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THE VOICE OF CONTROL LINE  
AEROMODELLERS FROM  
AROUND AUSTRALIA

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Number 38



Produced by the Victorian Control Line Advisory Committee

October 2000  
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Wednesday 18th October 2000  
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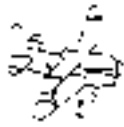
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# COMING EVENTS



## CONTROL LINE CONTEST CALENDER 2000/2001

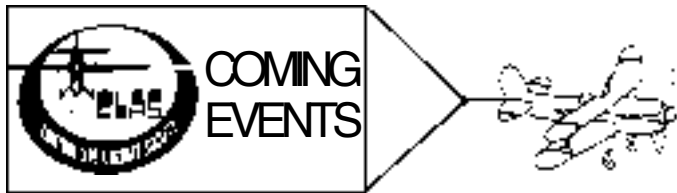
OCT 1	Country day. Maffra Sports Complex	CLAG
OCT 8	Simple Rat race, Simple Goodyear.	SMAC
OCT 15	<b>FAI Team race, Goodyear,</b> Jnr 2.5cc Rat race, <b>2.5cc Rat race (Riverside Trophy).</b>	CLAMF
OCT 22	FAI, Novice & Junior Aerobatics, Combined Speed, Class 2 Team race, Vintage "A" Team race.	KMAC
NOV 5	Country Day at Knox	CLAG
NOV 12	Triathlon.	SMAC
NOV 19	<b>FAI &amp; Combined Speed,</b> FAI & Modified Combat, <b>Mini Goodyear, 1/2 A Combat.</b>	CLAMF
NOV 26	Monty Tyrell Memorial - Classic Stunt.	KMAC
DEC 10	Aust "A" Team race, Aust "B" Team race, Bendix.	SMAC
DEC 17	<b>FAI Team race, 2.5cc Open Combat,</b> <b>1/2 A Team race.</b>	CLAMF
2001		
JAN 21	<b>FAI &amp; Combined Speed, Mini Goodyear.</b>	CLAMF
JAN 28	FAI (Hearns), Novice & Jnr Aerobatics, Vintage "A" Team race, Aust "B" Team race.	KMAC
FEB 4	Simple Rat race, Simple Goodyear.	SMAC
FEB 18	<b>FAI &amp; Combined Speed, 1/2 A Combat,</b> <b>Mini Goodyear.</b>	CLAMF
FEB 25	Classic Stunt, Vintage Stunt, Class 2 Team race.	KMAC
MAR 11	Hand Launched Glider.	SMAC
MAR 18	<b>FAI Team race, Goodyear,</b> Simple Rat race.	CLAMF
MAR 25	FAI, Novice & Jnr Aerobatics, Vintage "A" Team race, Aust "B" Team race.	KMAC
APR 8	Simple Combat.	SMAC
APR 13,14, 15,16	Victorian Control Line State Championships.	KMAC/CLAMF
APR 21 - 27	54 <sup>th</sup> Australian National Championships. Busselton, W.A.	
APR 29	FAI (Yeoman), Novice & Jnr Aerobatics. Vintage Stunt.	KMAC
MAY 6	Vintage "A" Team race, Aust "A" Team race.	SMAC
MAY 20	<b>FAI &amp; Combined Speed,</b> Triathlon (Artemil Trophy), <b>1/2 A Team race.</b>	CLAMF
MAY 27	FAI, Novice & Jnr Aerobatics, Classic Stunt, Simple Rat race.	KMAC
JUNE 10	Balloon Burst, Limbo.	SMAC
JUNE 17	<b>FAI Team race, Goodyear,</b> 1/2 A Combat,	

JUNE 24	FAI & Modified Combat. FAI, Novice & Jnr Aerobatics, Combined Speed, Vintage "A" Team race.	CLAMF KMAC
JULY 8	Simple Rat race (whipping permitted)	SMAC
JULY 15	<b>FAI &amp; Combined Speed, Jnr 2.5cc</b> Combat, <b>Mini Goodyear,</b> Jnr 2.5cc Rat race.	CLAMF
JULY 22	FAI, Novice & Jnr Aerobatics, Class 2 Team race, Vintage Stunt.	KMAC
AUG 12	Simple Combat.	SMAC
AUG 19	<b>FAI Team race, 2.5cc Rat race,</b> <b>1/2 A Combat, Combined Speed.</b>	CLAMF
AUG 26	FAI (Stuntmasters), Novice & Jnr Aerobatics, Vintage "A" Team race, Aust "B" Team race.	KMAC
SEPT 2	Classic Stunt, Vintage Stunt, Aust "A" Team race, Aust "B" Team race, Simple Combat.	Warragul
SEPT 9	Vintage "A" Team race, Aust "A" Team race.	SMAC
SEPT 16	<b>FAI &amp; Combined Speed,</b> Simple Rat race, <b>1/2 A Team race.</b>	CLAMF
SEPT 23	FAI, Novice & Jnr Aerobatics, Classic Stunt, Bendix.	KMAC
NOTE -	All SMAC events to be held at KMAC flying field. All events at KMAC except Aerobatic events to be run by CLAMF, DAC & SMAC members.	

Events will be flown in order of printing. Events in **Bold type** will be flown over hard surface

**CLAMF** Frankston Flying Field, Wells Rd, Seaford (Melway 97J10), 10.30am start  
Contact :- G. Wilson (03) 9786 8153,  
Events conducted by CLAM.F at the KMAC Field (Melway 72 K9) 10.00am start.  
Contact :- H. Bailey (03) 9543 2259  
**KMAC** Stud Rd . Knoxfield (opposite Caribbean Gardens) (Melway 72 K9) 10.00am start  
Contact :- T. Matthews (03) 9560 0668.  
**SMAC** Contact :- Reeve Marsh (03)9776 5949  
**WMAA** Horsham. Contact :- V. Cresp (03) 5382 4065  
**BRCAC** Bendigo-Newbridge Rd . Marong  
Contact :- S. Power 03 54 424 925

Competitors at CLAMF competitions are reminded that events **start at 10.30a.m.** and they should be ready to begin at this time.



