

THE SOCIETY OF ANTIQUE MODELLERS
The SAM 600 Thermaleer

SAM 600 of Australia Newsletter, Issue # 129

April - June, 2014.



SAM600 Members
 Clean Up at 1788
 Champs Canowindra
 Col Colyer
 1st Oldtimer Glider
 Kevin Fryer
 1st Burford Event.
 Clean Sweep in Texaco



Brian Stebbing
 2nd

Kevin Fryer
 1st

Brian Laughton
 3rd

NEXT COMPETITONS

6th-7th September - COHUNA, Saturday - 1/2A Texaco, Burford /Electric Coota, Duration.
 Sunday - 9am AGM - 10am Texaco, Climb & Glide & '38 Antique.
 4th-5th October - Eastern State Gas Champs - Wangaratta - Run by SAM 1788

NEXT MEETING

Annual General Meeting - Cohuna - 9am - 14th September, 2014.

SAM 600 Australia - Victorian Old Timers Association Inc. Committee



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"The Thermaleer" is the official newsletter of SAM 600 of Australia, Victorian R/C Old Timers Association (SAM600) Inc.

From the President

Hi fellow modellers. As per usual I am late putting in my report.

Sorry (Not). Has been some time between reports - I could address heaps ... Main things are:

- Nationals wasn't in the best of weather but was run and won - Wasn't as many... Butt
- Take off and landing areas - I hope have been accepted as a good system - mainly to do with our safety. Hopefully commonsense.
- Electric old timer - $\frac{1}{2}$ A Texaco. Great comp I reckon.

I have heard people talking about how electric should be a motor run and stop .. Similar to timed engine runs. Well there is such a comp. 30 sec or 200 metres limit. (using height limiter)

Looking forward to a better flying season ... Was a bit windy for the past year or so. As I hope to be travelling some of next year I am hoping to let another be President next season. Keep hands warm as much as possible - it helps with Arthur right arse. Thanks for the help. Too many. Steven



Texaco Pits at Canowindra 2014



CONTEST CO-ORDINATORS REPORT

From Brian Laughton

Another summer of flying is over and we are having our winter break because, through past experience, we have found winter in Victoria too cold and miserable to hold comps. Only the icebergers turn up to fly and as we get older we have less wanting to venture out of our warm homes.

Unfortunately, this has been the worst competition year I can remember for bad weather. We didn't put a model in the air in competition from September 2013 until late January 2014, but we did a lot of travel and sitting around at events waiting in vain for the weather to improve, which it didn't. At Bendigo and Ballarat we reverted to watching the forecasts and calling off these events. We did, however, replace Ballarat with a postal comp which at least gave us the opportunity to get some flying done and it proved popular.

The VIC / SA State Champs were held in Monarto SA and even these were blown out on the first day - but our May Cohuna comp had a change of luck being the first comp since September last year that we were able to fly for 2 days in a row.

We would like to welcome back to SAM 600 Brian McLean from Echuca and a new member Bradley Cooper, our first junior for a long time. Thank you Steve Gullock for your kind-heartedness and patience in helping him into our great hobby.

We are now in full swing with the new rules, especially the field layout which is now a much safer way to fly. This rule change was brought about by the hard work and persistence of our safety officer Steve Gullock. The seven minute max for 1/2A seems to be working well as only one person achieved three maxs in our recent competition.

See you all at Cohuna in September - **DONT FORGET THE ALTERED DATES FOR THIS EVENT - 6th & 7th SEPTEMBER.**

Full Results - Vic/SA State Championships

$\frac{1}{2}$ A Texaco	Texaco	Burford	Duration	38 Antique
1 B Britcher	K Fryer	D Markwell	B Stebbing	K Fryer
2 M Newcombe	D Markwell	B Stebbing	K Fryer	L Clifford
3 L Clifford	B Stebbing	R Brown	L Clifford	R Taylor
4 R Brown	B Britcher	B Britcher	M Newcombe	B Dowie
5 P Keely	L Clifford	M Newcombe	P Keely	
6 C Britcher	P Keely	C Britcher	D Markwell	
7 B Stebbing	C Britcher	L Clifford	D Howie	
8 D Markwell	M Newcombe	S Gullock	R Taylor	
9 K Fryer	R Brown	K Fryer	S Gullock	
10 D Howie	B Dowie	R Taylor	P Leaney	
11 R Taylor	R Taylor		B Dowie	
12 B Dowie	S Gullock			

VIC/SA STATE CHAMPS

Monarto S.A. - 3rd & 4th May 2014

From Brian Laughton.

I was not able to attend this comp so I have re-written Brian Stebbing's comments.

Unfortunately the comps on Saturday 3rd May were called off because of wind, rain and very cold. This then put pressure on to try and hold all the comps on Sunday so as to complete the champs.

All the members met at the local that night to try and drown their sorrows and have a hot meal to try and warm themselves up.

Fortunately Brian Stebbing brought some wood and his chain saw and Steve Gullock cut up a tree branch that had fallen down and they were able to have a camp fire

at the field and warm up all those that camped there overnight.

Next morning dawned reasonably clear with light winds so it was decided to start at 9 am and run all events with 2 flights, 1 to count and have a flyoff. This seemed to work well except there weren't enough timers as everyone seemed to get into the flyoff. But they did manage and got all comps finished on Sunday which is what us Victorians drive all that way to S A for.

You will find all the results here.

The Fred Stebbing Trophy points are allocated to the highest placed SAM 600 members. Therefore the Fred Stebbing scores are not the same as the competition results. If you're confused don't worry so am I and I run it.



Winners of the Burford Event at Monarto - LtoR: 2nd Brian Stebbing, 1st Dave Markwell, 3rd Rex Brown



More Monarto Winners: Above L to R: Duration - 2nd Kevin Fryer, 1st Brian Stebbing, and 3rd Lyn Clifford. Below L to R: Texaco - 2nd Brian Stebbing, 1st Kevin Fryer and 3rd Dave Markwell



New SAM 600 Member from Ballarat, Bradley Cooper, receiving his trophy for 1st in Junior Climb and Glide at the Cohuna Oldtimer Competition on 17th and 18th May, 2014..

Bradley is being mentored by SAM 600 President Steve Gullock and he is seen below with Steve's Polly / GB 500 Diesel.



COHUNA MODEL FLYING CLUB INC
R/C OLDTIMER EVENTS
Report from Roger Mitchell

On the 3rd and 4th of May, 2014 the Society of Antique Modellers, SAM 600, competed at **Monarto** South Australia for the joint State Titles between Victoria and South Australia with pilots and their crew coming from all parts of Victoria.

On Saturday the 3rd the weather was windy and wet with the occasional heavy gusts of wind making flying impossible. However on Sunday the 4th the rain had stopped and the wind was light and a reduced competition for the titles was now on.

The full results of the Victoria/ South Australia State Titles are listed elsewhere but for the S.A.M. 600 Members placings are listed below:

Texaco: 1st Kevin Fryer, 2nd Brian Stebbing, 3rd Lyn Clifford.

Duration: 1st Brian Stebbing, 2nd Kevin Fryer, 3rd Lyn Clifford

1/2 A Texaco: 1st Lyn Clifford, 2nd Pat Keely, 3rd Brian Stebbing.

Burford: 1st Brian Stebbing, 2nd Lyn Clifford, 3rd Steven Gullock.

'38 Antique: 1st Kevin Fryer, 2nd Lyn Clifford, 3rd Rob Taylor.

The competition for Antique Models planes moved from **Monarto** South Australia to **Cohuna** Victoria on the 17th & 18th May 2014 with the weather being good for flying and pilots coming from different parts of Victoria to compete in the event, Full results are listed elsewhere in this newsletter,

Bradley Cooper from the **Ballarat** club won his first trophy in the Climb and Glide for juniors - well done Bradley.

The club members would like to thank our sponsor Cohuna Butchers for the BBQ meat, Bernice Yates and Joy Taylor for the catering and preparing of the food on the weekend.

Our next Competition days are at Cohuna on the 6th and 7th of September 2014.

By Broken Propeller.

COHUNA 17th-18th May 2014

From Brian Laughton.

The weather forecast for the weekend was looking good and most of us arrived at Cohuna Friday afternoon to find mild weather and light winds.

Saturday dawned as per the forecast - mild and light winds - but this didn't last for long as the wind picked up to about 17 kph at about the starting time for $\frac{1}{2}$ A Texaco, and all these buzzing little beasts took to the air only to find that the wind up there was a lot stronger than down where we were. Needless to say only one person did three maxs, as everybody was flying on down elevator to try and get penetration - all to no avail - and the good height gained in the climb was wasted trying to keep your model near home. $\frac{1}{2}$ A Texaco electric is growing in popularity with 6 entries, only one less than I/C, and that wily old devil, Roger Mitchell, came in 1st managing to beat the "always first" at electric $\frac{1}{2}$ A, Steve Gullock !!

As there was no flyoff for I/C $\frac{1}{2}$ A, we decided to have an early lunch and we were not disappointed as the standard of the food was what we have come expect - it was terrific!

After lunch was Burford. The wind was still strong, but the lift was much better, and we only have five minute maxs, therefore we had six out of the seven entries qualified for the flyoff. This was a Cohuna whitewash, leaving all the visitors wondering what they did wrong! Good on ya Cohuna!



Brian Stebbing's modified Irvine 40 Diesel in his Rambler for Texaco. Another 2nd Place! Brian achieved 2nd Place in Texaco at the Canowindra SAM Champs this past Easter. At Monarto he was 3rd in Texaco. In all three Texaco events Kevin Fryer gained 1st Place. Well done Kevin. Below: Brian Laughton and timer Laurie Baldwin "at the office".



