R/C REPORT ONLINE!

September 2011 Issue 302

RC REPORT ONLINE

OFFICE NOTES

September is here already, huh? Happy Labor Day!

Labor Day: How it Came About; What it Means

Labor Day, the first Monday in September, is a creation of the labor movement and is dedicated to the social and economic achievements of American workers. It constitutes a yearly national tribute to the contributions workers have made to the strength, prosperity, and well-being of our country….USDOL

So to all of you out there; enjoy your day!

The office will technically be closed on Monday, but as many of you know that doesn't mean much around here. Email me if you need help.

The weather is starting to cool down a bit, perfect weather to go fly! Enjoy it while you can! Old Man Winter will be here before you know it.

It appears that August was a transition month for me. Otherwise, I wouldn't be sitting here writing with only a few days left before the end of the month.

I have a special surprise for everyone next month! The "Celebration Subscription Special" returns this year; just a month early because we are honoring Miss Cassie this year. She will be turning 17 on October 10. Look for more information coming to your inbox soon and in the October issue. YOU DON'T WANT TO MISS THIS ONE! WE WILL BE OFFERING THE LOWEST PRICE EVER FOR RC REPORT ONLINE! YOU WILL NEVER SEE A DEAL LIKE THIS ONE AGAIN!

I have a couple of different email distribution lists hanging around in my Outlook. If you are an iPad user; you can have the PDF version emailed to you each month. Kindle and Nook users can request that the Kindle version be sent to you also. I have also created a list for subscribers who are having difficulty downloading the PDF. Please email me if you would like to be added to one of these lists with the list you want to be added to in the subject line.

Thanks to all of you who took the time to send in items for Photo-ops! Keep the pictures coming! We love to share!

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

Bye for now,

Julia

Smile! You could be the next Winner!

Smiley Face Contest #9 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 September30, 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 #9 2011

US Mail: Smiley Face Contest #9, 2011 PO Box 12051 Huntsville, Al 35915

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

FOURTEEN!

Jim Fowler

THIRTEEN!

Milton Johnston

FIFTEEN!

Jeff Mrachek

TEN!

Dan Schaller

FOURTEEN!

Frank Maguire

FOOURTEEN!

That is enough for one month and it should be good for 2 month with few to spare!

One more and I have to say again "somebody got Smiley Face wild!"

Stay cool and

Greetings from North Dakota.

Manfred Decker

Hi Smiley Contest #8

I have 13 smiley's and 1 baby smiley.

Thanks to the picker of the June Smiley Winner me.

Larry Slowiak

Please note that not all Smiley Face entries will be published each month. On occasion, I finish this page early in the month, but all entries are considered when determining the winner.

Julia

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

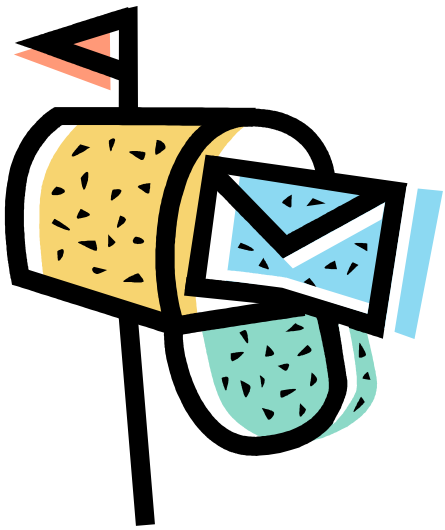
Total Smileys for the August 2011, issue was 15.

July's winner is alumni Milton Johnston!

Thanks for your submission, Milton!

Julia Coberly

Mail Call



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

Hi Julia!

We have a club member who has an airplane and doesn't know any information about it, not even the name. HELP!

Thanks,
Larry S

So guys, anyone know what this is? Email me if you do! Findings will be published in an upcoming issue!

Here's an interesting email I have been holding onto for a while now. Thanks for sharing, Dan!

A paraprosdokian (from Greek, meaning "beyond" and "expectation") is a figure of speech in which the latter part of a sentence or phrase is surprising or unexpected in a way that causes the reader or listener to reframe or reinterpret the first part. It is frequently used for humorous or dramatic effect, sometimes producing an anticlimax. For this reason, it is extremely popular among comedians and satirists.

Some paraprosdokians not only change the meaning of an early phrase, but also play on the double meaning of a particular word, creating a syllepsis.

I asked God for a bike, but I know God doesn't work that way. So I stole a bike and asked for forgiveness.

Do not argue with an idiot. He/she will drag you down to his level and beat you with experience.

I want to die peacefully in my sleep, like my grandfather. Not screaming and yelling like the passengers in his car.

Ø Going to church doesn't make you a Christian any more than standing in a garage makes you a car.

The last thing I want to do is hurt you. But it's still on the list.

Light travels faster than sound. This is why some people appear bright until you hear them speak.

If I agreed with you we'd both be wrong.

We never really grow up; we only learn how to act in public.

War does not determine who is right - only who is left.

Knowledge is knowing a tomato is a fruit; Wisdom is not putting it in a fruit salad.

The early bird might get the worm, but the second mouse gets the cheese.

Evening news is where they begin with 'Good evening', and then proceed to tell you why it isn't.

To steal ideas from one person is plagiarism. To steal from many is research.

A bus station is where a bus stops. A train station is where a train stops. On my desk, I have a work station.

How is it one careless match can start a forest fire, but it takes a whole box to start a campfire?

Some people are like Slinkies ... not really good for anything, but you can't help smiling when you see one tumble down the stairs.

Dolphins are so smart that within a few weeks of captivity, they can train people to stand on the very edge of the pool and throw them fish.

I thought I wanted a career; turns out I really just wanted pay checks.

A bank is a place that will lend you money, if you can prove that you don't need it.

Whenever I fill out an application, in the part that says "In case of emergency, notify:" I put "DOCTOR".

I didn't say it was your fault, I said I was blaming you.

I saw a woman wearing a sweat shirt with "Guess" on it...so I said "Implants?"

Why does someone believe you when you say there are four billion stars, but check when you say the paint is wet?

Women will never be equal to men until they can walk down the street with a bald head and a beer gut, and still think they are sexy.

Why do Americans choose from just two people to run for president and 50 for Miss America?

Ø Behind every successful man is his woman. Behind the fall of a successful man is usually another woman.

A clear conscience is usually the sign of a bad memory.

You do not really need a parachute to skydive. You only need a parachute to skydive twice.

The voices in my head may not be real, but they have some good ideas!

Always borrow money from a pessimist. He won't expect it back.

A diplomat is someone who can tell you to go to hell in such a way that you will look forward to the trip.

Hospitality: the art of making your guests feel like they're at home, even if you wish they were.

Money can't buy happiness, but it sure makes misery easier to live with.

I discovered I scream the same way whether I'm about to be devoured by a great white shark or if a piece of seaweed touches my foot.

Some cause happiness wherever they go. Others whenever they go.

There's a fine line between cuddling and holding someone down so they can't get away.

I used to be indecisive. Now I'm not sure.

I always take life with a grain of salt, plus a slice of lemon, and a shot of tequila.

When tempted to fight fire with fire, remember that the Fire Department usually uses water.

You're never too old to learn something stupid.

To be sure of hitting the target, shoot first and call whatever you hit the target.

Nostalgia isn't what it used to be.

Some people hear voices. Some see invisible people. The rest have no imagination whatsoever.

A bus is a vehicle that runs twice as fast when you are after it as when you are in it.

If you are supposed to learn from your mistakes, why do some people have more than one child?

Change is inevitable, except from a vending machine.

I thought I was wrong once, but I was mistaken.

Now, if you are still here with me; here's a little tribute to Grandparents, since Grandparents Day happens to be this month from my friend, Dick:

Grandmas are moms with lots of frosting. ~Author Unknown

What a bargain grandchildren are! I give them my loose change, and they give me a million dollars' worth of pleasure. ~Gene Perret

Grandmothers are just 'antique' little girls. ~Author Unknown

Perfect love sometimes does not come until the first grandchild. ~Welsh Proverb

A grandmother is a babysitter who watches the kids instead of the television. ~Author Unknown

Never have children, only grandchildren. ~Gore Vidal

Becoming a grandmother is wonderful. One moment you're just a mother. The next you are all-wise and prehistoric. ~Pam Brown

Grandchildren don't stay young forever, which is good because Grandfathers have only so many horsy rides in them. ~Gene Perret

When grandparents enter the door, discipline flies out the window.
~Ogden Nash

Grandma always made you feel she had been waiting to see just you all day and now the day was complete. ~ Marcy DeMaree

Grandmas never run out of hugs or cookies. ~Author unknown

Grandmas hold our tiny hands for just a little while, but our hearts forever. ~ Author Unknown

If I had known how wonderful it would be to have grandchildren, I'd have had them first. ~Lois Wyse

My grandkids believe I'm the oldest thing in the world. And after two or three hours with them, I believe it, too. ~Gene Perret

If becoming a grandmother was only a matter of choice, I should advise every one of you straight away to become one. There is no fun for old people like it! ~Hannah Whithall Smith

It's such a grand thing to be a mother of a mother - that's why the world calls her grandmother. ~Author Unknown

~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

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FOR SALE

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

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

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

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

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

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

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

Dick

PHOTO OPS

Rod Stauffer wrote: Hello Julia, Thank you for your support of our 2011 RAMS Dragonfly Helicopter Fly-In. The RC Report Online subscriptions were greatly appreciated. The above is the 2011 Dragonfly Collage capturing some of the activity at the event.

Hi Julia,

In July the Portland (Maine) Propsnappers hosted 17 boys who were attending the "ACE Academy", a week-long aviation camp sponsored by the Portland Jetport, with the help of the FAA and the general aviation staff. Here's a photo of the group, all of whom spent the morning at our field learning about R/C models and all got a buddy box flight as well. The other photo is of Propsnappers Instructor Bill Reeve and ACE Academy Director Marcia Wescott (a professional flight instructor) learning from Bill how to fly R/C.

Frank Maguire

Received the following from Dick Sprau in Montana: Montana Aircraft Association has a fly-in each August. Real laid back, no ropes, so you can use a wing for shade. They also have a flour drop and spot landing contest in the afternoon. A lot of fun at a little airport in Three Forks and the Grange Ladies cook up a mean burger for $4!


