

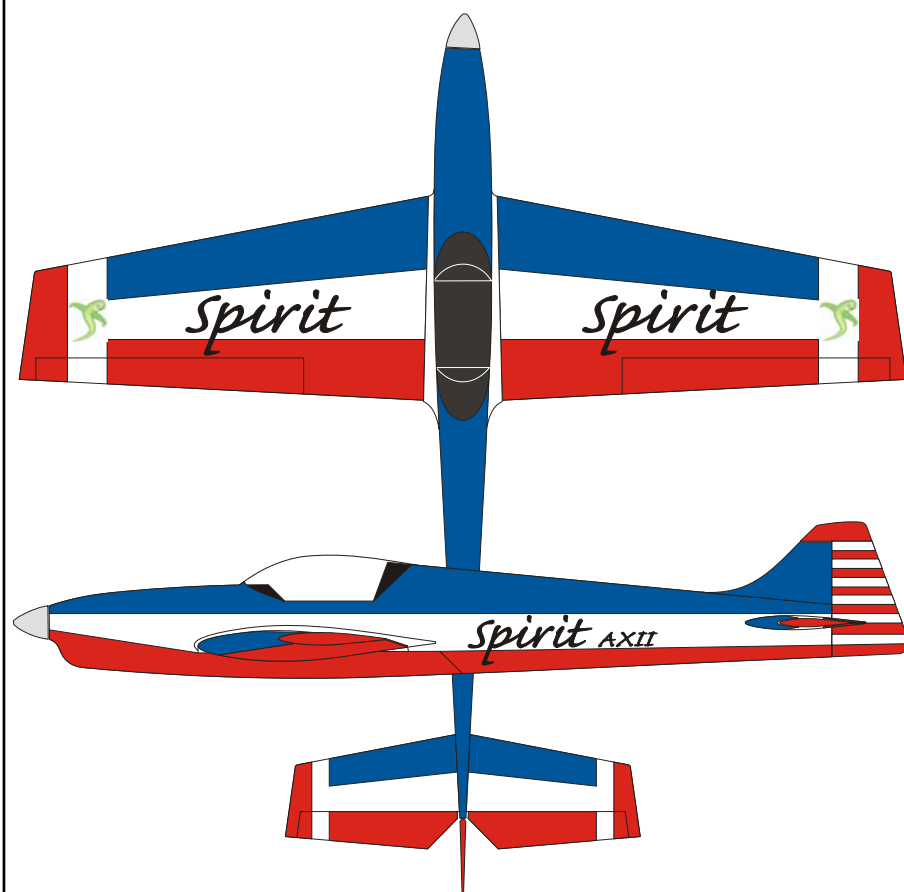


Great Britain Radio Control Aerobatic Association

# AEROBATICS

**NEWS**

Newsletter of the Great Britain Radio Control Aerobatic Association



*July 2000*

# Aerobatics Editorial

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## **This edition**

features quite a number of members articles particularly from our Scottish contingent; it seems like my rantings for articles haven't gone unnoticed which is very encouraging for me as an Editor.

## **The front cover**

shows a schematic of Alan Simmonds' Spirit AXII design for a Super Tigre 90 engine or equivalent. The accompanying article will be published next edition.

## **Competing at the Cashmoor Centralised event recently**

gave me a stark experience of the dangers of having a well laid out flight line with box markers and guide lines all present and correct. I simply saw exactly where my flying was going wrong at times in terms of being off centre; it was so clear and almost embarrassingly obvious. The event itself seemed to me to be the best run centralised event that I'd ever attended, and probably the best ever event in the UK. This follows a string of Centralised competitions that have shown steadily increasing quality in terms of flight line layout, scoring and efficiency, that really do stand out from previous years. In hoping that this will continue in the future, it is clear that these successes result from the commitment of a few people who give up their time and energy to make these events run as best they can. Whilst this situation is good for the moment, it can only continue like this and improve if there is continued support from the members of this association. The organisation and running of these events becomes very easy if many people take responsibility for small things for example running the time keeping, collecting scores, scribing, setting out flight lines etc. In the same way that I appealed for help with articles for the newsletter, I believe the same is necessary at events like these. They can be brilliant, rivalling those put on by our European counterparts, but only if the support is there to help run them for every ones enjoyment. What can you do at the next event that you attend to help them run well? If you don't know, then ask your CD, preferably before the date of the competition.

Keith Jackson  
Newsletter Editor

## **Lee Shelly being awarded the President's Rolex Trophy 1999 of the Royal Aero Club of the United Kingdom.**

His Royal Highness the Duke of York presents the award at the RAC.

Awarded to a young person or a group of young people between the ages of fourteen and twenty-one for outstanding work, performance or achievement in any aerospace activity.



## A letter of Appreciation

It seems that most people in the Association have been aware that it has been necessary for me to go into hospital for a spot of maintenance. I have had a replacement valve in my heart. It is made out of carbon (no rejection problems), it's light so should not effect the C or G.

Seriously I would like to thank all my friends for their numerous get well cards and good wishes. It really does cheer one up particularly when the fertiliser hits the fan blades.

I must apologise for the changes that have taken place in the contest calendar (mainly centralised), some of which were beyond our control. I am sure we will all appreciate the efforts Alison put in it, in order to keep things going while I was lying in bed of pain!

I have a few ideas for next season which hopefully will ensure fewer changes and a smooth running contest season. More of this at the AGM.

Thank you all once again for your support to me and my family.

Kind regards

Bill Harrop  
Comp. Sec.

## **Pushrod fittings used with the Dual MK Bell crank**

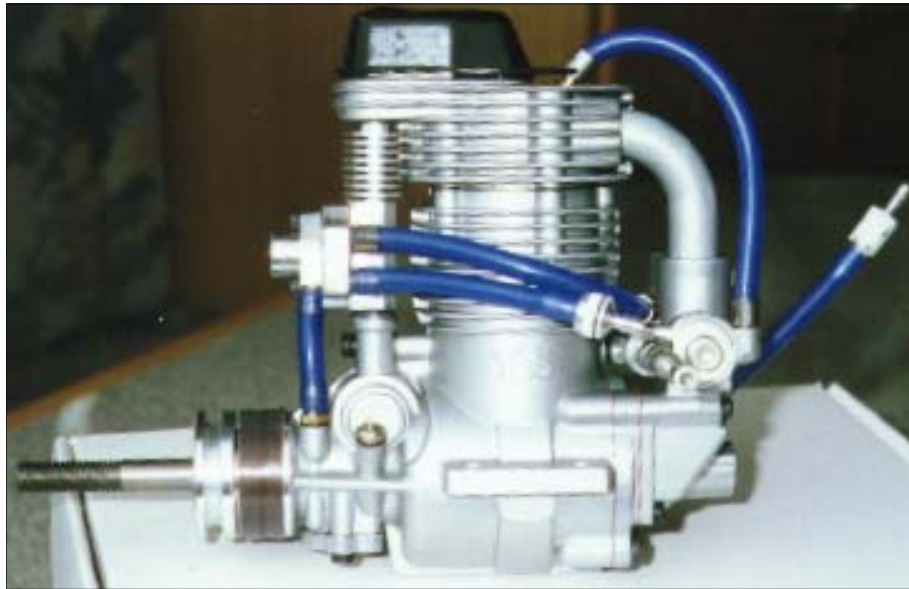
Dear Keith,

I was sorry to read of Daryl Foster's recent loss but I must take issue with his advice to use a high tensile bolt as a pushrod end to prevent failure at this point. It is well documented that carbon fibre pushrods are subject to vibration due to their light weight and stiffness coupled with little inherent damping in the material. This vibration causes the metal end fitting to be bent repeatedly, the final failure mechanism being fatigue in bending. Changing to a high tensile end may delay failure slightly but it will not prevent it, the only method of doing this being to support the pushrod midway to prevent its vibration. The dreadful English translation from the Japanese supplied with the MK coupler unit allude to the problem and suggest using bits of foam threaded onto the pushrod to achieve it. My new model is using a single elevator servo, MK coupler and carbon pushrod in place of the two servo set up I have used for years. I intend to support the pushrod with a close fitting piece of tube slid over the rod and imbedded in a small block of "transmitter case" foam plastic which in turn will be fixed in the fuselage. I have a feeling that as soon as JR release some mini digital servos I will return to the two servo layout!

Malcolm Harris

## New Fuel Injected YS 140

The following pictures of the new YS 140 were obtained in at the Tornado de Champagne in Romilly from Alex Goossens. Apparently the engine was in the care of Wolfgang Matt who, after testing this motor, was returning it to YS in Japan with the comment, "This engine is too powerful for the size of models currently being flown....".



## Tornei de Champagne, Romily, France. 10th & 11th June

No	Noms	Prénoms	Nationalité	V1	%V1	V2	%V2	V3	%V3	Total
1	PAYSANT-LE ROUX	Christophe	France	518.50	1000.0	536.00	1000.0	538.00	1000.0	2000.0
2	MATT	Wolfgang	Liechtenstein	483.50	932.50	517.00	964.55	486.50	904.28	1897.05
3	BENINCASA	Marco	Italie	476.00	918.03	475.50	887.13	492.50	915.43	1833.46
4	POYET	Arnaud	France	470.00	906.46	492.50	918.84	478.50	889.41	1825.30
5	ROCHEDIEU	Florent	France	461.50	890.07	465.50	868.47	464.00	862.45	1758.54
6	MARQUET	Philippe	Belgique	458.50	884.28	454.00	847.01	440.00	817.84	1731.30
7	SCHADEN	Bernhard	Suisse	446.00	860.17	445.50	831.16	465.50	865.24	1725.42
8	DIERICKX	Benoit	Belgique	450.00	867.89	458.50	855.41	458.50	852.23	1723.30
9	STEUPERAERT	Nathan	Belgique	434.00	837.03	471.00	878.73	439.50	816.91	1715.76
10	HANS	Christian	Belgique	447.50	863.07	456.50	851.68	439.00	815.99	1714.75
11	KOCH	Daniel	Suisse	456.50	880.42	415.00	774.25	446.00	829.00	1709.42
12	BESCHORNER	Bernd	Allemagne	443.50	855.35	454.50	847.95	455.50	846.65	1703.30
13	ZARDINI	Jean-Pierre	Belgique	427.50	824.49	460.50	859.14	453.00	842.01	1701.15
14	BOSSARD	Arnaud	France	419.50	809.06	452.00	843.28	460.50	855.95	1699.23
15	DRACK	Patrick	Suisse	431.50	832.21	451.00	841.42	458.50	852.23	1693.65
16	GLOBEZ	Pascal	France	434.00	837.03	425.50	793.84	459.00	853.16	1690.19
17	RANSLEY	Brandon	Angleterre	10.00	19.29	451.00	841.42	452.50	841.08	1682.50
18	AMATI	Florent	France	412.50	795.56	447.00	833.96	454.00	843.87	1677.82
19	PONGNAN	Franck	France	414.50	799.42	460.00	858.21	417.50	776.02	1657.63
20	JACKSON	Keith	Angleterre	399.50	770.49	448.50	836.75	439.00	815.99	1652.74
21	HOWARTH	Richard	Angleterre	434.50	837.99	436.00	813.43	417.00	775.09	1651.43
22	BERNARD	Philippe	France	420.50	810.99	447.00	833.96	414.00	769.52	1644.95
26	BURGESS	Stephen	Ecosse	425.00	819.67	425.50	793.84	405.50	753.72	1613.52
27	CATON	Kevin	Angleterre	401.00	773.38	430.50	803.17	434.50	807.62	1610.79
28	LEMONNIER	Patrick	France	422.00	813.89	405.50	756.53	422.50	785.32	1599.20
29	BALFOUR	Malcolm	Ecosse	393.00	757.96	441.50	823.69	416.50	774.16	1597.86
34	HARROP	John-William	Angleterre	380.00	732.88	430.00	802.24	407.00	756.51	1558.74
38	BALFOUR	David	Ecosse	373.50	720.35	383.50	715.49	397.00	737.92	1458.27
41	HARRIS	Malcolm	Ecosse	371.50	716.49	344.00	641.79	370.50	688.66	1405.15
42	BALFOUR	Angus	Ecosse	176.00	339.44	243.00	453.36	393.50	731.41	1184.77
45	ALLISON	Bill	Ecosse	307.00	592.09	237.00	442.16	118.50	220.26	1034.26



