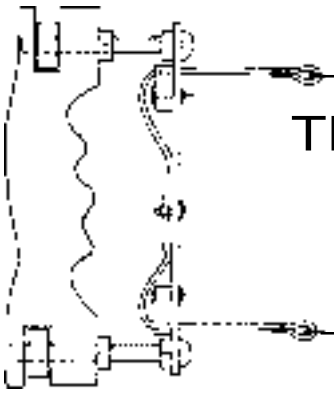


$2.00

THE VOICE OF CONTROL LINE AEROMODELLERS FROM AROUND AUSTRALIA

Number 35

Produced by the Victorian Control Line Advisory Committee

July 2000

INSIDE THIS ISSUE

Copy Deadline for next issue is: Wednesday 19th July 2000

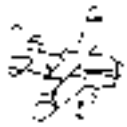
PRODUCTION SPECIFICATIONS

Please remember when submitting copy that if you have access to a PC, or suitable typewriter you can save us retyping by giving us your items pretyped, and please use a good black ribbon for best reproduction. **Best of all is to send it on a 3.5" disk as a Windows Write, Word for Windows, or as an ASCII TEXT FILE or use Email**

Conest results should be tab delimited, ie use a single tab between each column of results, if submitted by disk. This makes formatting much easier on the editor.

Harry and Paul Bailey at
37 Thompson Street. Clayton VIC. 3168.
Telephone (03) 9543 2259.
Email address:- acln@ozemail.com.au
Fax is also available, but please notify before sending to ensure fax is active.

COMING EVENTS



VICTORIAN CONTROL LINE CALENDAR

DATE	EVENT	CLUB
JUNE 25	F2B, NOVICE & JUNIOR AEROBATICS, COMBINED SPEED,CLASS 2 T/R	KMAC
JULY 2	SIMPLE COMBAT	SMAC at Knox
JULY 9	**FAI & COMBINED SPEED,** JUNIOR 2.5cc RAT RACE, JUNIOR 2.5cc COMBAT, FAI & MODIFIED COMBAT	CLAMF
JULY 30	FAI (STUNTMASTERS) NOVICE & JUNIOR AEROBATICS, CLASSIC STUNT	KMAC
AUG 6	SIMPLE RAT RACE (WHIPPING PERMITTED)	SMAC at Knox
AUG 12-13	NORTHERN AREA DISTRICT CHAMPIONSHIPS	BRCAC
AUG 20	**FAI TEAM RACE, 1000 LAP GOODYEAR,** 2.5cc OPEN COMBAT	CLAMF
AUG 27	FAI, NOVICE & JUNIOR AEROBATICS, VINTAGE STUNT, COMBINED SPEED, CLASS 2 TEAM RACE	KMAC
SEPT 3	WARRAGUL COUNTRY MEETING	CLAG
SEPT 10	**FAI & COMBINED SPEED, 1/2 A TEAM RACE, MINI GOODYEAR,** JUNIOR 2.5cc COMBAT	CLAMF
SEPT 24	FAI, NOVICE & JUNIOR AEROBATICS, CLASSIC STUNT, 1/2 A COMBAT, COMBINED SPEED.	KMAC

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 ***Note:-*** All events listed at KMAC ***Except Stunt*** to be run by the competitors on the day

Contact :- T. Matthews (03) 9560 0668.

SMAC Memorial Drive, Ross Reserve, Noble Park. (Melway 80 E12) 10.00am start.

Contact :- Reeve Marsh (03)9776 5949

WMAA Horsham. Contact :- V. Cresp (03) 5382 4065

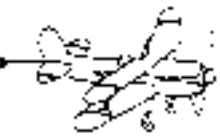
BRCAC Bendigo-Newbridge Rd . Marong

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.

CLAMF members are reminded that club meetings are held on the first Friday of the month at Clayton Primary School, Browns Road, Clayton.