Finally! Some reasonable weather for a SAM 600 event! A Lanzo Bomber on approach for landing.

The next event was Duration, and the wind had dropped a little, and still we had lift so ten of the eleven entries got into the flyoff in almost still air at about 4.45 pm - not dark but closing in. This time we kept the Cohuna boys at bay with their highest placing being Rob Taylor in 4th place, so finished a beaut day.

Off to the Tavern we all went for dinner as there were not enough people for a spit roast at the motel.

Sunday morning was almost identical to Saturday, medium to strong wind and mild weather. First event was Texaco with a good number of entries. In this event our servos didn't behave themselves with Lyn Clifford losing his rudder servo in flight and landing in another field with some damage and my elevator servo stopped in flight but I managed to fly back on rudder undamaged. Changed the servo and flew on - again good thermals - but lots of down elevator to keep our models from disappearing down wind,

The models that penetrated in this event were the victors hence the first three models were two Cumulus's and one Rambler - all reasonably quick models in calm conditions. Again a good result with eight of the thirteen models in the flyoff.

Then comes climb and glide with 7 entries and a lot of fun. For the first time I can remember we had a junior competing in the person of Bradley Cooper and for his first time out he didn't disgrace himself. Well done Brad.

Well I must say even though the attendance was not terrific we all had a fantastic weekend. Lots of laughs and fun and plenty of flying something we haven't done for quite a while.

Steve brought his dog Brindle along, boy has he grown!!! But a nicer dog you couldn't wish to meet and he loves cuddles. He is just a big sook!

Again we would like to thank the Cohuna club for their hospitality and kindness. I for one always look forward to a very relaxed and friendly weekend and to pig myself out at the canteen. Thanks guys and girls from all at SAM 600.

COHUNA 17TH & 18TH MAY 2014**Results for I/C engines****1/2A TEXACO**

	Name	Model	Engine	Fuel All	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	L Clifford	Stardust	Cox	5	420	420	420			1260
2	B Stebbing	Stardust	Cox	5	391	400	420	420		1240
3	K Fryer	Stardust	Cox	5	390	395	420	280		1205
4	P Keely	Stardust	Cox	5	L/O	399	335	420		1154
5	B Laughton	Albatross	Cox	5	412	386	321	L/O		1119
6	R Taylor	Stardust	Cox	5	130	291				421
7	B Mc Lean	Stardust	Cox	5	284					284

BURFORD

	Name	Model	Engine	Run/Sec	Rd1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	R Taylor	Dixielander	P/B	40	291	300	300	300	638	1538
2	M Heap	Dixielander	P/B	40	300	300	300		559	1459
3	L Clifford	Creep	P/B	40	300	300	300		487	1387
4	B Stebbing	Swiss Miss	B/B	38	300	300	300		482	1382
5	K Fryer	Atomoser	P/B	40	300	300	300		419	1319
6	B Laughton	Dixielander	P/B	40	300	300	300		403	1303
7	S Gullock	Stardust	P/B	40	280	221	168			669

DURATION

	Name	Model	Engine	Run/Sec	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	B Stebbing	Stardust	Dubjet 35	25	420	420	420		1040	2300
2	B Laughton	Playboy	Thunder Tiger 36	25	420	420	420		837	2097
3	K Fryer	Cumulus	McCoy 60 spark	40	420	420	420		749	2009
4	R Taylor	Cumulus	Y S 63	28	420	420	420		745	2005
5	L Clifford	Racer	Y S 63	28	420	420	420		739	1999
6	R Hicks	Cumulus	Y S 63	28	420	420	420		734	1994
7	P Keely	Playboy	Y S 63	28	420	420	420		682	1942
8	G Gulbin	Playboy	O S 56	32	399	420	420	420	603	1863
9	S Gullock	Playboy	Saito 56	32	420	420	420		601	1861
10	B Taylor	Playboy	Saito 50	32	410	420	420	420	498	1758
11	M Heap	Bomber	G M S 32	25	420	297	392	392		1204

TEXACO

	Name	Model	Engine	Fuel All	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	K Fryer	Cumulus	O K 60 Spark	24	600	600	600		1143	2943
2	B Stebbing	Ramler	O S Diesel	8	600	600	600		1132	2932
3	R Taylor	Cumulus	O S 61	18	600	600	600		810	2610
4	B Laughton	Bomber	O S 60	15	O /time	600	600	600	800	2600

5	M Heap	Bomber	O S 40	12	600	600	600		758	2558
6	R Hicks	M G	Enya 46	15	600	600	600		725	2525
7	P Keely	Bomber	O S 52	12	533	600	600	600	658	2458
8	S Gullock	Bomber	Enya 53	15	600	600	600			1800
9	G Gulbin	Bomber	Enya 46	15	536	600	547	270		1683
10	B McLean	Bomber	ASP61	12	284	434	741			1459
11	R Yates	Bomber	O S 48	12	580	573	262			1415
12	P Miller	Bomber	O S 40	12	423	476				899
13	L Clifford	Racer	Enya 60	18	600	L/O				600

38 ANTIQUE

	Name	Model	Engine	Run/Sec	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	R Taylor	Cumulus	Atwood 60	116	600	600			1041	2241
2	L Clifford	Record Breaker	Atwood 60	116	600	600			817	2017
3	K Fryer	Cumulus	O K Super 60	144	600	600			763	1963
4	S Gullock	Polly	G B Diesel	205	600	355	339			955
5	M Heap	Californian chief	ED 3.46	180	461					461
6	B Laughton	R C 1	O K Super 60	120	333					333

CLIMB & GLIDE

	Name	Model	Engine	Run/Sec						TOTAL
1	B Stebbing	Stardust	Dubjet 35	60						1054
2	G Gulbin	Playboy	O S 56	60						930
3	R Mitchell	Bomber	Electric	60						870
4	K Fryer	Atomizer	Burford	60						867
5	R Taylor	Cumulus	Atwood	60						767
6	B Cooper	Bomber	O S 48	60						699
7	M Heap	Bomber	GMS 32	60						DNF

COHUNA 17TH & 18TH MAY 2014

Results for ELECTRIC Power

ELECTRIC 1/2A TEXACO

	Name	Model	Motor	Bat Allow	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	R Mitchell	Red Ripper			600	600			783	1983
2	P Miller	Fox 180			600	600			720	1920
3	S Gullock	Stardust			600	600			618	1818
4	R Yates	Bomber			570	240	600			1170
4	M Heap	Kerswap			570	410	600			1170
5	L Baldwin	Stardust			600					600

TEXACO ELECTRIC

	Name	Model	Motor	Bat Allow	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	R Mitchell	Bomber			600					600
2	L Baldwin	Bomber			DNF					

DURATION ELECTRIC

	Name	Model	Engine	Run Sec	Rd 1	Rd 2	Rd 3	Rd 4	F/O	TOTAL
1	L Baldwin	Bomber			600	600				1200
2	R Mitchell	Bomber			DNF					



*'38 Antique Winners - Cohuna
Left to Right
3rd Kevin Fryer, 1st Robert Taylor
and 2nd Lyn Clifford.*

*Texaco Winners - Cohuna
Left to Right
3rd Robert Taylor, 1st Kevin Fryer
and 2nd Brian Stebbing.*



*Very High and Very Sunny
Left Brian Laughton
Right Kevin Fryer*

Wire Bending.

From AL Lidberg aalmps@aol.com

Having to bend some serious 5/32" wire for the Powerhouse landing gear, I asked for advice a week or so ago. Someone sent me the attached excerpt from a Flying Models mag so I thought I'd try this method. It works nicely!

Before you head out to the shop, bear with me for a minute or so - and I'll share some wisdom. You know: that's what we acquire while we learn and make mistakes.

To begin with, I only had one Visegrip and it was an old Sears variation, so went off to Walmart and bought another, the only one they had, in the Stanley brand. I ground the opposite corners from the 2 Visegrips' jaws. With the wire marked for bends, I clamped each Visegrip a bit on each side of a mark. The wire was placed in the first major jaw groove, nearest the open end of the jaws. For bends that must all be in the same 'plane', it is important to remember the up/down angle at which the Visegrips have been placed because each bend will require the same placement. Bending takes place on a plane defined by the major part of the Visegrip handles.

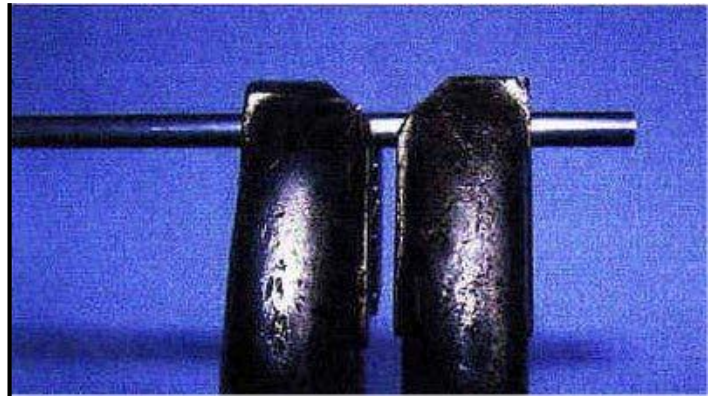
I pulled on the Visegrips and the first thing that happened was that a Visegrip let go! It was the new one and by then, it was obvious what the problem was - this one had curved jaws, such as would be useful for pipe or other round objects, much larger than the wire I wanted to bend. Because the jaws were curved, the first major jaw groove on both the top and bottom had a poor grip on the wire. Because I had ground off the corner of the jaws, I couldn't take the tool back for credit. Determined now to press on with the LG, I got out my little bench vice and tried to bend the 5/32 wire - no joy there as all I could do was to bend it a little as my hands couldn't get enough leverage.

