AM. Sellers, buyers, spectators are free. $5 flying fee for pilots. AMA membership is required to fly. Bring your own table or sell out of your car or truck. Food and soda will be available at the field.

On May 7-8, 2011, in Rocklin, California, the WARBIRDS OVER ROSEVILLE FUN FLY will take place at the Amos Flying Field. Email John Hainlen at johnhain@aol.com or visit www.amosrc.com for more information. This is a two day event for scale and semi scale aircraft. Awards will be presented Sunday, at 12 noon.

The PGRC 20TH ANNUAL OPEN HOUSE FLY IN will be held on May 7, in Bowie, Maryland, at club field. Charles Gettier can be reached at cgettier@comcast.net. Visit: www.pgrcclub.com. 40x400' paved runway, 800' grass field, free admission, food and concessions. RC plane raffle, all AMA members welcome.

BOMBS AWAY....OVER VANCEBORO in Vanceboro, North Carolina, at Gaskin Field will be da'bomb on May 7! Contact Michael Zaytoun at michael@zaytouncustomcabinets.com and visit www.southernairrc.com. Warbirds of all sizes, pilot registration $10. Pilot meeting 9AM, 100x600' beautiful open field. Plenty of parking, primitive camping welcome. BBQ chicken lunch, lots of prizes. Come join us for a great day of beautiful warbird flying.

The 11TH TEXOMA RC ELECTRIC EXTRAVAGANZA will be held on May 7, in Sherman, Texas, at Pete Danta Field. You can email Joe Denney, CD, at joe1d@juno.com. Visit: www.texomarc.org. Fly in for all electric powered aircraft. RVs welcome, but no hook ups, A/C only. Out of town guests are welcome on Friday also. $15 landing fee includes lunch. Pilot meeting at 9AM.

Call me when you get to Huntsville on May 14-15, 2011 for the HUNTSVILLE HELI FLYERS 2ND ANNUAL CHAMPIONSHIPS. Email Daniel Hiatt, CD, beforehand at hiatt.daniel@gmail.com. Visit www.huntsvilleheliflyers.org. Events 431, 432, 433, 434 (O).

Be vertically challenged on May 13-15, 2011 in Madera, California at the VERTICLE CHALLENGE held at club field. Email Craig Roberts at drydockmarine@comcast.net or visit www.frcm.org.

I'll meet you in Marietta, Georgia, on May 13-15 for the ATLANTA STUNT MEET 11 in the Lockheed Parking Lot. Contact Tom Dixon, for more information, at bdixon@mindspring.com. Events 323, 324, 325, 326(JSO). AMA classes, Old Time Classic, Profile. No BAM or appearance pts. Site open on May 13, for practice.

On May 14, in Lawrence, Kansas, you can become electrified at the JAYHAWK ELECTRIC FLY IN held at Clinton Lake. Careful! Don't get electrocuted with all that water! Gary Rauckman, CD, can be emailed at rocketman200@juno.com.

That same weekend, you can mix it up in Lucas, Texas, at RICHARDSON SPRING COMBAT. Ed Kettler has the information. Email him at ed.kettler3@verizon.net or visit: www.rrcc.org. Events 750, 755(JSO). AMA and hard hat required. SSC and 2948 scale combat. Spectators welcome! There will be lots of fun for pilots and spectators.

I'll even meet you in Auburn, Alabama on May 20-21, 2011 for WARBIRDS OVER EAST ALABAMA held at Planesmen Field. Email Henry Helmke before you get here, so he can warn me that you are coming! His email is hhelmke@charter.net. Visit: www.auplanesmen.blogspot.com. 80" mono, 60" multi-wing. AMA required. Restricted to warbirds only, in military or civilian paint. Free lunch for pilots both days. Flying 9AM to 5PM, turf runway, RV parking, no hook ups. $20 landing fee.

Travel to Ft Collins, Colorado on May 20-22, for COLORADO JETS 2011. Contact Daniel St John at dstjohn9@q.com for more information or visit www.loveairrc.org/events/events.htm. Join them for three days of jet fun. Enjoy their 800x60' runway and wide open skies. Perfect for jets! Hours Friday and Saturday, 8AM to 6PM, Sunday 8AM to 2PM. Lunch served Saturday and Sunday. Limited dry camping available. Early set up Thursday. Landing fee $30. All freq available. 50 mhz and 53 mhz require ham license. Open to turbines, glow and elect ducted fans. AMA waivers required.

More fighting in New Haven, Michigan, on May 21-22 at the GREAT LAKES COMBAT CHAMPIONSHIPS held at Wetzel State Park. Keith Jones can load you some tape. Email him at kaydeejay9@yahoo.com. Visit www.rccd.org. Events 755, 760(JSO). Six rounds SSC and three rounds limited B on Saturday. Three rounds limited B and six rounds Open B. $15 one event, $5 each additional event.

Relive your glory days in Julian, North Carolina on May 21-22, at the GLORY DAYS VINTAGE MODEL FLY IN held at the Old Julian Airport Field. Robert Harris can be emailed at bharrisus3@cs.com. Visit: www.oldjulianairport.org. Join them and re-visit the way we flew models back then. Bring your model designed, published, kitted etc before 1976. They welcome vintage RC, control line, free flight models. Large flying field for RC/free flight, three grass control line circles. Join them and remember the good old days.

So you're over 60? Lisbon, Ohio, is the place for you on May 21. Join the others at the SENIOR FUN FLY. Email John Young at 343sp@copper.net. Visit: www.centaur-rc.org. Calling all seniors "60" and over for a special appreciation day honoring you with a special meal and fun for all.

So you're under 60, but short? On May 21-22, visit Tomalo, Oregon, for the THREE AMIGOS SMALL MODEL MEET. Bruce Hannah can answer even the smallest question. Email him at bolt1938@yahoo.com. Events 140, 142, 503(JSO), HLG, Cat G, 8" cat G, scale, E-36, cloud trap, ladies only Cat G, island flyer, runt, double take, P-20.

Here's another opportunity to meet me. This time in Murfreesboro, Tennessee, on May 21 at the ELECTRIC JET FLY IN AND OPEN NIGHT FLY. Daniel Wandell can point me out if you email him at mprcflyers@gmail.com. Visit: www.mprcf.com. 350x50' paved runway. Electric jets, only, start at 9AM. Foamies welcome. All aircraft types starting at 4PM. Night fly open to all aircraft. Landing fee $5. Charging station, concessions, and door prizes.

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!

Isabelle

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Model:	Hanger 9 Sundowner 36 ARF	Typical Price	$269.99
Airplane Type:	Sport Racing ARF	Sale Price	$179.99
Manufacturer:	Hanger 9	Wing Span	Advertised: 51.5 in
	4105 Fieldstone Rd.		Measured: 51.375 in
	Champaign, Ill 61822	Wing Area	Advertised: 400 sq.in
	(877)504-0233		Measured: 360.75 sq.in
Distributor:	Horizon Hobby	Airfoil	Semi-Symmetrical
	4105 Fieldstone Rd.	Wing Type	Built-up balsa
	Champaign, Ill 61822	Wing Joiner	Carbon fiber tube
	(877)504-0233	Fuselage Length	Advertised: 44.0in

	Measured: 44 in
Pushrod type	Wire
Hinges included	Yes
Hinges Installed	No
Rec. Controls	Ail, El, Rud, Throt
Engine Mount Installed	NO
Rec. Engine	.32-.40 cu.in. 2-stroke
	Power 25-32 Electric
Landing Gear Installed	No
Wheels Included	Yes
Advertised Weight	4.0.-4.5 lbs.
Hardware:	Metric

Hardware Included: Plastic spinner cone, engine mount, aluminum standoff spacers (for electric installation), pushrods, fuel tank, control horns,

Items needed to complete: 2cycle .32-.40 engine, 4-5 mini servos, 5+ channel receiver, servo battery, 9x7 prop

Covering Material	Ultracote
Fuel Proofing required	No
Estimated Assembly Time	8-10 hours

Estimated Skills required

Building: Intermediate

Flying: Intermediate

Drilling required: Yes-Servo arms, servo screws, motor mount, and control horns

Assembly Tools required: Hobby knife, small drill bits, pliers, side cutters, #1and#2 Phillips head screw drivers, various metric hex wrenches

Adhesives required: Medium and thin CA glue, 5 minute epoxy

Completed Model Specifications

Finished Weight:	3lbs 12.1oz.
Wing Loading:	23.95 oz/sq.in
Engine Used:	Evolution .40 2-stroke
Propeller Used:	APC 9x7
Fuel Tank Used:	provided

Main Battery used: Hyperion 2-cell LiFe 1450mAr pack without regulator

Radio used: Futaba R617FS Rx with Futaba 12FG transmitter

Servos used: 2-Spektrum A5040 digital servos in ailerons, 3-Futaba S9650 digital servos on elevator, rudder and throttle

Cheers: Lighter than advertised, cowling cutout template, smooth flight and slows down to land well

Jeers: Wing area not correct, aileron servo installation limited options, insufficient down thrust, wing pin alignment slightly off

The Sundowner 36 ARF is the third, and smallest, aircraft in the Sundowner pylon racing series of planes. The Sundowner series has a Formula one size that uses a big 1.60 to 2.10 glow engine for the real pylon racing enthusiast. The Sundowner 50 uses a .50 size 2 stroke engine and now the smaller quickie 400 size

Sundowner .36. The Sundowner 36 ARF is advertised to be a great speedy flyer that can be slowed down and flown easily by the newest intermediate pilot. Let's have a look.