COMING EVENTS



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
JUL 9	KMFC	A.G.M. SESQUI STUNT, 2.5cc RAT RACE, 2.5cc STUNT
JUL 29/30	SSME	TEAM RACING, VINTAGE A and B , OPEN B, BENDIX, PHANTOM.
AUG 13	KMFC	F2B AEROBATICS
SEPT 10	KMFC	CLASSIC STUNT (F2B PATTERN)
SEPT 17	ILLAWARRA MFC	F2B AEROBATICS
SEPT 30-OCT 2		*NSW STATE CHAMPIONSHIPS*
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 inc	SPORT 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 Calender

Date	Events
Jul 9th	CLASII Rat, Class 2, Bendix, “Scale Fly In”

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.

Any comments, queries or complaints with respect to any article in this publication should be addressed to the author of the article.

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.

Brake Horsepower Curves and What They Can Do For You.

Maris Dislers

Published Engine Tests

Over the years Aeromodeller and Model Airplane News were filled with many engine test reports by the perennial PGF Chinn. Full technical descriptions, good photos of the components and those neat BHP and Torque curves made possible by the eddy current dynamometer at his disposal. Armed with this data and an optical tachometer, one can approach the job of getting peak performance on a sound technical basis. Undoubtedly these tools are useful, but they are only an aid to achieving maximum performance. Trial and error with props and fuels against the stopwatch can't be replaced by bench running, but a lot of time can be saved and valuable insight gained by a bit of preliminary bench work.

It is unfortunate that most of the engine test reports in some current mags. concentrate on less important (to me) matters such as whether the castings look pretty on the outside, how it survived running on the latest fad commercial "low goo" fuel blend or how well the throttle works. At least you get a list of RPM figures for a variety of propellers, something like this.

10.5 x 8	Taipan	10,750 RPM
11 x 6	Keil Kraft Nylon	10,500 RPM
8 x 8	Tornado Nylon	12,300 RPM
12.5 x 5.5	Magnum	9,000 RPM

With a good dose of luck, you can make some sort of comparison with a known engine which you can check with one of the propellers used, but such data is not a patch on a good BHP curve.

Roll Your Own BHP Curve

It would be nice to refer to a published BHP curve for any engine of interest. We don't have that luxury, so let's look at producing our own.To do the job properly, it would be nice to borrow Peter Chinn's dyno. As a poor mans' alternative one can use a set of standard propellers, an optical tachometer and a set of propeller absorption curves. These curves show how much power is needed to turn a standard propeller at a given RPM. Such a set of curves was published in Aeromodeller April 1994 and is reproduced in this issue of ACLN. All you need now are a set of the appropriate APC and Graupner props, a tacho, and you are in business.

Run the engine on a variety of standard propellers that the engine can reasonably pull and record the RPM figures for each prop size. Refer to the curves for each prop size and read off the BHP produced by the engine at those revs. It is then a fairly simple matter of plotting BHP against RPM to produce your own BHP curve.

The shape of the curve will typically peak at a certain level before arcing down again. Our aim is to find the optimum RPM and then work towards fitting a suitable flight propeller to achieve this. This is not exactly straightforward, as the engine will run faster in the air on a given propeller, than when it has to turn it while stationary on the ground. As a rule of thumb, I allow around 2000 RPM difference; a bit more for higher revving or racing engines and less for combat or stunt set-ups. As an example, an engine shown to peak at 16,000 RPM would probably be at its best with a flight propeller checked at about 14,000 RPM before takeoff.

Of course there are shortcomings with this method, such as variation between the propeller you buy versus the one tested originally and the peculiar like or dislike that a test engine shows towards particular test props. The latter is probably due to the dynamics of balance/vibration inherent in single cylinder engines versus the smooth-running electric motor used in the initial calibration work. The ability of your test stand to absorb vibration is also a factor. You need to use a bit of discretion when "joining the dots" on the graph.