Back on the road to ACE hardware where I found another new Visegrip - the genuine article this time. There was a note saying that they had invented this useful tool in 1924! Ground off the corner from this one and tried again. Now we have something! It does work, and takes surprisingly little hand pressure.

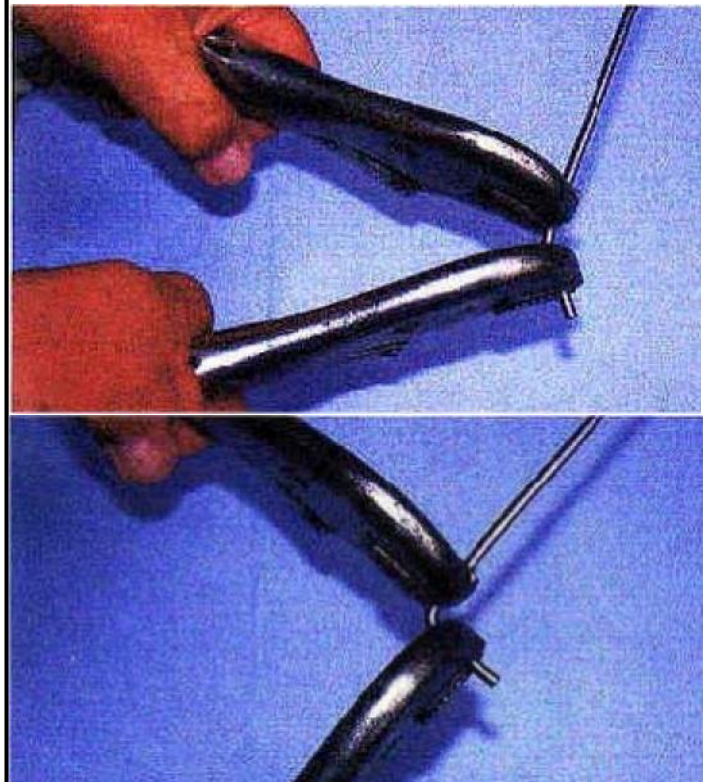
Regarding the 'grind off the corners' exercise: if you want to try bending wire this way, try first without grinding. It might be necessary if one wants a right angle bend, but the Powerhouse bends were all less than 90 deg. The only bends that were difficult were those at the bottom of the rear braces where the parts that join to the main LG were not in the same 'plane' as those of the center portion. It took some visualization to plan the Visegrips' angle for those.

I should point out that even with some space between the pair of Visegrips, there's little space for grabbing the tools so you'll have to get things started with a less-than-perfect grip. Once things start to bend, there's plenty of finger grip room. You may also find that the tools leave some jaw marks on the wire but a little work with a file or Dremel grinder can clean those up. If you start with the no longer common, shiny 'piano' wire, you might not see such marks.

Hope you find this useful!



Charlie Reeves demonstrates how to grind off the inner\upper corners of your pair of Vise Grips (above) in order to more easily bend landing gear for any of your model projects. Charlie is now holding the wire and Vise Grips for the initial bend. Charlie is half way through the bending process (below). Less effort is exerted than you might think in this quick and efficient way of moulding your wire to the shapes you desire. Charlie is now finished with the bend and only slight adjustments are needed to conform to the shapes as drawn on the plans (at bottom). Charlie and Allen chose the 5/32" music wire to show that it can be done. 1/8" music wire or a length of lesser diameter is a mere breeze.



Easy 1/8" Wire Bending.

I do not own an anvil or a vise but still need to bend very strong and contrary 1/8" music wire into a shape as drawn on a set of plans. I struggled with this until Charlie Reeves made me aware of an easy method of solving that problem. You need to own two sets of Vise Grips or similar tool.

Charlie taught me to grind off one corner of each of the two tools. You should grind off opposing corners of the lips, and the two corners would be next to each other when both tools are held in parallel to each other. The pictures enclosed probably make a lot more sense as "a picture is worth a thousand words".

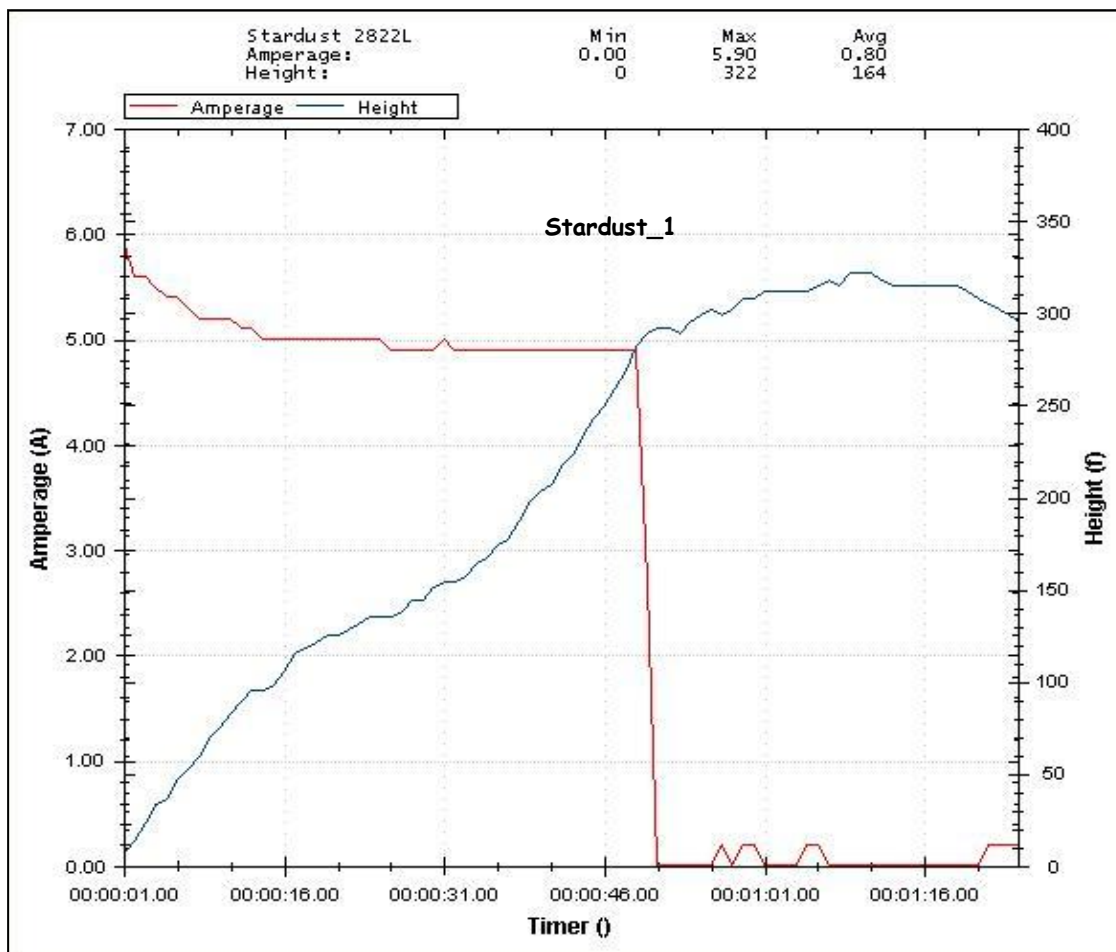
Decide where the bend should occur and hold both tools about 3/16" apart. Clamp down on the wire just left and right of the marked bend. The tools and your hands should be parallel to each other, and then simply pull the two tools away from the centre. You will be surprised as to how easy it is to bend the 1/8" music wire into the shape you desire. Fit the bent wire over the form drawn on your plans and begin planning your next bend.

If you have some "inside" bends, like the top portion of a Nobler main landing gear, then you will need to pre-plan those bends prior to going on to the "outside" bends. Not that 1/8" piano wire is inexpensive, but you can afford to make a few mistakes with your first one. If planned correctly, the wire will not have too many squiggles in it. Place the completed wire over the plan again and "tweak" the metal until it conforms to the shapes you need.

I have mistakenly bent 3/16" wire and thought that I had a tough piece of 1/8" music wire. Was I surprised to find out that the wire was larger in diameter than I had planned to bend? But, I bent it with only some difficulty. Enclosed are several shots of the procedure, as Charlie Reeves performs it.