THE FOLLOWING PROGRAMME IS OPEN TO ALL MEMBERS OF  
THE MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA  
(M.A.A.A.)  
LOCATION OF FLYING FIELDS

(ALL EVENTS START 9 am UNLESS OTHERWISE NOTED)

**TAMWORTH MAC:** CONTACT LEN SURTEES 02 67-61 8508  
**R.E.M.A.C.:** PETER BOARD HIGH SCHOOL, WICKS RD.,  
**S.S.M.E.:** LUDDENHAM ROAD, LUDDENHAM.  
**K.M.F.C.:** ST. IVES SHOWGROUND, MONA VALE ROAD, ST.  
IVES.  
**S.A.T.:** KELSO PARK, HENRY LAWSON DRIVE  
**I.M.A.C.:** BIRKLEY ADJACENT TO FREEWAY.  
**MUSWELLBROOK M.F.C.:** MITCHELL HILL FIELD, NEW ENGLAND  
HWY., MUSWELLBROOK.  
**DOONSIDE M.F.C. :** EASTERN CREEK RACEWAY OFF REEN  
ROAD, BLACKTOWN  
**NARROMINE:** CONTACT STEVE BAKAC 02 68 89 2501  
**CLAS** CONTACT MIKE COMISKY 02 9605 2062

DATE	HOST	EVENTS & VENUE
OCT 15	REMAC	DUKE FOX MEMORIAL STUNT
NOV 19	SAT	F2B AEROBATICS
NOV 19	KMFC	VINTAGE A T/R, 1/2A T/R, VINTAGE STUNT
NOV 26	SSME	F2B AEROBATICS
DEC 2	REMAC	VINTAGE STUNT
DEC 3	WERRINGTON	CLASSIC STUNT TO 1970 WITH MUFFLERS
DEC 3	MACARTHUR MODEL AVIATION CLUB SPORT inc	SCALE DAY
DEC 10	KMFC	CHRISTMAS PARTY AND FUN FLY

All dates subject to change : for further details contact:-  
Guy Bevan Hon Secretary CLAS 2 Kamilaroi Rd Bayview  
2104 Phone / fax 02 9979 9595 Mobile 0412 465 802  
Email: guybevan@hotmail.com

### Queensland Control Line Events Calendar

DATE		FIELD
Oct 8	CLASII Rat, Scale Fly In,	CLASII
Nov 12	CLASII Rat, Class 2 T/R, Bendix, 35 Slow Combat	CLASII
Dec 10	CLASII Rat Final, Trophy presentations & Christmas BBQ breakup.	CLASII

Year 2001

Jan 26-27 Control Line "Scale" Championships  
F4B, (Qld) Stand Off Scale, Fun Scale  
Leichardt Park Ipswich

## Speed Fly Day Oct 8th

After the relative success of our Speed Get Together last year, we are doing it again.

This is not a competition, just a day where everyone who has a speed model, especially old ones, comes down and has a fly and talk etc.

The date is October 8th at Frankston field starting around 10-30 a.m.

Every one welcome. Please spread the word to speed flyers old and new.

For details contact Robin Hiern 59 96 0339

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## CONTEST RESULTS



### Australian 'B' Team Race at Warragul Sun Sept 3rd

	Heat 1	Heat 2	Final
1. Hallowell / Ellins	3:13.09	-----	6:33.16
2. Ray / Ray	3:33.69	-----	7:05.46
3. Wilson / Bailey	3:52.00	3:50.25	10:19.88
4. Hunting / Hunting	4:30.28		

O.S .25 engines were the order for the day. The Ray's (Jim & Colin) used the L.A. the rest used F.P's.

The big models handled the winds well but Wilson/Bailey were handicapped with a tail wind on take off in the final which was lifting the tail on take off.

The views and opinions expressed in ACLN do not necessarily reflect those of the Editor or Committees of Clubs or of the members of the Club represented in ACLN but are those of the respective authors.

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The Editor and Committee of Clubs accept no responsibility or liability for any loss or damage incurred or suffered by anyone as a result of this publication or in reliance upon or as a result of acting upon anything contained in this publication.



## Tuned Intakes by Bob Fry.

In recent years Earl Bailey of Bailey Machining Service has been manufacturing two types of Pulse Jets. One is the "Stock Jet", which is a very close match to the Dyna Jet, in fact most of the parts are interchangeable between the two. The other Jet is known as the "Fast Jet". This Jet differs in that it has a longer length intake head known as a "Tuned Intake". The tuned intake principal I will not go into in this article but to suffice to say it makes quite a difference in performance over a standard Jet. The head length is about 80 mm long and has very little taper in the intake throat.

*Tuned intake with spun aluminum "Couts" type cowl and fibreglass "Bailey" style cowl, Oversize petal and performance retainer, flow injector and metering jet.*



Most Standard Jets have a considerable amount of taper in the intake throat, which develops a venturi effect making them draw fuel from the flow injector. When more air passes through the venturi more fuel is drawn into the combustion chamber and the Jet continues to operate within the correct air / fuel ratio and keeps running.

With the Bailey Fast Jet the head has a large parallel-sided throat and the Jet must use chamber pressure to operate correctly. The model and tank set up is critical to the starting and performance of the Jet. Some people have tried to use this type of Jet in their models normally powered by a Stock jet and just can't get them to go. Charlie "Doc" Davis has written some articles to set up the Jet correctly and will get you going no worries.



*Close up of 2 part tuned intake and fibre glass cowl.*

An article in the American Speed Times caught my attention advertising a Tuned intake manufactured by "JET" Bill Capinjola selling for \$285 US.

This intake has a tapered throat and runs on suction or pressure and can be fitted on a Dyna, OS or Bailey tail pipe. In fact it is a simple procedure to unscrew the original head and fit the tuned intake, it can even be changed with the Jet still on the model, and there you have it, an instant jump in speed.



*Tuned intake and cowl as a complete head.  
(not a detailed photo)*

The Tuned intake is very user friendly and just as easy to start as a good stock Jet.