New ZNLine EVOLIS used by Arnaud Poyet



Yes, this is a Tucano used by Bernd Beschorner



David Balfour (TopLine 97), Malcolm Harris (Synergy), Elliot Balfour (Team Manager), Malcolm Balfour (Desafio), Angus Balfour (Typhoon) and Steve Burgess (Synergy) of the Scottish Aeromodellers Association. All using YS 140 fourstroke engines.

# Team Manager's Report

## **10th European F3A Championships**

Just a reminder that September 2nd-9th are the dates - Liege, Belgium is the place - Kevin Caton, Keith Jackson and Brandon Ransley are the team - and cash is always the problem.

## **Manoeuvres and how to please the judges with them**

Since the last issue of Aerobatics News a goodly contingent from the GBRCAA travelled to France to attend the F3A Tournee de Champagne at Romilly, about 20km north west of Troyes, in the Department of Aube. There were 8 pilots from the UK along with a dozen or so supporters and we all had a great time. It was especially pleasing to have Bill Harrop along with us, having been given his doctor's approval to travel minutes before departure. I won't go into the results because I'll only be duplicating a report elsewhere in this issue.

What I will go into is my perspective of the way the top Europeans are tackling the problem of pleasing the judges. I accept that much of this will be seen as a series of statements of the obvious but I'll just make the point that the obvious is where the down grades come from! I also accept that there is no substitute for skill and practice and that compensation for weather conditions may influence size, depth and speed at which the manoeuvres are flown. Although specific to the P01, most of these remarks can be read across into any of our many schedules. I'll start with some general comments.

It was really noticeable how the top pilots set the scene with a smoothly executed procedure turn, tidy trimming pass and downwind turn. This is the overture to the symphony to follow so make sure that you grab the judges attention in a positive way. Depth flown usually exceeded the 150 metre (up to 180 in some cases) Flying closer is so demanding, loss of heading and drift being much easier to spot, appearing as height deviations. Rolls never looked hurried, flown slowly within the bounds of prudence. In the point rolls pilots showed a definite dwell at each point but with lead-in and -out lines kept short, making it much easier to make them appear to be of equal length. Base line heights were very consistent. The original base line you set remains firmly in the judges mind and variations get the judge thinking downgrades before the manoeuvre has even started.

Now for some specifics on the high K manoeuvres. In each case I've first summarised, in brackets, the Judging Notes (JN: ) taken from the FAI Sporting Code.

### No 2 - Triangular Rolling Loop, 2/4 on top

(JN: climbing and diving legs at 45°, entry and exit part loops are at the same point). Don't make the starting part loop too large because the next two are going to have to be quite small for you to fit in a nice 2 of four while making sure you hit knife-edge on centre.

### No 4 - 1 1/2 Negative Snap, 2/2 Point Roll

(JN: only a brief pause between the two elements). Many marks are lost through delay between the two elements while the pilot is sorting out attitude so go into the snap with enough energy (speed) to see you through without loss of height. Start and end should be the same distance from the centre so start the snap good and early, the transition will not be on centre because the 2/2 takes up much more sky than the snap, (and don't forget to do them in opposite directions!)

### No 6 - 45 degree up 2/2 point rolls

This is a long manoeuvre and, if it's to done with good definition - nice hesitations and defined straights of equal lengths - you have to make the entry and exit 1/8 loops small or it will look rushed and you may be forced to compromise the 45°. The transition from rolling one way to rolling the other is easy to spot so centring is very important.

#### No 8 - 8 sided loop

Its easier to judge equality of straight lengths than equality of radii so make the first part loop small and don't leave it late or you'll never make it round this figure with eight equal length straights. For some reason there is tendency to make the top upright horizontal straight too long, watch out for this, the resulting lozenge is a certain downgrade.

#### No 10 - Outside/inside vertical 8

A lot of people make the first loop too large often threatening the 60° high line, then it's impossible to make the next one the same size without going underground. The other common error is leaving the transition from outside to inside late, giving the appearance of starting another outside loop and then suddenly remembering what you're supposed to be at.

#### No 12 - Reverse Knife Edge

(JN: Knife-edge segments of equal length and long enough to demonstrate controlled knife edge flight) Here's another one with an easy to spot centre, and it's a lot easier to judge that both knife-edge legs are of equal length. The judges trick for assessing equality of lengths is to count from start to middle and then again from middle to end, if you get to the same number each time it must have been equal. Try it for yourself.

#### No 14 - Pull-Push-Push Humpty 2/4 down full roll up

(JN: entry and exit quarter loops and bottom half loop all equal radius). A classic for spotting if the rolls are centred on the up/downlines so concentrate on getting those up/downlines the same length. Watch other pilots and see how often in verticals the leg following the roll is shorter than the one before it. (Tappin's Instant Rule for Easy Downgrades).

#### No 16 - Two Loops, 2 Half Rolls

(JN: loops round and superimposed and half rolls integrated with loops). Superimposition of the two loops shouldn't give you too much trouble but the rolls are often left too late, the part after the centre often being twice the length of that before it. With the rolls being at the bottom, added to the fact that the model should be in knife-edge at this point, errors are doubly easy to spot. Integration of the roll with the curve of the loop sorts out the men. Too often even the "stars" fly the second half of the roll as a straight thereby ruining the shape of the loop.

#### No 18 - Stall Turn 3/4 up, 1 1/4 snap down

Try easing off the throttle a bit earlier because this one is the exception to Tappin's TIRED rule (see 14). The straight after the 3/4 up is often longer than the one before it putting the 1 1/4 snap at least one lost point higher up than the 3/4 roll going up.

#### No 20 - Slow Roll

Good news, these are getting better. With the exception of figure 3, I've been awarding consistently higher scores this year to all forms of horizontal rolls. Keep it up!

#### No 22 - Figure Z

Much the same applies to this one as to figure 6, the 45° up. If those 135° part loops are too large you'll never fit in a nice 2/2 and, once again, the centre is so easy to spot.

#### **Sponsorship**

I'm most grateful to Tony Stevenson Traplet's MD for providing me with some studio time to update the GBRCAA sponsorship appeal video of which we now have a couple of dozen copies all ready to attract the interest of a noble sponsor or two for the 2001 World Championship team. I've got some ideas of my own but I also need your recommendations for suitable "targets".

I know that some of you are getting very bored with hearing about my efforts at fund raising but the fact is that, though most grateful for it, the cash the pilots get from the GBRCAA team travel fund, plus that which comes from the BMFA (which excludes European Championships expenses), is not nearly enough to cover their costs. The GBRCAA fund will be seriously depleted



by our visit to the September 10th European Championships so preparing for the 2001 World Championships in Ireland is already dominating my efforts. The majority of you did a great job selling raffle tickets last year so I think you deserve a rest. For the 46 who made no ticket sales and may now be regretting it, may I respectfully draw your attention to the Treasurers address inside the front cover?

### **Stop Press - Sandown 2001**

Thanks to our efforts at the Sandown Symposium this year we've been asked back! In 2001 the show will be held over the weekend of June 2nd-3rd, later than usual thanks to grand-stand refurbishment. We have been allocated longer slots and our own stand and we hope to repeat the Sandown Challenge with a few extras. Watch this space.

### **The Cashmoor Challenge**

To give the poor judges a break from judging the 54 flights made in the 4th centralised event at Cashmoor in Dorset on Sunday August 6th we did something a bit different. A volunteer panel of master pilots judged Angus Balfour, Kevin Caton, Keith Jackson and Brandon Ransley having a go at the F01. It's not only very hard to fly, I believe that the ad hoc panel found it quite challenging to judge, too. The normalised result was 1000 Kevin, 984.5 Angus, 943.7 Brandon and 868.6 Keith.

If time permits we hope to repeat this concept at Barkston after the Nats are over (with commentary if the pilots permit).

The result of the 4th Centralised (best two rounds of three) was 2000 Brandon, 1996.95 Keith, 1948.2 Angus and 1936.2 Kevin. Hopefully there will be a full report on the 4th Centralised in the next issue (or in this one if someone was extra quick off the mark).

E-mail or give me a call for more info on this and / or the European Championships.

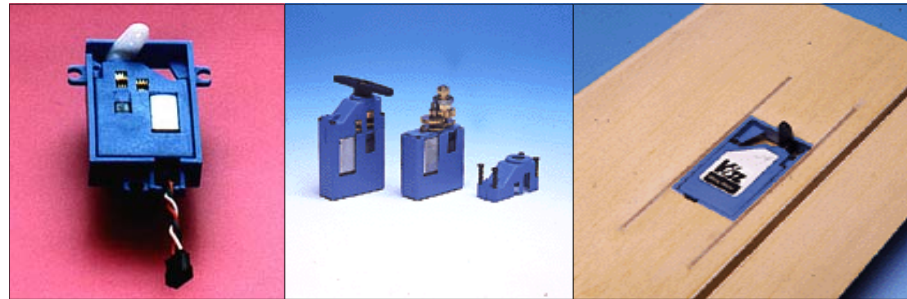
David Tappin UK F3A Team Manager



**UK F3A Team for European Championships, Liege, Belgium, September 2000 Left to Right, Kevin Caton (ZN Line Fashion Line II / YS140LM), David Tappin, Brandon Ransley (ZN Line Alliance / YS 140 LM), Keith Jackson (ZN Line Caprise / YS 140 LM).**

## VOLZ 10 mm (0.39") sized wing servos

We are the first manufacturer who is offering real 10 mm (0.39") sized wing servos designed to be used exclusively in wings and rudders.



In the case of a 10 mm servo using **conventional technique**, it would be necessary to use smaller components. Accordingly a smaller motor would provide an inferior performance and a smaller potentiometer would give limited reliability.