While unpacking the box, I noticed the usually good packing job done by the Hanger 9 factory. Each of the larger components of the kit are packed in their own plastic bag, and then taped to the inter structure of the cardboard box itself. One note here, use scissors to cut the tape where it attaches to the bag and/or the box. Too many times I have tried to pull the tape off and the dangling end ends up getting stuck to the wing, fuselage or tail fin. If you cut the tape at the bag or box, there are no ends hanging off to get stuck to something you don't want it too!

The wing consists of two wing panels covered with three colors of UltraCote iron-on covering material. The bottom of the wing panels have plywood covered doors that cover the servo locations, and secure the servos into the wing panels. The servo area is very small and limits the size of the servo that can be used in this location. The servo must be laid on its side and only allows for a servo .5 inches wide or less. I quickly looked at the instructions and they note a JR DS388 digital servo. This servo has metal gears, only .43 inches wide and is capable of 60 oz-in of torque at 4.8 volts and 75oz-in at 6 volts. These are very impressive numbers for a servo this size, but this JR DS388 retails for $69.99 each so perhaps I think I'll look for a slightly cheaper alternative as we get into the building process.

The vertical and horizontal stabilizers are packed separately form the wing panels and pre-covered. On the areas where the stabilizers will be glued onto the fuselage, the covering is already removed for the most part.

All hardware is bagged in several bags along with the fuel tank and plastic spinner. There seems to be more than necessary hardware, but more than likely because there is hardware for both glow and electric installations. With everything unpacked and inspected and undamaged; I can look over manual.

The manual is 47 pages long, staple bound in a landscape orientation. The first few pages list all parts included in the kit, specifications and minimum additional equipment needed. Since the Sundowner 36 can be built glow or electric powered, there are additional paragraphs for both the recommended hardware required. For a glow recommended setup, the manual lists an Evolution .40NX. I was surprised a little by this because the kit box says that at .32 to a .36 glow engine is to be used, but the more power the better! For an electric powered model the manual has three different setups. First there is the Power 32 NMPRA setup. The NMPRA (National Miniature Pylon Racing Association) is a spec class setup that requires an Eflite Power 32 motor, APC thin 8x8 prop, 60 amp speed controller and a 2500mAh 4 cell 30C LiPo battery pack. The second recommended setup is the Sport setup. The sport setup requires as Eflite Power .32 motor, APC 12x8E prop, 60 amp speed controller, and a 3200mAh 4 cell LiPo pack. The final recommend electric power setup is the speed setup consisting of the Eflite power 32 again, an APC 10x10 prop, and a 2700mAr 5 cell LiPo pack. All of these setups, glow and electric, require two servos for the ailerons, one servo for

elevator, one servo for rudder. The glow version will require an additional servo for the throttle.

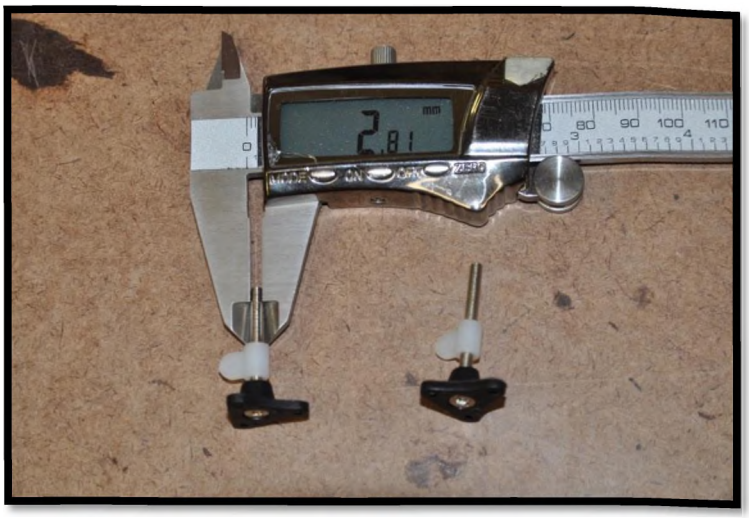
Now I mentioned earlier that the recommended aileron servo to use is the JR DS388, but I am going to use something a little less expensive with similar torque specifications. The JR DS 388 has 60 oz-in at 4.8 volts so I will try to keep that number in mind, even though I think that an airplane this size doesn't really need that much torque for ailerons. I can remember when .60 size pattern planes were zipping around at a ballistic 135+ mph with a single, good old Futaba s138 servo to control both ailerons, but I digress. Having a look at my servo collection, I immediately thought about my favorite mini servo, Futaba S9650 digital servo. The S9650 is good for 50 in-oz of torque at 4.8 volts, so it is in the range that I need, but it is .61 inch wide. The maximum width that can fit in this thin wing is .55 inches, and that's a very tight fit, so the S9650 is a no go for the ailerons. I looked a little deeper and I found a couple Spektrum A5040 servos. The Spektrum A5040 are digital metal gear servos with 66 oz-in of torque at 4.8 volts with good speed, .12 sec to 60 degrees, and a measured width of .56 inch. These servos run about $27.99 each at my local hobby shop and should fit the bill, albeit a very tight fit. Now for the Rudder, elevator and throttle servos I will fall back to the Futaba S9650 that I talked about a bit earlier. The recommended servos are the JR MN48 standard mini servo. These are very basic analog servos from R with 48 oz-in of torque, but they are an analog servo. I try never to use an analog on any plane other than a trainer type plane. Let's face it; this is a precision speed race plane, so I think a digital servo is a must. The Futaba S9650 is only slightly larger than the MN48, so it will work well, and I already have them in the cabinet. Now for the engine; I am using the recommended Evolution .40 NX ball bearing glow engine. As for a receiver I'll use my Futaba FASST R617FS in the plane, with a MPI heavy duty switch harness to control the power from the Hyperion 2 cell LiFe 1450 mAh receiver pack. My Futaba 12 FG transmitter will send the signals to the plane during flight, so with everything for the build, let's BUILD IT!

The manual starts off the building process with the attaching of the horizontal stabilizer to the fuselage. The manual convers this process in good detail with pictures and descriptions of how to line up the stabilizer with the wings that are temporary installed. I had no difficulty installing the stabilizer in the slot in the fuselage. The slot aligned the stabilizer nearly perfectly with the wing. I only had to remove about 1mm of additional covering on either side of the stabilizer to prepare for gluing. I used Bob Smith brand 15 minute epoxy to affix the stabilizer to the fuselage, making sure to have the elevator assembly slide into the slot. The manual has us use a T-pin to help with the lineup of the CA hinge in the center of the elevator gap. I found that if you insert the CA hinge in the elevator first, it will bottom out in the precut slot of the elevator leaving plenty of CA hinge surface to insert into the stabilizer. The six hinges in the elevator fit well into the stabilizer so I added a few drops of Bob Smith thin CA glue to each side of the hinges and set the fuselage off to the side to dry.

The vertical stabilizer, tail wheel and rudder are installed next. The vertical stabilizer slides into the slot in the fuselage, with the rudder post extending down to the bottom of the

fuselage. I first fit the vertical fin into the fuselage and checked the alignment with the horizontal stabilizer. From the rear of the fuselage the vertical fin had a lean to the right, but only slightly. I removed the stabilizer and laid it on my flat bench to check it for warping, but it was fine. I had to remove some material from the left side of the slot in the fuselage to allow the vertical to be aligned correctly. I only had to sand away a couple of thousandths of an inch so it was no big deal. I marked the stabilizer and removed a bit more covering and tested the fit once again. Once again I mixed up some more 15 minute epoxy and coated the stabilizer and the slot and reassembled, adding a piece of masking tape to keep the fin vertical while the epoxy cured.