Fairchild 24


58

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On Site Catering by Flannery's

CANYON CROSSWINDS 2011
EVENT/ACTIVITY SCHEDULE

EVENT	ACTIVITY	Date(s)
Swap meet & Fun Fly	General swap meet and gueat flying - All day	April 2, 2011
Scale Fun Fly	Guest flying, scale demonstrations, raffle prizes	June 11, 2011
Fourth of July	Members and families only fun fly, BBQ, and fireworks	July 4, 2011
3D Heli Jamboree	Guest flying, 3D demonstrations, overnight camping	Sep 9,10,11, 2011
Float Fly, Lake Castaic Lagoon	Guest flying, raffle prizes	September 17-18, 2011
Castaic Days	Demonstration Booth	September 24-25, 2011
Night Flying - Monthly	Night flying the first Friday of each month starting May 6, 2011	May 6, 2011 thru September

9th ANNUAL
JIM CECIL MEMORIAL
FLY-IN
HOSTED BY CONGAREE FLYERS RC CLUB

The CONGAREE FLYERS are hosting an AMA sanctioned Fly-In on Saturday, October 1, 2011 at their flying site in Gaston, SC. Bring your AMA membership card!! Registration starts at 8:30. We will begin flying around 9:00. Fly what you bring. Food will be available. Swap, Shop, Sell and have a fun day of flying on our 70' by 600' grass runway with a clear 80 acre over fly. There will be a $15.00 landing fee (includes lunch for registered pilots). Door Prizes and Raffles. Visitors and spectators are welcome! Come on out and join us just for the fun of it..... Google Coordinates: ***33°46'58" W***
81°06'56" N

No Channel 20 please!

For more information contact by E-mail r_controler@Bellsouth.net or www.congareeflyer.com

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8:00 a.m. to 4:00p.m.

Scheduled Events

Free Flying

Giant Scale Pattern Demo

Pylon Racing Demo

WWI Fly-By

WWII Fly –By

50/50 Drawing

Precision Pattern Flying Demo

Giant Sailplane Demo

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FOREWORD

A totally new engine range but they come from a lot of experience in the manufacturing of a range of well known glow ignition engines that have been used by modelers worldwide for quite a number of years. The CEO of the Chinese large manufacturing company has been developing this totally new range of petrol engines for a number of years - looking at what is already on the market - considering the style, quality and capacity range on offer - the trend of modeling when i.c. (internal combustion) engines are used - future requirements and what appears to be most appealing in the engine range. It is a fact that petrol (gasoline - gas - spark ignition, whatever you like to call them) engines have gained a tremendous popularity in the last 10 years. Many reasons such as the cost of glow fuel (in many countries it is exorbitant), the high consumption of glow engines, higher vibration of large glow engines due to the necessary higher compression, the noise, reliability, oil spattering to name a few. I just happen to like all types of i.c. regardless of the type and what fuel they use but I certainly have my ear to the ground listening to what the mainstream of modelers prefer and the reasons why. The first petrol engines for R/C use were, often times, crude converts of hand tool engines. They were rough, heavy, vibrated but…they were reliable, of large capacity and extremely inexpensive to run - three factors that generally overshadowed the bad aspects. The popularity of these types of engines grew rapidly and this was noticed by many manufacturers so the second wave of engines became available. Again, converts of hand tool engines but with a few refinements and the more refined engines were gaining the majority of the market. Now we have extremely refined engines and many now purpose designed from the drawing board up to the final product. It is this latter of which the NGH engine on review is a fine example. No conversion, no parts from other engines, no modifications - an engine that started as it is presented - a model aircraft engine that has spark ignition and runs on a 'petroil' (mix of oil and petrol) fuel.

It is quite obvious that this engine comes from a company well versed in this type of manufacturing and that a lot of research has been done as regards style, design, ease of operation and overcoming shortcomings seen in some other engines. One simple example is the carburetor mounting. No adaptors into an existing case design - the case is designed to accept the carburetor and in a position that overcomes a problem so common - the connection from the throttle servo to the throttle arm on the carburetor. The cast case mounting is canted in order to have the throttle linkage in a straight line back to the model's firewall and through to the servo - no bends curves or friction developing convoluted cable runs. An added benefit of canting the carburetor this way is that the high and low speed needles are also canted, but in their case, back towards the engine - very accessible. The engine is beam mounted and is supplied with a small muffler (petrol engines can use small mufflers) that has a rotating outlet at 90 degrees to the body allowing for up, down or an arc of (almost) 360 degree positioning. A Pitts style muffler is also being manufactured as an optional extra.

FIRST IMPRESSIONS

I set the engine up on the test bench and connected all the leads for ignition and connected the petrol fuel tank and gave the prop a few flicks to get the first load of fuel to the carburetor pump section. I noted that the engine was of low compression and there was a little bit of friction from the yet, unrun internal parts. My feelings were that the first starts would be best done at speed with the electric starter. Close the choke, switch the ignition on and give if a few spins and, quite quickly, it fired on the choke (normal procedure), Choke open, throttle about 1/3, give it a spin and it was away and singing so nicely. I let it run just a bit higher

Hemi head - deep fins.

than high idle until I could feel heat in the head fins then I switched it off and let it cool completely. This is my normal running in procedure and also one that is very close to that recommended by the manufacturer. After several starts and stops over a day I felt that, next day, it would be ready for some serious work. Next testing day it started quick as a wink and I could flick start it quite well, but if you're not an old hand at engine flicking, an electric starter has it humming in double quick time. The engine would now hold full RPM without sagging and the top RPM figure was about that which I expected with a 13 x 8 propeller. On this note, you will see in the instructions that the engine has the potential to reach 12,000 RPM but we are talking about the maximum stressed RPM the engine is capable of before it starts to self disintegrate. This is a common indication in the instructions of many engines but the RPM is not that which is achievable with the common use range of propellers. I am starting to see a maximum 'ground RPM' figure

with some engines now and this is the maximum the engine should be run at 'on the ground' before the model takes off. The RPM will increase in the air so it is gratifying to know that it will not be destroyed by the higher RPM. From my testing, this engine runs very well (unstressed) within the RPM range I have indicated in my propeller test figures. As well, within that range, you are not going to have a loud, screaming engine that might cause problems at the flying field.

Okay, notes from my test bench of my observations.

Very easy starting, safe (for me) to hand start as there is no kickback or prop flinging tendencies. With this in mind, the use of a spinner nut can be considered in place of the supplied hexagon nut. I used a spinner nut for all testing - much easier for the electric start. Vibration is quite low - so much so I tended to forget it was a 17 cc engine at times. Tuning is almost a non event. When I had the engine run in enough for the testing, I tuned both needles to maximum and neither required any change, nor, in fact, did a change give an advantage throughout the range of propellers I used. Take note of that - you needle twiddlers. Once the engine had a bit of running time it would sit (probably for hours) on a steady idle - great for controlled landings of scale models. Apart from a 'cold' muffler leak (more later on this) the engine was quite clean after all the testing and the exhaust was not much more than a few black specks as is usual for a well tuned petrol engine. My final word - a very enjoyable engine to run. I am sure the following (larger) engines will be just the same and….I am really looking forward to the 70 twin…Hmmmm-nice!

LET'S LOOK AT THE MAKE UP OF PARTS

Purpose designed crankcase - note the position of the intake manifold.

Very sturdy crankshaft. Note the oil groove.

Generally, the maincase is much the same as many good quality two stroke (glow) engines with a couple of 'special' points of attention. The casting is very clean, externally a smooth frosted finish - internally the machined sections a very finely finished, no evidence of casting porosity, threads are deep and well cut. I would consider the aluminum alloy used for the casting to be of quite high tensile material - tough and stable. The beam mounts are in the form of mounting pads joined by a thick web, there is plenty of metal around the exhaust

manifold bolt holes and the front housing is well stiffened with sturdy gussets. Inside the front housing are the two ball bearings for the crankshaft and the plain bearing -gas seal - section in between. To lubricate this plain section there is a small groove from the intake manifold to an annular ring behind the sealed front bearing. The ring acts as a storage for lubrication and the feed is via the groove. The front bearing housing is thicker in section than is often seen in some engines. One reason is that it is more stable for the imposed loads from the propeller when the model is maneuvering and also that a reasonable depth of metal is required for the threaded holes for the sensor attachment screws.

Mixture needles angled to the rear.

The intake manifold is very well designed to seat and secure the Walbro carburetor. Such a simple matter to just mount the carby on an engine and more often than not; no consideration whatsoever for the linkage from the throttle servo. Here we have a thoughtful design - the mounting base for the carburetor is positioned at an angle so that the linkage is in a direct and straight line back to the firewall - a throttle connection with no curves or kinks. The two mixture screws are angled towards the rear and close to the finned barrel - very accessible.

Throttle arm and choke lever in a straight line back to the firewall

A nipple leading into the front bypass channel is connected with fuel tubing to another nipple in the throat section of the intake manifold - its purpose to provide the necessary pulses from the engine to drive the diaphragm in the carburetor pump. One other little point here, the position of the carby puts the atmospheric equalizer hole in the carburetor close to the engine - away from the disturbed air that will flow from the propeller and through cowl apertures.

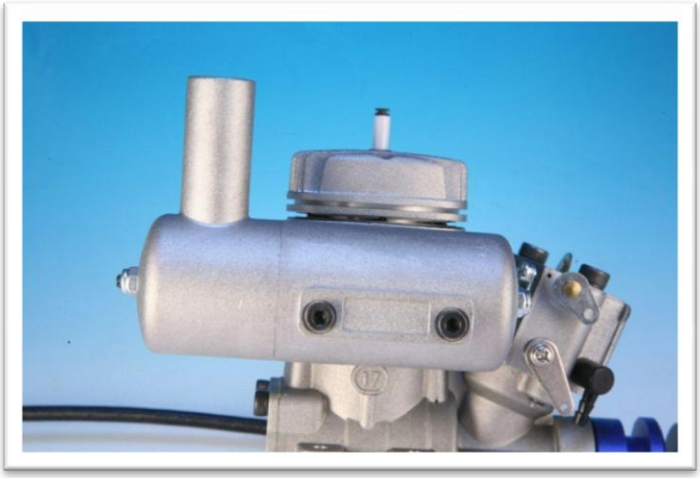
Cast and machined rear cover. Note the shallow 'smile'.

The rear cover is cast with a piston skirt clearance flat section, the body and inside face of the flange is machined and the seal is a fibrous gasket material. There is a shallow groove describing about 1/3 of a circle on the inside face - don't know why.