As neither would suit our intentions we decided to think about a **new way to build such servo**. Recesses like small windows within the new housing allow the biggest components such as motor, potentiometer and gears **to get to the same level as the outer shape of the housing**. Using this new technology we manage to use the well proven motors and potentiometer of our Micro-Star 3 and Micro-Maxx servos. The **newly developed gear train** using only four instead of five gears, reaches almost same gear ratio as Micro-Star/-Maxx. Changing from five to four gears minimizes backlash and **increases efficiency**, with the result that the new 10 mm servos have even greater performance than our Micro-Star 3 and Micro-Maxx servos!

The high tooth flanks of the new gear train and the glass reinforced housings make our new Wing-Star and Wing-Maxx servos very robust servos which are completely **Made in Germany**. As you can imagine we do not supply our Wing-Servos with an open housing: thin stickers of only 0,08 mm strength cover mentioned recesses without measurable increase of the thickness.

The **mounting system** of our new servos is a completely new design: locking tabs and corresponding slots on housing and frame let the servo snap into the frame putting it into proper position (see photo above and photo underneath). Using 2 mm screws the servo is fixed afterwards.

For more information see <http://www.volz-servos.com/english/english.html> or contact Probuild on 01202 891319.  
Ed.

## COMMENTS PRODUCED AFTER GBRCAA COMP, PAISLEY, 18th JUNE

It has been stated that the top UK aerobatic pilots are way behind their Continental counterparts. Could this be because the British judges are far too lenient over small errors? An apt illustration comes right at the start of all the schedules, the take-off. I have pointed out before, in a published rundown on observed 'standard' errors, that many pilots fly far too far away on take-off, but it has apparently made not the slightest bit of difference, in fact I think the standard is even worse now. Please, guys, read the rules properly.

The FAI rules state that after take-off, the model should turn 90 degrees towards the line defined by the upwind and downwind markers. When over this line - the 150 metre line, please note the model should turn 270 degrees for a downwind trim pass. When approximately even with the downwind marker, the model initiates a turn-around manoeuvre of the pilot's choice. In other words, the outer limit of the take-off is the 150 metre line, and you don't go off downwind into the next county in your turn round, either. Perhaps if the judges were to award a few zeros for take-off it might make a difference? It has occurred to me, a day or so late, that I got the impression that the English pilots managed to control the depth of their manoeuvring line better than the Scots. And they restricted their take-off excursions into the distance better. I am almost certain that it was during one of the Scots pilots take-offs that my scribe muttered "Arran, here we come !~. Which makes me wonder if the Scottish judges are too lenient over what one might call 'area management'. Unfortunately, I did not take particular note of this on the day, so cannot be more definite, but certainly in the future I shall try to be more definite.

Anyway , I shall start this rundown with an exact copy OF WHAT I SAID BEFORE.

### **Take-off Sequence**

Only comment is that some pilots fly too far away after the first turn. The rules state that the aircraft should start the 270° turn onto the downwind leg by the 150m. line.

### **Triangular Loop, 2/4 point Roll on top**

Quite a few pilots pull up into this manoeuvre on a curved path. And most pull up too steeply. Dig out your old school 45 degree set square and you'll see what I mean. If you try for an equilateral triangle, you'll find that the climb is at 60 degrees. Measure your other set square - you did have two, didn't you? - to get the picture.

### **Half Reverse Cuban, 1/2 Roll up**

Most pilots flew the upline at far too steep an angle, even allowing for the fact that it is foreshortened by us looking partly endways on to it. Once again, the FAI says 45 degrees.

### **1-1/2 Negative Snap, 2/2 point Roll**

Not much one can say about this strange manoeuvre, apart from the fact that graceful it ain't!

### **Top Hat, 3/4 point Roll up, 1/4 point Roll down**

The top leg seemed to give problems, with some being almost non-existent, some curved and some at anything but right-angles to the manoeuvring line.

### **45 Degrees Up, Two of 2/2 point Rolls opposite direction.**

Quite a high standard. No real grounds for criticism here.

### **Half Square Loop, Full Roll down**

Things haven't changed much here. Far too many pilots push over into this at a very wide radius but make the push at the bottom really square. From a G loading angle this doesn't make sense, so it must be psychological at seeing the ground coming up! From a judging standpoint, the actual radii aren't all that critical so long as they match.

### **Eight-sided Outside Loop**

Definitely getting worse. Very few pilots flew a good one. Standard error was a wild variation in the lengths of the straight bits, especially the top one being made far too long. Once you start varying the line lengths it throws the shape of the whole manoeuvre. Best bet would seem to be concentrating on getting the first line on pull-up at the length you want, then making very sure the rest are the same. Most pilots got the included angles right, but quite a few flew very waffly corners, which gave the effect of a loop with hiccups.

### **Figure 9, 1/2 roll up**

Only common error was doing the half-roll far too soon in the up-line. Remember, rolls should be centred in lines.

### **Outside/Inside Vertical Eight**

Most common error was arriving back much too high at the start point after the outside loop and then again after the inside loop, often even higher. Practically everyone did it. Keith thought it might be the cross wind, but I observed the same fault whatever the wind direction. Sorry, I can't figure a reason for that one, unless over-correction for the force of gravity, which seems a bit unlikely!. Another fairly common fault was making the bottom loop a bit too big, rather like letting the model fall too far on the way down, to put it crudely.

### **2 turn Inverted Spin**

Not much to say, except that waffling across the sky trying to make the thing stall doesn't look very professional! Maybe a minor point, but remember presentation counts. Getting a really crisp stall with a definite wingdrop seems to be ignored by the majority. And don't complain that it makes the model dangerously unstable, just don't go too far. Confucious he say "Practical aerodynamics is a trade-off."

### **Reverse Knife-Edge**

Not bad at all, though it helps to select top rudder, Bob!

### **Immelman, Full Roll**

Quite hard to get this one wrong!

### **Pull-Push-Push Humpty Bump, 2/4 point Roll down, Full Roll up**

Quite a high standard.

### **Reverse Top Hat, 1/4 Rolls**

Worse than they used to be. Surely most pilots have seen a real top hat, or even a picture of one, as worn on the head? It is flat along the horizontal bit, not convex. One or two pilots even made it pointed, rather like an upside-down dunce's cap. Does the cap fit? :-)  
Also common was a lack of any line at all after the descending quarter roll. Rolls centred in lines, please.

### **2 Loops, 2 Half Rolls**

The latest method of flying a curving knife-edge through the half-rolls looks superb if well-flown, but otherwise oh dear.....!! In most pilot's cases, it just extended the bottom line so that the manoeuvre was pumpkin shaped. Keep practising, guys.

### **Split-S**

Like the Immelman, hard to get wrong.

### **Stall Turn, 3/4 point Roll up, 1 1/4 Pos. Snap down**

I think we saw only two very good stall turns all day. Far too many pilots just slow down enough so that a powerful rudder and a blast of slipstream can push the model round a tight knife-edge half loop. In other words, it is not stalled, so you have every chance of getting a big fat zero if the judges are doing their job properly. The model should rotate as if someone had nailed it to a wall by the tail, like a hammer-head stall only sideways.

### **Humpty Bump with Options**

Generally OK.

### **Slow Roll**

Most pilots still use too high a roll rate. But how slow is slow? The rules don't give a figure. I got the impression that a lot of pilots flew far too long an entry line before starting the roll and had to rush it.

### **Half Square Outside Loop on Corner**

Hard to judge this properly because of the distortion caused by the viewing angle. Most pilots seem OK.

Throwaway comment: Manoeuvres that can really only be judged by viewing at right angles should not be used as turnarounds.

### **Figure Z, 2/2 point Roll in Dive**

Not a very attractive manoeuvre, although one or two pilots can make it neat and tidy. Most common error was making the first corner too tight, with far too flat a down-line - remember 45 degrees - so that the pull-out has to be just as tight. Also common was rounding off the pull-out before reaching a point directly below the entry.

### **Landing Sequence**

Pretty high standard all round.

This bit is aimed at the aspiring aerobatic pilots rather than those already flying at Team Trials level, so please don't feel insulted. However, even the top pilots are by no means perfect. (Thank heaven, judging would be impossible otherwise!).

It would seem that most of the errors could be at least reduced by an attention to detail, so long as the detail is appreciated by a close study of the rules rather than a quick read-through with the attitude that "I know how to do that already." Get a small plastic model and 'fly' it through the schedule while you read.

This next bit is definitely for the would-be aerobatic pilot.

Spend a lot of time in the air trimming the model to fly straight during the simple manoeuvres. A model that tracks well saves the pilot a lot of work. Practise knowing when the wings are exactly level before pulling up or pushing over. Fly the model, not the transmitter. The best pilots minds are up there responding to the model, not figuring which way they should move the sticks. The last words! Aircraft in the air are not really machines.

Ian Dunn  
Chief Judge  
Scottish Aeromodellers Association.

# Nats News

**Entries** - If you haven't sent in your entry yet, don't worry too much about the BMFA closing date of 11th August - you may still send in entries up to the last few days BUT please let me know you are coming and your frequencies, so I can sort out the lines & flight order. Your cheque must arrive at the BMFA before the office closes down prior to the Nats. You can also enter on the day - for double fees - but again, please let me know if you can. I will be sending out the allocated frequencies etc, shortly but I can only sort the flight order properly during the last few days, since I have to wait until I have received the majority of entries by post from the BMFA - so ring me from Wednesday 23rd if you like.

So far I've also received entries from some of our Scots colleagues including Steve Burgess & the 3 Balfour brothers. Also from Arthur Silsby in the Isle of Mann, John Ogier from Guernsey with his "uprated" electric canard and Chris Harris (FAI flier, age 16) travelling with father Dave all the way from S.Africa just to fly in our Nationals!

**Safety** - This year the BMFA have a new rule in regard to safety at BMFA comps including the Nats :

Rule 1.2.7 Radio Control Failsafes "any powered model with a R/C failsafe device must have that device set so that, as a minimum, it's operation causes the engine/motor to run at its lowest speed (stopped in the case of electric powered models) and specifically not to hold the last position of the engine/motor control regardless of the other functions of the failsafe. It is the responsibility of the pilot to demonstrate this function on request". So -

- a). if you have pcm radio & it's programmable, set the throttle failsafe to idle.
- b) if you have ppm radio & and an add on failsafe, set the throttle failsafe to idle.
- c) if you have neither of the above, no action is required.

At the 2000 Nats you must be prepared to demonstrate that any failsafe is working, so please re-program your Tx's *now* - reprogramming on the flight line is unsafe.

**Programme** - I normally plan 2 flights per day if the forecast is good for the weekend. This year FAI will fly first & I'm hoping to recruit enough FAI fliers to judge Senior & Standard. This should give the full time judges good breaks, so we may squeeze in a 3rd flight on Saturday & Sunday, hopefully with some demos in the breaks.

If all goes well David Tappin (Team Manager) is hoping to organise a separate FO-1 (World & European fly off schedule) event for team members or anyone who can fly it, probably on Monday. If you are interested, please contact David as soon as you can so we know how much time to allocate.

**Security** - This year new measures will be in place for transmitters. Full details will be sent with the pilots briefing to all competitors before the event, but the basic rule is No numbered bib - no Transmitter. Transmitters will only be given to competitors wearing the correct bib. After your flight Tx's will be returned to the compound until the end of the session.