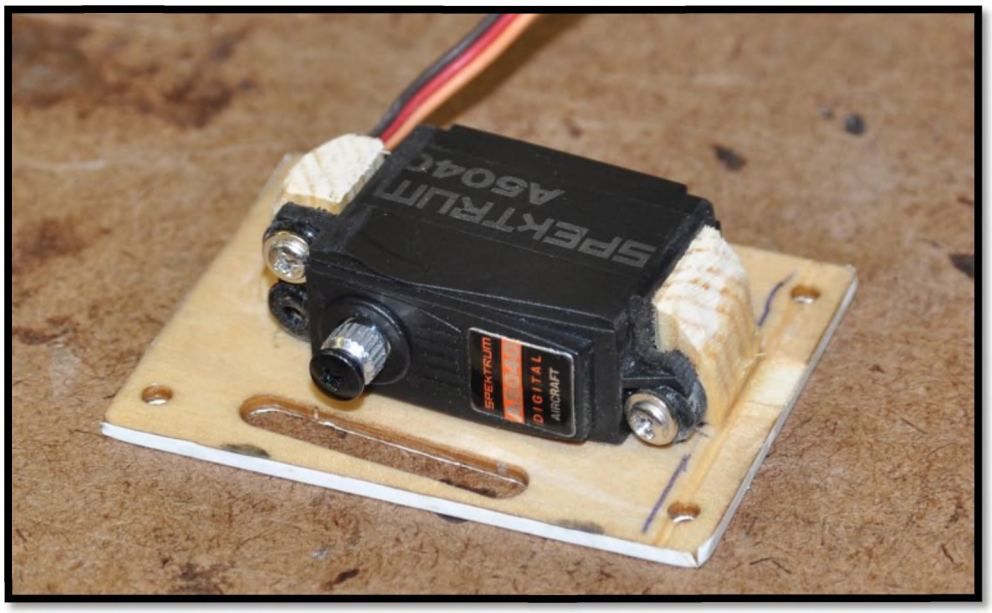
While the fuselage was curing, I prepared the rudder and tail wheel assembly. The tail wheel gear wire is installed on the bottom of the rudder with the 90 degree wire portion glued into a hole I drilled in the rudder. The hole required is to be located 7/8 in up from the bottom of the rudder as noted in the manual. I recommend drilling this hole, and then soaking it with CA glue to harden the balsa wood up. This is just an added bit of strength to prevent the rod from coming out the side of the rudder. Once the CA has dried, redrill the hole and proceed with the instructions. Roughing up the wire with some sandpaper will allow the epoxy to stick better, but don't forget to slide the aluminum bracket over the wire before final installation! Now just a bit more 15 minute epoxy and slide the assembly into the slot and hold it with a piece of painters masking tape. Once the rudder is dry, you will probably need to open up the bottom hinge slot due to the seepage of epoxy. The rudder attaches to the vertical fin with three CA hinges and more thin CA glue. A few drops of CA to each side of the hinges and we can attach the aluminum bracket to the fuselage. The bracket attaches to the fuselage with two screws into the bottom of the fuselage. Predrill the holes and then harden the balsa with thin CA before adding the screws. I didn't like the Phillips screws that were provided in the kit, so I used 9/16in servo mounting screws from RTL Fasteners. The foam wheel is held on with a small wheel collar and the rudder installation is done.



Now for the linkage installation for the rudder and elevator. The rudder control horn is a three hole plate with a 30mm screw extending up through the plate. The elevator control horn has a 35mm screw in it. A single control horn fitting is used, threads down on each of the screws. I found a serious problem with the elevator control horn screw. This screw was just a fraction smaller than that of the rudder control horn screw. Where the control horn fitting fit the rudder, the control horn screw was a good snug fit; the elevator control horn screw was very different. The control horn fitting would slide down onto the elevator screw without screwing it on. You could slide it on and off by hand with little effort. The elevator screw measured at a diameter of 2.81mm, whereas the rudder screw was 2.90mm. The control horn fittings were both the same size, so I needed a larger diameter screw, or a control horn with a smaller diameter hole. I found a hex head 4/40 screw that would fit the base well, as well as the control horn fitting to use for the elevator. Now we can prepare the rudder and elevator servos in the belly of the plane. As I mentioned before, I am using the Futaba S9650 digital servos for the rudder and elevator, but I need to open up the servo tray to accept them. I only had to open up the length of the existing holes. I then pre-drilled the servo screw holes and added a drop of thin CA to each of the holes in the plywood servo tray to harden up the plywood. According to the manual, we only need small servo arms with a hole for the pushrod at 3/8 inch from the center of the servo output shaft. We install the servo arms onto the elevator and rudder pushrods before we push the rods down the preinstalled pushrod tubes. The servos are installed into the fuselage and the arms attached to the servos. It helps to temporarily plug the servos into the receiver with a battery source, and the transmitter in order to center up the servos before installing the arms. At the rear of the

fuselage, just thread on the plastic clevises provided. Now the elevator and rudder control horns can be attached to the surfaces in line with the pushrod. One hint here put a drop of medium CA on the back of the control horn. Now clip on the control horn to the clevises and line up the pin of the clevises with the hinge line and set the control horn onto the surface and hold it. The CA will temporarily attach the control horn to the covering so you can predrill the three holes in the control horn. Now use the screws provided to hold the backing plate to the control horn. Once everything is tight, we can now adjust the clevises so the surface is straight when the servo arm is 90 degrees to the side of servo. The landing gear is next in the manual to assemble, even though I think it should have been the first step. The aluminum strap style landing gear is attached to the fuselage with two Allen head screws and a plate to smooth out the bottom of the fuselage. One note here that I missed initially is that there is a slight rake of the landing gear toward the front of the fuselage. The holes for the axles will be positioned forward of the mounting screws, so make sure you look at it prior to assembly. The axles are installed with the wheels and wheel pants already attached BEFORE attaching to the landing gear. Initially, I thought this process was quite cumbersome, but it actually worked quite well. The wheel pant is sandwiched between the shoulder of the axle and the strap landing gear, and a 2.5mm hex screw holds the pant from rotating. The wheels fit into the pants nicely and the landing gear is done.

Time to work on the wings. The ailerons have four CA hinges per aileron and the precut slots make installation easy. Once again the hinges fit into the ailerons and bottomed out half way in. Just center the aileron in the opening and add a few drops of CA to each side of each hinge and put aside to dry. Now to prepare the aileron servos and get them installed. I'll use the Spektrum A5040 servos I mentioned earlier, but it will take some slight modification. I attached the required arm to allow for the 1/2in pushrod spacing as required in the manual, but will have



to adjust the spacing. Each servo is attached to the servo door on the bottom of the wing with two hardwood blocks. The servo is lined up parallel with the slot in the servo door. The hardwood blocks are drilled for the servo screw and the servo is installed. Now it took me about an hour for the first servo to be installed in the wing. The problems were all because of the servo width. When all was said and done, the A5040 servos fit, but you could see a slight bump on the top of the wing. I did everything I could to prevent this, but there was just not enough room

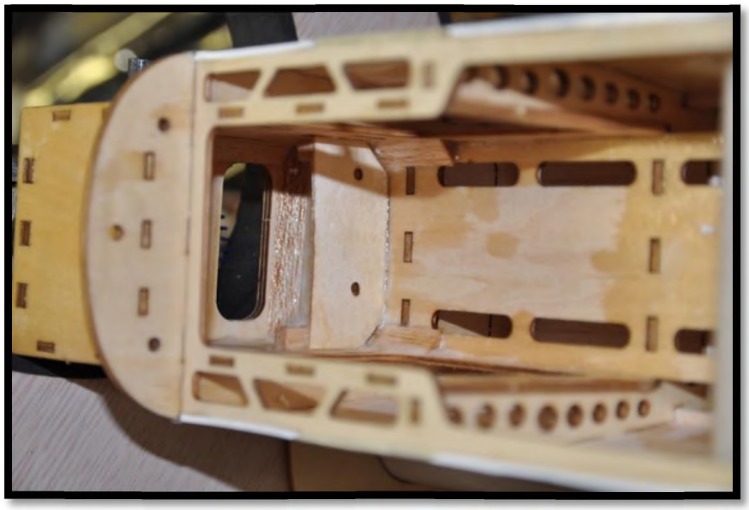
even after cutting the hardwood blocks down and removing one ear off the servo. Based on the recommended servo torque, I couldn't find any other name brand servo at my local hobby shop that would fit in that location. If you want to ease the building time required for this step, use the JR DS388 and save yourself some time, but not money! The aileron pushrods are attached, the same as the rudder and elevator. A z-bend affixes the pushrod to the servo arm and the clevis connects to the grey nylon control horn on the ailerons. These control horns have backingplates to screw into, but they look ugly on the top of the wing. It would look better if they were natural nylon or white, rather than grey.