The cylinder head is also a casting with deep fins - bit more cooling required for petrol engines - a hemispherical combustion chamber surrounded by a sloping squish band. Six bolts secure the head and the seal is by two brass shims. All good gear.

Parts of the muffler

Included in the cast components is the muffler assembly - a three piece unit comprising a long front section that includes the manifold, an inner cone with an O ring seal and the rear (parallel) section that has the stinger - outlet pipe as an integral item, This rear section can be rotated almost a full circle. The parts are held together with a 4mm stud that has Nyloc nuts both ends. The joint of the front and rear section leaked a dribble of oil when I first started the engine and that disturbed me a little but - as soon as the engine reached operating temperature - the leak ceased. This was a common occurrence each cold start until I put a wrap of plumber's Teflon tape around the joint and that fixed the leak nicely. A bit of a compromise here - the leak is due to the thin wall section of the muffler body and the thin wall is the reason why the muffler is quite light. I'm happy with the fix for the leak and…the very lightweight muffler.



Neat muffler - rotate the exit pipe to suit your model

THE MOVING BITS

The liner is heat treated steel - long lasting job and it has an interesting series of ports. The usual side, rear boost and exhaust ports are straightforward, but below each side port in the relieved section of the liner skirt, there are two more narrow ports. They would act as a booster for the side bypass ports and, maybe, as a form of sub port induction. Interesting and well machined.

Note the extra port in the liner skirt.

The piston is from a permanent mould casting and the aluminum alloy used is very tough and stable (expansion controlled). The mould form is of such quality that no after machining is required save a short internal dressing of the skirt to act as the tight fit on the piston mandrel for machining the outside sections. Briefly, a mandrel (finely machined shaft section) is held in the lathe, the piston pushed on (often they are mildly pre-heated to expand a little) and the fit is enough to secure the piston for all external machining - a very accurate process. When the job is done, a rod through the hollow mandrel is tapped forward and the piston is pushed off the mandrel. When I machine pistons I heat them with a heat gun to remove them but…I am generally machining only one piston - not thousands.

One pin located iron ring is fitted, the blind gudgeon pin (not drilled right through) goes up against a stepped hole one side of the piston and retained in place by a wire circlip - a method with which I find favor. There is a large oval port in the left side of the piston that aligns with the rear boost port in the liner for…an extra boost.

Large port in the piston. Note the blind end gudgeon pin.

The connecting rod is cast - also a very tough alloy - and is bronze bushed both ends.

The crankshaft is machined from bar stock - one piece - and from a high tensile steel alloy - probably chrome molybdenum - and heat treated. A very nice job here with a black oxide finish on the counterweigh and the fuel passage. The journals (shaft sections) are very finely finished and a just nice push fit (by hand) into the supporting bearings - just the way it should be. Just ahead of the intake port there is a 3.5 mm wide groove that aligns with the annular groove in the front housing. A lubrication reservoir that ensures the plain bearing section of the shaft is not run dry. The 32 mm diameter propeller drive hub - anodised or dyed deep blue - is keyed (Woodruff key) to the shaft for the purpose of the drive and for positive location of the timing magnet pressed into the rear section. Prop nut is taper faced steel (good) and the ½ inch AF nut is a standard item for that thread size. No lock nuts are required as petrol engines do not have a kick back tendency. All well made and cleanly finished.

CARBURETTOR AND IGNITION

Figure 1 Ever reliable Walbro carburetor - leader in the field.

The carburetor is a genuine Walbro - No. WT962 - with a 15 mm long throttle arm and a positive lock (open) choke. Same as all Walbro carburetors - simple, trouble free and very reliable…provided 'nobody' interferes with internal parts. It will reliably pump and deliver fuel whilever there is fuel and the tank and the filter is clean.

Ignition is by the very popular and reliable Rcexl CDI with a ¼ inch spark plug (same size as a glow plug) and the quarter twist, stainless steel lock-on plug cap. Use no more than 6 volts - 4.8 is quite adequate - and the sparks will flow whilever there is life in the battery.

Now used by so many engine manufacturers as the CDI of choice. Note the stainless steel lock on plug cap.

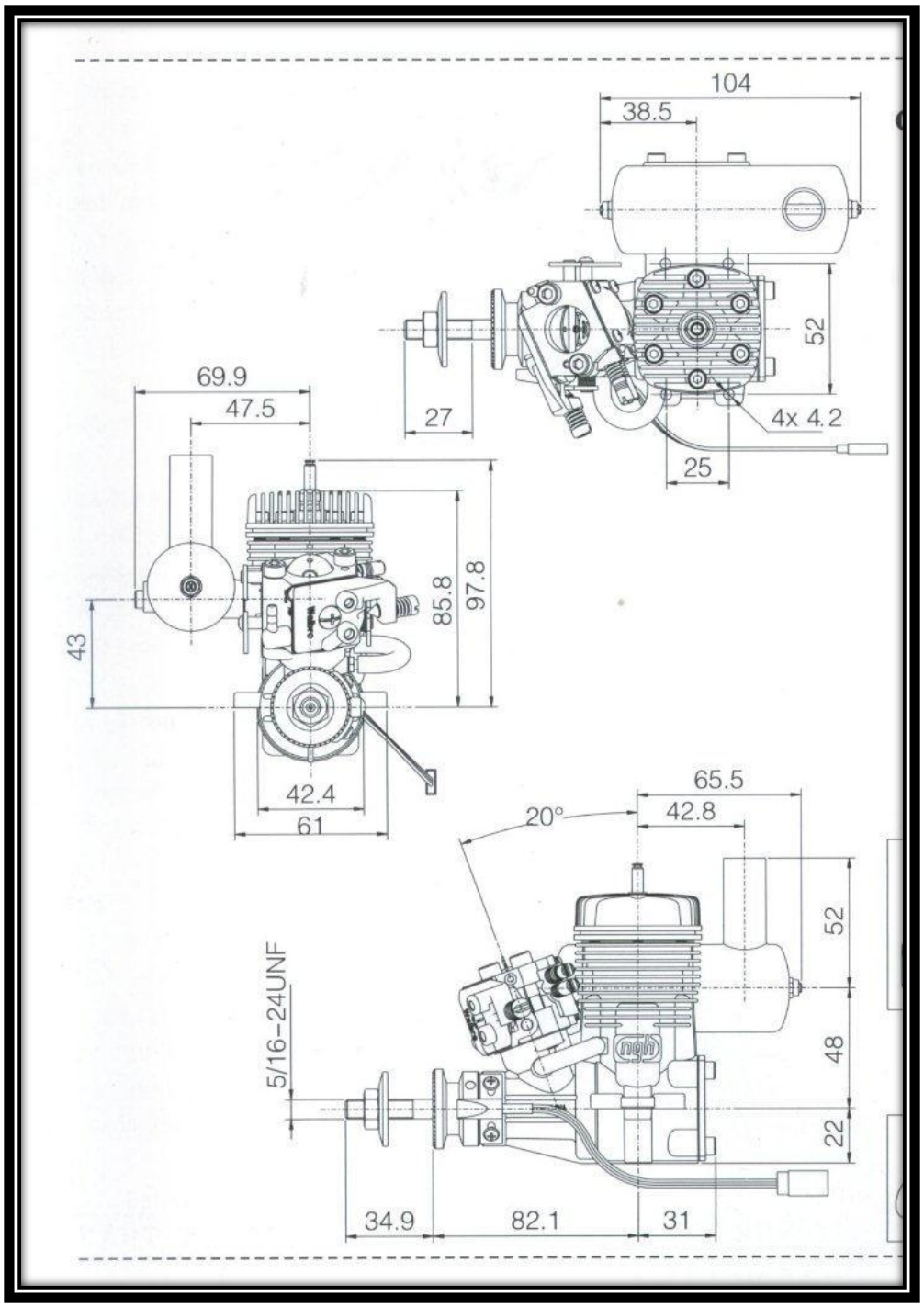
ON TEST

I am quite pleased with the engine - certainly an engine designed specifically for model aircraft use and by people who are very familiar with that facet of the hobby. Let us look forward to the next engine that will be (most likely) 25 cc - it should be good if it is anything like this one.

Testing was started on the 17.4.11 and finalized on the 6.6.11. Average temperature was mostly below 20 degrees C with (averaging) high humidity. Fuel was standard petrol with Coolpower Blue oil at a ratio of 20:1. For interest, I measured the cylinder pressure which came up to 78 kg/cm2 (112 PSI) which is quite good. The range for engines around this capacity is 90 to 120 PSI

PROPELLER TESTS

APC PROPELLERS		
13 x 8	**10,224**	**2,000**
Idle		
14 x 6	**9,778**	**1,700**
Idle		
GARVON WOOD		
14 x 6	**9,842**	
APC		
15 x 6	**9,386**	**1,500**
Idle		
15 x 8	**8,790**	
16 x 6	**8,347**	
17 x 6	**7,845**	
BAMBULA WOOD		
18 x 8	**6,521******	
RETEST		
13 x 8	**10,230**	

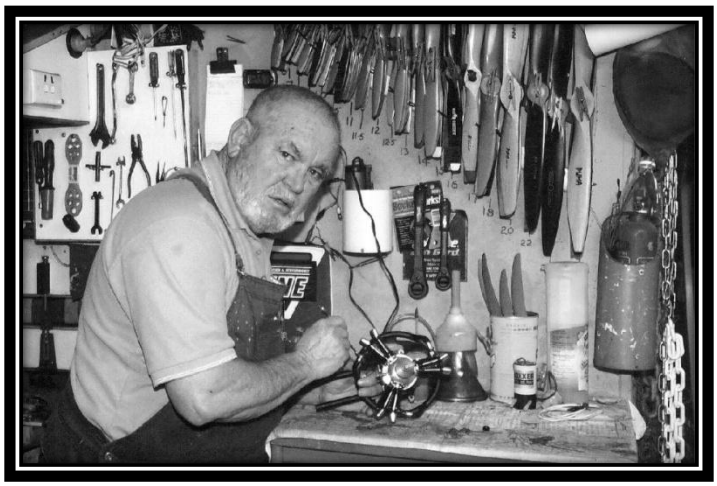

104
38.5
52
69.9
47.5
27
4x 4.2
25
43
85.8
97.8
42.4
61
65.5
20°
42.8
52
48
22
5/16-24UNF
34.9
82.1
31