**Weather Forecast** - wonderful! So lets see those entries for the best Nats ever.

Stuart

PS Some excellent news - found out this morning from Ripmax that they are again sponsoring us for prizes at the Nats.

## YS Fuel System in the 140 L Four Stroke Engine

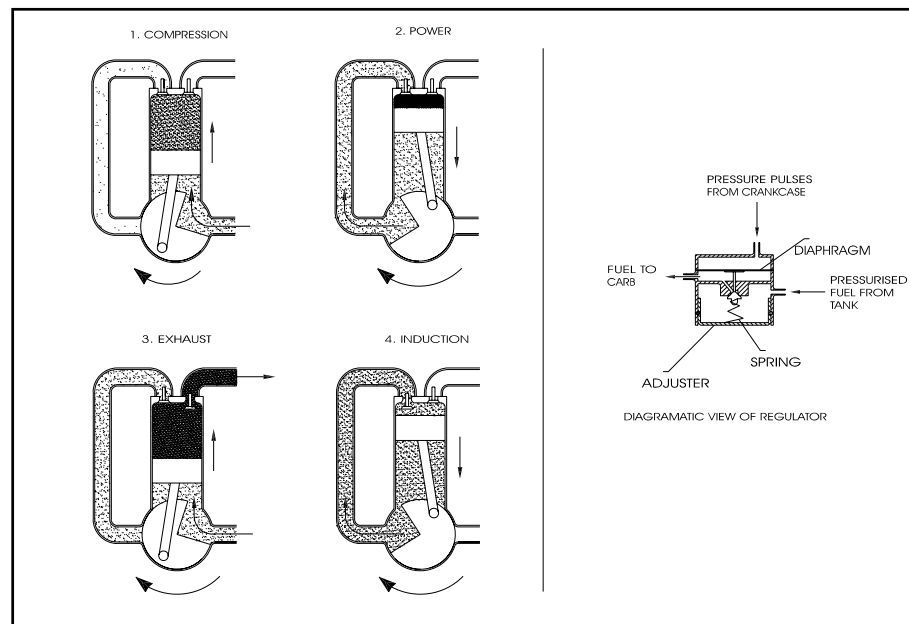
At a recent competition we were discussing the wonderful YS engines and it emerged that not everyone understands the two major innovations that make these engines stand out from all other mass produced model engines. These are: a) crankcase supercharging and b) the fuel pressurisation system. The following is an attempt to explain these features in lay terms. Please note that all I am trying to do is explain the principles rather than to be 100% accurate in mechanical detail. So if anybody more versed in these motors than I spots any mistakes please accept my apologies!

### SUPERCHARGING

It's best to start with the motor on the compression stroke rather than as more normally on the induction stroke.

1. The piston ascends with both poppet valves shut compressing the gas mixture in the cylinder (we'll discover how it gets there in a minute). As it does so, the rear rotary valve opens and fresh mixture is drawn into the crankcase. (I haven't shown the carburettor butterflies but there is effectively one in the inlet to the crankcase and one in the transfer tube but at full throttle we can forget these.) Incidentally on the YS140L all the fuel is injected in the inlet side of the throttle barrel whereas on all previous YS's it was added on both sides of the barrel i.e. in the inlet and transfer tracts.
2. The piston approaches TDC the motor fires and the piston starts to descend, the rotary valve opens to the transfer tube and descending piston pushes most of the mixture in the crankcase into the tube (and rocker cover).
3. At BDC the piston starts to rise with the exhaust valve open and as by this time the rotary valve has closed to the transfer tube, the mixture in it is trapped. Soon after, the rotary valve opens to the inlet again so that as the piston ascends on the exhaust stroke, more mixture is drawn into the crankcase.
4. At TDC again the piston descends only this time the inlet valve is open so that the charge in the inlet tube PLUS THE NEW CHARGE IN THE CRANKCASE now enters the cylinder. Voila - supercharging!

The foregoing is a very simplistic attempt to describe a dynamic system that is also subject to thermodynamic and resonant effects. Obviously it takes energy to compress the gas in the inlet system and this energy must come from somewhere, also compressing a gas causes it to heat up which also takes energy. Because the gasses have mass, they possess both inertia and momentum and it is this that means that careful adjustment to the length and volume of the inlet tract can lead to increased gas flow and hence increased charge weight in the cylinder. It was this discovery that led to the air chamber on the early engines and the rocker cover to become part of the inlet circuit on the later ones. Incidentally this inlet tuning is not a new phenomenon. I have read that on early model diesels a performance improvement could be gained by connecting a length of tubing up to a foot long to the air inlet!



### THE REGULATOR

Pressurised fuel from the tank enters the bottom chamber where it is trapped by the silicon rubber poppet, which is held against its seat by the spring. Each time the piston of the engine descends, the pressure in the crankcase rises and acts on top of the diaphragm. In the 140L this is by means of a separate feed pipe from a nipple on the backplate but in all previous engines it was direct "timed pressure" from a drilling in the crankshaft. The pressure on top of the diaphragm acts on the pushrod to open the poppet allowing fuel through into the lower chamber and on to the carb. With this arrangement fuel is only delivered to the carb when the engine is turning. Furthermore the amount of fuel can be roughly adjusted by increasing or decreasing the pressure on the spring. If the spring pressure is higher, the piston must descend further to increase the crankcase pressure to a value that will overcome the spring and so the fuel will flow for less time hence less is delivered to the carb. This type of regulator is not a constant pressure device, it is simply a means of ensuring that the fuel doesn't flow to the carb when the engine is not running and that the volume can be roughly adjusted. The job of adjusting the fuel mixture with changing revs is the job of the fuel metering slot and air bleed low speed needle in the carb.

I hope this is of some use to existing and prospective YS owners and gives you some idea of how clever these engines are. When they are working properly they are a delight to operate but when they do go wrong diagnosing the problem can be difficult. The most obvious problems are air leaks in the induction system and blockage of the fine galleries in the regulator caused by swelling paper gaskets. Both problems can be fixed by fitting "Leak Free" gaskets but less obvious can be vicious surging of revs usually caused by excessive ring clearance in the bore of the cylinder.

Malcolm Harris  
June 2000



**FURTHER TWO STROKE TWIDDLING / BUDGET SERVOS / STANDARD**  
**SCHEDULE 2000**

Since sending in the details of my Loaded Dice 60s with Super Tigre G90 & Weston genesis mini pipe I've made a few changes (hopefully improvements) which might be of general interest to anyone else working on two stroke set-ups:

- Firstly I found that pulling 9000 rpm on a 14\*8 APC, while giving great static thrust / vertical performance and good breaking in the down lines, was a bit noisier than I had hoped for with quite a harsh crackle in the air. After breaking the prop on one of my less than perfect landings I decided not to put my spare 14\*8 on straight away and borrowed a 13\*11 from Keith (Barrington), who had just finished using it to run-in his Webra 80. The engine pulls about the same 9000 rpm, with some reduction in static thrust, but the reduction in noise / change in note was immediately noticeable in the first flight and now the plane sounds really great.
- The next change came as the weather warmed up (I'm sure it did a while back?!) as the ST90 seemed a little unhappy, pulling less RPM and labouring at full throttle. Thinking it might be running a bit hot I tried an M7 plug, rather than the M8 I had been running, and the problems all went away with a happy 9000 rpm just as before which I can only put down to the change in ambient temperature.
- The final change recently came about when I switched fuel from Model Technics Formula Irvine 5% to Weston Liquid Gold 5%, principally since Weston will deliver carriage free on orders of 4 gallons or more. When I put the first tankfull in and adjusted the mix to suit the engine was struggling to pull 8500 and generally seemed to have lost it's sparkle. Having 4 gals of the stuff and so not wanting to give in too easily I tried an M8 plug again and immediately got all the performance back with the engine happy again all through the rev range and a solid sub 3000 idle. The Weston fuel certainly seems to burn more cleanly with less gunk out of the exhaust so I'll be sticking with it for the foreseeable future.

From all of this I've been reminded yet again that it is always worth a little experimentation with props, plugs & fuel to get an engine running well. Once set up the S.T. G90 runs happily from one session to the next with no need to adjust either needle, flick starting easily as long as it has a good prime for the first start of the day, leaving me free to concentrate on the major task of improving my flying.

My next area of investigation has been into lower price Futaba Servos. So far I've been using 3001s as they're powerful enough for this size of plane and I don't think my flying is good enough to reveal their limitations. Having said that I'm not particularly happy about the amount of slop they all have at neutral as it seems far greater than 1 click either way on the trims, which is the accuracy required to trim the plane out, which can't be a good thing. Not wanting to start throwing oodles of £ at it (you know me) I've tried a 9001 budget coreless servo which I was pleasantly surprised to find has very little slop in it (feels less than the 9202 & 9303 I've bought for the elevator & rudder of the LDIII). I've put the 9001 on the rudder of the LD60s and flown it for quite a few sessions now and the slop does not seem to be increasing, if it stays like this I might get more for the elevator & ailerons, although the one thing that worries me is that the Ripmax catalogue gives the same part number for replacement gears for both the 3001 & 9001 so why should it be any better? Has anyone else tried 9001s and if so what experience have you had - do they all have good gears or did I just get 1 good one?

Finally I'll add my thoughts to the question raised in the May newsletter about the new standard schedule. I certainly agree that it is quite a daunting schedule now and I'm glad I didn't come straight to it, having been trying to fly the previous standard schedule on and off for a couple of years, even managing to snatch last place in the one comp I've entered so far. Against that I think it is a reflection the increasing difficulty at the top level of aerobatics and the need to try and create a progression of even steps up through the classes. Also there is now the option of the sportsman class for newcomers, although a quick glance at the competition calendar shows that it does not appear to be being offered at competitions except in Scotland. From reading K-Factor and talking to Gus I know that both the USA and Japan have 5 classes from beginner to FAI, with the entry class containing a very simple combination of manoeuvres. I guess the problem is likely to be the number of entrants at competitions with the standard class often not being oversubscribed?! Despite this I think it would be good for the sportsman class to be on the menu at more competitions so as not to put off any newcomers thinking of taking part, even if there is only one entrant they would get a feel for flying in a comp and should hopefully be further encouraged by watching flyers in the higher classes, which would be better than being turned away by the look of the standard schedule and never coming back.

Nick Wicks.

**G.B.R/C.A.A. COMPETITION ENTRY FORM 2000**

Comp. Venue and date: .....

Name & Address .....

.....  
Tel. No. .... BMFA No. ....

Car Reg. No. .... Make ..... Colour .....

Names of passengers .....

Class (please tick box)  
Standard/Sportsman £8.00  Senior £12.00   
Master - domestic £15.00  Master .91 class £15.00   
Centralised (FAI) £16.00

Frequency (odd only)..... Alt. (must be specified) .....

Send the form and the following to the C.D. for the event not less than 3 weeks prior to the event:

1. Cheque made payable to the GBRCAA , dated the same date as the comp. ( if entering more than 1 comp send separate cheques for each event.)
2. Stamped addressed envelope.