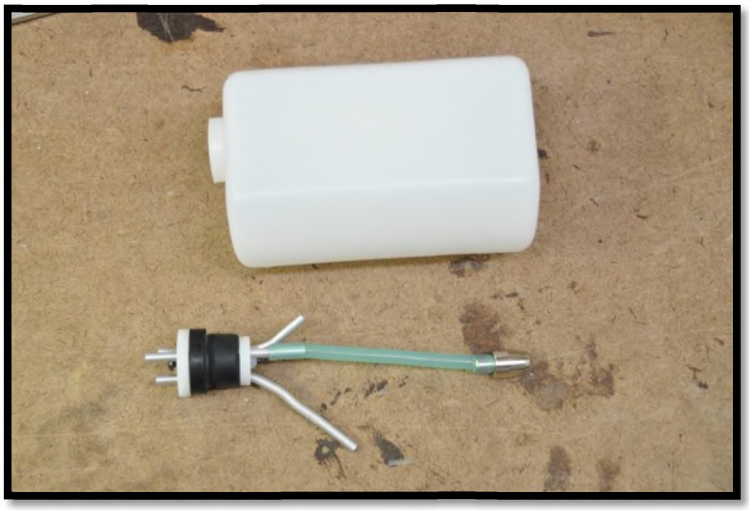
Finally, the engine installation can begin. Since there are several power system options, we are provided with a few hole drilling templates based on the choice of power system. The firewall has no mounting holes in it, so we just use the template for glow engine installation and fit it in the recess provided on the firewall. Now I just marked the four mounting holes and drill them for the provided blind nuts noted in the manual. The provided engine mount is attached to these blind nuts with metric screws. The .40 NX is mounted inverted so the instructions have us install the mount to the left side of the firewall to make sure the spinner is located correctly in the cowling. (That's to the left from the front when the engine is upright, but fuselage inverted.) The engine has to be mounted onto the mount with the thrust washer positioned 100mm from the firewall. Four 1/8in holes will allow safety nuts and bolts to hold the motor in place. Generally, I like to just drill the holes slightly smaller and tap threads for some 4/40 bolts, but I just used what was provided in this case. Once the holes were drilled, I decided to go get a few tanks of fuel and run it through the new .40NX before installing it on the plane. I ran three 16 ounce tank of 15% castor/synthetic blend fuel through the engine to make sure it was running good. I used an APC 10x 7 propellers for the first tank of fuel, while running it with a slightly rich mixture. In the past these Evolution engines need very little break in, but I do it anyway. After leaning out the mixture after about half a tank of fuel, I checked the maximum RPM and was happy to see 13000 without a problem. I let the tank run out on its own, running just about half throttle. The second tank was run with a 10x6 APC, and then the third tank was run with the intended flight propeller of ACP 9x7. Now I cleaned up the engine, and mounted it onto the Sundowner 36.

Throttle servo, receiver battery, and receiver installation are next. The throttle servo sets in a tray that is slightly elevated above the servo tray to align the throttle pushrod. Once again I used a Futaba S9650 just for continuity in the servo bay. An EZ Connector is used to connect the pushrod to the servo, but the throttle pushrod tube simply glues to the side of the

motor mount box and the side of the fuselage. The receiver sets behind the rudder servo on the same servo tray. I used a piece of Velcro on the back of the receiver to hold it down to the tray, but I also added a Velcro strap around the receiver and the tray for additional support. For a receiver battery, I used a Hyperion 2 cell 1450 LiFe pack. It was much higher capacity than I needed, but it was convenient to use; albeit a little hard to position in the servo bay. I had to add a few pieces of foam rubber to the battery and to a piece of a pair of chopsticks to hold it in place.

Now you may notice that I have been following the manual, but you can clearly see in the picture that I already installed the fuel tank. I like to get this step out of the way. The instructions show a two line fuel tank option. One aluminum tube is bent up towards the top of the fuel tank to act as muffler pressure, and a second line is used with a clunk to supply fuel to the carburetor. This is a standard setup, but with the cowing on, it will be difficult to reach up and remove the fuel line from the carburetor for refueling, so I added a third fuel line. The third aluminum tube is bent down to the bottom of the fuel tank. This line is like that of the muffler pressure line without a clunk or fuel line inside the tank. I used a third piece of fuel tubing outside the tank to run forward into the cowling. I will plug this line with a small aluminum stopper and allow it to hang out just slightly below the cowling when the cutouts are completed. Now to defuel the tank, I just need to hold the plane level and the pickup on the bottom of the tank can evacuate the fuel. The fuel tank fits easily in the area provided in the fuselage, but there is nothing to keep the tank from sliding forward and kinking the fuel lines against the firewall. I used some scrap balsa and plywood to put a stop block in front and behind the tank.





Finally time to get everything buttoned up and completed. The cutting of the cowling is next, and I usually dread this step, but I found something in the kit that is not referenced in the manual. We have a vacuum formed piece of clear plastic that appears to have lines molded into it. These lines appear to locate the holes needed for the muffler, needle valve, and various other necessary holes in the cowling. This clear plastic piece fits over the cowling so it's easier to locate the areas needing to be cutout. I made several holes along the molded plastic lines. I used these holes to make dots on the cowling for cutting.

Once the dots are made, I just connected the dots with a marker and cut inside the lines with a Dremel tool and a small sanding drum. As it turned out, the marks on the clear plastic piece were very accurate, but not perfect.

The radio setup is the final step and covered very well on pages 43 and 44. The amount of throw in each direction as well as recommend exponential is listed for all three control axis of the plane. Using the recommended servo arms, I was able to achieve the throws

listed without any problems.

I put the Sundowner 36 ARF on my SIG balance stand and was rather surprised to find that I was balanced just slightly in front of the forward most CG recommended in the manual. The manual CG range is from 2-3/8 to 2-3/4 inches, yet I was at 2-1/4 inches back. I suppose this is due to the 1450 mAh receiver pack and the larger .40 engine. I am not going to attempt to adjust this balance point since it is so close to the recommendation. Let's go fly!

I was able to get out to the field one Friday afternoon in March. North Alabama has been pounded with rain and storms for the last few weeks, so it is good to get out and fly. The weather is a bit on the cool side at 59 degrees, with a variable 2-5 Mph wind from the north. With the plane checked out, oddly I noticed the ailerons were reversed so I corrected that, and the engine adjusted to a slightly rich setting and the APC 9x7 turning in the 14000 rpm range; off we go. The first taxi attempted, I rolled into the grass and nosed over and killed the engine. I attributed this to the slightly nose heavy condition, so this time I taxied with full high rate to keep the tail down, and more importantly I kept the Sundowner 36 on the asphalt runway! I say no reason to fuss around, so I just nailed the throttle and ran to the north and into the air. The first few passes down the runway were basically uneventful as I adjusted the trims and got comfortable. The first and most noticeable fact was that I need a lot of down elevator trim to keep level flight at full throttle. Now a few low passes showed the speed of the Sundowner. The APC 9X7 propeller was pulling very well and would climb vertical nearly unlimited, but the

dive revealed that it was not the perfect propeller. In the dive there was little or no discernable RPM the pitch was a little too high for the combined drag of airframe. I am not really surprised because the instructions clearly say the best propeller is an APC 9x6N speed propeller. The Evolution .40NX is new, so the 9X7 will keep the RPM down slightly and allow the engine to break in gradually. The aileron rolls seemed to wobble a bit, but the low rate ailerons were very docile, and the high rate better, but I would like to have about 15% more high rate on ailerons. The elevator rates were about as perfect as you could want. A full throttle pass and hard elevator pull while on knife edge pulled around very nicely with little or no bogging down of the engine in the turn. After 7 minutes of flying, I brought the Sundowner in to land, fully expecting to fly by at least once while trying to get slowed down. My first pass was low and level, but I was holding some elevator pressure to stay that way. I assumed that this was because of all of the down elevator I added during the full throttle. Once the Sundowner was lined up, I cut the throttle back and settled down onto the runway more easily than expected. One slight bounce is all and the Sundowner rolled out and I taxied back to the pit

area. The first flight was very nice and the Sundowner looked great. I wish I could say the same for the second flight. After checking some radio settings and adding a kill switch function I prepared for the second flight; I started the engine and checked the needle valve and leaned it out a single click. I ran the Sundowner down the runway as before and lifted off…then things went bad…The plane rolled slightly to the left. I attempted to correct that left roll with right aileron, but it didn't help. The plane rolled more left until it was inverted. The ailerons didn't seem to be responding, so as the plane was going in inverted I tried to stab down elevator to get the nose up, but too late!