THE OILY HAND BRIAN WINCH

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

AN☺THER TIME

Back a couple of issues we looked at the timing for a wide range of four stroke engines and all was well - almost. I want to modify the timing sequence for the Saito 100Ti and 200Ti engines for a much better method. Saito use their method which is to time the front cylinder with the locator rod in the camshaft (as described for the Saito timing) which brings the straight line on the cam gear in the vertically down position. They then rotate the engine 360 degrees and use the shim (card) in the gear teeth to bring the straight line down as the reference. The camgear rotates at ½ engine speed so it stands to reason that, when both timing marks - the dot and line - are on the gear, they would be 90 degrees apart. The Saito method is quite correct but I like my method better. First off, remove the rear access plate (two screws) from the underside of the crankcase so you can see the crankshaft. Same now as Saito, time the front cylinder at TDC with the locator pin in the camshaft to display the vertical line reference. Now turn the crankshaft in the direction of rotation - counter clockwise (to the left) until you can see the rear big end and the crankpin of the crankshaft in the access slot and center it - you have rotated the shaft 180 degrees. It is easy to do visually but…if you must be precise, measure it then, using the locator pin in the

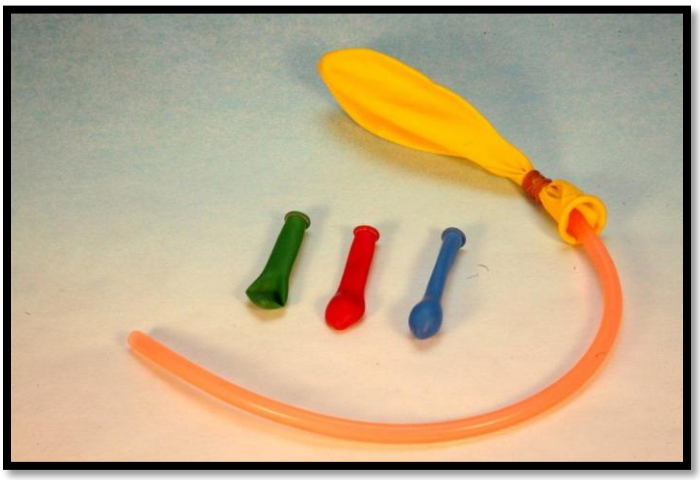


camshaft - putting the dot on the cam vertically down, fit the cam housing. Lock all up and the timing is spot on.

Copy this section and paste it in your timing records or the magazine if you keep these things. Err….do keep things like this as I get a bit „fussed" when readers ring me and ask for material that was in a recent magazine. Any material that is a reference, as with the timing details, are worth keeping for „that time" when you will need them. A simple, inexpensive concertina file from a stationery supplier or many supermarkets is very good for record keeping - they will hold a lot of information sheets and they fold flat for storage under your whatever - wherever you store flat things.

PHIL De TANK

It is quite a long time since we had a look at setting up fuel tanks, sizes required, filling and all those related topics that seem to gain a lot of „best method" stories, perpetuated myths and „reasons for problems". Why we ever moved away from balloon tanks is beyond me. No special tank bay required in the model, virtually any position was okay, variable capacity, no pressure required, cheap as chips and the failure rate was almost zero if certain procedures were



Simple balloon tank - made in a minute or less. The small 'Water Bomb' balloons are ideal for small engine tanks.

followed. Now, I am surmising, latter day modelers are scratching their head and wondering, „what the bloody hell is a balloon tank?" Well, my dear young fellow, a balloon tank was the choice of many modelers way back in „those" days when a 5cc engine was considered a big deal. Accessories for model hobbies were limited to (not much more than) fuel tubing, propellers, wheels, wire, rubber bands, tissue, dope, glue and B frame piano wire for controlline use. For a free flight or controlline model you needed only wood (balsa and bamboo), tissue or silk for covering, dope for shrinking the tissue, wheels, wire, rubber bands, an engine and a fuel tank which was, by choice of many, a simple party type balloon. Many of the small engines had a tank at the rear and this was quite adequate for free flight use. Even the „big" Frog 500 - 5cc - had a metal tank for free flight use but it was not big enough for the longer running required for a controlline model. When no tank was supplied with the engine you could use a balloon tank which could contain a very small amount of fuel or quite a lot according to your needs. You made up the „tank" by inserting a length of fuel tubing into the full length of the slack balloon, wound two (two for security) thin section rubber bands very tightly around the neck of the balloon sealing it against the protruding fuel tubing. All the air was squeezed out of the balloon (most often sucked - before worry warts told us that the fuel was dangerous - you might grow two heads or your children would be little bastards) then fuel was „pumped" into the balloon to the amount required or to fill the space where the tank would reside. Here again a retro look at „pumping" the fuel. No fancy pumps, no power panels, no 12 volt battery. As pride of your workmanship you made up a fuel bottle. Either soldered in a metal lid or pressed thought a cork or rubber bung was two short lengths of brass tubing. ☺ne tube had a pickup that went to the base of the bottle and a length of fuel tube on the outside that serves to fill the tank. The other piece of tubing protruded just past the lid or cork inside the bottle , and on the outside, a length of fuel tubing for the pump pressure which you provided by blowing into the tube. The fill tube was connected to the single tube from the balloon tank, you blew into the other tube until enough fuel was in the tank then you „switched off" the pressure pump. Simple,

almost no problems, inexpensive and an everlasting supply of free air for the pressure. Err…no pump noise either unless you had a touch of the „dog"s disease" - cold or flu congestion that caused you to rattle when you blew into the bottle. Now, that tank was stuffed, unceremoniously, into the free space behind the engine firewall regardless of the area shape and here we come to the first caution. No pins or prickly wood allowed - for obvious reasons - some fuel proofing, and for the ultra cautious, a double skin tank, one balloon inside another.

So simple filler bottle. Blow in the tube with the brass insert - when finished - connect the tubes to seal the bottle.

The second precaution was that penny pinching could be a real problem. For glow fuel you might use the tank for two weekends, maybe stretch it to three as the fuel was kind to the rubber. Diesel, however, tended to shorten the life of the rubber so one day"s flying was the limit. There is no reason whatsoever why a balloon tank could not be used these days. In fact, not so long back I purchased a „bladder" tank (quite expensive) that looked like a common plastic tank but it had a rubber bladder inside. The rubber was a bit thicker than that used for balloons, and no doubt, of better quality. You needed two tubes into the bladder - one each for filling and supplying the engine. You disconnected the engine supply or had a bypass that could be capped off and you filled the bladder to overflowing - no air space left and no ingress for air as it emptied. The tank had a pressure nipple in it on the side and the muffler pressure coming in applied pressure to the outside of the bladder but I doubt that this was necessary if the carburetor on the engine was efficient at supplying fuel to the engine (more on this further on).

An oiler bottle does good service for small needs. Mike Minty and Mills .75 - a love relationship.

POSITION AND PRESSURE

To me, both the position of the tank in a model and the use of muffler pressure is a dark gray area - actually, almost black. Like so many factors of modeling, there are many perpetuated myths, information carried on and on, information based on „ancient" modeling, solutions to problems that no longer exist and the preclusion of trials, tests and new ideas. To quote a few examples - „castor oil is the best lubricant for model engines…glow fuel deteriorates with age… muffler pressure is needed to provide a constant fuel pressure… some engines suck fuel better than others… you need to hold a model vertically to check for the tuning… you can freeze fuel that has water in it and remove the water when it becomes ice…if you fit a propeller on backwards the model will fly in reverse (dead serious with that one - I have had modelers argue the toss with me about that.). Okay, one thing at a time…let"s look at….

MUFFLER PRESSURE

For a start, here I kill a myth stone dead. Engines D☺ N☺T suck fuel nor does the pressure from the muffler PUSH the fuel into the engine. The very small amount of pressure from the muffler does provide a very low pressure above the level of fuel but it is atmospheric pressure (hereinafter referred to as „AP")that does the most in getting fuel into the engine. It would be a monster headache trying to calculate what benefits muffler pressure provides in assisting the flow of fuel from the tank. The first consideration is the height of the fuel in a full tank. Regardless of the amount of fuel in the tank, a tube placed in the bottom of a container (tank etc.) will siphon fuel over the top level of the tank and continue to flow if the outlet is level or below the top level of the fuel. While „siphon" is the correct term, the flow will not commence automatically just by simply placing the tube in position. The most common method of starting a siphon flow is to either fill the tube first and hang the outlet lower than the pickup end or give it the „suck and see" treatment as was common when, say, petrol was „siphoned" (aka stolen) from the tank of a car. Another method of starting the flow - given the type of container holding the liquid - is to blow (by mouth or other means) into the container - hence our early fuel supply container as mentioned above. An example of this method is often used by modelers when they want to prime and engine and cannot, due to cowling etc., put a finger over the carby intake. If muffler pressure is set up, you place your finger over the outlet of the muffler and spin the prop. The engine acts as an air pump with the air pressure directed into the tank through the nipple in the muffler and this sets the fuel flowing into the carby. There is already AP acting on the fuel in the tank and also into the carby so there is an equalization of pressure on the feed line. The air pumped into the tank adds to the internal atmospheric pressure and overcomes the equalization causing the fuel to flow along the feed line. Here we can encounter mild complications as far as the fuel staying in the line or flowing back and this depends on several factors we will look at further on. Due to the equalization of AP on both ends of the fuel (tank and outlet), the weight of the fuel plays no part in the flow as a siphon setup will draw the liquid at the same rate right to the last gurgling drop. Admittedly an extreme test, but to give you an idea of how it works, I placed a length of fuel tubing into a 375 liter (375 kg

water weight) fish tank and weighted it down to the bottom. I started a siphoning action to let the water flow into a small (2 liter) bucket but blocked the exit end when the tube was full with the end hanging below the pickup end of the tube in the tank. I did exactly the same with water in another 2 liter bucket and the tube from this (blocked for the moment) hung into a third 2 liter bucket. With a bit of manual dexterity I released both stoppers at the same time and let the water flow. Result? No difference in time - both buckets filled together. On the other h, and a gravity feed is a different matter altogether. The liquid will flow out the BOTTOM of a container at different rates according to the amount of liquid in the container. In this case we have good old AP pushing down on the top of the liquid and it is assisted by the weight of the liquid forcing the liquid out the base hole. A typical example of this gravity feed is from the top wing mounted fuel tank of a Tiger Moth (and other aircraft) and just about every motorcycle on the road. To ensure a constant supply of petrol (as required by the engine), a carburetor with a float bowl is one answer, a small header tank is another and even a vacuum tank will do the job, but for the simple carbies on our model engines (if no pump is fitted), a gravity feed tank is not a good idea.