Note—pre entry is a requirement of all GBRCAA competitions. If you wish to submit a late entry, contact the CD first. If the CD is willing to accept your entry on the day, double fees are payable. If you are unable to attend, please contact the CD as soon as you can as he may well have a reserve list for the event.

**C.D to return this part to entrant**

Your entry for .....comp is accepted/ not accepted

Your frequency is .....

Remarks.....  
.....  
.....

Signed .....C.D. Date .....

## 2000 GBRCAA Competition Calendar - Issue 4 24th July 2000

	Weekend 1	Weekend 2	Weekend 3	Weekend 4	Weekend 5
July	<p>2 <b>Skelbrooke</b> (Nr. Doncaster) Std. Sen Mast-FAI (PO1) CD: Ged Lawson</p> <p><b>Bedford</b> Std. Sen Mast-FAI (PO1) CD: Brian Ball</p>	<p>8 &amp; 9 <b>Triple Crown</b> East Fortune, Scotland Team Event CD: Ellito Balfour</p> <p><b>Cashmoor</b> Std. Sen Mast-FAI (PO1) CD: Alan Hilton</p> <p><b>Baldock</b>, Hertfordshire Saturday 8th Std. Sen Mast-FAI (PO1) CD: Greg Butterworth</p>	<p>16 <b>3<sup>rd</sup> Centralised Mini Nats</b> Barkston Heath , Lincs FAI (PO1) CD: B. Ransley Entry to: Bill Harrop</p>	<p>23 <b>Corsairs Field</b>, Doncaster Std. Sen Max 15 Competitors CD: Steve Dunning</p> <p><b>Warboys</b> Std. Sen Mast-FAI (PO1) CD: Clive Whitwood</p> <p><b>RCM&amp;E Freestyle Eevent- Beford</b> CD: Terry Westrop</p>	<p>30 <b>GBRCAA Open Comp.</b> Std. Sen Mast-FAI (PO1) CD: John Mee</p> <p><b>Barrow in Furness</b> Std. Sen Mast-FAI (PO1) Sport. CD: Bert Caton</p> <p><b>Cumbernauld, Scotland</b> Sportsman Mast-FAI (PO1) CD: Elliot Balfour</p>
August	<p>6 <b>4<sup>th</sup> Centralised</b> Cashmoor , Dorset FAI (PO1) CD: D Tappin Entry to: Bill Harrop <b>Brian Brotherton</b> <b>Memorial Trophy</b> Cambridgeshire Std. Sen Mast-FAI (PO-1) CD George Drever</p>	<p>12 &amp; 13 <b>SAA Nats</b> Glenrothes Airport, Scotland FAI (PO1) CD: E. Balfour Entry to: E. Balfour Details to follow</p>	<p>20</p>	<p>26, 27&amp; 28 <b>BMFA Nationals</b> Barkston Heath, Lincs 3 days Std. Sen Mast-FAI (PO1) CD: Stuart Mellor Entry to: BMFA Entry form from: BMFA</p>	

September	3 <b>Alloa, Scotland</b> Sportsman Mast-FAI (PO1) CD: Elliot Balfour	3-10 <b>European Champs</b> Belgium	17 <b>Mansfield, Notts</b> Std Sen Mast-FAI (PO1) CD: Trevor Plumbe	24 <b>Maidstone, Kent</b> Std Sen Mast-FAI (PO1) CD: Mike LeMmon  <b>5<sup>th</sup> Centralised LARKS</b> FAI (PO1) CD: <b>B Ransley</b> Entry to: Bill Harrop  <b>Guisborough, Cleveland</b> Sport, Std, Sen, Mast-FAI (P-01) CD: Paul Hepworth	
October	1 <b>Warrix, Scotland</b> Sportsman Mast-FAI (PO1) CD: Elliot Balfour	8 <b>Hastings</b> Std Sen Mast-FAI (PO1) CD: Alan Hilton	15 <b>Glenrothes, Scotland</b> Sportsman Mast-FAI (PO1) CD: Elliot Balfour	22 <b>Cashmoor</b> Std Sen Mast-FAI (PO1) CD: Alan Hilton	29
November					

**Sport**  
Sportsman Schedule

**Std**  
Standard Schedule

**Sen**  
Senior Schedule

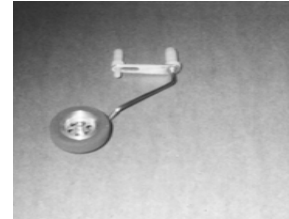
**Mast-FAI (\*)**

Master \* indicates FAI schedule(s)

**NB:** Centralised competitions are open to all classes; with all classes flying the FAI schedule indicated.

**Send entries to the Contest Director (CD) using the Competition Entry Form from Aerobatics News unless otherwise noted**

# ***M. A PRODUCTS***



## ***Price List***

### ***Exhaust manifolds***

***made to order from £22:00***

***Alloy wheels £17:00***

***Tail wheel to match £ 5:00***

***Steerable assembly £15.00***

***Prop nuts £ 6:00***

***Exhaust deflectors £ 7:50***

***Tuned pipe brackets £ 7:50***

***Please make cheques payable to:-***

***M. Aldous, Romila, Hilders Lane,***

***Edenbridge, Kent TN8 6JU***

***Tel. 01732 865113***

## Results from 2nd Centralised Event. CVF Scotland. 18th June 2000

Pilot	Raw Scores				Normalised Scores				Best 3/4 Rounds	Normalised Total
	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4		
B Ransley	503	481.5	494	495	1000.000	977.665	1000.000	1000.000	3000.000	1000.000
K Jackson	460	492.5	468	477	914.513	1000.000	947.368	963.636	2911.005	970.335
A Balfour	466.5	485	469.5	474	927.435	984.772	950.405	957.576	2892.752	964.251
D Balfour	437.5	401	456	476	869.781	814.213	923.077	961.616	2754.474	918.158
M Balfour	417.5	445.5	440.5	453.5	830.020	904.569	891.700	916.162	2712.431	904.144
S Wragg	412	444.5	433	412.5	819.085	902.538	876.518	833.333	2612.390	870.797
W Allison	288	422	420	424.5	572.565	856.853	850.202	857.576	2564.631	854.877
D Mathias	429	410	401	434	852.883	832.487	811.741	876.768	2562.138	854.046
M Harris	420.5	381.5	407.5	435.5	835.984	774.619	824.899	879.798	2540.681	846.894
A Silsby	76.5	366	382.5	402.5	152.087	743.147	774.291	813.131	2330.570	776.857
R Ried	314.5	0	378	355	625.249	0.000	765.182	717.172	2107.602	702.534

# *Probuild*

was born out of the desire to establish a high quality service to British F3A fliers. We stock only accessories of which we would use on our own models. A full line of YS engines are held along with possibly the largest stock of spares in Europe, as well as servicing & rebuilding service. Recent manufacturers price increases has necessitated a major investment in our stock to keep the prices we offer at a generally consistent, if not lower level than they were before. Even though mail order to US or European distributors may occasionally give slightly lower prices than we quote, we actually have most of these items in stock and these are just an overnight post away from you.

There is a full building service available but this is heavily over-subscribed and early ordering is well advised. Many pilots book a building slot rather than a particular model, with the arrangements finalised three months prior to the start of the model being built.

All kits from the ZN line and PL Products are collected from the manufacturers by ourselves, therefore there is no chance of the mouldings being damaged in the courier system. We have found that using the couriers resulted in a large number of kits being damaged, small cracks on fuselages to fork lift truck blades through the side of the fuselage have all been experienced! Please remember this when ordering a ZN or PL kit when comparing our prices to theirs. The French companies prices have to have delivery and box prices added to them ( about £50.00). Our price included us going to France and bringing them back here to the UK damage free! In addition to this, all our kits now come with a full Nomex former kit, & end grain carbon faced engine bulk-heads. A full Gator stab kit is included with the kits also, the cost of these items work out at an additional £75.00 if you we to buy from any other supplier.

The PROBUILD / ZN and PL kits are not the same as genuine items, both French companies favour using a press to hold the skins in place whilst the epoxy dries. Here at PROBUILD we favour using a vacuum bag system, this presses around 2000lbs on each panel whilst the epoxy dries. This helps tremendously with the bonding of the skins and makes for a stronger, lighter wing, tail, rudder panel.

An additional bonus to this system allows all of the aileron and elevators to be faced and hinged prior to the skins being attached to the core. The hinge is also installed, being made of Kevlar. A reduction in building time is a trade off to you the builder as well as having a more accurate wing or tail panel. The control surfaces are made integrally when the panel is made, therefore accuracy is also increased. Why do the other companies use a press? Simply time & money. It takes many hours longer to vac a wing & it is more expensive in consumables, but the end result is a much stronger lighter wing, Christophe also uses his own built lighter wing rather than a factory unit.

We offer a second to none service, open seven days a week from 9am to 9pm, if we are busy in the workshop then an answer machine will take your call & we will get back to you ASAP.

Finally we can now announce that we will be stocking the full range of Volz high quality servos made in Germany. These servos are typically used in wing / tail-plane applications and feature high torque / speed, metal gears and ball raced output shafts.

Phil Williams  
1st August 2000

# PHIL WILLIAMS PROBUILD

12 FOREST VIEW DRIVE, STAPEHILL, WIMBORNE, DORSET, BH21 7NZ.

TEL:- 01202 891319 E-MAIL PROBUILD\_UK@COMPUSERVE.COM

NEW \*\*\*\*\* WEB PAGE WWW.PROBUILD-UK.CO.UK \*\*\*\*\* NEW

**PLEASE MAKE ALL CHEQUES OUT TO P. WILLIAMS**

## THE HOME OF YS ENGINES IN THE UK

YS .53 FOUR-STROKE	£195.00
YS.91 FOUR-STROKE	£253.00
<b>NEW!</b> YS1.20FZ	£399.00
YS1.40L FOUR-STROKE	£465.00
YS1.40LM FOUR-STROKE	£520.00

## ENGINE MOUNTS

DAVE BROWN BEAM MOUNT	£36.95
GATOR SOFT & SAFE	£37.95
HYDE 1.20 SOFT MOUNT	£105.00
HYDE 1.40 SOFT MOUNT	£113.95
YS 1.40 ENGINE MOUNT	£145.00
HYDE COMPACT LITE .20 -.30	£19.95
HYDE COMPACT LITE .40 -.50	£23.70
HYDE COMPACT LITE .60 -.70	£29.95

## FOUR-STROKE MANIFOLDS

JOHNSON INSIDE	YS.91	£32.00
JOHNSON INSIDE	YS1.20/40	£32.00
HATORI INSIDE	YS1.20/40	£34.00
HATORI COPPER WASHERS		
PACK OF 2		£1.10
AAP POWER MANIFOLD		£42.00
SPARE HEADER TUBE		£11.50
AAP SUPPORT BRACKET FOR		
POWER MANIFOLD		£10.00