Crash… *As I walked toward the downed plane, I could see the ailerons were in fact working, but I immediately saw the problem…they were reversed… I got to the plane and verified that they were not moving correctly. Now when I went into the programing between flights I am positive that I did not reverse the servos. I know this because the Futaba 12FG has three different menus. The menu I was in for the throttle cut is not the same menus where the servo reverse function is. The other reason why I am sure I didn't reverse the aileron servos is that they were both reversed. I would have had to go to two different channels to reverse the servos because the ailerons are plugged into channels five and six. Upon further review of the radio system, when I got back to the shop, I found several other problems. The elevator down trim that I input from the first flight was not in the radio anymore. The throttle cut off that I setup up prior to the first flight was not showing up in the radio either. It appears that the radio system was not able to save the settings that I had input into the radio after I powered down the radio. I have tested the Futaba 12FG system and about one in every ten times I power down the transmitter, the radio takes about one minute to shut down. This is only the case when I am using or accessing a model located on the add-on Secure Digital card that I have in the transmitter. When I am accessing a model that is located on the built in storage of the Futaba 12FG, I do not have the delayed shutdown problem. It would appear that there are some bad memory blocks on the SD card that I have installed. Since Futaba has its own proprietary formatting of the memory card, it will be hard to test the card. The card is about four years old and is not a high end storage card. I think I will send the transmitter off to hobby services and have everything checked out since I have never sent this radio off for service.*

Since I only had one flight on the Sundowner 36, I have limited information on long term flight and trimming characteristics, but I will say it is a good looking, lightweight plane that flies well. The building of the Sundowner 36 is not difficult, but you need a few days to complete the kit successfully. The Evolution .40NX provides plenty of power and speed out of the box. I'm sure the addition of a tuned pipe and perhaps higher Nitro fuel could easily push the Sundowner speed up and perhaps past the 150 Mph range. Hanger 9 has a nice small racer that I would recommend to any intermediate flyer!

Tony Coberly

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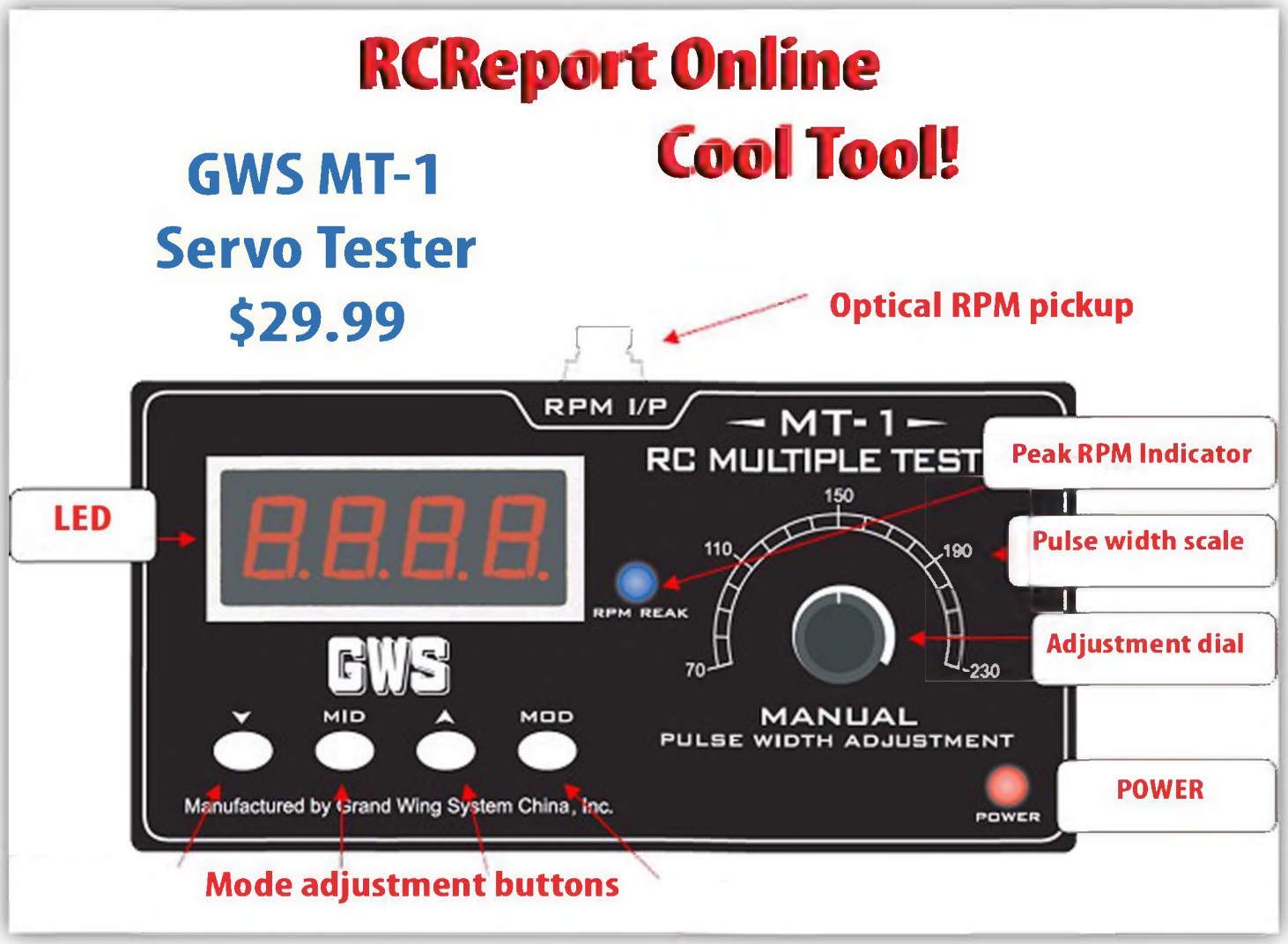


ITEM：GWRMT001

MT-1, the Multi-Tester, servo tester

An advanced tester for servos and RPM

Size: 140 x 70 x 20mm

Weight: 110g / 3.89 oz. (Batteries not included)

Functions and applications:

- Measurement of the pulse width sent from receiver to servo.
- To test the rotations of the servo automatically at the pulse widths of top, medium and low points set by user already.
- To test the automatic rotations of Servo.
- To test the rotations of Servo by turning the knob on the tester manually.
- To test the sensitivity of Servo (1 μS per step minimum).
- To measure RPM of a propeller: 2 - 6 blades. Peak RPM of 99990, with peak rpm indicator.
- Bright 4 digit red LED's to display the values measured.
- Power source can be from 4 -AAA dry cell, or an adapter or power supply with 7-15V output, or BEC (5V) from an ESC.
- Output port for applying Positive/Negative signals of pulse width from this tester. Any brand receiver can be tested-positive or negative shift.

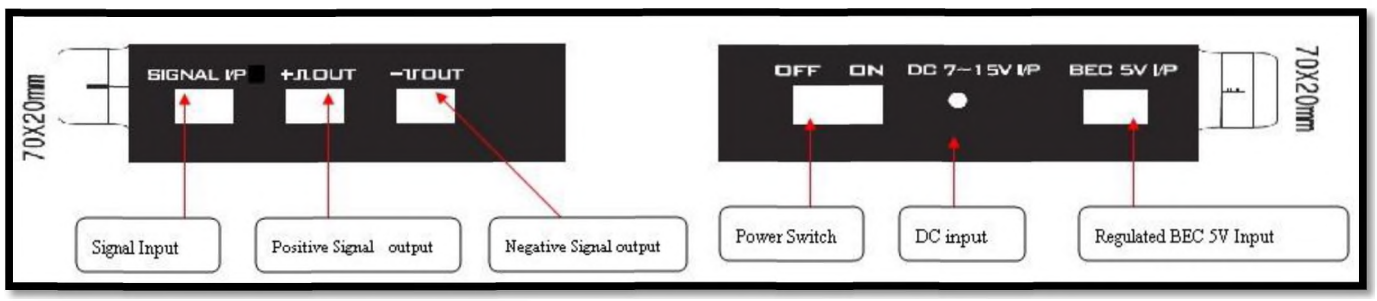
- Four buttons for setting up functions and modes.