A little more on the vagaries of fluid action to cover more reasons why setting up tanks can be a problem. We looked at flowing water out of fish tanks, buckets and the like, but much the same will happen with, say, a one liter fuel tank when it is full. Start the flow by holding the outlet tube below the tank and set up the siphon action to get the fuel flowing. Slowly lift the tube up and it will still flow while to outlet is level (or below) with the top level of the fuel in the tank as there is atmospheric pressure sneaking in the air inlet of the tank to press down on the fuel inside. Block off the air intake and the flow will stop even though there is (very close to) a kilogram of weight (fuel is slightly less weight than water) acting to push the fuel out. Letting air in, as the fuel level goes down, the outlet tube will need to be lowered to maintain the flow - due to the equalization of internal and external atmospheric pressure - until the tube would have to be below the top level of the fuel to maintain a flow due to a certain amount of drag caused by the viscosity of the fuel - lubricity drag. With atmospheric pressure (14.6 PSI- 1☺1 kPa) acting on the top of the fuel (through the air intake of the tank) the fuel will continue to flow and it will get a very small amount of assistance from the muffler pressure, but not so from the actual amount of pressure - more from the volume of pressure. Here again is a very gray area as engines blow AND suck which is how a tuned pipe works. The muffler blows in a small amount of pressure then there is a moment when the muffler pressure ceases (micro seconds) and atmospheric pressure flows into the muffler and engine AND though the pressure nipple into the tank. Complex but this is enough on that for this article. The main factor to remember - it is not the pressure (rate) of the air that inflates your car tire - it is the volume of air that builds up the internal pressure as pressure on the total inner surface area of the tire or tube. The tire gauge (used for checking) indicates only the amount of pressure that can escape from the tire valve. Blow a hole in a tire and you will experience quite an explosion from the volume of air. Much the same for a fuel tank (pressure on all surfaces inside the tank above the fuel level including

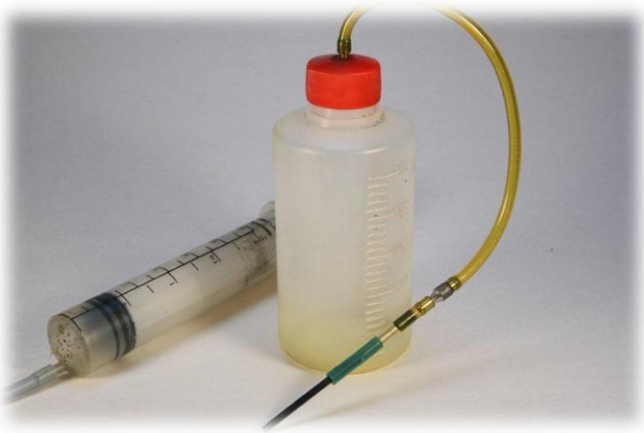
the surface of the fuel as well) but on a much smaller scale although, in some instances, a „blow out" of a tank can be a bit, shall we say, disconcerting. YS engines have a pump system built into the engine that applies air pressure (not exhaust pressure) to the tank so, considering this, a strong tank is required. I ran a YS quite some time back on my test bench and it blew a large hole out the top of my bench tank….much to my surprise (surprise meaning, cacked knickers).

Twin mufflers for double stack manifolds such as on Eta .29 and Ed 246 Racer. Note the venturi shaped inner chamber. Works well.

☺kay, a bit more on the „suction" misconception. I have discussed „suction" in the past, but for those who missed it; it is atmospheric pressure that causes fuel to be introduced into an engine. As soon as a space is vacant - the crankcase of a two stroke engine or the down going piston in a four stroke, atmospheric pressure flows in through the carby causing a high pressure trough. As it passes over the spraybar or even the interference of a hole in the wall of the venturi, it creates an area of low pressure - low pressure trough - and this draws fuel from the jet or spraybar aperture - the same principle that is used in suction type paint spray guns. The fuel mixes in with the high pressure further down the venturi and we then have fuel gas (moist gas) for the engine to use in combustion. Okay, that"s that point settled, now for the history of muffler pressure. As engine „rev heads" know, the bigger the hole, the more fuel, the bigger the bang. Simply, a large air intake, a great load of fuel and the combustion fire in the engine will be bigger - ergo - enhanced performance. If only it was as simple as that. There are so many other factors to consider other than fitting a much larger carburetor. The capacity of the engine is the first consideration. Take, for example, a two stroke engine. The crankcase has X volume and it is this volume that takes in the amount of air and fuel. Fit a super large carby to the engine and then wonder why it will not run. There is a time factor to consider with the flow of air through a venturi (throat of the carburetor). The air has to flow long enough to pick up sufficient fuel for the engine needs. The piston is up to top dead center, the crankcase has been voided (empty) so the air through the greatly oversize carby just dumps in to fill the case at a rate much too fast for it to carry sufficient fuel. Your

I tried to relieve the bear of the dummy (pacifier) but got a paw swipe for my trouble. Anyway, you know what the rubber bulb looks like.

only chance - if there is a chance with that particular size carby - is to inject the fuel under considerable pressure. This was done - maybe still is - by modelers who flew speed controlline models. A baby‟s dummy (nicely called „a pacifier‟) was used for the fuel supply. With considerable pumping effort (a push bike pump, large syringe or similar was needed)



Try your hobby shop for these squeeze bottles and large syringes.

the dummy was expanded with the pressure of the fuel being pumped in, and when the required amount was rammed in, the feed line to the carby was clamped off. Believe me, if the clamp slipped off, the fuel would spurt out much further than a young bloke with a full bladder could pee. A few drops of fuel was introduced into the intake, the engine flicked, and on first fire, the clamp was released. The engine either died instantly from flooding or screamed like a ….bloody high revving engine….with no muffler. This is one simple way of making use of an oversize carbies so…you should be getting the notion now that there is a lot more to the carby size than meets the eye. To add just a little more and here we get a bit from good old Sir Isaac Newton with his theories on force and motion. If your model is flying very fast (best at level flight) the weight increase on the fuel in the tank (being pushed back by the forward motion of the model) is so considerable, the engine could quite well utilize a larger throat carby due to the increase in fuel pressure (similar to the pacifier tank). Many early engines for controlline use (before popular radio) were supplied with one or two „chokes‟ - inserts to reduce the venturi bore - if the engine was to be used for aerobatic use. Due to the manner of flying and the varying pressure applied to the fuel in the tank, the fuel supply would not be reliable enough for the large throat carby so the throat was reduced. The effect required by the controlline fliers (same as now) was to have the engine running slightly rich („four stroking‟) on level flight and leaning out on climbs and maneuvers but not so much that the engine suffers a lean run. This combination of air amount and speed to match with the fuel supply even requires consideration of the viscosity of the fuel - an oily fuel flows slower (lubricity drag has a bit to do with it) and this has to be taken into consideration in some cases. A recent example of this can be seen with the latest ☺.S. 7 cylinder radial engine. The recommended fuel is one that contains no more than 10% lubricating oil. If you have no facilities to mix your own fuel and have to rely on commercial fuel with (average) 15% -17% oil, O.S. supply a venturi choke - reducer - to be fitted into the carby. If the engine is run on the higher viscosity fuel without the choke there is a good chance of doing internal damage to it.

Very early O.S. Muffler. Note the priming hole in the side.

☺kay then, with a bit of background in carbies and fuel supply, we now look into the history of the use of muffler pressure.

1961 O.S. Max-49 with a throttle coupled exhaust baffle. Full RPM = Full Noise.

With the introduction of the first radio control equipment we had a compilation and complication of valves, actuators, large batteries and rubber bands, for example. That the radio equipment had two channels was a great effort. Rudder and elevator used the controls, and with a lot of luck, your previous free flight model was now under (some) control and the chances of it „flying away" were reduced…not eliminated….just a little reduced. Rolling rapidly over quite a few years, radios were developed with more than two channels and the signals were proportional rather than the common „bang - bang" control…full right or full left - of the first radios. Suddenly we had a spare channel for the engine - really necessary for easier and safer flying but…what about a variable speed carburetor that could be connected to the servo from the „spare" channel? Quite rapidly, engines were available with an array of, often very complex, carburetors and baffles plates attached to the exhaust manifold. As the control arm of the carby was moved so, by the use of

Due to the exhaust connection, the throttle arm is on the RHS (from front).

interconnecting rods, the exhaust baffle moved. The main purpose of the exhaust baffle was to produce an amount of back pressure for low RPM. The back pressure retained in the engine was to do battle with the incoming atmospheric pressure in order for the low speed of the engine to be reasonably stable. Another requirement was to retain a small amount of engine heat at the lower RPM to prevent the glow plug from cooling right off as even these were not then up to a good standard for variable RPM operation.

Perry Conley carbies. Very simple, virtually trouble free and very efficient. Still available to suit most engines.

An older Robart pump (pressure driven) and current model Perry Conley pumps.

Carburetors became big business with many aftermarket types and brands available and various „gadget" attachments or internal parts to provide a reliable flow of fuel to the engine in all positions - remember - with the new radio capabilities, modelers were flying the models under (many times only partly) control so maneuvers and aerobatic movements were wild and varied. Quite often the early carbies could not cope with the changing fuel heads (tank levels) and varying pressures caused by different attitudes of the aircraft. John Perry, USA, developed a very good carburetor that provided good results but the ultimate reliability at the time was with the Perry pump. This was in the form of a pump built into a replacement back cover for the most popular run of engines. With this pressure operated pump (crankcase pressure) a larger carby venturi was used - due to the pressure forced fuel supply - and engines were very reliable as far as fuel supply. Several other brands and pumps became available with the main system of operation the same or very similar to the Perry Pump. Not long after the introduction of variable speed carburetors, mufflers started to make an appearance. Prior to the introduction of proportional radio, most free flight (or slightly radio controlled flying) was done in large open areas of land generally well away from populated areas. For the first few years of model flying - in our young industrial

Open the flap of an old Enya muffler and you can prime the engine and increase the noise - straight out exhaust.

world, flying model aircraft was quite a crowd pleasing event, but enough is enough after the gloss went off this attraction and safety plus noise became an issue. Not many current day modelers would experience the ear splitting bellow of a screaming 1☺cc glow engine with no muffler - believe me - it is something you don‟t enjoy for long. With that in mind you can consider the first of our noise problems when modelers began flying - due to the efficient radio control - closer to other (non modeling) people. Like the carbies, an array of mufflers were on offer, each one the „quietest or most efficient‟ available. Even with the „quiet‟ hype, many or even most of those early mufflers would not be tolerated at most fields today due to the lack of noise reduction or, to tell the truth, the actual amplification of exhaust noise.