## APC PROPS.

<b>TWO BLADE APC PROPS.</b>		
14*12 APC PROP		£9.07
14*13 APC PROP		£9.07
14.4*13 APC PROP		£9.07
14*13.5 APC PROP		£9.07
15*11 APC PROP		£9.07
15*12 APC PROP		£9.07
15*13 N APC PROP		£9.07
15* 14 N APC PROP		£9.07
15.5 *13N APC PROP		£9.07
16*8 APC PROP		£9.07
16*10 APC PROP		£9.07
16*11 APC PROP		£9.07
16*12.5 APC PROP		£9.07
16*13N APC PROP		£9.07
16*16 APC PROP		£9.07
16*12 APC PROP		£9.07
17*12 APC PROP		£12.72

## THREE BLADE APC PROPS

13.4*13.5 APC PROP	£19.50
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## FOUR BLADE APC PROPS

13.8*10 APC PROP	£19.50
14.5*11 APC PROP	£19.50
14.5*12 APC PROP	£19.50
15.5*12 APC PROP	£19.50

## FUEL TANKS.

TETTRA 14OZ	£8.00
TETTRA 16OZ	£9.00
TETTRA 18OZ (BLADDER TANK)	£21.95
TETTRA 20OZ	£10.00
IMP 14OZ	£ 8.95
MK 16OZ	£4.30

## CFE PRODUCTS

5/8" TO 5/8" EXHAUST COUPLER	£19.95
5/8" TO 15MM EXHAUST COUPLER	£19.95
15MM TO 15MM EXHAUST COUPLER	£19.95
SPARE VITON O RINGS	£3.49
1.20AC AIR FILTER	£17.95
1.20/1.40 AIR FILTER	£17.95
1.20/1.40 NOSE RING	£6.67
CFE EXHAUST COUPLERS HAVE FOUR VITON "O" RINGS PER UNIT TO GIVE A LEAK FREE JOINT. (THE BEST)	

OS "F" PLUGS	£5.30
--------------	-------

## FOUR-STROKE PIPES.

HATORI 692 ALLOY PIPE 405MM LONG	£115.00
HATORI 693 (NEW) ALLOY PIPE	
555mm LONG	£125.00
PROBUILD 1.20/40 ALLOY PIPE	£26.50
PROBUILD .91 ALLOY PIPE	£24.00
PROBUILD 1.20/40 LONG ALLOY PIPE	£41.50

## DUBRO ITEMS.

DUB447 IMP BALL WRENCH SET	£13.19
DUB361 4-40 TAP & DRILL	£4.40
DUB362 6-32 TAP & DRILL	£4.40
DUB391 4-40 THREAD INSERTS	£1.40
DUB313 SOK HD 4-40 BY 1.25"	£1.00
E/Z ADJ AXLE 2 BY 5/32	£3.10
DUB135 4-40 BLIND NUTS	£0.69
DUB 315 SOK HD 6-32 BY 1"	£0.79
EXHAUST DEFLECTOR 35-90	£3.49
DUB661 EZ TRIMMER	£5.19
PULL PULL SYSTEM 4-40	£5.50
SUPER STRENGTH SERVO ARMS	£7.25

## TETRA PRODUCTS.

TETRA HINGE GUIDE	£15.98
BALL ADJUSTERS	£5.95
ROD ADJUSTERS	£3.95
TRIANGLE JOINT WITH FILTER	£6.96
TRIANGLE JOINT	£4.15
SWITCH BRACKET	£6.95
ONE WAY VALVE	£7.49
FUEL DOTS	£4.50
PUSH-ROD ANGLE CLEVIS	£2.25

## RETRACT SYSTEMS.

SUPRA DX 40 WITH AXLES	£39.00
SUPRA DX 60 WITH AXLES	£39.00
SUPRA DX 200 WITH 5MM TITANIUM	
STRUTS & AXLES	£90.00
SPARE STRUTS FOR DX60	£9.95
LIGHT WIEGHT TITANIUM RETRACT LEGS	
3/16" (ONE PAIR)	£17.95

*ProBuild*



**ZN LINE KITS - ALL BASE KITS UNLESS SPECIFIED**

● BIG TOC CAP - READY BUILT, READY TO COVER	£1100.88
● CAPRISE, CARBON / KEVLAR	£400.00
● <b>FASHION LINE,CARBON /KEVLAR</b>	<b>£345.00*</b>
● ALLIANCE CARBON/KEVLAR	£400.00
LARGE MODELS	
● CAP 232, GLASS. 2.38M LONG & A SPAN OF 2.2 M FOR 60CC ENGINES UPWARDS	£445.55
● CAP 232, GLASS. 2.38M LONG & A SPAN OF 2.2M. FOR 60CC ENGINES UPWARDS WITH Balsa SKINNED FOAM PANELS	£581.11
● CPLR MADNESS 3D KIT, READY BUILT, READY TO COVER	£195.00
● EXTRA 300S, GLASS. 2.08M LONG & A SPAN OF 1.90M FOR 40CC ENGINES & UP.	£361.11
● EXTRA 300S, GLASS WITH Balsa SKINNED FOAM PANELS	£488.88
● MAJESTIC, CPLR DESIGN. BASE KIT IN CARBON/KEVLAR FUZ, FOAM CORES. CARBON U/C WITH GLASS SPATS	£470.00

**\* SPECIAL OFFER****BUILDING MATERIALS.**

6MM ENDGRAIN CARBON Balsa 300MM BY 300MM (93G CARBON)	£21.00
3MM NOMEX PANELS WITH GLASS SKINS 300MM BY 300MM	£15.00
3MM NOMEX PANELS WITH CARBON SKINS 300MM BY 300MM	£23.00

ALL PANELS ARE VAC BAGGED DURING MANUFACTURE TO ENSURE BEST ADHESION OF THE SKINS TO THE CORE MATERIAL.

180ML COTTON MICRO FIBRES	£2.20	LIGHTWEIGHT GLASS CLOTH	£10.50
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180ML MICRO BALLOONS	£2.20	80 GRAM GLASS CLOTH (PER-METER)	£5.00
180 ML FAIRING COMPOUND	£2.20	100 GRAM GLASS CLOTH (PER-METER)	£5.00
SMALL 101 EPOXY	£6.75	90G PLAIN WEAVE	£45.00
LARGE 101 EPOXY	£13.00	62G KEVLAR	£24.00
200 GRAM CARBON PLAIN WEAVE	£35.00	200 GRAM KEVLAR	£22.50

**PLEASE RING FOR ALL RC ITEMS @ DISCOUNT PRICES.****FUTABA RADIO.**

FF8	RING FOR LATEST PRICE
9ZAP COMBO	£775.00
9102 SERVO	£52.00
9202 SERVO	£44.00
9402 SERVO (6.0V)	£60.40
9204 SERVO(4.8V)	£60.40
136G SERVO	£35.00
3101 SERVO	£21.50
200MM EXTENSION LEAD	£2.50
400MM EXTENSION LEAD	£3.60
SWITCH WITH HARNESS	£5.50
CHARGE & DSC	£4.50

**MK ACCESSORIES**

LINKAGE FOR GEAR	£11.45
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TAILWHEEL ASSEMBLY	£16.98
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ALLOY BULKHEAD FUEL NIPPLES	£9.99
ELECTRIC FUEL PUMP (NEEDS 4 AA BATTERIES)	£29.95
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S & M ALLOY HORNS WITH LARGE PLASTIC BASE & FITTING KIT	£5.55
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WING TUBE SET 7/8 BY 30"	£21.99
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ALL PRICES IN THIS CATALOGUE ARE CORRECT AT THE TIME OF PRINTING. DUE TO ECONOMIC CONDITIONS PRICES MAY VARY, DOWN AS WELL AS UP !!!!!!!!!!!

*ProBuild*

# PROBUILD PL PROD KITS

**K**

<u>MODEL</u> KC = Kevlar/Carbon FV = Glass Fibre	BASE KIT	BASE KIT ALL FOAM PANELS IN COMPETITION GRADE Balsa	AS PREVIOUS COLUMN WITHAILERONS, ELEVATORS AND RETRACTS FITTED
EXCELLENCE FV	377.77	511.11	611.11
EXCELLENCE KC	466.66	600.00	700.00
TORNADO FV	377.77	511.11	611.11
TORNADO KC	466.66	600.00	700.00
LARIMAR KC	466.66	600.00	700.00
LARIMAR FV	377.77	511.11	611.11
ALIZE KC	388.88	522.22	622.22
ALIZE FV	322.22	455.55	555.55
EXTRA 300 S FV		872.22	972.22
EXTRA 300 S KC		1044.44	1144.44
SMARAGD KC	466.66	511.11	611.11

## SHADOW KIT FROM PROBUILD.

The shadow, further development from the world famous Desafio S, the model features plug in wing & Stab, one piece full length underbelly with access to radio installation via a carbon panel. The foam wing, tail are cut from low density foam with the CNC foam cutter for accuracy. The fuselage is a glass cloth with carbon fibre, with reinforcing panels in the rear of the fuz as well as the fin. Motor requirement is for a YS1.20AC up to the new 1.40 LM. Fuselage comes ready sprayed in a white gel coat.

### **Base kit**

Glass fuz & underbelly, foam wing & tail cores with tube holes cut, plan, wing & tail joiner tubes.

### **Deluxe kit**

Includes all above as well as the wings & tail skinned in contest grade balsa, with integral spar system. Ailerons & elevator lined & hinged with kevlar full length system, retract & servo wells cut & lined.

### **Hi Tec kit**

Includes all above but with all formers cut from Nomex glass & fitted into the fuz, motor installation completed. Wing & tail fitted with incidence adjusters.

Base kit. £295.00  
Hi tec kit £775.00

Deluxe kit. £525.00

*ProBuild*

## USA ITEMS

Alloy ballraced tail wheel assembly, complete with fitting kit & alloy tail wheel.	£21.00
24" carbon Fibre rods with 4-40 titanium fittings for direct servo connections to control surfaces	£15.95
Titanium fittings only (4 of)	£8.50
36" length Carbon rods (2 off per pack) 3/16" dia with 4 Titanium end fittings	£16.50

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• 2 1/2" FAI	£23.25
• 2 1/2" FAI, LIGHT BACK PLATE	£30.72
• 2 3/4" FAI	£26.96
• 2 3/4" FAI, LIGHT BACK PLATE	£30.50
• 3" FAI, LIGHT BACK PLATE	£33.12

## ZN SPINNERS

• 76MM ALLIANCE LIGHT BACK PLATE	£42.10
• 82MM CAPRISE / MAJESTIC / FASHION	£42.10
• 127MM CARBON / ALLOY BACKPLATE	£75.00
• 152MM CARBON / ALLOY BACKPLATE	£94.44