Why not try Electric 1/2A Texaco? Part 2

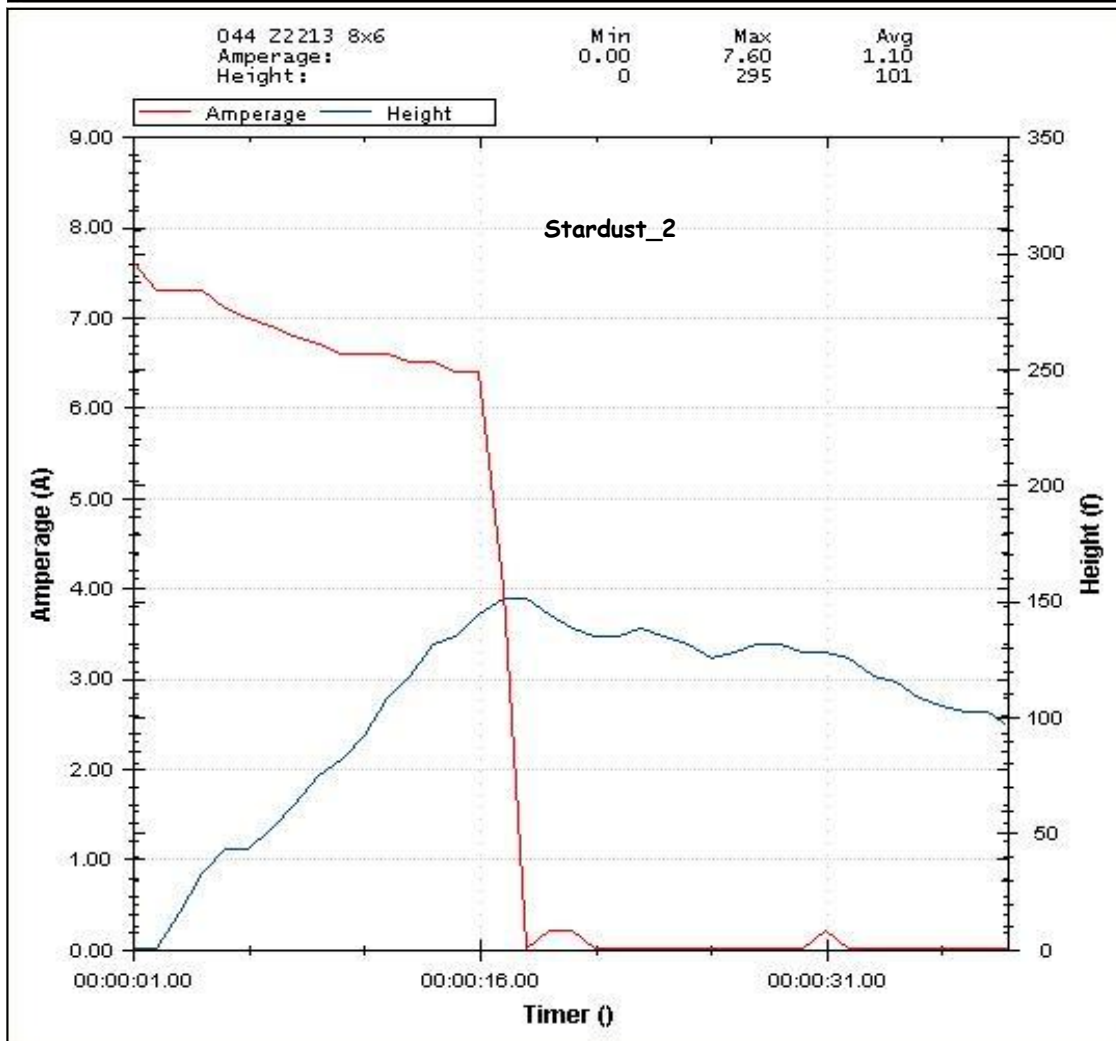
From Laurie Baldwin



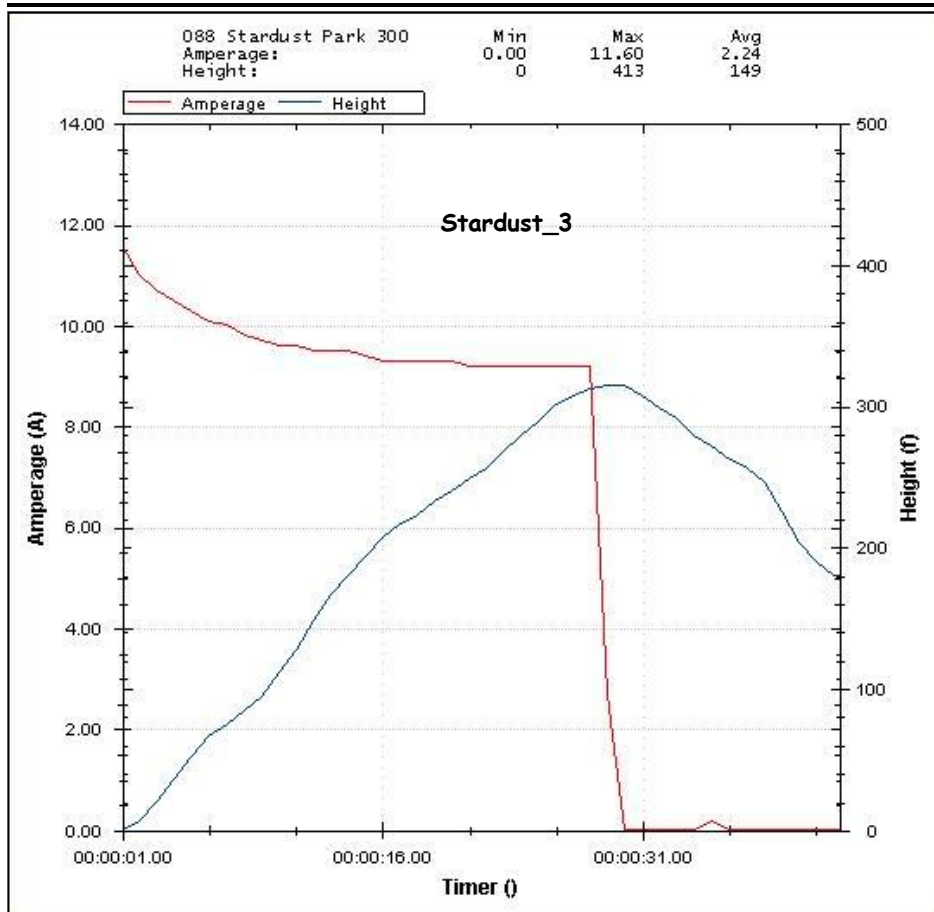
In my first article I offered a challenge. Be brave and convert one of your 1/2A models to electric. I wrapped up by promising to write about flying an electric 1/2A Texaco event and some of the differences I've noticed (and like). I thought I might also explain about some graphs I've produced. So here goes.

Recapping a little about motor choice, I've been experimenting with some alternatives for my Stardust and flown it a few times with a data logger on board to capture some real-time information. I've experimented with four motors and finally settled on the Turnigy 2822L, at least for now.

Stardust_1 shows the first climb part of my flight with that motor. The red line is current out of the battery: its axis is on the left and the units are amps. The red graph shows I was a full throttle, at about 5 amps, for under a minute. The blue line is height, scale on the right, and looking at the current curve I can see I shut off at 275 feet.



I've used a Hyperion motor up until now and Stardust_2 shows it climbs much more smartly but is quite hungry.



Based on static testing, I thought a Turnigy Park 300 might be better so I tried it as well (Stardust_3).

From the data files I've calculated comparative data for fast climbs for the three motors and put it into Table 1. I've also included two other factors, 'energy used per 100 feet of climb' and 'energy used per minute of motor run'. Both are akin to fuel consumption rates (like litres/100km and litres per minute). After all, Texaco has an 'economy' heritage and 1/2A electric old timers are following the theme.

Motor	Average Current (amps)	Rate of climb (feet per minute)	Energy Used per 100 feet (mAh)	Energy used per minute (mAh)	Max motor time (minutes)	Max height if a single run (feet)
Turnigy 2822L	5	338.4	25.2	85	4.8	1642
Turnigy Park 300	9.5	651.7	24.4	159	2.6	1696
Hyperion Z2213	6.5	503.3	21.85	109.9	3.7	1894

Table 1 - Stardust Three motors 8x6 prop

I'd love to be able to see a clear winner from all this but I'm not sure I can. At face value all three motors use about the same total energy to get the model aloft, with the Hyperion being marginally the more efficient. The Park 300 does it quickest and the 2822L does it longest. Which strategy do you want?

Isn't that the \$64,000 question? Is it better to climb as high as possible, as quick as possible, or run the motor as long as possible? That seems a question that's equally intriguing for IC and electric. Stardust_4 (on next page) is the record for a 2822L flight that includes both a quick and a slow climb. From the data-logger's information I've built Table 2.

Climb	Time (secs)	Average Current (amps)	Battery Used (mAh)	Height Increase (feet)	Rate of climb (ft/min)	Energy / 100 ft (mAh)	Energy/minute (mAh)
1 - fast	50	5	71	282	338.4	25.2	85
2 - slow	78	1.5	32	115	88.4	27.8	24.6