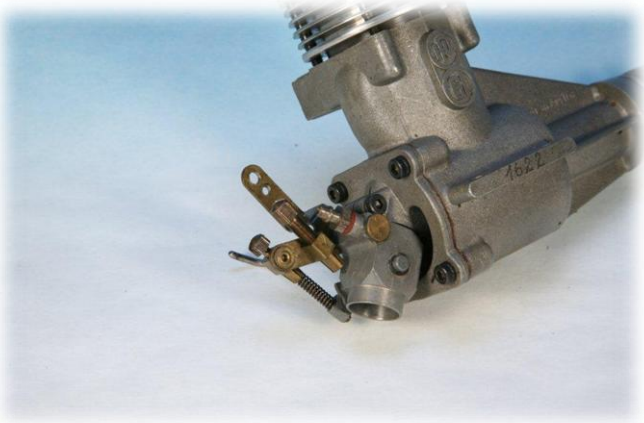
A couple of 'blasters' from days past. Noisy at both ends.

Slipping further back for a little bit, the popular method of priming an engine was to squirt fuel into the open exhaust and this preferred method of priming was carried over into the design of mufflers.

These are the primer nipples in old style mufflers.

Almost all the early mufflers had a „priming‟ nipple in the far side (from the exhaust manifold) of the main body. The nipple led into a tube that almost entered the exhaust manifold of the engine so that the fuel injected into the nipple would act as a prime for the engine. Here I must lapse into a bit of probability as it would be almost impossible to find the initiator of the

pressure nipple so, let‟s look at a probable. When an engine was running with a muffler fitted, some astute modeler noticed that there was a puff of exhaust expelled out the priming nipple. This had to be pressure and wasn‟t it pressure that provided a reliable fuel supply with the use of Perry (and other) fuel pumps? What about if we applied that pressure directly to the fuel tank? ☺kay, fit another nipple to the muffler and feed it into the tank. With the varying efficiencies of the early carburetors, this pressure idea might have made a difference. Then again, maybe it was the advance in carby designs making the difference along with modelers gaining knowledge of the best tank sizes for various engine capacities, better tank positioning in the models and better plumbing systems from the tank to the engine. Whether all factors were considered I do not know, but as far as the USA modelers, tank pressure was almost mandatory and so it is today with some modelers. An engine will certainly run quite well with or without muffler pressure with just a small tweak of the needle to make a tuning change. This tweak makes it almost obvious that there is some pressure being applied to the fuel as you, very slightly; richen the mixture without muffler pressure. Nevertheless, any engine with a well designed carburetor will run perfectly without muffler pressure and will also drain the tank. This is borne out by the engines that do not have a pressure nipple in the exhaust



Quite different RC carburetor on the HP Long Shaft 10cc.Definitely not for needle fiddlers.

system and there are several two strokes and four strokes that have no nipple provided or provision for one. Apart from the single cylinder engines, consider the multi cylinder engines such as the OS Gemini range (and clones), the 4 cylinder Pegasus and IL300, 5 cylinder radials as an example. The Saito multi cylinder engines have a half hearted nipple on the end of the flexible exhaust pipes but I think these are more to please the few modelers who insist that pressure must be used rather than for any benefit to the fuel supply. It has been my experience that all the Saito engines run

If you must have it - this is the pressure nipple on Saito flexible exhausts.

perfectly without exhaust pressure as do (almost) all other brands of high quality engines. The „almost" applies to one or two very high performance engines (large carbies) that need muffler pressure as stated by the manufacturer. Several of the early Chinese clone engines had oversized carby venturis to, no doubt, increase the engine power output. Problem was that you certainly needed muffler pressure if you wanted the engines to run in anything but a simple horizontal position. Even with the pressure they were less than reliable and I made and fitted many venturi inserts for customers in order to provide a reliable running engine - with or without muffler pressure.

MY THOUGHT ☺N THE MATTER

I do not like to use muffler pressure for many reasons. First off, a by-product of combustion is water - particularly so when methanol is the fuel. Pumping exhaust into the fuel tank is adding water to the fuel for a start. This may not be a problem with the initial tank, but if you drain the unused fuel back into your tank at the end of the flying period, that water will accumulate, and suddenly, your engine is not running well and various reasons are put forward by pit experts. One reason might be „bad fuel" or „old fuel". The first is correct as the fuel is now „bad" because of the accumulated water content. The second is incorrect as glow fuel does not „go off" with age but it does go off in quality, again due to the water content.

Other reasons for my dislike are that you are also pumping combustion contaminants and fine solids into the fuel. Remember what I said about the to and fro motion of air in the muffler? A muffler will drag in fine grit and other airborne solids and some of these find their way into the tank via the pressure nipple. Ever wonder where the hell the fine hairs and other foreign material come from that is found in fuel tanks? You filter the incoming fuel and make sure the fuel delivery hose is clean so…how does it get into the tank? Well, now you know of one way it does. Another consideration is the cooked oil that comes out with the exhaust. Some oils change their characteristics during combustion and end up as a different product. I have found a layer of sticky residue on the bottom of fuel tanks and this sticky goo breaks off small amounts that are often the inexplicable goop that has blocked the carby. Check for yourself, note the dark ring on the inside of the top of the tank where the exhaust pressure enters.

Okay, up to you to make your own decision but…do run your engine without muffler pressure for a test - you have nothing to lose and you might be surprised at the results.

Next issue we will continue on with this topic and delve into the plumbing and setting up of fuel tanks.

TOP SALESMAN

Well, the „frootbat" (workshop fool) is attending a new tech course is right up his alley (so he claims)…it is about writing product advertising. For a starter the teacher told him the lead-in to a product advertisement and he had to think what product would match the lead. Her examples came from a familiar mail order catalogue. Her first example was „Stop Hauling Heavy Groceries Up The Stairs". His answer was, „Let your Grandma do it for you with her Zimmer frame". Next one was „Fix a Flat Tire at the

Touch of a Button". His answer was, „Press the buttons on your mobile phone and call Road Service." He really liked, „Perfect Baked Potatoes In Minutes" and for this he said, „Ring the nearest fast food outlet." I think the clincher was for „Remove unwanted hair Rapidly" as he suggested a gas flame or an oxy torch. He was sure the teacher was impressed as he heard her say, quietly (so other students would not hear her praising him only), "You have a slick mind." I reckon she said that he had a SICK mind but…why would she say that…I wonder?

This last bit is dedicated to a mate of the fool. His name is:-

Griswold R. Piddel-Wortering - fellow student of good old Saint Flognasty Primary.

Good old „Gris" had the thinking power of burnt custard.

He spent his fruitful years measuring camel"s testicles and trying to sell bugs on a sting.

His inspiration came from his (weird) mother who spent most of her waking hours teaching flies to walk upside down on the underside of the ceiling.

This is not a memorial - Gris" is not dead yet but he will die someday I suppose.

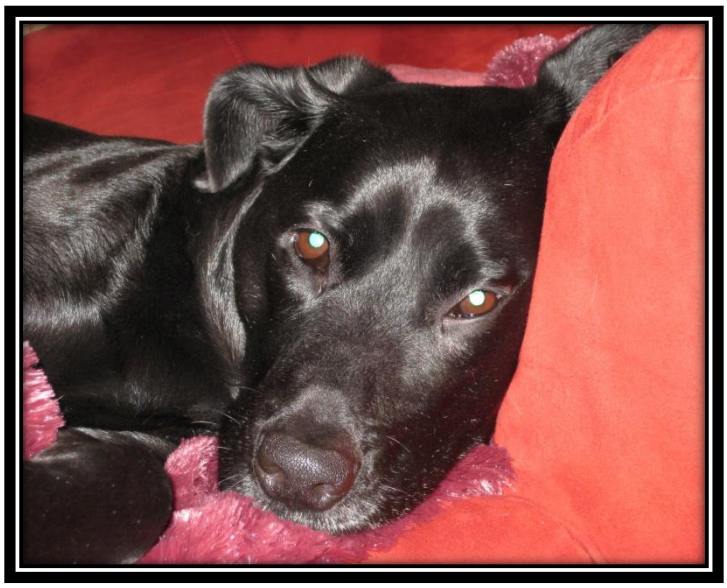
TAILS FROM THE OTHER SIDE ISABELLE

Here it is already September! Happy Labor Day! I trust that Mom covered the history lesson in Office Notes. She may have left out one little bit of information: it has been ten years since the 9-11 attacks. I wasn't around back then; I was only nine back in July. The United States has changed a great deal since then; in both good and bad ways. Please take a minute this month and say a prayer for all the people who lost their lives that day and their families. Don't forget the countless volunteers (and some of them were canines) who worked so tirelessly in the days that followed. Say thank you to the brave men and women who may not still be here with us, but held it together in the face of danger and did what had to be done.

September 11, is also Grandparent's Day! Hugs to all the Grandparents out there! There is some funny stuff in Mail Call about Grandparents. Take a look!

October is a favorite month around my house, so let's take a look and see if it is a good one for all you RC folks!