Your BHP curve may be different to one from another source. So what. In itself it is valid and as a comparative tool, it is very useful. Your BHP curve can tell you quite a bit about your engine's performance. The shape of the curve gives peak power level and optimum RPM data as well as the horsepower drop-off on either side. The most useful engines are often those that perform fairly close to their best over a broad range of RPM. It is easier to pick an effective flight propeller and minor variations in needle valve and compression settings are less noticeable. A curve with a sharpish peak is fine, but you need to be aware that some careful work is needed to get the best in the air from such an engine. Matching prop size to engine can be put to good effect in aerobatics, where it is desirable to match the BHP delivered to that required under a variety of loads, so a horsepower output with a distinct peak could even be turned to advantage.

Further Insights

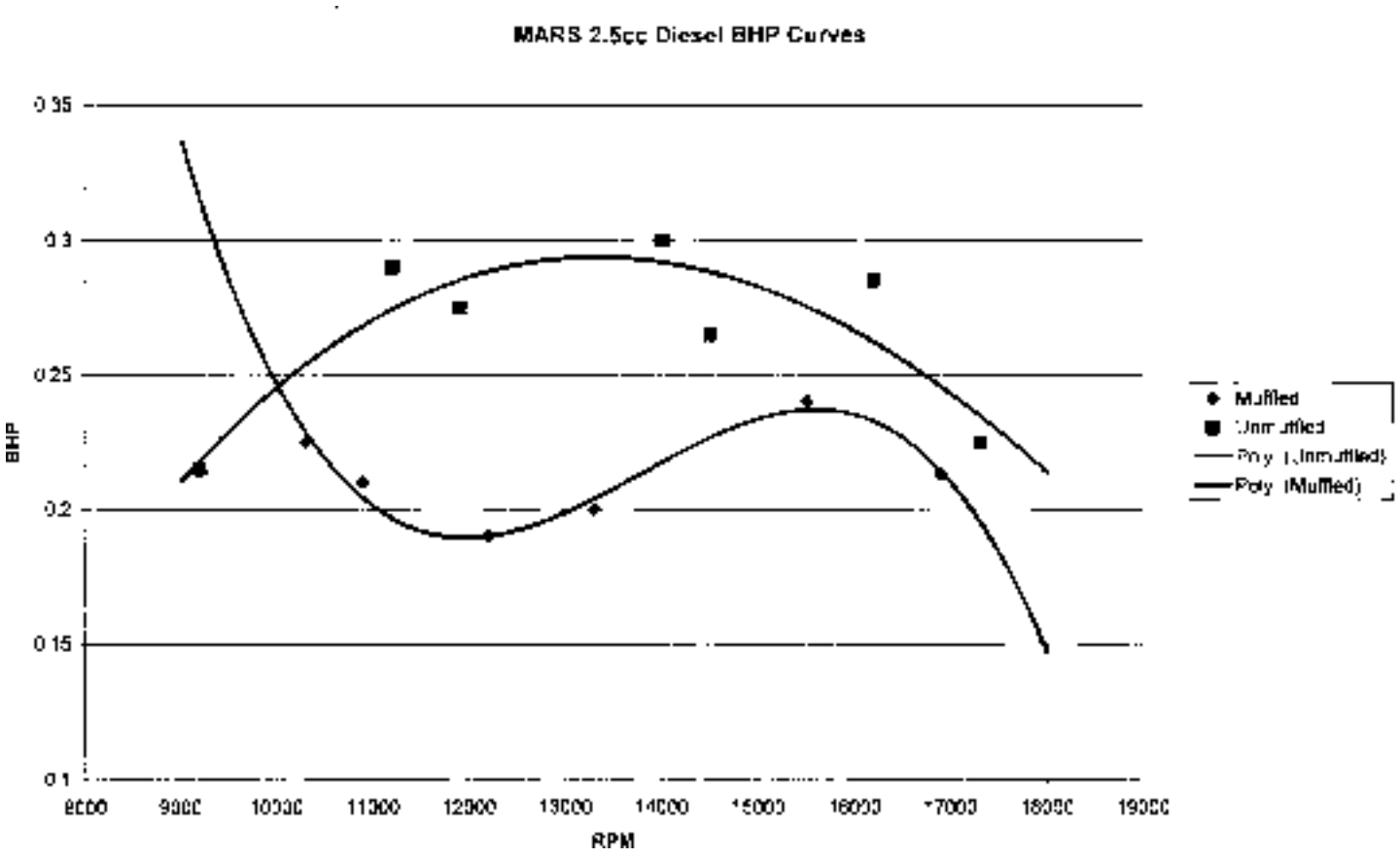
The fun bit really begins when you compare one curve with another. You can produce multiple curves for an engine by changing fuel mixes, carburettor size, port timings or other hot-up work. This is even better than the usual before and after checks against one propeller only, as the gains and losses from some modifications occur at varying levels over the RPM range.