"JET" Bill also supplies a blowgun that is perfect for starting and can be used on other types of Jets also. The machining and finish of the 2024 T351 Aluminium is superb. A special feature is that the venturi throat can be unbolted from the valve body to allow easy access to the port area of the head for more modifications if desired. The head uses "oversized" petals as the ports are 10.16mm in diameter compared to the 9,14 mm found on standard Jets giving 11% larger ports. Head length is 79 mm (3 1/8 inches) compared to 55.8 mm (2 3/16 inches) stock head which is considered as the tuned length for the pulse rate of the engine. The pulse rate is determined by the combustion chamber and tail pipe length as well as the operating temperature of the engine. (approx 650° C.)

*Exposed view of the tuned intake with flow injector and metering jet fitted. Note: venturi taper on front section of intake.*



Also supplied with the intake is a choice of cowls, a fibre glass copy of the Bailey cowl or a more streamlined version designed by Bill. A spun aluminium cowl shaped by Mike Coutts is also available separately (check price list). The flow injector and a range of 5 metering jets as well as the starting blow gun are all supplied in the cost.

High performance valve retainers, oversized valves and metering jets can also be purchased as well as an increasing range of parts and tools for the serious Jet modeller. Top of the range is a full aluminium mono line model, constructed, tested and trimmed, ready to push 200 mph. Bill is very easy to deal with and has a prompt service and he can be contacted via e-mail for a current price list and is quite willing to share his knowledge of Jets. He regularly fly's Jets and is constantly developing his products and is currently turning 183 mph. Mike Fiske holds the record using this intake at the American Nats at 197 mph.

We currently have three of Bill's tuned intakes in Western Australia and we are having a great deal of success using them on a range of different models.

So if you want to go out and make some noise and go fast give "JET" Bill Capinjola a call. Phone (330) 699-9295 fax (330) 699-4818. Mailing address, 3101 Sweitzer St N.W. Uniontown Ohio 44685. or E-mail [jetbill@yahoo.com](mailto:jetbill@yahoo.com)

# CONTEST RESULTS



## Combined Speed held at Knox 27/08/00

Pos	Name	Class	Engine	Flight 1	Flight 2	Flight 3	Fastest	Km/h	%
1	R Hiern	Vint/FAI	S T G20/15	17.45	17.24		17.24	208.82	94.08%
2	R Hiern	.21	Novarossi 21	15.41	15.47	15.08	15.08	238.73	92.73%
3	N Wake	Class 4	OS 40 VRP	11.77	11.93		11.77	246.12	81.10%
4	N Wake	Class 2	Picco 21	12.82	12.92	13.08	12.82	225.96	78.00%
5	J Hunting	Proto	Cippolla 20	48.50			48.50	119.46	55.30%
Midge									
1	R Hiern	Midge	Elfin 1.49	9.90	9.42	9.42	153.76		
2	K Hunting	Midge	Taipan	10.90	10.52	10.52	137.68		
3	G Ingram	Midge	PAW	14.80	14.29	14.29	101.36		

## FAI and Combined Speed held at Frankston 10/09/00

Pos	Name	Class	Engine	Flight 1	Flight 2	Flight 3	Fastest	Km/h	%
1	N Wake	Class 1	OS CZ11 PS	16.02	15.89	15.87	15.87	226.84	93.57%
2	R Hiern	.21	Novarossi 21	16.15	15.17	14.96	14.96	240.64	93.47%
3	C Agnew	Class 1	OS CZ11 PS	16.27	16.07	15.98	15.98	225.28	92.93%
4	R Hiern	Class 2	Super Tigre X29	10.81	13.46		10.81	267.98	92.51%
5	R Hiern	FAI	Profi	-	14.13		14.13	254.78	89.88%
6	N Wake	FAI	Irvine 15R	14.40	14.40		14.40	250.00	88.19%
7	H Bailey	Proto	Novarossi 21	30.93	30.66		30.66	188.96	87.48%
8	K Hunting	Midge	Taipan	10.95	10.61		10.61	136.51	83.41%
9	N Wake	.21	Picco 21	-	17.50	17.09	17.09	210.65	81.82%
10	J Hunting	Vint Proto	Enya 29	50.09	49.60	49.60		116.81	72.58%
11	V Marquet	Vint Proto	McCoy 29	57.13	56.20	51.63	51.63	112.21	69.73%
12	J Hunting	Vint A	Cox Medallion15	29.97	27.83		27.83	104.09	64.68%
13	P Wake	Class 1	Super Tigre X11	-	-	-			0.00%

After some heavy rain and hail the previous day and night, gumboots were the footwear for the day in the gooeuy mud. The concrete of the flying circle was dry and with a good entry, 13 models were flown.

Due to the amount of models and the nature of the event, it took some time to run, much to the annoyance of the racing flyers. Their events could still have been flown if they really wanted to. It seems that clubs are only interested in promoting certain classes and Speed is not one of them. Speed is the only class that was flown every time it was on the calendar last year.

In the future at Frankston we will fly FAI in the morning or till midday then racing can use the circle. We will then finish off the speed event.

It was good to see someone else win speed for a change. Noel Wake won with his Class 1 model. The top positions were all close and of a high standard. Verne Marquet flew for the fun of it with his old McCoy 29F1 in a Vintage "B" model "Chatterbox" A slow time was achieved but he entered into the spirit of the event again and his times are getting faster.

Next speed comp is at Knox on October 22nd

Report from Robin Hiern

## MOULDED Balsa SHELLS

BY WINDY URTNOWSKI

Almost every type of model can benefit from parts moulded from thin sheets of Balsa to form "shells." This is especially true when lightweight and maximum strength are priorities. A carved block offers very little grain-direction strength, but a moulded piece has excellent strength derived from the grain.

Another benefit is that there is almost always a savings in time. Carving a turtledeck or fuselage top from a solid block and then hollowing it out is a common way of building fuselage tops and bottoms. Unfortunately, not only is the carving process laborious and prone to error (who hasn't had a problem trying to keep uniform wall thickness or going through?), but also, the cost of large blocks of very lightweight balsa is almost unbelievable these days. Once you hollow the block, to make another, similar ship, you would have to carve another block over again, and of

course, buy another relatively expensive piece of wood

On the other hand, you can turn a carved but as yet un-hollowed block into a mould much more quickly than it would take to hollow out the block. You would have to buy the block and do the original carving either way, but from that point on, the choice is either to hollow or to spend a bit less time and make a mould, with the advantage of then being able to make as many parts as you like, quickly and accurately, using inexpensive sheets instead of expensive blocks. If you tend to build models on the heavy side due to “thick” hollowing techniques, you will benefit even more.