## NEW ITEMS NEW ITEMS NEW ITEMS

• PARSONS PRODUCTS SERVO PLUG SAFETY CLIP, 3 PER PACK	£4.50
• MK MAGIC BOXES, SPRUNG LOADED UNDERBELLY FIXINGS (2 OFF)	£27.50
• PL PROD ANODISED ALLOY CONTROL HORNS (PURPLE)	£7.50
• PL PROD SPRING LOADED CATCHES (PAIR)	£6.00
• PL PROD PULL-PULL WHEEL, ALLOY ANODISED (PURPLE)	£7.50
• TACK CLOTH	£1.17
• PILOT FURRED MYLAR HINGES, 20 PER PACK	£3.75
• MULTIPLEX FIELD BOX. FOUR SHELVES COMPARTMENT TOP COMPARTMENT	£55.00
• FINE LINE TAPE, 2.5MM THICK, 66 METRES LONG	£2.75
• HIGH PERFORMANCE 5/8" EXHAUST TUBE	£6.75
• JB WELD, 24 HOUR TWO PART GLUE, SUPER STRONG	£3.60
• CRC DEFLECTION THROW METER	£18.95
• OS PLUG WRENCH WITH KEEPER, IDEAL FOR YS COWLED MODELS	£5.20

**Synergy for 2000** as detailed on November 1999 Newsletter front cover, designed by Malcolm Harris & Steve Burgess. The kit consists of a white pigment gel Carbon/Kevlar fuselage, with computer generated & cut foam panels, for 140 YS power. Plug in wing & tail. Std kit. Fuz, underbelly, canopy, foam wing, tail & rudder panel's. Wing & tail joining tubes. £400.00 Deluxe kit POA

• FULL VOLZ SERVO RANGE. PLEASE RING AND WE WILL SEND FULL SPECIFICATIONS.	
• ARNAUD POYET'S ZNLINE EVOLIS (SEE PICTURE <b>PXX</b> ). BASE KIT	£400.00
• MK MAIN RETRACTS, ANGLED.	£57.73
• CARBON PIPE. VERY LIGHT WEIGHT. AS USED BY CHIP HYDE / BRANDON RANSLEY.	£159.95
• DUBRO METAL BALL ENDED DRIVER SET.	<b>£XX</b>
• ZNLINE ANODISED HORNS.	£11.50 / PAIR
• EZ RETRACT MOUNTING SYSTEM.	£6.00 / PAIR
• SERVO BOX MOUNTING SYSTEM.	£6.00 / PAIR
• VITON 2" LENGTH COUPLER.	£11.22
• 5 MIN EPOXY. 18OZ. THE ONLY ONE TO USE.	£8.25

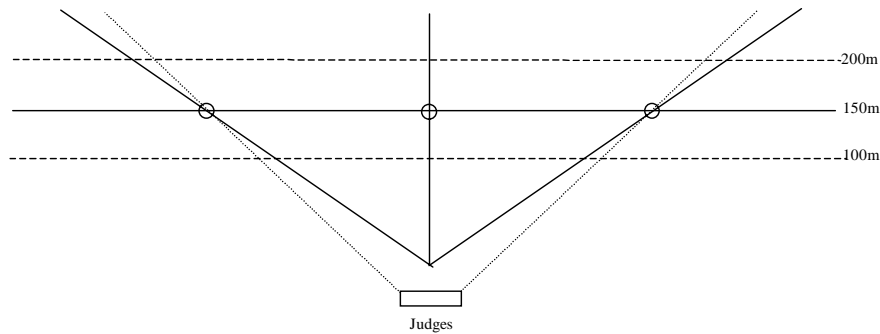
## BOXING CLEVER

A recent conversation with Steve Burgess about the judge's eye view of the manoeuvring box prompted me to do some research into the subject.

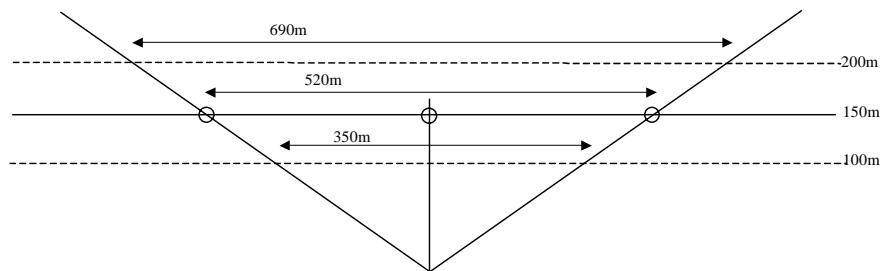
Dusting off the memory of trigonometrical functions, firing up the calculator and putting pencil to paper produced some interesting results. The included drawing is pretty close to scale, but the judges' position has been moved back a bit - it should be a maximum of 10 metres behind the pilot stance - to make it easier to see the angles involved.

It would appear that many pilots regard the 150 metre line as the minimum distance out, rather than the specified distance. The GBRCAA rules quote a maximum practical distance of 175 metres from a visibility point of view alone - and remember some of us ageing judges no longer have 20/20 vision (no rude comments, please!). Personally, I regard a pilot who consistently flies too far away as trying to gain an advantage by giving himself a much longer box and down mark him accordingly.

However, the main point of the exercise was to discover what difference in the visible length of the box was created by the distance that the judges sat behind the pilot. It will be seen from the diagram that, as long as the aircraft is kept within the 150 metre line, the judges actually see a slightly longer box than the pilot and that it is only as the distance beyond the line increases that the judges box becomes shorter than the pilot's.



The second diagram was created out of interest, just to see what difference flying farther out made to the length of the box.



So unless my maths results are really up the creek, a considerable advantage is obtained by flying farther out. However, as I do not claim omniscience, please feel free to dispute my findings. We can all learn from a bit of constructive discussion.

Ian Dunn  
SAA Chief Judge

## **In response to John Mee and Bill Michie's Letter in the May Issue of the GBR/CAA Newsletter.**

Experiences of a beginner and new member of the GBR/CAA flying the Standard Class Schedule.

**From: - Martyn Uttley**

Having read Bill Michie's letter, it prompted me to think about my own experiences as a newcomer to the sport of Radio Controlled Model Flying and R/C Aerobatics.

I started as a total beginner in 1997 with the usual basic trainer then on to an Acro Wot the year after. I then began to think about what next? Scale WW II or Aerobatic Scale. I Quite liked the idea of building a Scale Sukhoi or an Extra and after spotting an advert for joining the GB IMAC in the RCM&E I duly sent off my £10 and received nothing. After a few phone calls I did receive a membership card, event calendar and a number of flyers advertising various kits. Further phone calls and the flight schedules arrived. At this point, this was not what I expected and feeling £10+ worse off for the experience; I decided this was not for me.

However, at our flying field I couldn't help being impressed on how well our clubs pattern aerobatic pilots were flying and turned to Bert Caton for advice. After a trip to Bert's loft I returned home the proud owner of an early eighties designed Pacemaker with a Redshift 60 engine. Bert also suggested I come along and watch his son Kevin, on one of his visits to Barrow-in-Furness, practising for the nationals. I was totally amazed by Kevin's skill and knowledge and felt that this is what I wanted to have ago at.

Back to the Pacemaker, after purchasing servos etc, and sorting a few engine problems she was in the air, it was bit fast for my skill level, but what impressed me was how smooth it was to fly. Unfortunately, I lost her due to pilot error; it was a bit too fast and just beyond my skill level. (I was totally gutted) But, I now had a taste of flying an aerobatic model, which was very very different from flying my Acro Wot. But it was back to flying the Acro Wot. During the winter 1998/1999 I used this aircraft to practice flying the 1999 standard schedule. At this point I joined the GBR/CAA. (I received a membership card, schedules etc, and a newsletter by return of post, very impressed!)

To get me back flying an aerobatic model as soon as possible Bert suggested I repair an O/D model of his called a Bosscat. The wing looked ok, but the fuz was in three bits. After a few months work and the purchase of a second hand O.S. 61 RF-P, the Bosscat was in the air. It flew ok, but with a twisted wing and tail it was always going to give problems in looping manoeuvres.

On to my first competition, Redmarsh in the North of England, not a bad result for my first attempt, my highest score was 123 not far off 130 for promotion points to Senior class. After a couple of other competitions, Darlington and Doncaster a similar result. The prospect of a huge leap from Standard class to Senior class started to worry me, but from what I was told that was the goal.

My plans were somewhat set back, when at the 1999 AGM a new Standard and two Senior schedules for 2000 were proposed. (Does anyone know what happened to the second senior schedule?) Looking at the Standard Schedule, there was nothing in it, I felt, I could not fly and it does reinforce the core skills required to move on, it was just a bit longer. No problem I thought, I would soon gain promotion points to Senior and with a new model for the 2000 season, an Excelsior 188 with a second hand YS 120AC four stroke at the front, the aircraft would fly its self! (I believed all those rumours about four strokes) Having practised the schedule, everything seemed ok, I was sure of promotion points. Now to flying in competition, Ashbourne, what a

shock! Although I think I flew ok, the Judges thought differently and they were quite right too. Thank goodness I didn't get promoted to Senior in 1999; I need a lot more practice flying the core elements, particularly in crosswinds. On reflection, I now think that if I had gained promotion points from the 1999 Standard schedule, I would now be seriously out of my depth in Senior class and the GBR/CAA would be less one new member, despite all the encouragement I received from Bert.

Conclusions from my first year in the GBR/CAA

I believe I am very lucky to have met and been rescued by Bert Caton, before ending up being bored on a Sunday afternoon flying scale WWII models. (No disrespect to scale modellers) Bert picked me up, (several times) set me on the right road and gave me the encouragement and help I needed. Indeed, I am not the only one in our club Bert has helped. Ian Pilton, who is a very good up and coming aerobatic pilot and together we hope this enthusiasm will rub off on other club members too. It is on the local club flying field where the GBR/CAA will attract new members through encouragement and help.

I know there is plenty of information on how to fly the various manoeuvres for beginners, but I have seen very little on handling crosswinds. Could anyone tell me why the wind is always up and down the flight line when I'm practising but at a competition there is always a crosswind?

The Sportsman's class, as I have been lead to believe, is the entry into Aerobatics for beginners, but it is not a turn-around schedule. Maybe it is time the present membership through the committee could re-assess this schedule and up-date it, so it does contain the basic turn-around manoeuvres and still remain attractive to local club flyers. Thus, it will provide the beginner, like me last year, with a stepping stone on into Standard class.

I believe the current Standard schedule is correct, and in the right place, (I really enjoy flying it) but it is not an entry schedule. It contains all the right core-flying skills **to enable a pilot to move on to Senior class** without fear of been intimidated.

I cannot provide any conclusions on the Senior or FAI Masters class except, that from a pilot, who wishes to aspire to those levels, there seems to be leap of gigantic proportions between Senior and FAI Masters. A prospect, if I am lucky enough to reach that standard, do not relish. Maybe the present members through the committee could also introduce a new class, halfway between Senior and FAI Masters to bridge that huge leap and make those stepping stones smaller for us beginners to walk across.

There is no doubt that goals, which are achievable with a little bit of stretching, provide more motivation than a goal, which is out of reach. I am sure every member who enters a competition would like to win and with more opportunities to win, success will breed success. This rule I think will ultimately be proved in the membership status.

I do not want to enter the current debate on judging criteria. All I will say on the subject of judging is that I think all the Judges do a very good job in sometimes very difficult circumstances. All do it on a voluntary basis. No judges, No competitions. The scores I have so far received have been more than fair and quite rightly reflected the standard of my flying. Thank you Judges.

These are my thoughts from a beginner at the bottom of the pile.