In the first example, the two BHP curves of the MARS 2.5cc diesel in muffled and unmuffled state are shown. Apart from the implausible "muffled" trend line below 10,000 RPM (Microsoft Excel's choice, not mine) it is clear that the muffler has dire effects on BHP at lower RPM and that a fairly narrow "sweet spot" exists around 15,500 RPM. Also obvious is that peak muffled BHP can be matched or exceeded in the unmuffled state anywhere between 10,000 and 17,000 RPM !! Taking the muffler off and propping at around 13,500 RPM in the air gives over 20% more power.

The second example is a comparison between two engines: the Taipan 1.5cc and 1.9cc diesel engines. I wanted to know which engine to use for the Gordon Burford Free Flight Power event at the Nats. Peak horsepower, power to weight ratio and broadness of power curve are clearly in the Tyro's favour. The rapid drop off at higher RPM also suggests that some balancing improvements and port timing changes are likely to do the Series 66 engine some good.

Conclusion

One obvious shortcoming with the Aeromodeller curves is that they stop at 20,000 RPM. Many competition engines in use will peak well above this figure. I have mathematically extrapolated some absorbtion curves to much higher levels. Validity of this approach is OK in theory and is better than nothing anyway. Of course the safe maximum operating RPM of the test props must be considered. No matter what your ultimate aims I hope you will give this method of performance appraisal a try.



The Northern Area District Championships

are to be held at the Newbridge Road flying site in Marong on the weeekend of 12th-13th August