Start the month off right in Miami, Florida, on October 1, for the 2011 AMPS SWAP MEET held at Amps Silver Field. Juan Almeida is the fella who will welcome you to still sunny Florida. Email him at jarealty@bellsouth.net or visit www.amps-rc.com. Meet from 8AM to 2PM, seller fee $6 shaded area, $4 non-shaded. Tables for rent for $5. Buyer's fee is a $2 parking donation. Flying allowed on 2.4 ghz radios only. Food and drinks all day. Sponsor: AERO MODELERS OF PERRINE INC



The following weekend, join the good folks in Wilkesboro, NC, for the 2ND ANNUAL RIVERS EDGE RC FLYING CLUB SWAP MEET held at the National Guard Armory. Please email Richard Marsteller for more information at ae4nr@charter.net. Admission $5, children under 12 free, spouses free. Tables are available for $10 for center tables, $15 for wall tables. Vendors are welcome, same table cost. Each vendor will receive one admission per table purchased. The doors will open to the public at 8AM, vendors only will be admitted at 6:30AM for set up. Soft drinks and coffee will be available. Sponsor: RIVERS EDGE RC CLUB

ON October 15, in Harrison, OH, the (E) CINCINNATI AEROMODELERS SWAP AND AUCTION will take place at the Harrison Knights Of Columbus. Contact Michael Koons, CD, at mskoons@gmail.com. This is the 50th annual auction! You are going to have fun! Unload/set up 8AM, open to public 9AM, auction 12PM. Food available. Open flying afterwards at the Aeromodeler field, weather permitting. $3 admission, $15 table. Sponsor: CINCINNATI AEROMODELERS INC

Head East from there to New Stanton, PA, for the (E) LAUREL HIGHLANDS MODEL AIRPLANE CLUB FLEA MARKET on October 23. Donald Accorsi can give you directions to Hempfield Hunt Club when you email him at accorsi@comcast.net. 40 8' tables. Admission $5, free admission with each table rental. Tables $12 pre-paid, $15 at the door. Spouse and under 12 free. Door prize ticket with paid admission only. Doors open at 8AM for vendors, 9AM for all others. Good food, bargains and door prizes! Sponsor: LAUREL HIGHLANDS MAC

Have a spooky good time on October 29, in Manor, TX, at the (E) ARCA SWAP MEET held at Manor High School. Robin Masek will hold your hand while you scream! Just send along an email: arca@austin.rr.com or visit www.austinrc.org. 9AM to 3PM, setup 8AM. Auction at 1PM. Raffle prizes, drawings, auction, vendors. Admission $5, tables $5 each. Sponsor: AUSTIN RC ASSOCIATION

That's what I've got for all of you with money in your pockets to shop. If you wanna fly; read on!

Visit Millington, TN, on October 1-2 for the (C) MIDSOUTH WARBIRD FLY IN taking place at Jim Prilliman Field. Email Clifton Mcnabb at cliffmcnabb@earthlink.net or visit www.mbrcclub.com for more information. All size aircraft with military paint schemes only. Landing fees $10 first plane, $15 any number of multiple planes. Landing fee includes pilot lunch, awards, RV parking $5 per night, no hook ups. 600' e/w x 500' n/s grass runways. Hamburgers, hot dogs, refreshments on sale. Pre-registration available. See website for additional lodging information. Sponsor: MILLINGTON BARNSTORMERS

That same weekend, you might find yourself in Ft Worth, TX, for the (D) THUNDERBIRD OPEN HOUSE/AIRSHOW. Ellwood Lake can tell you all you need to know; just email him at at6pilot@att.net or www.fwthunderbirds.org. Join us for the grand opening of our new field; we have relocated. Family entertainment: flight simulator, give-a-ways, flight demos, training. Free hotdogs and drinks. 10AM to 4PM. Sponsor: FORT WORTH THUNDERBIRDS R/C ASSOCIATION, INC

I am going to bounce you around a little this month. Head to Williamsburg, VA, on October 8 for the (C-Restricted) BAY AREA GIANT SCALERS FALL FLY IN. Email Carl Rannigan for more information at cran6962@aol.com or visit www.homestead.com/flyrc. See website for map. No landing fee, fly from 9AM to 3PM. Overnight camping okay, fly on Sunday as a club guest, no hook ups. Giant scale plane for raffle. IMAA and AMA rules apply. Must be IMAA member or join at the event. Food and drinks for sale on site. Sponsor: COLONIAL VIRGINIA AEROMODELERS

Or maybe you are on the West coast? On October 7-9, visit Benton City, WA for the (C) INDIAN SUMMER FUN FLY at Higgins Field. Douglas Bowman, CD, can help you out when you email him at dougb@redgemranches.com. Feeling a little shy? Just visit www.my2wings.com/indian-summer. After the heat of summer comes a full weekend of RC fun. All skill levels and aircraft welcome. Sponsor: MINIATURE AIRCRAFT ASSOCIATION

I'm not exactly sure how far Benton City, WA, is from Visalia, CA, but on October 14-16, the (AA) FALL AERO TOW will be held at Club Field. Christopher Pratt will know a little more about the West Coast that this Southern Belle, so email him at cmesoar@sbcglobal.net or visit www.cvrcsoaring.com. This is the 10th annual fall aerotow at CVRC's great grass field. Come join the fun, bring everything you can. Sponsor: CENTRAL VALLEY RC SOARING CLUB

Leaving on a jet plane…Well, you better if you are going to make it down to Cape Coral, FL, on October 15-16 for (C) JETS OVER THE CAPE. Email Edward Gamils for landing assistance at egamils@hotmail.com or visit www.rseahawks.org. Paved runway, 600x60', lunch available. Free parking for pilots. Primitive camping. See website for lodging and restaurants. Sponsor: CAPE CORAL R/SEA HAWKS

Now this is my kind of event! On October 22-23 in Hollowville, GA, have some fun at the (A) 2011 SOUTHSIDE PUNKIN CHUNK. Planes and Punkins? I'm so confused! I want some pictures from this event! Email Burt Watkins for details at burt_watkins@bellsouth.net or visit www.flyinggriffins.org. Event 441(O). Sponsor: FLYING GRIFFINS

That same weekend, visit Rochester, MA, for the (C) JOHN NICOLACI MEMORIAL FLOAT FLY held at Mary's Pond. Edward Watts can assist you at nedwatts@mac.com. Fee $10 per pilot. Proceeds to Nicolaci Museum Exhibit. Plenty of free parking. Retrieval boat will be available. Sponsor: BRISTOL COUNTY RADIO CONTROL

Here's another good one, and by that I mean SPOOKY! Don't be anywhere but Alamogordo, NM, on October 29, for the (C) SPOOK AND FLY. Mark Springfeldt will be there with candy. Email him your favorite kind at mark.springfeldt@gfk.com. Braces? Just visit www.alamogordorcers.com/home for more information. Cash prizes, raffle, food, free RV spaces with free water and electric hook ups. Extra points if you were a Halloween costume! $10 landing fee. Sponsor: ALAMOGORDO RCERS

Now, you must quickly leave Alamogordo and hitch a broomstick to Greenville, OH, on October 30, for an (D) ELECTRIC FLY IN sponsored by Darke County Aero Modelers Assn held at the Darke County Fair Grounds. Email Randolph North if you are having trouble finding your way around Darke. His email is: sparky4@embarqmail.com. Something tells me that with an email like that; there will be a light at the end of the tunnel. Landing fee is your admission to the swap meet ($3). 60x100x15' ceiling. Enjoy the swap meet and fly for fun.

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

Spay and neuter your pets and ADOPT – don't buy!
Rescued is my favorite breed!

Sparky's Revolt

by Tony Coberly

Let's talk a bit this month about weight. Now the batteries and brushless motors can produce gobs and gobs of power, and because of this a lot of folks forget to pay attention to weight. My uncle back in South Carolina is a retired Marine. Many years ago we were talking about when he was in training after boot camp. Uncle George said, "You learn real fast that ounces equal pounds and pounds equal pain when you are packing your ruck sack." Well the same thing applies when rigging your electric airplane or helicopter.

The first and most common thing to consider the weight of is, of course, the flight pack itself. The proliferous of brand name and generic packs these days give us almost TOO many options. I'm going to compare advertised weights of three brand name packs with three off brand of generic packs for the same cell count, capacity and C rating. The three brand name packs I am going to compare are: Thunder Power, FlightPower and Hyperion. The three generic packs I am going to compare are: Voltz, Rhino and Zippy. Now these are just a small sample of the options for batteries out there, but it's a start.

Thunder Power

Type: LiPo

Capacity: 2250mAh

Voltage: 11.1V

Connector Type: Open Ended

Wire Gauge: 12 AWG

Weight: 6.7 oz (189g)

Configuration: 3S

Length: 4.02 in (102mm)

Width: 1.38 in (35mm)

Height: 1.02 in (26mm)

Maximum Continuous Discharge: 65C

Maximum Burst Discharge: 130C

Maximum Continuous Current: 146A

FlightPower

Dimensions: 4.29 x 1.46 x 1.06" (109 x 37 x 27mm)

Weight: 7.84oz (220g)

Power Rating: 24.4W

Max. Charge Current (6C): 13.2A*

Max. Continuous Discharge Current (50C): 110A

Hyperion G3 VX 2200

•Weight: 189g

•Dimensions: 108 x 36 x 26.5 mm

•G3 Technology Lipo

The Voltz 2200mAh 3S 11.1V 25C

Specs:

- Voltage: 11.1V

- Capacity: 2200mAh

- Discharge Rating: 25C

- Burst Discharge Rating: 50C

- Charge Rate: 1-3C Recommended, 4C Max

- Size: 103mm (L) 34mm (W) 22mm (H)

- Weight: 168g

- Max Continuous Discharge: 25C (55A)

- Max Burst Discharge: 50C (110A)

- Balance Plug: JST-XH

The Rhino 2250

Capacity: 2250mAh

Constant discharge: 25C

Burst rate: 37C (15sec)

Configuration: 3S 11.1v

Pack size: 114x35x23mm

Weight: 190g

The Zippy 2200

Capacity: 2200mAh

Voltage: 3S1P / 3 Cell / 11.1V

Discharge: 40C Constant / 50C Burst

Weight: 202g (including wire, plug & case)

Dimensions: 107x35x25mm

These six packs are all of similar construction and capacity. The lightest pack is 168 grams and the heaviest is 202 grams. These quick numbers show that you could save 34 grams (over one ounce!) between these packs if you assume the same performance. Again every gram counts so by using the Voltz pack is the first step in maximizing performance by minimizing weight.

Now we can look at the wires that are used on the pack itself. Most of the time when you use a single pack the wire length can be used as is without modification. If your plane has a readily accessible flight pack you can usually shorten the wires up quite a bit and save even more weight. Just think that a two inch piece of 12 gauge silicone insulated wire weighs in at about 2 grams. So if you shorten up the black and the red lead to a bare minimum of one inch length by removing 6 total inches of wire you have saved 6 grams and effectively reduced the resistance of the wire. Less resistance means more current flow and that of course means more power. Just as an FYI, a piece of 10 gauge copper silicon insulated wire weighs a whopping 3 grams per two inches! (Every little bit counts!)