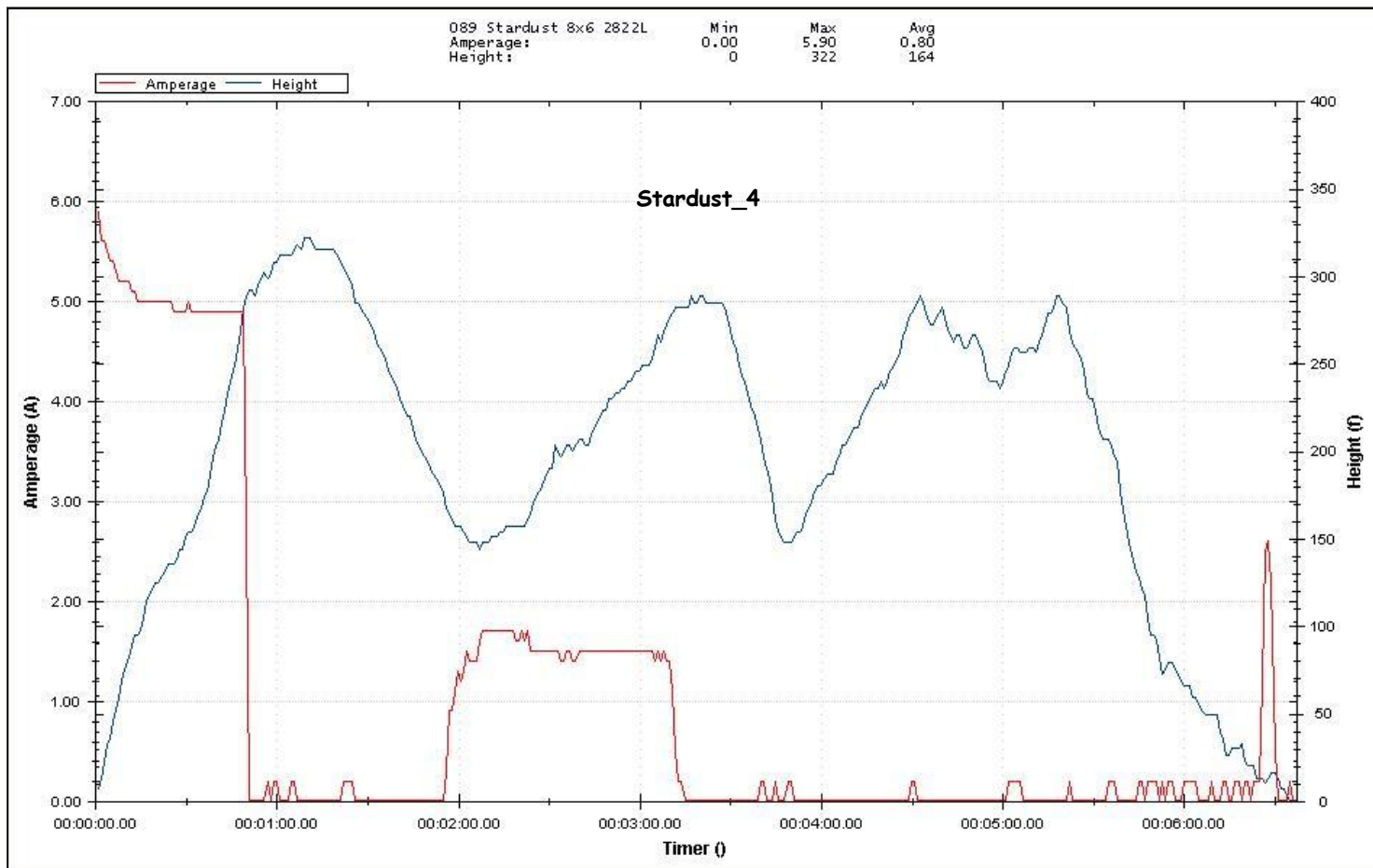
Table 2 - Stardust 2822L 8x6 prop

Is a long slow climb a better way to use my battery than a short quick climb? On the basis of this flight, there's not much in it. If anything the slow climb is slightly less efficient. Using our 2S 460mAh battery to 90% of its capacity and the 'energy per minute' factor, in full throttle mode the motor would run for 4.8 minutes; 'economy' would be 16.8 minutes. So achieving our target 10 minutes for a 1/2A Texaco flight should be a breeze, regardless of which strategy is adopted. A fly-off is another matter altogether!

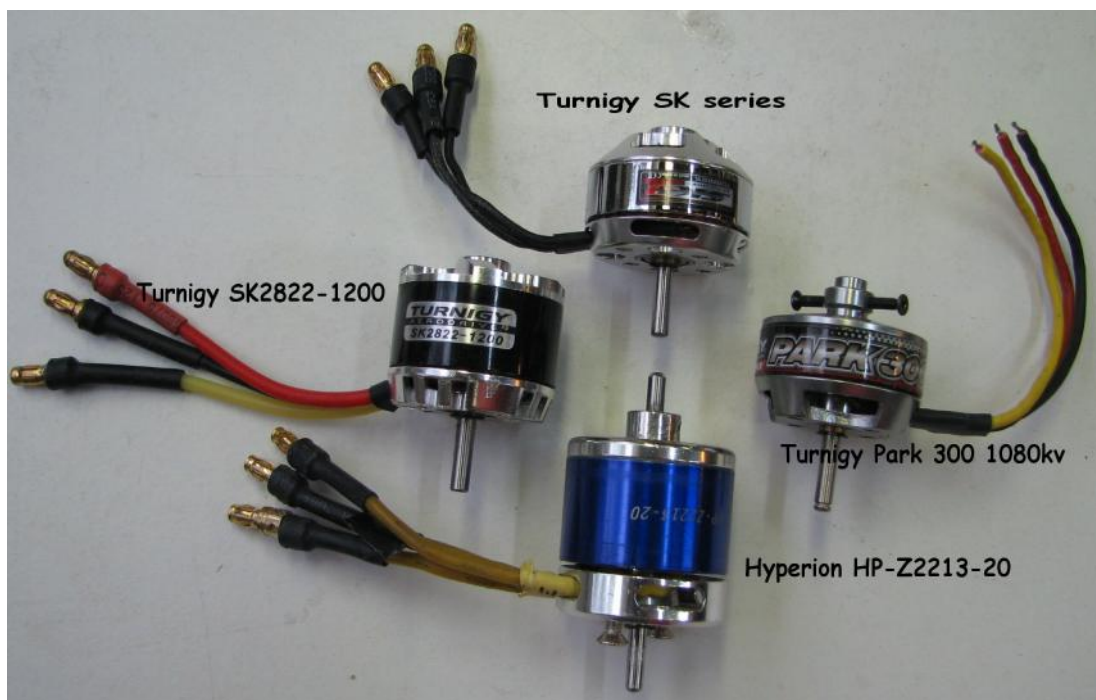
Let's now look at how high the model would be under each strategy if the motor was run continuously. Using the same parameters, full throttle is ~1600 feet and economy ~1485 feet. I doubt I'd see the model at either height so for me it's most unlikely that I'd attempt to get to maximum altitude anyway. Again, in terms of absolute ceiling, there isn't a great deal of difference between the two approaches.

I really like electric Texaco and one of the niceties is being able to stop and restart the motor in-flight. Do I hear cries of "Heresy"? Are we guilty of compromising some of the fundamentals of the old-timer movement? Well indirectly Ian Avery has helped me with that by giving me a document about SAM's history (there's now a link to it on our website). I found some key philosophies and some interesting parallels. By my reading, EOT is totally in keeping with the fundamental ideas of "casual, enjoy-

able competition, flying vintage models in a way that is fair to all participants and meets the needs of our members". So lets move on.



Going back to my full flight graph (Stardust_4) there are a couple of other things to note. Initial full throttle climb then an economy climb used a total of 23% of my battery. You can also see little blips where there was servo activity and a burst of throttle as I was landing. I can deduce that as well as climbing under power, I found a little thermal activity after each run, as well as a nice bit of air at the 4 minute mark. During this flight I never got much above 300 feet (maximum was 322'). Good thing too. Our field has a legal ceiling of 400'. While the main purpose of the flight was to get some data, it shows you can have a nice enjoyable flight working low level thermals where you can clearly see the model and observe what its doing.



Perhaps the best conclusion I can draw from all this analysis is that it's not what you got, it's the way that you use it. Motor choice for 1/2A E-Texaco isn't going to determine success. It's going to be the ability to find thermals and exploit them that's going to be the difference. The motor you choose might influence your style but it's unlikely to be a significant aspect. For me that means it's not your budget, your engineering skills, or your eyesight that are deciding factors. How well you fly will make the difference and I think that's what old time flying is about. Now wasn't that fun?

If you still have doubts about being able to get an electric 1/2A in the air, let me offer some help. I would be happy to convert your IC model to electric, for the cost of the parts and I estimate that at about \$60. If that's of interest contact me directly and we can discuss what's involved. (laurie.baldwin@internode.on.net or 041 734 7034)

FILLON'S CHAMPION

Part 2 From Brian Laughton

To continue on from the last Thermaleer, the next step was to build the canopy - it seemed to be easy but easy it was not. The first thing was to make a mould of the shape out of builders bog, a two pack plastic that sets very hard but is easy to plane and sand. Then on the bottom of it you insert a dowel about the size of a broom handle and you then insert the dowel into a vice with the mould facing up.

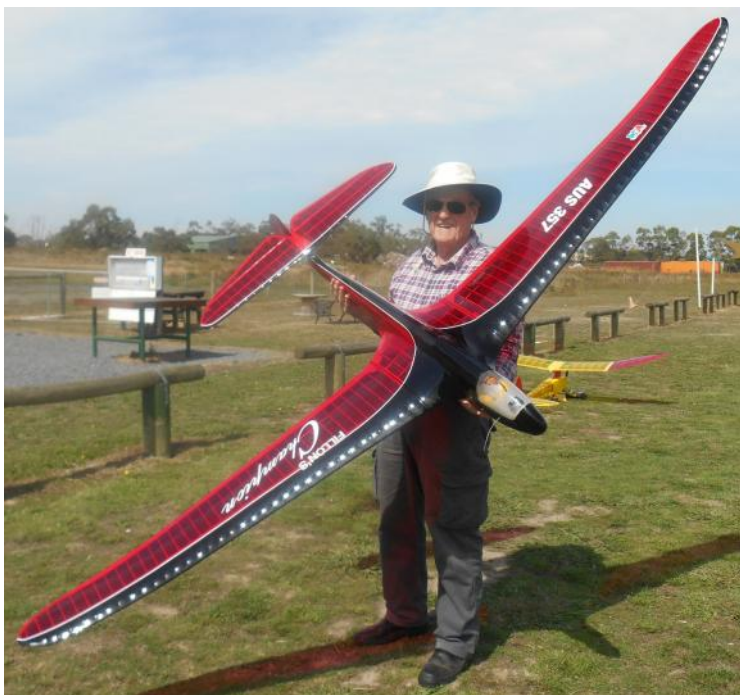
The next step is to get your clear plastic sheet and on two opposite sides staple pieces of wood to act as handles. Then you place this into an oven and heat to 180 degrees for ten minutes. Then, with your hands in oven gloves, you remove the clear plastic quickly from the oven and pull it down firmly over the mould until it forms the shape and then hold it until it goes cold. Then take it off and cut it to the required dimensions it took me three tries, the best of which is not perfect, but it will have to do.