At first, moulding may appear difficult to do, but not long into a project you realise that it's almost always quicker to do than you first thought. After a few trial runs, you can replicate parts quickly, over and over, with very little effort. The technique described in this article has been easily adopted by many entry-level modellers in our club, and in large clubs, you may want to share moulds for popular designs. We now have moulds for about ten very popular designs and they get used regularly.

So, if you think you'd like to try moulding balsa, here are some points that will help you succeed right away and avoid pitfalls.

Some fuselages with complex or convex shapes may not be good choices for your first attempt. My Spitfire was moulded in three separate pieces: nose section, turtledeck, and one-piece fuselage bottom. There were no radical shapes, so it was extremely easy, and I made useable parts on my first attempt. Following this technique, you should have success right away, and even if you don't, making corrections is very easy.

Let me take you through a typical fuselage top, as an example. Build the fuselage up to the point of carving the top block. Tack glue your block on and carve to final shape, but don't final-sand yet.

Always try to use a fairly lightweight block to carve the plug—it's easier to carve, contour, and block-sand to final shape than hard balsa is. Four to six-pound wood is ideal, but six to eight-pound wood will work fine, with just a bit more carving. A trick scale modellers often use is to make female templates at various fuselage cross-sections to insure symmetrical side-to-side profiles.

Pop off the block now—you need to reduce its size slightly. One effective way is to take a marker pen and “paint” the wood surface. Once you sand this off, you've under-sized the plug it by about 1/32 of an inch. Depending on the thickness of your shell, you may want to repeat this step, but don't worry if you make it a bit too small there's a trick I found to fix that easily.

After the under sizing operation, lay the block back on the fuselage, and you should see that it's a bit smaller than the sides' width from end to end. It's not critical at all, as the finished shells are quite flexible and forgiving when final installation time comes.

Originally, I'd mould right over this under-sized block, but

getting the right “edge” to fit against the fuselage was difficult. Instead, here's a foolproof way to do this accurately: First, cut or sand a slight radius on the joining bottom edges of the block. Next, glue the mould block to a piece of half-inch balsa sheet, then use a jigsaw to match the outline of the carved block to the base piece—do this carefully. Finally, glue a piece of 1/16-inch wire in each “joint” between the mould block and the base, where you created the radius. The wire will leave an impression in the moulded final shell, showing the correct “trim” line. At this point, you're already a few hours ahead of the guy with a hollowing knife, and your mould is ready for a test to see how accurate it is. Moulded balsa is actually very forgiving—to work well, fits don't need to be as accurate as you might think at first, and even if you demand perfection, it isn't difficult to attain.

Select a sheet of 1/8-inch or 3/32-inch four to six-pound A-grain balsa that will cover the whole mould and the sides of the base when wrapped around. (Use only A-grain sheets for moulding parts—C-grain tends to split.) If you need to splice the sheet to make it wide enough, the glue joints should go as close to the edges as possible. Rough-trim the sheet so it does not go beyond the edges of the base when wrapped around.

Now, soak the sheet with ammonia, Windex, or water until it is thoroughly soaked (about five minutes). During this time you can pre-bend the sheet around the mould by hand, just to soften it up. Ammonia has a strong odour, so it's nice to do this step in a garage or outdoors, if possible. Windex and water should be used if you're sensitive to ammonia smells. They work almost as well as ammonia—just allow a little extra soaking time.

You'll need a few Ace bandages to wrap the sheet tightly over the mould—the best ones are the kind that stick to themselves. They're available in a drug stores and last forever. I've found that the easiest way is to start wrapping in the middle and work toward the end, but you could start at the front and work toward the back, also. The idea is to make a “mummy,” with the wrap reasonably tight all around. Put a pin in the end of the wrap when it's done, so it won't unwind while everything is drying. Let this dry 24 hours with the bandage in place.

The next day, unwind the wrap, and peel the shell off carefully. You'll see the impression of the wire on the inside face—trim off the extra wood at this time. I use an old sanding belt contact-cemented to my building table to true up the shell edges before installation. Once you're satisfied with the shell's fit, it's ready for a final sanding. Frank McMillan had a good tip: he recommends doing most of the sanding of a shell on the mould, for best results. This works great, and I recommend it.

If the shell is too big, sand down the mould some more and make another shell. If it's too small, you can put layers of masking tape on the mould, or a sheet (or two) of 1/32-inch under your next mould sheet and mould the 1/32-inch and 1/8-inch at the same time to make a slightly larger shell. This also allows one mould to yield several sizes of shells for different designs.

About the time you're finished moulding, you're even with the guy who's hollowing, but you can now make as many parts as you like, every one straight, true, and of uniform wall thickness. Keep in mind that the same mould can make parts that will fit similar-sized ships. For instance, my Spitfire turtledeck mould makes a perfect Nobler top-rear shell. Most nose moulds are similar and interchangeable, so once you do a few sizes, you can make custom shells for almost every model.

Another technique is to laminate several layers of 1/32-inch sheet with glass cloth or carbon fibre veil between the layers. First, do all the shaping by moulding three or four pieces right on top of themselves, all at once. Once they're shaped and dried, separate the sheets, and using slow-cure epoxy, sandwich the layers of glass or carbon fibre veil in between, on the mould. A good tip here is to wrap the mould with Saran Wrap to prevent any of the squeezed-out epoxy from sticking to the mould. The Ace bandage pressure will squeeze out almost all the extra resin, making an extremely strong, extremely light part.

On complex designs, you may want to add laminations of 1/32-inch sheet inside the shell, especially where it butts up to the spinner ring. Adding cooling vents of 1/64-inch moulded plywood is a nice touch, too. Use a piece of tubing for the mould, soak the plywood, and wrap it in the direction opposite to the grain of the outer lamination.