The MT-1 RC Multiple Tester is a more advanced servo centering or testing unit. This unit it designed to test the movement of your servos, but also monitor the output pulse width of a receiver, and transmitter. There are seven different modes of operation. Mode F0-0 used to set the low default pulse width settings during servo testing and operation. The default low pulse width 800uS, but is adjustable from 300uS-1999uS. (uS is the abbreviation of microsecond) Mode F0-1 is default medium pulse width is 1500uS. Mode F0-2 is the default high pulse width 2200uS. Mode F0-3 is a setting for the stepping of the servo during testing in other modes. This test is basically the speed the servo will move when a test mode sweep is started. The default setting is 5uS, but can be adjusted from 1uS-100uS.

The second mode is ModeF1. This mode is used to test the servo positioning at the low, mid and high end of the pulse width. Simply plug a servo into the port with labeled + for positive shift. Now you can power on the tester and press the MOD button one time. The tester automatically defaults to mode F1, so by pressing the MOD button you are in the ready to see the positioning. By default the tester starts at the center 1500uS position as indicated on the tester. If you press the arrow down button the servo will move to the low position, and of course the arrow up button will move the servo to the high position. The dial is nonfunctional in this mode. This mode just moves the servo from the low, to mid and to high positions only. This mode can be used to make sure there is no binding on of a servo or linkages.

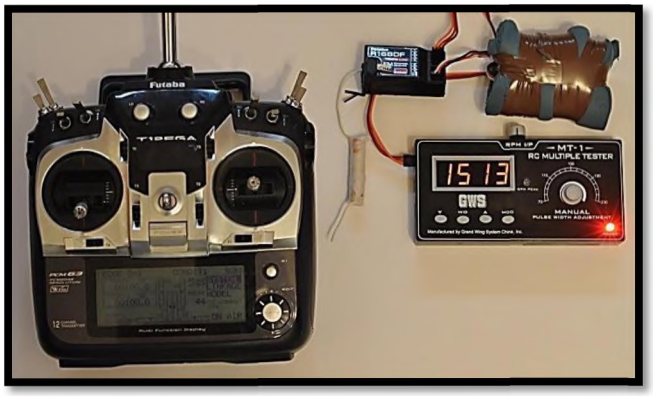
Mode F2 is used to test the sensitivity of the servo based on the pulse width defined in the earlier mode F0-3. Again with a servo plugged into the positive servo signal output port. Now turn on the tester and press the arrow up button one time until F2 is displayed on the screen, and then press the MOD button. The tester will now rear 1500, and the dial will still not be functional. The servo will center up and can be moved in steps by pressing the arrows up or down. Each button push will move the servo 10uS, or whatever step you chose in the F0-3 mode.

Mode F3 is used to sweep the servo back and forth in one of six different speeds. Plug in the servo to the positive output again and power up the tester. Press the arrow up until the display reads F3 and press the MOD button. The display will show AU03 and the servo will sweep back and forth. The servo speed can be changed with push of the up and down arrows. AU01 is the slowest sweep, whereas AU05 is the fastest sweep. This test is great for testing older servos to see if the pots (potentiometer) are getting warn out. The sweep should be smooth and steady throughout. Should the servo sweep stop or slow down near the center of the servo sweep, it's time for the pot in the servo to be replaced.

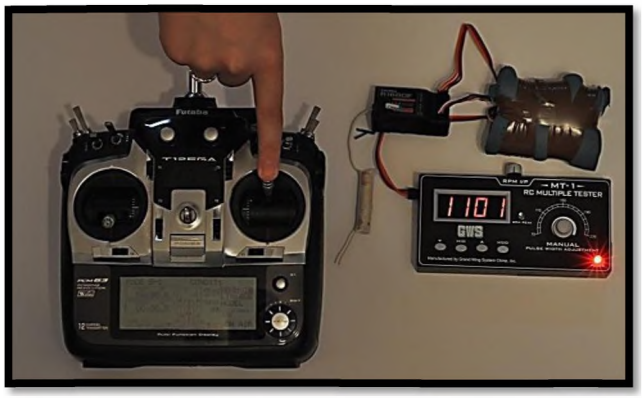


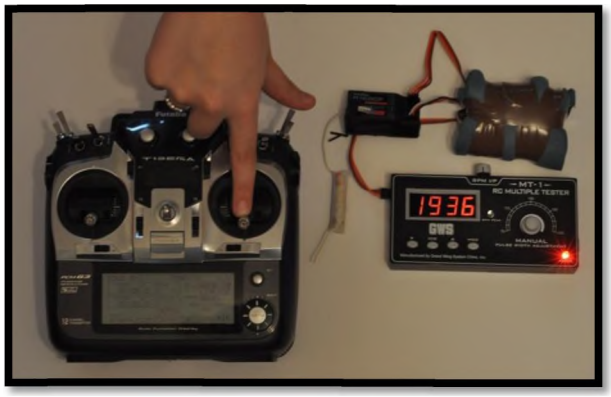
Mode F4 is used to manually move the servo with the dial knob. Again with a servo plugged into the positive signal output, turn on the tester and press the arrow up button until the screen reads F4 and press the MOD button. The tester will now read the low end of the pulse width and read 800uS or whatever the manual dial indicator is point too. Now you can move the dial back and forth and the servo will move with the turn of the dial.

Mode F5 is used to read the receiver output to the servo itself. The receiver is only outputting the information that the transmitter is sending to receiver. So this test can be used to see if the pots in your transmitter are getting worn out. First plug in the supplied servo cable from the servo channel on your receiver (the receiver must already be bound to your transmitter if you are using 2.4Ghz system) that you want to test; then plug the other end of the cable into the Signal IP port on the tester. You will need a receiver pack plugged into the receiver to power it up. Now turn on your transmitter and power on the tester and navigate to the F5 with the arrow keys and press the MOD button. This will display the pulse width of whatever channel you are plugged into. I am using the elevator channel in channel 1. In the first picture you can see that the output pulse width, while the elevator stick is in the center position, is 1513uS. This shows that the transmitter is just slightly off from the ideal 1500uS perfect centering



of the servo. The two following pictures show the settings for full down elevator position of 1101uS, and a full up elevator position of 1936uS.





Mode F6 requires additional cables for your specific transmitter system. The transmitter plugs into the trainer/DSC port with the appropriate cable and into the Signal IP port. This allows the transmitter to display the actual output from the transmitter, without a receiver. These cables are optional and need to be purchased separately.

The GWS MT-1 servo tester is a great tool for checking out your servos and radio system. Get it at BP Hobbies or your local hobby shop for around $29.99! I like it!

Tony Coberly

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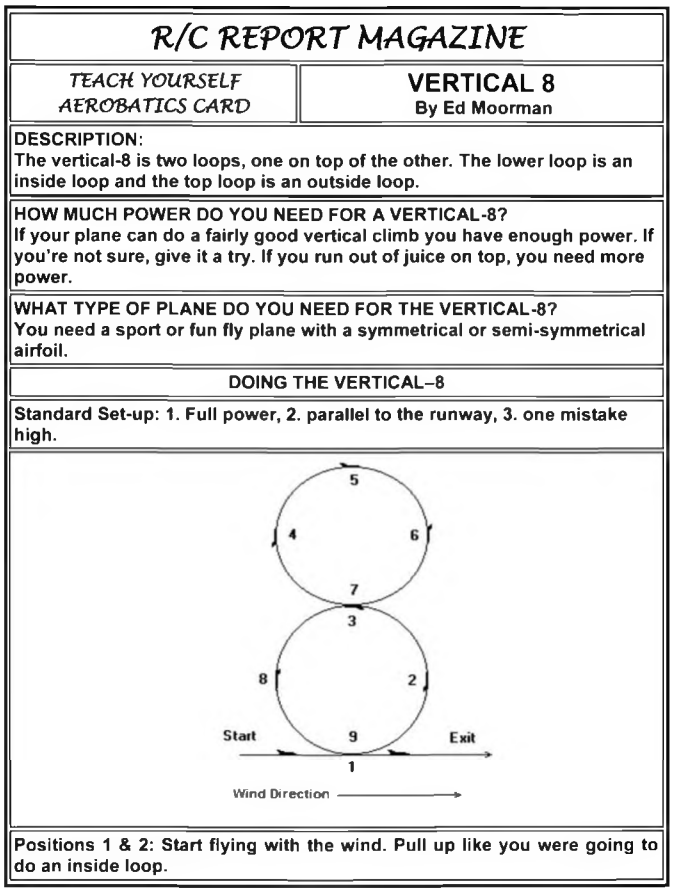
MANEUVER OF THE MONTH:
VERTICAL 8

The vertical 8 will give you a good check on your power. If your plane can get through a vertical-8, then it has enough power to do most anything. Nearly all sport planes have enough power to do vertical maneuvers, loops, Immelmanns and such, but a vertical 8 takes a lot more. For the vertical 8, you do an Immelmann, but instead of rolling out, you put in some down elevator and do an outside Immelmann on top of the first one. If you don't have really good power, you don't make it to the top of the second one without stalling out. That's why I call it the power check maneuver.