The covering of the wing and tail were quite conventional but the fuselage around the fairings wasn't easy and took a long time, but eventually, after a few tries, it seemed to be OK.

Next it was time to mask up and I did the painting as photographed, I use a special 2 pack paint which I had almost learned to master on my previous models, so I thought that I would stick with what I know. Luckily, it came out pretty good. Next was the pin striping and the job was finished.



The Fillon's Champion ready for its first flight at VARMS field.



Moulding the canopy.

The weight came out at 69 ozs, quite a bit heavier than the original at 38½ ozs, but I had strengthened the model quite a lot to cope with winch towing so I wasn't too concerned. Next will it fly ???

One Saturday I threw the model in the car and headed off to the VARMS glider flying field at Knox and met Col Colyer there. He offered to test fly the model for me as I had never flown a model using a winch before and didn't know what to expect.

So away it went with Col at the controls. Wonder of wonders it went straight up on the line, glided fast but well, a little insensitive to rudder and slow to turn. So when it landed we removed the exponential and increased the throw. This time I flew it and it really was a pussy cat to fly so I then went home feeling as happy as a dog with two tails.

The next stop was the SAM Champs at Canowindra. On arriving there the first competition was Oldtimer Glider and if I entered I must fly the model myself - no relying on Col. This was my undoing, having very little experience with towing. I made some awful flights that didn't do too well in the final results, but it was still in one piece with no damage. It no doubt would have done much better without me, as many people have told me "your models fly much better when you forget to turn the radio on".

But at the end of the Canowindra Champs, at the presentation night, I was presented with the Mick Walsh Concours D'E-lagance trophy for the best model, voted by all of the competitors. This did make up for my bad performance on the winch.

I hope I haven't bored you with this article but this is the most ambitious model I have ever attempted and I had to tell someone about it.

Thanks for listening.

Australian 1788 SAM Champs - Canowindra 2014

Another SAM Champs at Canowindra at Easter has passed. The object of this event, run by SAM 1788 of NSW, is to get together and have fun, and to meet people with the same interests from all over Australia. This year there were competitors from W.A., QLD, S.A., A.C.T. and Victoria as well as a large contingent from NSW.

It seems that Victorians have lost the urge to travel as only four Victorians attended. They were Kevin Fryer, Brian Dowie, Brian Laughton and a new member to SAM 600 and also President of our premium model gliding club VARMS, Col Colyer.

The first events were on Thursday with free flight but we had no members entered in this event, however Col Colyer was there flying one of his many FF models.

The next event was Oldtimer Glider and Victoria had two entries, Col Colyer with his enlarged model called Satyre and Brian Laughton with his new model - the French designed Fillon's Champion. There were fourteen entries this year and this event seems to be attracting more entries each year. These models are launched with a power winch of which there were three in operation. Col brought his winch and it proved very popular. The weather was perfect with only light winds. There were some thermals but a bit hard to find unless you were Col Colyer as he was the only one to get three maxes to be a clear winner in this event. Good on ya Col.

The next event was the cabin model scramble for R/C models and the only Victorian to fly was Kevin Fryer. He was going great guns until his receiver batteries went flat about two thirds the way through the comp and put him out of the running.

Also during the day they ran C/L Phantom and Keil Kraft Champ Racing but no Victorians entered these events. It seems they are getting very fast and the old blokes get dizzy and fall over. That night we all went to our normal haunt, the corner pub for dinner and a chat to other members.

Friday morning they have processing and at 11am, with lovely weather, the first competition, Nostalgia with seventeen entries, was started. The only Victorian entry was Brian Laughton with his flying pencil. Unfortunately the air was dead and only two fliers got three maxes. The next event was 1/2A Texaco with 29 entries. Three Victorians entered and the weather was perfect with lots of lift until the flyoff when, just as the models were being launched, a huge wind came through throwing models all over the sky. This event was won by one of the most likable chaps to ever grace Canowindra, Dave Paton from Queensland, good on ya Dave!! Another lovely day finished and off to the pub we went.

Saturday - the first event was Burford with thirty entries. SAM 600 had three entries with Kevin Fryer, Brian Laughton and Brian Stebbing, from SA, who is now a SAM 600 member. Again weather was glorious. First round saw Brian Laughton lose sight of his model at the top of the climb and not re-sight it again - until about an hour later. Ian Avery found it by the front gate of the farm we fly on with its pylon broken. As you can see by the results the thermals were there as there were seventeen in the flyoff and our second Victorian win with Kevin Fryer and his Atomizer beating the other sixteen fliers to take first place. Good on ya Kev.

The next event was Texaco with thirty-four entries. Again the weather stayed perfect with four of the five SAM600 members taking part. Poor Brian Dowie's bad luck seems to follow him around because during this event his Spektrum transmitter fell apart putting him out of the competition. This event was very competitive with twenty-two fliers getting into the flyoff but SAM 600 members reigned su-

SAM 600 Members Results 32nd SAM 1788 Champs Canowindra - Easter 2014

Free Flight Vintage Power

Free Flight Cardinal

Oldtimer Glider - 14 Entries - Winning Score 1080

- | | | | |
|--------------------|-----|------------------|------|
| 1.. Colin COLLYER | VIC | Satyre | 1080 |
| 13. Brian LAUGHTON | VIC | Fillons Champion | 631 |

Vintage Cabin R/C Scramble - 12 Entries

Winning Score - 2139

- | | | | |
|-----------------|-----|------------------|------|
| 12. Kevin FRYER | VIC | Irvine Mills .75 | 1113 |
|-----------------|-----|------------------|------|

Nostalgia - 17 Entries - Winning Score - 1260 +448

- | | | | |
|-------------------|-----|--------------|------|
| 6. Brian LAUGHTON | VIC | Pencil K&B40 | 1062 |
|-------------------|-----|--------------|------|

1/2a Texaco - 24 Entries - Winning Score - 1260 +347

- | | | | | |
|--------------------|-----|------------------|------|----|
| 9. Brian LAUGHTON | VIC | Albatross | 1260 | LO |
| 12. Kevin FRYER | VIC | Cumulus | 1220 | |
| 14. Brian STEBBING | VIC | Stardust Special | 1154 | |
| 19. Brian DOWIE | VIC | Playboy | 874 | |

Gordon Burford - 30 Entries - Winning Score - 900 +948

- | | | | | |
|--------------------|-----|----------------|-----|-----|
| 1. Kevin FRYER | VIC | Atomiser PB | 900 | 948 |
| 16. Brian STEBBING | VIC | Swiss Miss BB | 900 | 366 |
| 28. Brian LAUGHTON | VIC | Dixielander PB | L/O | DNF |

Texaco - 34 Entries - Winning Score - 1800 +1507

- | | | | | |
|-------------------|-----|-----------------------|------|------|
| 1. Kevin FRYER | VIC | Cumulus OK Super 60 | 1800 | 1507 |
| 2. Brian STEBBING | VIC | Rambler Irvine 40 Dsl | 1800 | 1474 |
| 3. Brian LAUGHTON | VIC | Bomber OS 60 4/ | 1800 | 1422 |
| 32. Brian DOWIE | VIC | Bomber OS 61 4/ | 1097 | |

'38 Antique - 17 Entries - Winning Score - 1800 = 2769

- | | | | | |
|-------------------|-----|---------------------|------|------|
| 5. Brian LAUGHTON | VIC | RC1 OK Super 60 | 1800 | 2027 |
| 8. Kevin FRYER | VIC | Cumulus OK Super 60 | 1800 | 756 |

Duration - 32 Entries - Winning Score - 126 + 648

- | | | | | |
|--------------------|-----|--------------------------|------|-----|
| 4. Brian STEBBING | VIC | Stardust Spl. Dub Jet 35 | 1260 | 525 |
| 6. Kevin FRYER | VIC | Cumulus 92% McCoy 60 spk | 1260 | 431 |
| 11. Brian LAUGHTON | VIC | New Ruler Saito 62 4/ | 1260 | 376 |
| 26. Brian DOWIE | VIC | Playboy 105% OS 40 2/ | 1116 | |
| 28. Colin COLLYER | VIC | Super Quaker Rossi 40 | 1052 | |

Standard Duration - 14 Entries - Winning Score - 1080 + 1879

2cc Duration - 13 Entries - Winning Score - 900 + 514

- | | | | |
|-------------------|-----|-------------------------|-----|
| 9. Brian STEBBING | VIC | Dixielander Taipan Tyro | 832 |
|-------------------|-----|-------------------------|-----|

Champion of Champions

Michael WALSH QLD

Concours D'Elegance

Brian LAUGHTON VIC - "Fillon's Champion" Glider

Geoff Shaw Memorial Texaco Encouragement Trophy

Basil HEALY NSW

preme taking all three places with only eighty-five seconds separating them after a twenty-five minute flyoff - with Kevin Fryer coming in first with his OK Super 60 powered Cumulus, Brian Stebbing coming second - his father would be proud of him - and Brian Laughton coming third. A Victoria/SA SAM600 whitewash, BLOODY TERRIFIC!!!