To install a finished shell, I glue about six inches at a time with CA, alternating sides and checking that things are staying aligned, then run a bead of CA down the seams on the inside and fine-sand the final exterior joints.

I videotaped the whole moulding operation for modellers who'd like more information. The tape is a full two hours long and is available from John Brodak.

Once you've installed your first shell, look over at that mould and smile, because building your next ship will take a fraction of the time, and with the money you save by not having to buy another block, you can take your wife out for pizza.

Using this technology, you'll quickly see other parts that lend themselves to moulding. Turtledecks, wing tips, leading edges, hollow rockets, bombs-the ideas are limited only by your creativity. When Joe Adamusko and I did our Spitfires, we pre-moulded the leading edge sheets of the elliptical wings. You can even take an old wing and use it to mould leading edge sheeting, or just carve out a mould piece from styrofoam. I've made wrapped stabilizer and rudder leading edges, and hollowed rockets for my F-16. Once you run off a few parts, you'll have ideas of your own, too. It's a modelling technique you'll find many unique uses for.

Don't want to do any of the above?

e have many moulded parts ready to ship for many different designs! email us for details at windy@aol.com



**Paul Walker (USA) gained 9th place in F2B Aerobatics at 2000 World Champs (Landres, France) with this this semi-scale B17**

Photo: Frank Sutherland

The above model is powered by four OS 15 engines. Every flight attracted a huge crowd of admirers. Starting the four engines during the 1 minute period created no problems!



## TARMAC Notes for August and September

One of the things that is made much of in the stunt world these days, is the sealing of hinge lines. This prevents air flowing between the wing or tail plane and the attached control surfaces and that improves control effectiveness. This is not a new concept, as it has been common practice in full size aeroplanes (especially gliders) for ages, and my friend and well known West Australian aeromodeller, the late Len Armour was preaching this gospel many years ago. The usual method of hinge line sealing is to fit R/C type pinned hinges to attach the control surface (elevator or flaps), and then cover the gap with a flexible sealing tape. That works well enough, but does have the drawback that some tapes used can stiffen the controls a bit and also may crack as they age and need replacement from time to time.

Long ago Len fixed the two problems of hinging and sealing at the same time, by using a strip of cloth as a full length, flexing hinge. The cloth that he used was mercerized cotton aircraft fabric. It worked well, but only lasted for a couple of years and then had to be replaced by different hinges as the constant flexing caused the cotton to fail. Len built the hinge in at the time of model construction, in a way that made replacement near impossible. He glued the fabric between strips of balsa that made up the wing trailing edge and flap leading edge.

I liked the idea of sealed hinges and had used the flexing cloth method previously on Vintage team racers, as they give a neat, free moving, sealed hinge. They also eliminate the worry of getting a lot of slots for R/C type hinges accurately aligned. Having now used this type of hinge for a stunter, I thought that somebody might be interested in finding out how I went about it. I suppose the first question that might be asked is 'Why go to all that trouble?' With a history of doing things the hard way behind me, my answer would be 'why not if it does the job better?'

My experience with the vintage racers taught me that flexing hinges are a bit fiddly to install. I glued those into a sandwich between two laminations of sixteenth balsa to make up a tail plane one eighth of an inch thick. Glue has to be applied very carefully to avoid surplus glue squeezing out into the hinge and rendering it rather less flexible than you want (even solid). I had a long think about that and decided that it could be a whole lot more difficult to get right on the longer hinges of a stunter's flap. Even so, I decided to try the cloth hinges on a stunter, and I have been quite satisfied with the results, but I have to admit that my methods involved a great deal of mucking about that could try your patience.

I wanted a cloth that would last a lot longer than cotton, and I settled on using satin or nylon hair ribbon as the

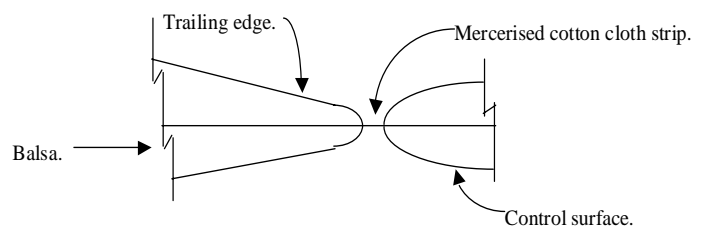
hinge material. I had used both successfully on team racers, and even though they have a lot less work to do than the hinges on stunters, they seemed to show no signs of failure after a fair length of time. I also wanted a hinge that allowed the model to be built and painted before final fitting of the control surfaces. That provides better fuel proofing and paint finish in the hinge line without the worry of paint stiffening up the hinge material. It would also be very nice if there was some way to replace the hinge should it ever be necessary.

This is how I went about making the hinge. First I cut some 1/8" wide hardwood strips of furniture veneer shelf edging pre-glued with heat sensitive glue. The wood was 'Nyatoh' and with it's glue coating is just over 1/32" thick. The ribbon is sandwiched between two of these straight strips of wood that are placed with the glue side towards the ribbon and ironed with Mum's clothing iron to bond the wood to the ribbon. I made a little jig to hold everything in place for this operation, as it is very easy to build in a curve or twist if you try this freehand. Once bonded, you have a two ply strip that is 1/8" wide and 1/16" thick. Having successfully got that far, I repeat the performance with another two strips of wood, leaving a small strip of ribbon exposed.

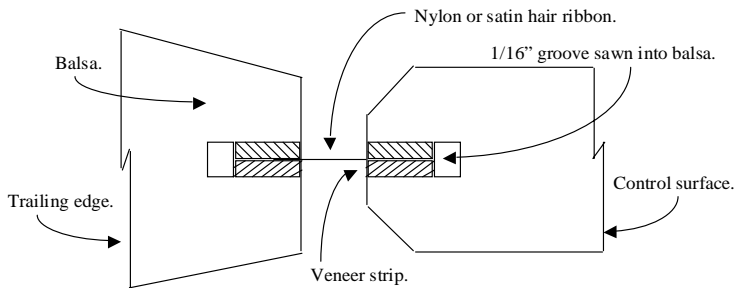
You end up with 2 bits of wood 1/16th x 1/8th, with a bit of nylon ribbon between them. The whole assembly is 5/16ths of an inch wide and it is fitted into 1/16th slots accurately sawn into the centerline of the Leading Edge of the flap and the back of the flap spar. The slots are sawn (in my case) with a small circular saw before the wing is built. That bit is easy. The hinge strip can be experimentally pushed into the slots for trial fitting of the control surface and finally assembled and glued into place after painting the model and control surfaces separately. During the model painting process, I filled the slots for the hinges with strips of scrap 1/16" balsa to prevent paint ingress during finishing. After painting, the scrap strips can be prized out, leaving clean wood in the slot for the glue to bond to. I used thinned balsa cement (pre-glued) to assemble the finished product as my first experiments with water based glue caused the wood to swell and distort. Balsa cement worked well for me, and I have the fond hope that if it is ever necessary to remove the strip, it may be possible to soften the glue with acetone.