Description of the vertical-8: The vertical-8 consists of two loops, one on top of the other. You start it just like an Immelmann with a half of an inside loop. When you get to the top, you reverse the elevator and do a complete outside loop going upwards. This is where you need the power to pull you over the top of the second loop. At the bottom of the outside loop, which is the center of the whole maneuver, you reverse elevator again and finish the inside loop back down to your starting point.

What type of plane do you need for the vertical-8? You need a sport or fun fly plane with a symmetrical or semi-symmetrical airfoil. Part of the maneuver is an outside loop so a plane with a flat bottom airfoil will have a hard time doing it. You also need a fairly powerful engine so the plane has a good power-to-weight ratio. How can you tell if you have enough power? Pull your plane up into a vertical climb from level flight. If your plane continues to climb pretty well, you probably have enough power. I'm not talking about unlimited vertical, but if it goes up a hundred feet or so, you'll be Okay. If your plane runs out of steam fairly quickly in the vertical climb, then you'll have trouble with a vertical-8. If you're not sure, go ahead and give the vertical-8 a try. You'll know soon enough. If you run out of juice on top, you need more power.



Wind Direction: Like most all eights, do the vertical-8 going down wind. I tried a few recently, starting the maneuver while flying into the wind just to verify the best direction. I had trouble getting the top loop over the bottom one. Starting the vertical 8 while flying in the same direction as the wind is definitely best way.

Doing the vertical-8

Standard Set-up: 1. Full power, 2. parallel to the runway, 3. one mistake high.

What to do: Check the R/C Report Aerobatics Card for the drawing and follow through the steps.

Positions 1 & 2: Start flying in the same direction as the wind. Pull up like you were going to do an Immelmann. Make it medium size. Not a really tight one because this scrubs off some of your speed and not a really big one because this also costs you speed. We need the airspeed for the next part of the maneuver so try to lose as little as possible unless you have a grossly over powered 3D plane.

Position 3: At the top of the half loop where you would normally roll out in an Immelmann, pause momentarily, reverse your elevator and start an outside loop. If you are power limited, it will probably be a small one since your airspeed is slow.

Position 4: Right here you are, unless you have tons of power, you are going to have to nurse your plane through. Your engine is chugging with all its might and you have to help by letting it fly its best radius. Don't try to stretch it upwards and don't be too tight. Watch your direction and make aileron corrections if necessary. One more thing, if your engine sags, you may have it tweaked too lean. If this is the case, land and open the needle valve a quarter turn or so.

Position 5: You are king of the mountain, up on top. Back off that elevator and let the plane sort of do its own thing or you'll tuck under quickly and your outside will be tiny. You'll be gaining speed fast so you may want to throttle back. I never do, but some people like to because your plane can get going pretty fast by the time you get to the bottom.

Position 6: Continue the outside, but watch the elevator. Vary the down elevator to try to be at the spot where you started the outside portion of the maneuver.

Position 7: You'll get here quickly. If you didn't throttle back your speed will be high at the end. You did check to see if your plane would take g's, didn't you? Reverse your elevator and finish the inside loop.

Position 8: From here you just fly back to your starting point. Check your wings and make aileron corrections, if needed.

Position 9: You will come zooming down here so watch the plane for your exit altitude and also listen for flutter. If you reduced power, add it back here at position 9.

Okay, what really happened in your vertical-8?

You didn't make it: The plane fell out at the top: More than likely you need more power unless you were trying a giant inside loop and lost all your speed doing it. Try a smaller inside loop and see if you make. If you don't, you can try some prop changes first, but you'll probably need more power.

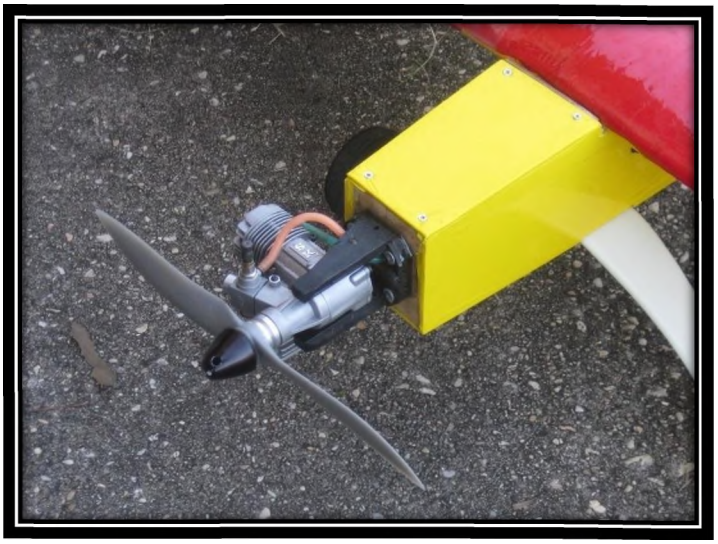
Position 3: At the top of the inside loop, pause momentarily, reverse your elevator and start an outside loop.
Position 4: Right here you are, unless you have tons of power, you are going to have to nurse your plane through. Don't try to stretch it upwards and don't be too tight.
Position 5: Back off that elevator and let the plane sort of do its own thing or you'll tuck under quickly and your outside will be tiny. YYou may want to throttle back
Position 6: Continue the outside, but watch the elevator.
Position 7: You'll get here quickly. Reverse your elevator and finish the inside loop.
Positions 8 & 9: This is the easy part. You just fly back to your starting point. Watch your speed. As your speed increases, so do the g's.
PROBLEMS
THE PLANE FELL OUT AT THE TOP: -More than likely you need more power. Try a smaller inside loop and see if you make. If you don't, you can try some prop changes first. See if a lower pitch and longer diameter prop helps. For a .46, try a 12 1/4 – 3 3/4 or a 12-4. A different prop may work, but you'll probably need more power.
YOU BARELY STAGGERED THROUGH: There may be hope for you. Much of doing a vertical-8 is technique. Try a smaller inside loop. That's the first thing. -Try pausing a little longer in the inverted position to let the speed increase slightly. In other words, make a very slow transition to down elevator. -Try a lower pitch prop for a little less speed and more climb.
YOUR PLANE PULLED OFF TO ONE SIDE: -Use right rudder just like you normally do on take off, to keep the plane tracking straight during the inside loops. -Use LEFT rudder in the outside portions since P-factor will pull you left.
CLIP OUT-TAKE TO THE FIELD *COLLECT THE WHOLE RC REPORT SERIES*
For reprints of Fun Aerobatics or back issues call R/C Report (256) 503-8436
Ed Moorman E-mail: emoorman25@gmail.com

You barely staggered through: There may be hope for you. Much of doing a vertical-8, especially in a plane with limited power, is technique. First, try a smaller inside loop. Next, cheat a little. Try pausing a little longer in the inverted position to let the speed increase slightly. In other words, make a very slow transition to down elevator. Hey, this is not pattern flying here. We are trying to learn a maneuver with a sport plane just for fun. You might also try a lower pitch prop for a little less speed and more climb.