## GBRCAA Championships. Middle Wallop. 27th & 28th May 2000

	Raw Scores				Normalised Scores				Norm Totals	Position		
Competitor	R1	R2	R3	R4	Total	R1	R2	R3	R4	Total		
<b>Standard</b>												
A Waterhouse	176.5	123.5	162.5	195.5	481.5	933.9	623.74	1000	1000	2933.9	1000.00	1st
Paul Metcalfe	189.0	198.0	0.0	0.0	387.0	1000	1000	0	0	2000.0	681.70	2nd
Roy Shepherd	130.0	143.5	0.0	0.0	273.5	687.8	724.75	0	0	1412.6	481.47	3rd
<b>Senior</b>												
Graham Reid	0.0	220.5	276.0	302.0	798.5	0	1000	998	1000	2998.2	1000.00	1st
Steve Hartley	248.5	210.0	276.5	238.0	763.0	934	952	1000	788	2886.6	962.78	2nd
Rhys Williams	248.5	220.0	263.5	274.5	786.5	934	998	953	909	2884.9	962.22	3rd
Alan Simmonds	229.0	0.0	252.5	267.2	748.7	861	0	913	885	2658.9	886.84	4th
Ken Moss	266.0	202.5	165.5	0.0	634.0	1000	918	599	0	2516.9	839.48	5th
Mike Lumb	225.5	0.0	0.0	0.0	225.5	848	0	0	0	847.7	282.75	6th
<b>Masters</b>												
Keith Jackson	430.5	437.0	434.5	445.0	1316.5	965	1000	986	1000	2986.4	1000.00	1st
Kevin Caton	446.0	431.0	440.5	436.5	1323.0	1000	986	1000	981	2986.3	999.96	2nd

Kevin Caton	446.0	431.0	440.5	436.5	1323.0	1000	986	1000	981	2986.3	999.96	2nd
Angus Balfour	431.5	413.5	429.0	444.0	1304.5	967	946	974	998	2939.1	984.18	3rd
Steve Underwood	428.0	435.5	410.0	432.0	1295.5	960	997	931	971	2927.0	980.12	4th
Roichard Howarth	419.5	417.5	421.0	420.5	1261.0	941	955	956	945	2856.1	956.36	5th
John Harrop	387.5	397.5	394.0	417.0	1208.5	869	910	894	937	2741.1	917.88	6th
Dave Matthias	430.5	374.5	342.5	404.0	1209.0	965	857	778	908	2730.1	914.18	7th
Malcolm Balfour	390.5	401.0	388.5	390.5	1182.0	876	918	882	878	2677.1	896.44	8th
Mike Pole	411.5	375.5	373.0	366.0	1160.0	923	859	847	822	2628.7	880.22	9th
Dave Rumball	395.5	362.0	395.0	365.5	1156.0	887	828	897	821	2611.9	874.59	10th
Sam Wragg	331.5	344.5	339.0	378.5	1062.0	743	788	770	851	2408.5	806.49	11th
Richard Christopher	317.5	308.5	307.0	354.0	980.0	712	706	697	796	2213.3	741.14	12th
Bob Reid	318.5	295.0	302.5	336.0	957.0	714	675	687	755	2155.9	721.91	13th
John Mee	253.0	328.5	306.0	218.5	887.5	567	752	695	491	2013.6	674.28	14th
Tom Shore	241.5	261.5	225.0	0.0	728.0	541	598	511	0	1650.7	552.73	15th
Alan Wild	331.5	329.5	0.0	0.0	661.0	743	754	0	0	1497.3	501.37	16th
Mark Waterman	289.0	352.0	0.0	0.0	641.0	648	805	0	0	1453.5	486.70	17th
Dave Owens	287.0	245.0	0.0	0.0	532.0	643	561	0	0	1204.1	403.21	18th



## TRIPLE CROWN 2000, ENGLAND TEAM MANAGERS REPORT

A rather grand title considering the lack of management I actually had to exercise, mainly due to a very competent team and an event that was very well ran. Elliot Balfour really pulled the stops out to produce a very professionally run event with considerable support from local flyers and their wives. The ladies had worked very hard indeed to produce a first class buffet on both competition days which to be truthful was raved about more than the models! Unfortunately the weather was to undo all the hard work put in by the "management", washing out Sunday totally.

Lynda and I arrived at midday on the Friday for an afternoons practice, most of the flyers had already been there from early morning. On my third flight I joined the growing YS conrod failure club, an expanding group with open membership! Turning to my No 2 Saxon the FZ was suffering from congealed Klotz in the fuel system and wouldn't play ball either! A midnight strip and swap into the lighter, new Saxon was thankfully rewarded with success on the Saturday. Richard Welch was also suffering with engine trouble and I was concerned whether the team would be able to post enough scores to place at all. Most of the engines needed some adjustment as the weather changed from close humid conditions to low pressure, as a front swept across the country.

With some relief the whole team completed their individual flights on the Saturday with scores all being closely grouped together. Dave Mathias was our star by just a few percent. Whilst we had no out and out winner amongst our team the strong performance across the board helped us to secure 2<sup>nd</sup> place behind Scotland by a smaller margin than we felt we could realistically have hoped for and all four flyers finished in the top 8. The standard of flying from all competitors was very high and set the judges a daunting task.

Model of the weekend I feel had to be RAY Keane's Angels Shadow, I'm amazed he didn't slip up in the "pool of drool" that must have surrounded it! The quality of this model was immediately evident from the moulded in colour scheme right down to the small details. In Ray's very capable hands the model looked superb in flight. Now if the six numbers.....mmmm!

On a personal note, this was my first England team position and despite the difficulties and subsequent bills, I enjoyed the whole experience. I did not expect to find myself in the managers position and I extend my sincere thanks to my fellow team members for their support to me in this role. As a team we can hold our heads up high, we may have been dubbed the "C" team but I feel we proved ourselves a worthy England B!!

Dave Rumball

Rank	Final Score	Contestant	Round 1	Round 2
1	1999.30070	Angus Balfour	999.301	1000.000
2	1967.93997	Ray Keane	1000.000	967.940
3	1958.71168	Steve Burgess	985.315	973.397
4	1901.91855	Dave Mathias	950.350	951.569
5	1850.90871	Richard Welch	928.671	922.237
6	1844.20763	Malcolm Balfour	933.566	910.641
7	1838.73344	Dave Rumball	932.867	905.866
8	1829.60818	Mike Pole	922.378	907.231
9	1806.81079	David Balfour	938.462	868.349
10	1749.92702	John Mee	872.028	877.899
11	1742.79663	Malcolm Harris	859.441	883.356
12	1722.19540	Barry Smith	853.846	868.349
13	1721.44936	Niall O'Sullivan	879.021	842.428
14	1689.58300	Bill Allison	914.685	774.898
15	1600.01145	Robert Young	767.133	832.879
16	1471.01098	Brian Carolan	708,392	762.619

## Hastings Comp 4th June 2000

After a week of poor weather the weekend of the comp was fine if breezy. Those knowing the Hastings site will not be surprised to learn that the breeze was blowing at 45 degrees to the flight line at about force 5 on the Beaufort scale!

After much persuasion and filling in there expense forms I got the judges (Bob Zero Ailes and Phil Pro-build Williams) into position for the first round.

Seniors led the way; all the pilots found the conditions tricky Graham Ried led the round with Steve Hartley second and Jason Thomas third.

Keith Jackson with Steve Underwood making a welcome return to competitive flying a close second predictably headed Masters first round. Alan Wild from wildest Essex was third.

A Knight with Paul Metcalf led standard in second, the lone sportsman Terry Gevaux did very well in the difficult conditions.

Round two went much the same as round one with the exception of Steve Rutherford in masters, who's score jumped nearly 100 points (barman can I have a pint of what he's drinking). Steve is flying a New Solution powered by an OS 140 the combination clearly working very well.

Round 3 saw the wind conditions improve considerably, but the Hastings curse of the sun encroaching on the left end of the box came in to play for the later fliers, except Steve (someone up there likes me) Underwood, the only cloud in the sky conveniently covered the sun during his flight. There were two sets of promotion scores and two near misses during the third round Congratulations to Graham Ried and Paul Metcalf commiseration's to Steve Hartley and Jason Thomas.

Thanks to: -

Bob and Phil for judging senior and masters, Alan Wild and Keith Jackson for judging standard and sportsman, Christopher Williams for helping with the scorecards, Mark Waterman dad for his wit, and all the competitors for turning up.

Alan Hilton

### Results

Senior	Round1	Round 2	Round 3	Total	Position
J Potter	217	246.5	255	501.5	5 th
S Hartley	269.5	257	299	568.5	2 nd
T Maslin	237	257	267	524	4 th
G Ried	278.5	265	320	598.5	1 st
J Thomas	242	264.5	295	559.5	3 rd
<b>Masters</b>					
R Christopher	320.5	310.5	375.5	696	5 th
K Jackson	422	464	481	945	1 st
A Wild	340.5	326.5	371	711.5	4 th
M Waterman	299	326.5	361.5	688	6 <sup>th</sup>
S Rutherford	334	421.5	449	870.5	3 rd
M Burrell	300.5	330.5	237	631	7 th
S Underwood	411	427	462	889	2 nd
<b>Standard</b>					
R Sheppard	131.5	172	124.5	303.5	3 rd
P Metcalf	153	178	206	384	1 st
A Knight	180	194		374	2 nd
<b>Sportsman</b>					
T Gevaux	92.5	92		184.5	1 st

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### **For Sale**

2 Wolfgang Matt Diamante models, built to Matt's spec. & prepared by the M.O. company, Japan's leading manufacturer of F3A models. Both models are A.R.T.F., primed in white epoxy & require just final colour finish only. Canopy is finished & painted with pilot installed. A complete set of MK accessories is provided & installed including retracts, latest belly pan fittings, tank & all top quality links, horns etc already fitted. A spare belly pan is also provided as are leather trimmed professional wing, tail & fuselage covers as used by the worlds top fliers. A rare opportunity to acquire models of this quality in the U.K. Offers around £1000 o.n.o each required.

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Tel. mob. 07930 377988

Loaded Dice 40S, Newman Precision Models kit, built by Paul Newman himself (Paul used to be 2<sup>nd</sup> in UK aerobatic rankings) as a display model. Professionally finished in K&B paint in Loaded Dice colour scheme – absolutely immaculate. Has APS 53 engine with Aldous manifold and Hatori tuned pipe installed, with two Futaba low profile wing servos. Also has fixed undercarriage with wheel spats. Used as display model at international shows, only had 1 hour flying. £350 o.n.o. Ring Paul Newman: 07775 783175, or 01702 525010; or Allan Levi: 07974 481475

Loaded Dice III, immaculate, 2K finish c/w Super Tigre G20-23, Weston Muffler, Aldous Manifold, Supra Retracts. All as new £895.

Super Dalotel, 67" span aerobatic model (ideal for standard / senior class) c/w Super Tigre 90, APC prop, on / off switch, throttle servo etc (just fit gear and fly). £225.

Further details on either model, please contact Gerry Scothern 01623 479422 after 6.00pm or weekends



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