With a bit of luck, there should be some Primitive illustrations nearby to show the difference between Len's method and mine.

### Cross sections of full length flexing hinges.



The hinge method used by Len Armour.



The hinge method that I used.

Another building tip that could be of use to someone is the suggestion that you can shape wing root fillets by smoothing your favourite filler material into the joint using small spheres of the desired diameter. Use marbles or ball bearings which are readily available in a huge range of sizes. This gives a more consistent fillet radius than using a fingertip. I have used pieces of wooden dowel of various diameters in the past with reasonable success, and I will try the sphere method next time that I feel the urge to build a fillet. The filler that I usually use is epoxy filled with microballoons until it makes an almost dry paste. It seems to stay put very well once cured.

It may just be a result of the diseased weather that we have had here for the last couple of months, but I noticed that on the few good flying days we have had lately, there have been vast hordes of modelers in action. Along with them were quite a few visitors roaming about. Fred Adler pointed out to me as we surveyed the scene that with all this activity and 20 or so models on the ground we would be the envy of any Control Line club. I agree.

That's all for this month. The End. Ashes to ashes, balsa to dust.

Charlie Stone VH4706  
Email<cestone@bigpond.com>

## Prop Doctor



Hi editor,

Here is a little gem for ACLN with a website that may be interesting. My apologies for not contributing for a while but I have been having my heart re-plumbed.

Cheers Supercool. props@space.net.au

Reading about the water-in-methanol problem and thought I'd relate a just learned little snippet from <http://merlin.net.au/~bhampton/holdfast/howfuels.html>. That being to put the suspect fuel in the freezer. Methanol freezes at -79C so it won't freeze but the water content will and will precipitate to the bottom of the container. Thus one can examine for contamination and even have some recourse to correct it.



## Monty Tyrell Memorial Classic Stunt

### RULES OF HOSTALGIA AEROBATICS

1. Models must be of the 1966 design.
2. Models must be of the 1966 design.
3. Flying time must be 7 minutes.

**\*Don't miss it.**

**The annual Monty Tyrell Memorial Classic Stunt is on again.**

**Make a note to be at the KMAC flying field on Sunday 26th November.**

**\*Great range of classic stunters.**

**\*Meet old friends.**

**\*Monty Tyrell Memorabilia Display.**

**The event is for control line stunters of a design similar to that of pre - 1966 that will do the classic pattern in a maximum of 7 minutes.**

**Food and drinks available at the field.**

**Enquiries to:-**

**Derek Pickard**

**Tel (03) 9889 1149 (A.H.)**



## Control Line Aeromodellers of Gippsland Warragul Competition Day. From Peter White.

Sunday September 3<sup>rd</sup> dawned cold and very windy in Warragul with no sign of relief in the sky or the forecast.

Despite this, most of the usual Gippsland mob turned up, most with the intention of spectating while a pleasing number of the racing boys made the trip from Melbourne to compete. Details of their day's activities will doubtless be found elsewhere in this newsletter.

Because of the wind strength and the scarcity of enthusiastic competitors, Vintage Aerobatics was shelved but classic went ahead with four brave (foolhardy? foolish?) souls risking all for little or no glory.

Judging duties were attended to by Steve Mitchell and Bill Cecil who are to be thanked for their assistance and the time spent sitting in the cold – Thank you Bill and Steve!

Those who flew were Alan Harrison, Geoff Ingram, Paul Richardson and yours truly.

Alan bravely took the punt and drove all the way from Essendon to participate. He flew his faithful old Mk 1 Thunderbird with Merco 35 power. The first flight was a little on the rich side although Alan seemed to handle it pretty well under the conditions. For the second flight the needle setting was leaned off a little but this didn't help too much as the motor still wasn't happy, which didn't add to Alan's confidence with the wind still whistling across the paddock. Wisely, Alan waved off his flight.

Geoff Ingram's rebuilt ex Paul Richardson All Australian with an Enya 35 up front wasn't at all happy with the conditions and during the second flight it gave up its fight against the elements, suffering extensive damage. Geoff's first round flight ended during inverted laps when the motor cut out unexpectedly.

Paul Richardson bravely battled on with his Zilch / O.S. Max 11 .29. This model is difficult to fly accurately in good weather – this time Paul had his hands full just keeping it out of the mud. He chose to pass on the second round flight.

Yours truly flew a '51 Nobler which was fairly stable despite the conditions. Old G.A. knew what he was about when he designed it. The Fox .35 wasn't keen to fire up for either flight but once running it hauled the Nobler around quite well.

By early afternoon, all the flying that was going to be done had been done and all that was left was to work our way through the BBQ snags that had been cooked up by Greg Beevor, Graham Keen and Graham Vibert. Thanks for jumping in there boys and looking after that job.

To anyone else who helped and hasn't been named, my apologies and my thanks.

Final placings and scores for Classic Aerobatics were:-  
Peter White 3103  
Geoff Ingram 1154  
Paul Richardson 1039  
Alan Harrison 826

Maffra Sports Complex is the venue for our next flying day on Sunday 1<sup>st</sup> October Yes, it is quite a step from Melbourne but we are always happy to see some new faces turn up along with the regulars and make the trip. Lunch is B.Y.O. with the usual BBQ facilities provided.