Events on Saturday will be

Junior Simple Rat Race

Simple Rat race

Simple Goodyear

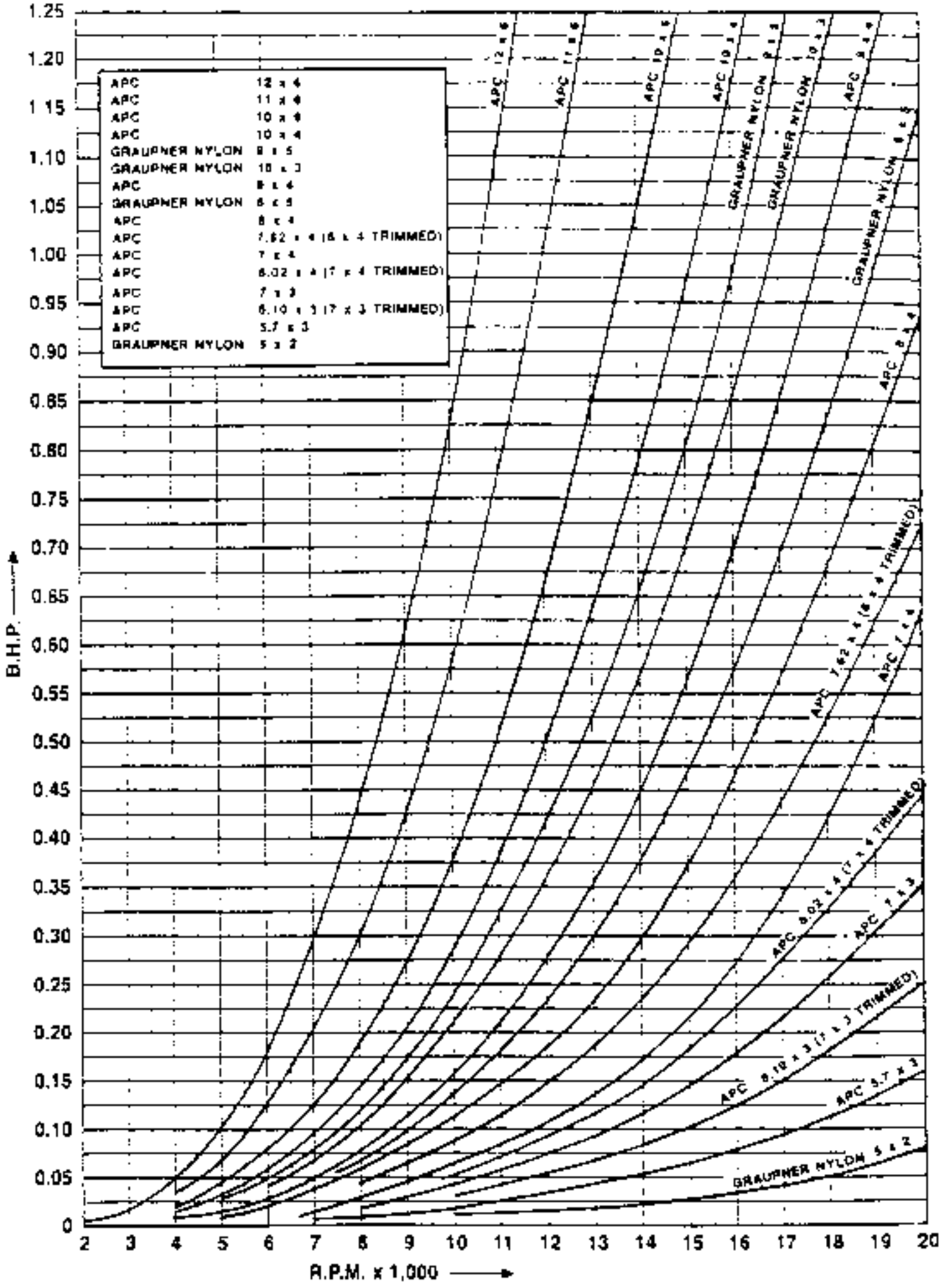
Sundays events are

1/2 A Combat

Vintage A Team Race

Australian B Team Race

Catering will be available on Sunday


APC 12 x 4
APC 11 x 4
APC 10 x 6
APC 10 x 4
GRAUPNER NYLON 8 x 5
GRAUPNER NYLON 10 x 3
APC 8 x 4
GRAUPNER NYLON 6 x 5
APC 8 x 4
APC 7.62 x 4 (6 x 4 TRIMMED)
APC 7 x 4
APC 8.02 x 4 (7 x 4 TRIMMED)
APC 7 x 3
APC 8.10 x 3 (7 x 3 TRIMMED)
APC 5.7 x 3
GRAUPNER NYLON 5 x 2
APC 12 x 6
APC 11 x 6
APC 10 x 6
APC 10 x 4
GRAUPNER NYLON 8 x 5
GRAUPNER NYLON 10 x 3
APC 8 x 4
GRAUPNER NYLON 6 x 5
APC 8 x 4
APC 7.62 x 4 (6 x 4 TRIMMED)
APC 7 x 4
APC 8.02 x 4 (7 x 4 TRIMMED)
APC 7 x 3
APC 8.10 x 3 (7 x 3 TRIMMED)
APC 5.7 x 3
GRAUPNER NYLON 5 x 2
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1.20
1.15
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1.05
1.00
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Cacho's Corner

ENGINE TEST: DS60RE/R

The Russian Revolution That Succeeded

by Derek Pickard

Looking back on all the trends that have come, gone, stayed and influenced real development in stunt engines in the past decade, the big one that stands out is the way F2B fliers have now shifted to prefer stunt-only designed rear exhaust engines. Whether you prefer stock exhausts or pipes, these dedicated 60s have established themselves as the best way to fly.