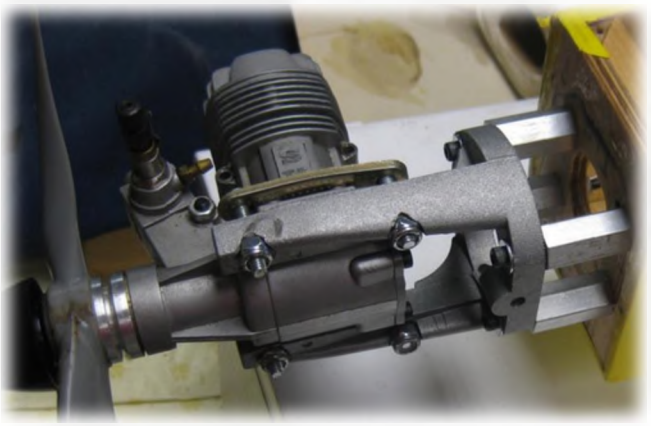
Your plane pulled off to one side: Remember when I had the feature on P-factor, torque and spiral prop blast? The vertical 8 is P-factor city. Remember, when you pull up, the right side pf the prop is momentarily at a higher angle so it pulls the plane to the left. You may notice this during the first pull up and want to use some right rudder. Notice I said, "You may…" Well, the first half of the vertical is pretty normal, but the second half is where things get different. Here you are slow and using down elevator. The P-factor reverses and the left half of the prop bites more causing a pull to the RIGHT. You will need to use LEFT rudder going over the top in the vertical 8. I know this is different, but that's how it is. The slower you get the more rudder you'll need.

That's about all that can go wrong except for correcting your ailerons. It's not a hard maneuver; you just need the power to make it from position 3 to position 5.

Ed & Patches, an original Stick-type plane constructed from a modified World Models Skyraider Mach I wing that has one rib removed from each side and 3 degrees of anhedral.



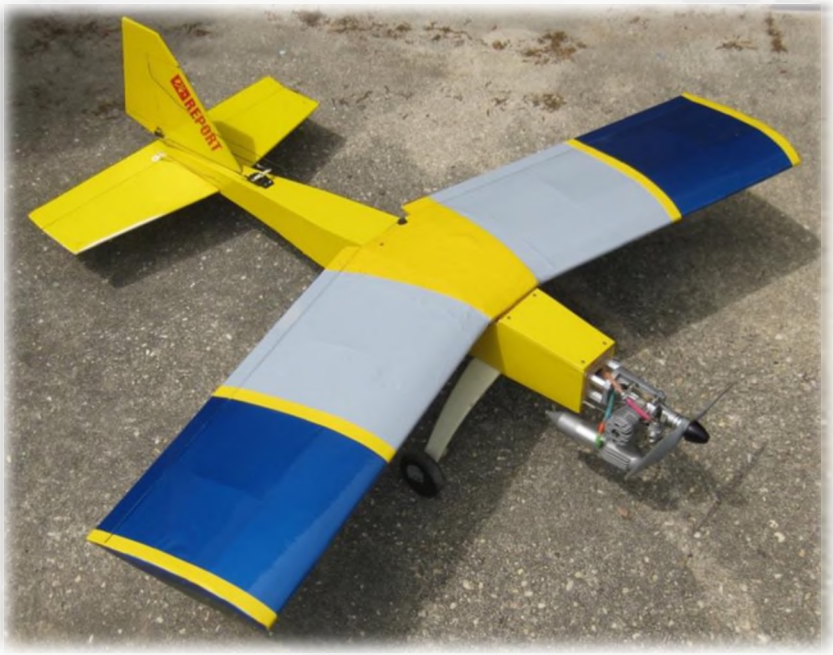
The SK .50 mounted on Patches' fuselage with on a Great Planes fiberglass engine mount.



The SK .50, now mounted further out from the firewall on Patches' fuselage with the aluminum, clamp mount and the stand-offs.

Feature of the month: Dave Maguire's Swept Forward Wing, 3D plane. I was all set to publish the "How-to" on replacing bearings, and I already have it written and the photos taken, when I received a couple of photos from Dave Maguire from Apple Valley, Minnesota, a suburb of the Minneapolis-St. Paul area. Wanting to experiment and try something different for 3D, Dave designed a swept forward wing, 3D plane.

Ed with the newly named "Vulture" ready to test. Note how the center section over the fuselage is straight across and not swept.



Another shot of the Vulture before flight.

Dave Maguire's original design, swept forward wing, 3D plane with Magnum .52XLS power. As of this writing, it hasn't been flown since it is in the 20s and windy in Minnesota, but I will publish a follow-up on how if flies, handles and does 3D.

First, let me give you a little background on SFW planes. Just like high wings with anhedral, swept forward wings are, to the contrary of popular belief, not unstable. They really give basically the same characteristics as a swept back wing. They are also really good in cross winds. The problem with forward sweep has always been in the construction. Any time you pull g's, the wings flew and bend. If they have sweep, they also twist some. Take a look at the photos and imagine a line that is the shortest distance from the root to the tip. It will be from the root leading edge to the tip trailing edge. This is the line on which the wing will twist. The twist on a swept back wing will give you wash out, not bad. The twist on a swept forward wing will give you wash in-tips at a higher angle-and an instant tip stall. This has always been the downfall of swept forward wings.

During World War II, the Germans experimented with a swept forward wing plane, the Junkers Ju.287. The wings did twist, causing problems on the 17 flights the plane made. One interesting thing was that both wings twisted on the lift off for takeoff. The tips would twist to a higher angle of attack, causing an ever increasing climb angle unless the pilot held forward control yoke.

On the US X-29, SFW experimental plane, composites were used in the wing construction to preclude the twisting and this plane flew fine. Much has been made of the computers used in the flight controls for stability on the X-29. This is not because of the swept forward wings, but because all fighters type aircraft are balanced way tail heavy to increase maneuverability. The F-16 is like this. Without the computers, the plane is so tail heavy it is virtually impossible to control. It does turn tight, though.

The Vulture on takeoff: the tail wheel is up and the plane is tracking nicely, veering a little into a slight crosswind.

RC planes can also be constructed to make the wing virtually without twist. Sheeting and shear webs will reduce or eliminate twist. In the middle 1980s, I designed three different SFW planes called the Vector 1, 2, and 3. Two were low wing; one had a single tail and the other, twin tails. The third plane had a shoulder wing and a single tail. Photo6, a scan of an old album page, shows Ed's original SFW design Vector 3. These had sheeted foam wings and had no bad characteristics. They were excellent in cross winds.

It turns out that the sweep of a wing is determines by the sweep, or lack of, of the mean chord line. This line is half way between the leading and trailing edge all along the wing. If you look at three full scale acro planes, the Giles, extra and Edge, you'll find that the Giles has a swept back mean chord line, a swept leading edge and a straight trailing edge. The

Extra is pretty much a straight wing. But the Edge has a swept forward mean chord line with a straight leading edge and a swept forward trailing edge. This is all going somewhere, so hang in there. In RC flying, the Giles is a better IMAC or pattern acro plane. Pattern planes tend to have somewhat swept back wings as swept back wings roll really well. The Extra is a good compromise in the middle. The Edge with its swept forward mean chord line is an excellent 3D plane. This tells me that it might be a good idea to try a little more forward sweep. Enter Mr. Maguire and his SFW plane.

Dave Maguire told me his inspiration for his SFW plane resulted from reading a thread on RC Universe about different wing shapes and how they relate to general flight and to high angles of attack. They covered everything except swept forward wings. He asked around and couldn't get any answers so he decided to experiment and try it himself. I like his thinking.

He has a lot of experience flying Paul Swanson's Mojo design so he ordered some Mojo ribs. He drew up some plans and found a sweep he thought looked good. It turned out to be 4 ½" forward. The span also had to be a max of 46 inches. This size would fit into his car for transport to the field.

The ailerons are widened at the root to give more control during hover and harriers when the only airflow over the wing is from the prop blast.

Dave said he liked the fuselage on the Chinn designed Yak so he ordered one of these and modified it for his plane. He also ordered the Yak tail feathers.

The plane is built like a 40-size Mojo with a carbon fiber tube down the center of the fuselage. The servo wires run through the tube and the tube makes the fuselage nearly indestructible. Photo7 shows the SFW 3D in the bones. You can see the carbon fiber fuselage tube. Also note the shear webs. These resist twisting.

The Vulture at altitude and looking good.

The servos Dave uses are Hitec HS-625 metal gear servos with an HS085 on throttle. He uses a 2000 mil, 5-cell battery pack.

Overall, it's a great looking bird. Different, but great looking and I like it. He should come fly with Flaps and I. His plane would fit right in. As soon as I get a test report on how it flies, I'll have it in the column.

The Vulture on a low pass

The Vulture just before touchdown: it needs a little left aileron correction.