Contacts for any details are:-  
Paul Richardson on 5147 2374, mobile 0402 066 753 or  
Peter White on 5623 5120, mobile 0401 496 265



### Control Line Classic Contest

When: 5th November 2000  
9.00 am start

Where: Hunter Sports High School Pacific Highway Gateshead.  
( Formerly Gateshead High School)  
Fields at rear of school.

Format: Classic Pattern as per attached.  
Classic legal models only, ie pre 1965 design.  
Sausage sizzle included in entry fee.

Entry fee : \$10.00 per head  
Prizes for 1st,2nd,3rd & concourse.  
All welcome juniors etc.

For more information contact:  
Glen Walker 49537997  
John Tidey 49845636



# World Championships 2000 Results

## F2A - SPEED

Updated 22nd July, 2000

### Individual general results

Place	N°	NAME Surname	Nation	Flight 1 (km/h)	Flight 2 (km/h)	Flight 3 (km/h)	Result (km/h)
1	A12	PARRAMON Luis	ESP	294.5	297.5	288.9	297.5
2	A23	MORRISSEY Ken	GBR	291.2	297.0	286.6	297.0
3	A38	KALININE Andrei	RUS	294.8	278.2	292.2	294.8
4	A24	HALMAN Pete	GBR	293.3	294.5	293.3	294.5
5	A22	ISLES Gordon	GBR	288.0	0.0	293.6	293.6
6	A37	KOSTIN Serguei	RUS	267.4	0.0	292.2	292.2
38	A02	WALKER John	AUS	0.0	0.0	265.0	265.0
42	A03	SUTHERLAND Frank	AUS	255.1	0.0	209.5	255.1

## F2B - Aerobatics

Place	N°	NAME Surname		Nation	Flight 1	Flight 2	Fly-off 1	Fly-off 2	Fly-off 3	Result
1	B18	HAN Xinping	W/Ch	CHN	2961.5	2998.5	3056.0	2966.0	2921.0	6022.0
2	B31	BERINGER Gilbert		FRA	2918.0	3052.0	3037.5	2917.0	2975.5	6013.0
3	B17	NU Anlin		CHN	2921.0	2961.0	3040.5	2879.5	2832.5	5920.0
4	B34	BERINGER Rémi	Jun/W-Ch	FRA	2918.5	2962.0	2955.5	2919.5	2880.5	5875.0
4	B19	ZHANG Wei		CHN	2946.0	2990.0	2945.0	2930.0	2922.5	5875.0
6	B95	WERWAGE Bill		USA	2922.0	3018.0	2957.5	2904.0	2902.5	5861.5
48	B05	TOWELL Reginald		AUS	2555.0	2755.0				2755.0
52	B03	HANNA Dallas		AUS	2548.0	2635.5				2635.5
65	B04	BATTAM Frank		AUS	2485.5	2578.5				2578.5

Below:- F2C Winning Model. Jean Maret /Jean-Paul Perret, France



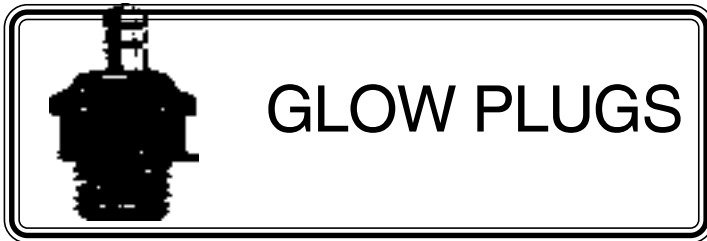
## F2C TEAM - RACING

Place	N°	NAME Surname	Nation	Heat 1	Heat 2	Heat 3	Semi 1	Semi 2	Final
1	C13	MARÉT J. / PERRET J.P.	FRA	69 laps	3:27.7	3:12.2	3:12.4	0:00.0	6:28.9
2	C45	BONDARENKO Y. / LERNER S.	UKR	3:21.7	3:16.7	DISQ	3:27.7	3:13.5	6:45.6
3	C32	CHABACHOV J. / MOSKALEEV S.	RUS	3:30.6	3:24.4	3:12.9	3:13.0	3:35.6	34 laps
4	C15	SURUGUE P. / SURUGUE G.	FRA	3:18.4	74 laps		3:14.1	3:16.2	
5	C05	FISCHER J. / STRANIAK H.	AUT	3:24.6	33 laps	3:17.0	3:16.6	3:14.9	
6	C14	DELOR B. / CONSTANT P.	FRA	3:21.1	34 laps	DISQ	3:31.8	3:17.7	

22	C02	CAMERON P. / FITZGERALD R.	AUS	3:32.2	3:44.5	3:28.6			
28	C03	JUSTIC R. / OWEN R.	AUS	DISQ	3:34.2	3:47.7			
35	C04	WILSON G. / STEIN P.	AUS	3:47.9	6 laps	4:11.1			

## F2D - COMBAT

Place	N°	NAME Surname	Nation	Result (wins)	Round								
					1	2	3	4	5	6	7	8	9
1	D63	CHORNY Stanislav	UKR	8	W	W	W	W	L	W	W	W	W
2	D64	MILENIN Igor	UKR	7	W	W	W	L	W	W	W	W	L
3	D72	ZOLNERKEVITCH Igor	BLR	6	W	L	W	W	W	W	W	L	
4	D44	WAKKERMAN Loet	NED	6	W	L	W	W	W	W	W	L	
4	D25	HENTSCHEL Lothar	GER	6	W	W	W	W	L	W	W	L	
6	D48	TALANTSEV Stanislav	RUS	5	W	W	W	W	W	L	L		
6	D18	VARFOLOMEJEV Dmitri	EST	5	L	W	W	W	W	W	L		
6	D30	WHILLANCE Mike	GBR	5	W	W	W	W	W	L	L		
6	D69	WILCOX Mike	USA	5	W	W	W	W	W	L	L		
13	D02	OWEN Robert	AUS	3	W	W	W	L	L				
33	D04	HARRISON Byron	AUS	1	L	W	L						
50	D03	POTTER Grant	AUS	0	L	L							



The glow plug is used to provide ignition for the fuel/air mixture in a similar manner to a spark plug in a petrol engine. A spark plug could also be used in our model engines running with our special fuels but would then require added equipment and complexity with the possibility of interference with the radio receiver. However, glow plugs can not be used with an engine running on petrol (likewise without added equipment).