That night we were back to the farm for a delicious BBQ put on by the local CWA.

Sunday was '38 Antique with seventeen entries, perfect weather again. Two SAM600 members entered this event.

The wind was so light it didn't matter which way you took off it made no difference. There were nine in the flyoff and this was a QLD/NSW finish with our highest placing being 5th.

The next event and the last for the Victorians was Duration with thirty-one entries - all five SAM600 members flew. There were eighteen in the flyoff and again it was a QLD/NSW affair with the three top placings but our Brian Stebbing came 4th, Poor old Kevin Fryer's McCoy powered Cumulus was going like a rocket but failed to get lift and ended in 6th place.

That night was the presentation night at the local RSL and it was the best \$25 meal we have had for a long time. All the trophies were presented for the completed competitions with a lot of carpet being worn out from Kevin Fryer's seat to the podium and the last trophy of the night was the Mick Walsh Concours D'Elagance Trophy and that was won by Brian Laughton for his Fillon's Champion Oldtimer Glider.

It should be noted that Kevin Fryer's wins are the best for a SAM600 member since Brian Laughton's two wins in 2007 and together with Col Colyer's win would be the best performance by SAM600 members ever at Canowindra.

The weather couldn't have been better with light winds each day, clear skies and mild temperatures. BOGWOOD, the farm on which we fly, is owned by Paul and Kim Farthing. Paul is a past SAM1788 President. The farm was lush green, the best we have seen it, and so immaculately prepared by Paul and others, it looked like a manicured park in the suburbs. Thank you Paul, you made our Easter perfect and thank you for all your generosity from all of us at SAM600 and we are all looking foreword to next Easter.



Col Colyer launching Brian Laughton's Fillion's Champion in the Oldtimer Glider event.



Dave Paton from Queensland expressing his pleasure with his winning of the 1/2A Texaco Perpetual Trophy



Above: Brian Laughton with his Concours D'Elagance Trophy for his Fillon's Champion chosen by all the competitors.



Right: Kevin Fryer receiving the Texaco Perpetual Trophy from SAM 1788 President Peter Scott.



At the Canowindra Champs.

Far Left: Ian Dixon from WA with his Oldtimer Glider "Shoek". Left: SAM600's S.A. member Brian Stebbing. Above: Basil Healy's Oldtimer Glider "Nibbio" - an Italian design.

MY DREMEL SAW - WOE AND REDEMPTION

(From AVANZ News No.126)

Now quite a number of you who are old hands at this aeromodelling game will have a Dremel Fretsaw similar to the one pictured. Mine is about 30 years old and has a type number of 57-2

The WOE of this story is when I broke my last saw blade and so sought a replacement. It would seem that Dremel have gone out of the saw business as their website and all the suppliers I could locate locally and on the internet only had bits for the Dremel rotary tools - no saws and the like - B--ER!

However REDEMPTION was at hand as on a chance visit to a club mate's workshop I spotted a saw blade that might suit the saw. Enquiries revealed that he had made the blade up from a Junior Hacksaw blade and described the method he used. A serendipitous moment!

Junior Hacksaw blades are widely available and come in various styles so a good available source. I had a packet in my own stock so out they came.

The Dremel Fretsaw blades are pin ended and need a blade with 3 inches (75mm) between the pins. The Junior Hacksaw blades are 150mm between the pin ends so need to be modified to suit the Dremel Fretsaw. Here is the method.

- Step 1 Heat the end of the Hacksaw blade to dull red heat to de-temper the blade, which also allows you to remove the pin by pulling and twisting with pliers or tapping it through. Put the pin safely aside for use later.
- Step 2 Mark the Hacksaw blade between 70mm and 80mm from the remaining pin in the blade and heat this area to dull red and let cool. This de-temperes that area allowing you to drill a new hole for the pin.
- Step 3 Centre mark a point 75mm from the pinned end and drill a hole the size of the pin removed in Step 1.
- Step 4 Cut or break the Hacksaw blade at the hole end leaving around 5mm clearance from the hole drilled in Step 3. Insert the pin in the drilled hole centered on the blade. It can be a little loose and locked with a drop of thick cyano as the blade will be under tension when fitted to the saw.
- Step 5 As the Hacksaw blade is wider than the original Dremel blade you will probably need to file a fore and aft slot in the saw table for clearance - quite easy on my sheet metal table but maybe a little more work if yours has a cast metal table.

The pictures at right show the modified saw blade and it fitted to the saw, (Bottom) and the modified saw alongside the standard Junior Hacksaw blade (Top).

Yes it works just fine, not quite so good going around curves but this is compensated for by being more accurate in a straight line cutting, the wider blade reducing the wander apparent with the original narrow blade.

With luck my trusty Dremel Saw will now serve me for my modelling lifetime, thanks to a Club Mate.



Facts Of Spark Ignition Engines by Bill Schmidt

I notice that very few people know the following facts about model engine spark ignition operation, so I thought I'd put it to paper. What do you know about transformers? Yes, they hang on a pole or sit in a box on the ground behind your house and convert 7200 volts AC to 220 / 120 volts AC power for use in your home. *(Transformers use a pair of coiled wires that are usually wrapped around an iron core. Their primary role is to increase or decrease AC voltages. Transformers operate on the principle of induction, in which a rapidly changing magnetic field produces an induced EMF (electromotive force), or voltage. For this reason, they only work with alternating current. The first coil winding is known as the primary, and the other the secondary. - editor-SAM 56)*

With a volt meter connected across the secondary output windings of a transformer and DC power applied to the primary input windings, the meter will momentarily deflect upscale and then return to zero. When the circuit is opened the voltmeter will again deflect upscale and then return to zero. If the DC power is left connected the transformer will get hot and begin to smoke and eventually fail if not catch on fire.

All transformers have voltage ratings for their primary and secondary windings. These windings have more OR less turns in their construction that dictates their input to output voltage performance. A transformer can be successfully reversed for use in most simple operations. An example is of a unit marked 120 vac input that gives 12 vac output. If you put 12 vac on the output you will get 120 vac measured at the input side although not at the same amperage capability as when connected in reverse.

You should know that there is usually no connection or electrical continuity between the primary or the secondary windings. This gives electrical isolation between circuits and is desirable in many cases. However, in some transformer construction the primary and the secondary windings are connected at one point in their assembly. There is no electrical isolation therefore between circuits and their intended application specifies this feature.

What does all this have to do with model engines? Model engine spark coils are small TRANSFORMERS. They have a primary coil of about 24 turns of # 20 wire wrapped around the iron core laminates which is also connected to one end of the thousands of turns of the very much finer wire of the secondary winding. Put an ohm meter on a scale of 5000 or 10,000 ohms and touch the output secondary that goes to the spark plug to one of the primary Lugs. You will get a reading of from 1400 to 4600 ohms depending on the quality of the coil.

Touching the other primary Lug will give you the same reading. You cannot read it at the scales available, but there will be 2-3 ohms difference between the two readings as one side includes going thru the primary to get to the secondary. A general rule is that the higher the resistance of the coil's secondary, the better the performance you will get in the form of a greater spark.

What about transformers (model coils) not working with dc current when batteries certainly are dc? Well, transformers are kind of neat things. AC current switches from + to - 60 times a second in the power grids of most countries and this is what a transformer usually sees. HOWEVER, if you pulse, that is turn off and on, a dc input into the primary of a transformer at a fairly fast rate the transformer sees this as acceptable ac power and functions as such.

Large transformers however, must be manufactured specifically for the cycles per second of their intended use to function correctly and our small coils by their design do not have such a tight specification. Turning the power on and off at a rapid rate is the function of the ignition points on our model engines. These point contacts generally see 3 amps of current flow thru them with the action of a capacitor to act as a buffer and keep the burning and pitting of them to a minimum.

The advent of my Schmidt Trigger design in Model Aviation Magazine in August of 1985 utilizes a high speed transistor to take the load off of the tungsten ignition points and lets the transistor switch the heavy current. The engine's ignition points then only "tickle" the transistor to get it to switch the power on and off thru the coil. With a small resistor of about 20 ohms on the base of the transistor the ignition points see only about 50 mA of current flow thru them and burning and pitting is virtually eliminated.

I tested the circuit back then and it would tolerate up to about 95 ohms resistance (read dirt and oil) in the points tickle circuit before it would cease to switch the coil off and on. The utter simplicity of the design having only one transistor and one resistor has made it universally used by nearly all those who run spark ignition engines.

There are thoughts and articles that the polarity of the connections of + and - of the batteries to the primary terminals makes a difference in the spark output power. The secondary connection is made externally to one of the primary's lugs and the positive (+) should go on that lug for the best voltage output. By carefully removing the solder with a suction tool you can find which lug has the secondary connected to it. I've checked this out and found that this does not always hold true.

I made up a $\frac{3}{4}$ " x4" x14" wooden breadboard circuit with a transistor, a bed for various ignition coils, a Deans plug battery connector, a pair of letter "C" shaped 2" high vertical #20 wires that can be spaced about $\frac{1}{4}$ " to 5/16" apart at the top and a ice cream stick wrapped with # 20 bare copper wire with 25 windings spaced about 1/8" apart. Mini-gator clips are used for the various quick connections to coils to be tested.

When hooked up hot, I run a test probe up and down the wire wrapped ice cream stick like Jerry Lee Lewis on the piano keyboard and watch the spark intensity. A 3 volt #123 camera battery (cheapest at Wal Mart) is the usual test and flight battery but a 3.7 volt Li Po battery will really make a poor quality coil stand up and talk.