Since in most cases the flight battery is the bulk of our plane, in a percentage basis, we started there, but now we can look at other areas to save weight. On planes bigger than say 60 size I tend to move to a heavy duty extensions for my servos. These extensions weigh more, by definition, so make sure you only use extensions that are just long enough. If you need an 18 inch extension for each aileron servo in the wing, DON'T use a 24 inch extension. The weight difference between my 24 inch and 18 inch extension is 4 grams. Now consider that my pattern plane has two aileron servos and two elevator servos. In all four cases an 18 inch extension will work, but if I use 24 inch extensions I will gain 16 grams. (About one half ounce)

I mentioned elevator servos before, but I'm going to go a bit deeper. Should you have servos in the rear of your plane, you can also reduce the number of extensions you have to use. You can build a wiring harness for the two elevator servos in the rear by only bringing one black lean, one red lead and two white signal leads. By doing this you can effectively reduce the weight of the extension by two thirds. The tradeoff here is that you need to build this harness by soldering or crimping a Y-harness of sorts out of the receiver for the two elevator channels. I only recommend this for someone that is comfortable with a good soldering iron and/or crimp tool. First you take a single heavy duty servo extension and carefully remove the black and red wire from it entirely. You are left with an extension that has only a white wire in it. Secondly, you take another heavy duty extension of the same length and rest it next to the normal heavy duty unmodified extension. Now if these extensions were plugged into a receiver and the other end into a servo you would have one servo that works correctly, and another that does nothing at all. The servo that has only a white signal wire will need to get the red and black power wires from the other elevator wires. Now if you have a set of servo terminal crimpers you can clip off the connectors from the full extension. Now you take the servo end of the extension that you removed the wires from. Using a short piece of the red and black lead, with the original servo end terminals on them, and put two black wires in a new brass terminal and crimp the new connector. Then reinsert the terminals into the servo end connector. I don't have a crimp tool, so I stick to soldering. About 3 inches down the unhampered with servo extension, I use a knife to remove the insulation around the copper and expose about ¼ inch of copper wire beneath. Now use a few inches of the wire that was removed from the other servo extension. How

much you use depends on how much room there is at the back of the fuselage you are working with. I usually use about three inches of wire that has the original servo end brass leads on it. I put on some heat shrink tubing over the wires and slide it beyond the exposed copper. Now just as quickly, solder the short wires onto the exposed area on the 1st lead. Now just move the heat shrink tubing back over the wire and shrink it up. This type harness will bring the weight of two servo extensions at 14 grams down to about 9-10 grams depending on your solder job.

Now it's now time to look down. I mean look toward the ground at our landing gear and more importantly the axles' we use. Most people I see just go to the hobby shop and grab the nearest wheel that is the size they need. I have seen wheels that range wildly from one ounce per wheel up to two and a half ounces per wheel. I really like the Dubro Super Lite wheels made of soft foam. I use these wheels on my F3A pattern plane, but I would not use them for anything that weighs more than 13 pounds. If the plane is too heavy, you will get flat spots on the wheels between flights. A Dubro Super Lite 2.5 inch wheel is 9.65 grams, whereas a standard Dubro 2.5 inch low bounce wheel is 41 grams. That means a swap from low bounce to a super lite can save a total of 60 grams (that's 2.11 ounces). Now for the axels' themselves.

A very standard heavy duty axle from Great Planes or Dubro 5/32 axle weighs in at 14 grams each on average so 32 grams total. If you go to a Central Hobbies NMP aluminum 5/32 axle, you are looking at 2 grams each for a total of 4 grams. (Again these little things count.) This overall savings from the standard steel to aluminum means you could be saving up to 28 grams (almost exactly 1 ounce).

I hope these tips will help you to put your plane on a diet and perhaps get just that bit more performance. Or maybe you have the older F3A pattern plane that is just over the 11lb weight limit. All the tips I shared in this article, save a total of about 133 grams. That's just under 5 ounces. Remember that ounces equal pounds and pounds equal pain!!

Tony Coberly

tonyc@rcreport.net

Wingspan: 16.1 in (409mm)

Length: 15.4 in (391mm)

Weight: 1.25 Oz (35.3g)

Motor Size: 8.5 mm Coreless Brushed

Servos: AS2000 linear servos

Battery: 3.7V 150mAh 1S Li-Po

Approx. Duration: 6-8 minutes

Age Recommendation: 14 years

Experience Level: Intermediate

Recommended Environment: Indoor/Outdoor

Assembly Time: Less than 1/2 Hour

Retail price: $99.99

The Pole Cat from Park Zone is the next sporty thing in the Ultra Micro arsenal. This racer is patterned after the Formula 1 racers of the scale pylon racing circuit. The Pole Cat uses a brushed motor with a gear box to maximize the motors potential. The Pole Cat is using the now standard AS2000 linear servos for control of the full boat aileron, rudder and elevator channels.

The Pole Cat is powered by the Eflite one cell 3.7 volt 12C LiPo. The single cell LiPo is charges by the supplied ParkZone DC Quick Charger. The quick charger is powered by the supplied four generic dry cell batteries. The charger begins the charge cycle when the flight pack is plugged in. The light on the charger stays on solid indicating the charge cycle is started. The light begins to blink during the charge cycle. Once the pack is fully charged the charger will blink every 20 seconds. One nice thing on the charger is that we have an alternate power input option. A small 6 volt power supply can be used in lieu of the four provided dry cells. I use this port with an old larger 5 cell NiMh flight pack that I have retired. I added the correct size barrel connector to the pack and it plugs into the charger.

Setting up the Pole Cat is easy as it gets. You need a DSM2 or DSMX compatible transmitter to bind to the BNF Pole Cat since it does NOT come in a Ready To Fly version. To bind the Pole Cat you simply plug in the battery to the plane and then set your DSM2 transmitter in bind mode. I used my new DX8 transmitter by simply powering the transmitter on while holding the spring loaded trainer switch. I only had to adjust the rudder just slightly to center up all the control surfaces.

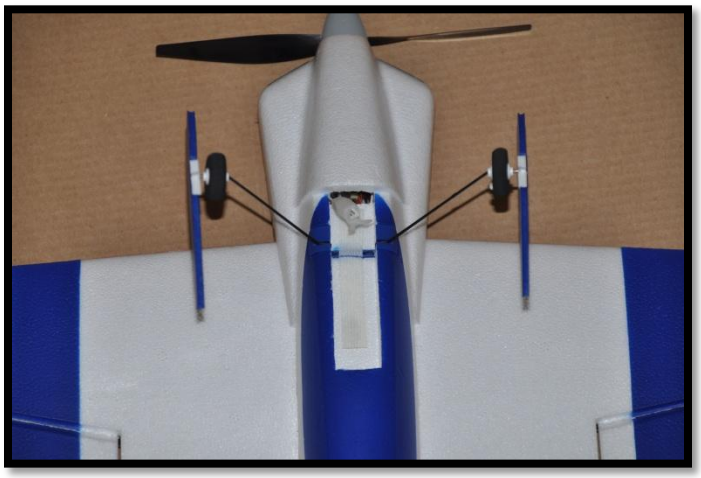
The instructions indicate that the appropriate control surface rate settings are 6mm up for high rate and 4mm on low rate for the ailerons. I was able to get the high rate with a 100% setting on the transmitter with low rate being reduced to 75%. The elevator followed a similar setting of 100% movement for high rate and 80% for low rate. I chose to leave the rudder ant 100% since I want all the rudder authority I can get.

The CG for the Pole Cat is recommended to be set in the 22-25mm range from the leading edge of the wing at the fuselage. I found that by

moving the battery fore and aft you can change the CG from 19mm to 29 mm with ease, so balancing is very easy. Now we are ready to fly!

The Rocket City Radio Controllers in Huntsville Alabama we had a beautiful hot summer day. There was no breeze at all so it was perfect for flying, but I was not there. I was doing some test flying while in North Carolina on business. Behind a restaurant parking lot in a small field, off we went, while getting eaten by those lovely sand gnats! The field was covered with long grass so I opted for a hand launch so a flick of the wrist and off we go! At full throttle the Pole Cat was off to the races and showed great power. I needed only two clicks of elevator trim and a small nose down condition was corrected. The roll rate of the ailerons was a bit slow for me so I went to high rate. The high rate aileron is much better, but still not fast with a roll rate of about 360 degrees per second. The low rate elevator is very smooth and will pull around pylon poles with a minimum of speed lost at full deflection. Now the rudder controls are something to be reckoned with. The rudder will not allow the Pole Cat to hold knife edge flight on any rate or battery position. I had to move the pushrod to the closest hole to the rudder to get the rudder authority needed. The first flight lasted 5 minutes and was able to land with plenty of power.

Surprisingly the Pole Cat is very stable and responsive at low speed. If you throttle back to about a couple clicks above ¼ throttle the Pole Cat is a floater. I suppose this is because the wing has a good airfoil and not just depending on the angle of attack. The landing gear can be removed, but I rather like the look of the gear with the wheel pants. The wheel pants also add just a bit more side area to help with rolls and knife edge. This little Pole Cat is



the best flying little plane in the Ultra Micro line of planes. It actually fly's like a plane, not the foamy that it is. Indoor flying should be fine with at least a half sized gymnasium to enjoy those cold winter days that the weather men say is coming. With a retail price of $99.99 it is cheaper than several of the other Ultra Micro series, and fly's better that then a lot of them! The Pole Cat is one I will now keep in my big work van for those lunch breaks and early afternoons this fall. You need to get you one and you will not be disappointed regardless of your skill level.

Tony Coberly

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Foot note:

The Eflight 150mAh 3.7V LiPo works well, but if you get a Hyperion 160mAh 3.7V pack provides about 20 percent more power that is very noticeable! The Hyperion costs a couple dollars more, but it's worth it!

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

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

Ok all, this is for those jet jockeys and gasser flyers, and I suppose old Sparky over yonder in Alabama. My computer had some kind of infection thingy that wouldn't let me do anything but go to these shopping sites that wanted to sell me this and that. While at the computer ER place there I got some of that canned air and I found something interesting. This company makes some\thing they call a Fire Stop Fire Suppressor! Odd that it's not called a fire extinguisher, but there's probably some legal stuff ain't worth fighting for. This can is filled with some chemical that's NOT a nasty powder, but it's more like soapy water. The can is 16 ounces of chemical that I went against my thrifty ways and sprayed it several times to see what was amiss. It smells like a formula 409 type cleaner and is supposed to be used on most any kind of fires. I believe if you have a gasser or those hot jets out there, you should be careful and have something like this handy! Let's not forget those lovely batteries that like to burn you house down! This little thing is a good size and can be bought at Sears also or their website at www.blowoff.com, at least that what the big old Google tells me! I got mine for $9.95 at the computer ER place, but its lots cheaper than a regular Kiddie extinguisher for about $29.00 so it's a good deal! Get you one!

'Til next month

Latin Prof. Post Hole Digger