So how does it work? To start the motor we must first heat up the element (the small coil of wire inside the plug) by connecting it to a battery. Most plugs are designed to use 2 volts but some can only handle 1.5 volts. Make sure which one you have! A 2 volt plug will not get hot enough on 1.5 volts for easy starting while a 1.5 volt plug will burn out on 2 volts (the coil melts).

Once the motor is running the battery can be disconnected. However, the plug will continue to glow with an orange heat to provide ignition. How does it do this without a battery?

It all hinges on the fuel we use (or part of the fuel) and what the element is made from. The working part of the fuel is methanol which is a type of alcohol, but not the drinking kind, it is quite poisonous. The element is made from several metals alloyed to make it strong enough to handle the heat and vibration. The metal we are interested in is the platinum. When platinum comes in contact with alcohol there is a catalytic reaction between the two which heats the platinum while causing the alcohol to ignite. So one helps the other.

But the element is glowing all the time the motor is running so how does the fuel know when to start burning (in other words, what determines the ignition point)?

Well this goes back to the catalytic reaction again. This reaction depends on two things, one is the temperature of the element (the hotter it is the easier it will react) and the pressure of the fuel/air mixture inside the cylinder (the higher the pressure the easier it will react).

Glow plug temperature is controlled by using different HEAT RANGE plugs. Just like motor car spark plugs, glow plugs come in different heat ranges from hot to cold with maybe half a dozen steps in between. If in doubt, use the plug specified by the engine manufacturer. Using a hotter plug than normal will advance the ignition point and a colder plug will retard the ignition. The only way to determine exactly the right heat range plug is by using an accurate tachometer. The plug that gives the highest rpm (for the same fuel and propeller) is the correct plug.

But what about the pressure of the fuel/air mixture? This is determined by the compression ratio of the engine and

normally is fixed by the manufacturer with possibly some small change allowed for by fitting or removing shims under the cylinder head. Not something to play with unless you know what you are doing.

For ultimate power a competition modeller will juggle combinations of plug, compressions and type of fuel (mainly nitro methane content) but this is way beyond the needs of the sporting flyer.

## PROP BALANCING

Why is it necessary? Consider that your engine is revving at around 12000 rpm and one blade of the prop is heavier than the other. This will cause considerable extra vibration which will be felt by every part of your model. Vibration is BAD! It causes engines to come loose (even fall out), can give interference to the radio equipment, reduces the life of the model, accelerates wear of the engine (particularly the bearings) and in general is NOT A NICE THING!

By their very nature, all engines produce vibration. What we have to do is to minimise this and the best place to start is with the prop. So how do we do it?

Before checking the balance, use fine wet and dry paper to remove the sharp mould lines from the front and rear edges of the blades. If you are starting by hand then these edges can cause a nasty cut if your finger slides along the blade.

There are many different types of prop balancers available from Hobby Shops, generally the more expensive they are the more accurately they will do the job. For sport type flying probably the best is also the simplest. This is a short length of round bar with tapered ends that come to a sharp point and is inserted through the hole in the prop hub. The points are lightly held between two fingers so that the prop is free to swing. If one blade is heavier then it will rotate to the bottom. This is usually the blade to do some work on.

With fine wet and dry paper, carefully sand along the TOP side of the blade. Try to take material off evenly along the length of the blade so as not to alter the airfoil shape too much. If the prop appears to be almost balanced, start by removing any painted brand names or, in the case of wood props, sand off some of the varnish. Check frequently with the balancer, you don't want to take too much off and have to start all over again with the other blade. The idea is that eventually the prop will sit in any position without any sign of movement.

Use care when holding the balancer between your fingers. Only use enough pressure so that it won't slip out, any more pressure just increases the friction and you won't get as accurate a reading.

Sometimes you will find that the prop will always stop horizontally but only with the blades in one orientation. This is because the true balance point of the prop is not in the centre of the hole but is actually off to one side of the hub. For general useage this is no real problem, it's really only of concern to competition modellers. Also it can be quite difficult to correct.



## QUEENSLAND TEAMRACE NEWS

*I would like to correct a few inaccuracies in the column written by Mark McDermott*

*Currently Ipswich club has two teamrace teams, they are the minority in the QLD teamrace scene.*

*McDermotts thoughts on Vintage B may be shared by others but we have no intention of changing our B class Vintage event or running against two leg, Class 2 teamracers.*

*I have never seen an Enya 29 used in Vintage B in QLD, break anything, except mine. The above average Enya 29 will break a rod if you can get it revving hard enough for long enough, mine lasted approx one year, 4 to 5 comps.*

*This problem is easily fixed by paying Robin Hiern \$40 for a solid Rod. (Enya Rods are cast.)*

*John Taylors Enya has been around for several years now, this motor cost peanuts and has done heaps of competitions. This Enya 29 mostly, starts first flick and has been a reliable good performer, the fastest in the Ipswich Club, so whats the problem?*

*For what reason would you pull out this motor and replace it with a 25 schnuerle?*

*The facts are Vintage B is doing very well. It is accepted in NSW and by a few Victorians as well, with two Nationals and two state titles, this event is the event of choice in class B.*

*On any day you can buy a NIB or near new 29 suitable for Vintage B, on EBAY for less than \$100.*

*Regarding the unacceptable rules. Unacceptable to whom?*

*The Rules are written to protect the class for the MAJORITY.*

*Class B was instigated in this country to be a CHEAP, FUN team race event catering for teamrace beginners and oldies alike.*

AUS 3197  
John Duggan



Stunter for sale: Time Machine 57inch by Tom Dixon (Scaled down Patternmaster) Professionally built. Excellent. \$180

Suit 50 or 60.

Also : Tigre 60 engine to suit \$200

Derek Pickard (03) 9889 1149 AH

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Sig Super Chipmunk C/L stunt. 53 1/2" span.

Suit .29-.40 motors. \$120

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Royal 46 reworked for stunt by Randy Smith

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(Had little use) \$80

Phone Paul Allen on (02) 65 72 4436

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