The Super Aero Spark and Model Electric coils seem to be the strongest. Changing polarity on the coil being tested is the best

way to determine spark output. Watching closely, one can see that the output is better in intensity one way than the other relative to polarity. Mark the coil with a tiny piece of red electrical tape or paint as to the best polarity hook up for the + lug. You might notice that one way the spark path is crooked and wild whereas the reverse polarity give a straight spark path between the vertical wires.

There is also a difference in the color of the spark. No one has been able to explain this phenomenon of the people I have talked to. It is fascinating to see. (I know the phone will ring some day with an explanation) I do not make or sell my transistor design but there are several folks who do, and their ads can be found in model publications and in the pages of the newsletters of various modeling organizations. Only one supplier of the many gives me credit for the design of the transistorized ignition circuit but others rather seemingly pass it off as their own. I do realize it is in the public domain by this time, but I request no royalty, only the credit for its design. Bill Schmidt.



Left to right the ignition coils are:

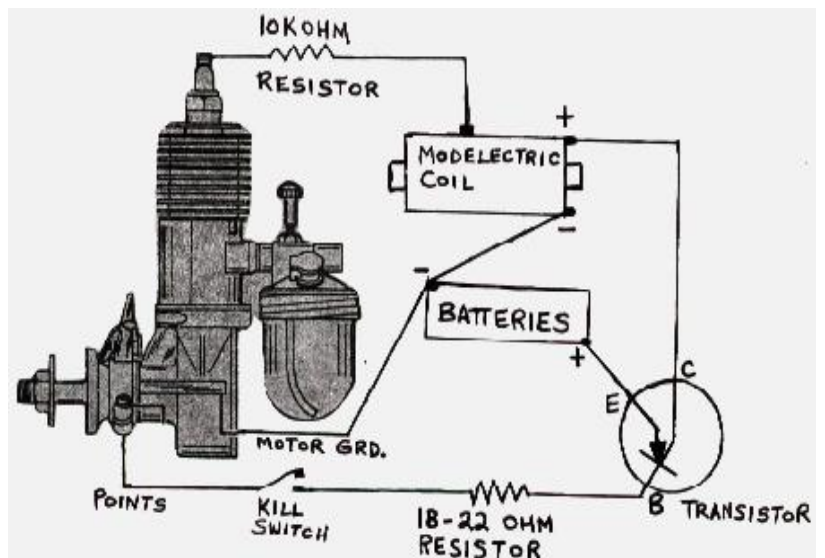
- 1) O.K. Twin Coil
 - 2) Sparky
 - 3) Super Aero Spark Feather Weight
 - 4) Model Electric Standard
 - 5) Larry Davidson's coil
 - 6) Gettig Coil
- and the smallest is the
- 7) Electro-Mite which came out mid 1948 after the glow plug was already in wide use.

Editor note: #5, Larry Davidson's coil is very similar in size weight and performance to the earlier #6 Gettig coil, and could be either a near copy or from the same source. As far as I know it's the only new coil commercially available, since production stopped on the #4 Modelectric coils.

Old Timer Model Airplane Engine Electronic Ignition

All the items needed to complete the above ignition system can be obtained from Larry Davidson, 66 Casa Mia Circle, Moneta, Va. 24121 (540)721-4563. His email is samchamp@jetbroadband.com or <http://www.modelflight.com/larrydavidson.html> to view his complete catalog of products. Larry has the complete solid state ignition unit, the high tension leads, spark plugs, and the coils. The complete system runs about \$75.00 less shipping. Tell him Scott from Model Flight sent you.

- This circuit is the circuit Bill Schmidt designed in the early 1980's. It is a time proven and reliable ignition system.
- Use TIP42, 2N-5195, or SK series (SK-3083, SK-3189, or SK-3961) transistors.
- Make sure you use the 10K ohm resistor at the spark plug on radio control ignition models or excessive radio interference will result.
- The limiting resistor from the base of the transistor to the points should be between 18 and 22 ohms, or the trigger current can be excessive causing burning of the points. (This electronic ignition reduces deterioration of the points greatly compared to the old points-condenser circuit.)
- Use a new strong coil as some other older coils don't work well in a transistor driven circuit.
- Use 16 gauge wire or bigger from the battery to the coil or excessive voltage drop will reduce spark effectiveness.
- You can use 3 nicads, 3 nickel metal hydroxides or 2 dry cell batteries for the battery source. Make sure you have between 3.0 and 4.0 volts at all times.
- An external boosting battery source can be used to give a hotter starting spark, but is usually only needed when using dry cells. Parallel the booster battery across the model battery using a plug and jack.
- The kill switch can be activated by timer or servo depending on the application.



Contest Calendar 2014



SAM 600 Australia
Victorian Old Timers Association Inc.
 10 Cunningham Drive
 Endeavour Hills
 Vic 3802

Contests commence at 10 am, unless otherwise stated.

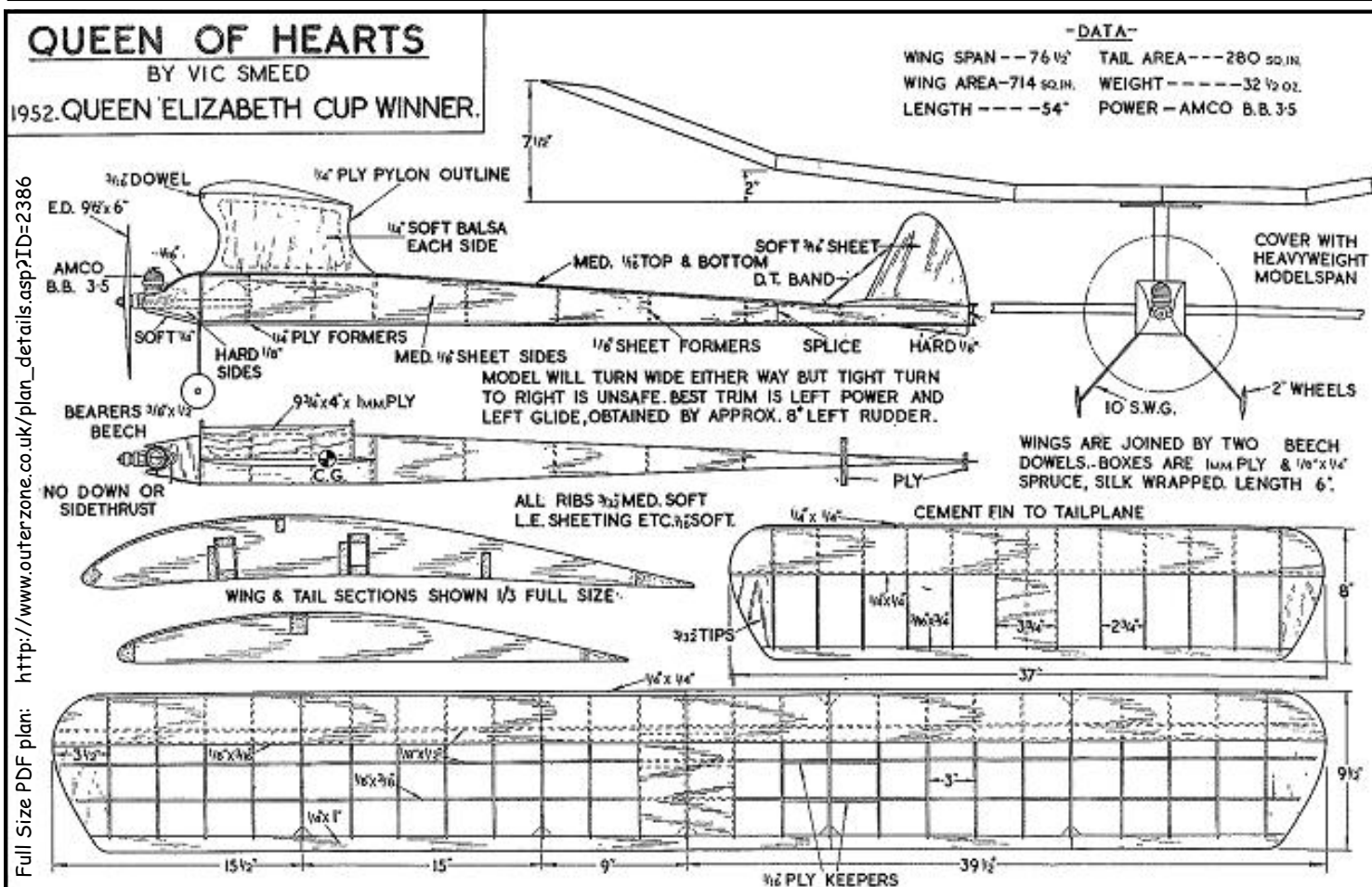
The New MAAA 2013/2014 Rules apply.

The CD for all SAM600 events will be nominated on the day of the event.

AGM meeting Cohuna 9am 14th September, 2014.

2014 — All 1/2A, Duration & Texaco events will also be electric

September 6 th — 7 th	Cohuna Saturday 1/2A Texaco, Burford / Electric Coota & Duration Sunday 9am AGM Meeting---10am Texaco, Climb & Glide & 38 Antique
October 4 th — 5 th	Wangaratta Eastern States Gas Champs. Run by SAM1788
November 8 th — 9 th	Cohuna Saturday 1/2A Texaco, Burford / Electric Coota & Duration Sunday Texaco, 38 Antique & Climb & Glide
November 30 th	Haddon , Ballarat Sunday Duration, Texaco, 38 Antique & Climb & Glide



Full Size PDF plan: http://www.outerzone.co.uk/plan_details.asp?ID=2386