The ironic thing about their development is that most of the early work was done by the Russians and their allied countries. They were the first to standardise on what were then mainly 9cc but they were very much F2B only in the design and nearly always with a rear exhaust. They also featured good materials application which kept weight to a minimum. The reason for such a layout was invariably those fliers could not buy off-the-shelf engines, had to make their own and naturally chose to make totally suitable layouts. Those designs for the top fliers were not modified radio but real stunt-only from the drawing boards.

The latest of these new engines is claimed to provide the lot and the specification is impressive: top materials, excellent build quality, Schnerle big power porting, thin ring against a smart low friction liner and, of course, a rear exhaust. To top it all, the weight at just under 11 ounces is low. This is the Double Start 60RE/R Lite.

I've looked at DS motors before and tested one of their Lite offerings which went well in place of an ST60. But that, like the other early DS motors, incorporated traditional deflector piston porting whereas this new version has switched to more modern transfer ports - all four of them. And as George Aldrich proved as far back in the 1970s with his version of the then Fox 40 stunt, contemporary transfer ports can suit stunt very well if they are suitably arranged.

While that early Fox engine had transfer ports that worked because of their relatively small size and low timing, it is perfectly possible to boost the power of two stroke engines by increasing the capacity of the transfer facility if the ports are suitably arranged. This has to be done not just crudely by making larger ports (invariably 2 or 3) but by arranging the transfer facility around the back and sides of the circumference relative to the exhaust that incorporate the right direction, capacity and timing. When I was earning my living developing competition engines many years ago we very quickly went to 6 transfer ports which gave the effect with the exhaust of looking like a ring of ports when viewed down from the top of the liner.

Fortunately, this technology of the 1970s is now finding its way into some of our F2B engines. And when such transfers are correctly arranged (capacity, direction, timing) the plot comes together nicely to give the right kind of power. And, better still, the complex curves and capacities of 1970s two stroke exhaust pipe technology have found their way into the better pipes for F2B work.

This new DS has 4 such small transfers and a bridged exhaust port (the latter incorporates an expansion slot just underneath) which take on the visual effect of being like a ring of 6 ports around the liner's circumference when viewed from the top.

The basis is a normal slightly short stroke layout with top metallurgy and machining, but now with more advanced transfer ports. On top of that is a low compression to keep the whole thing controllable and a decent rear exhaust layout. The muffler bolts onto the back of the cylinder and in turn is bolted to the plane chassis. In stock form, only this conventional type of exhaust is available from the factory but a quick removal of head shims and the making of a different header will see it take on a new role as a pipe powered engine. While that is the theory, it is not recommended as a twin ball race layout in place of a plain bush would be more suitable for the high revs of pipework.

Anyway, getting back to the remainder of this motor's interior, it is impressive in the way the rod is bushed at both ends with decent oil holes, and the piston rod has PTFE (Teflon to you guys) pads. The single ring is conventional in layout and the fit is superb. The shaft spins in bronze alloy bushes and not bearings which is one of the reasons why this motor saves weight over other modern F2B 60s.

The Moldavan maker claims a positively unbelievably lean oil mixture which it says the engine will thrive on, but as this was only borrowed for a test, the decision was taken to keep the lube to 20%.

From new, out of the bag, the engine felt very sweet as regards overall fits with a very very good piston ring seal. Following 15 minutes of breaking-in, it was felt the situation was not improving because there was little to improve - this engine is so well made that only the minimum of breaking-in was required.

In the years I've been involved with stunt engine testing, I've been impressed at the way more and more new engines are being sold requiring only minimal breaking-in. This is the result of optimum metallurgical choice with good machining and is the way things should be. The next time someone tries to sell you a new motor which they insist: "Needs at least a couple of hours before it gives its best offer them a 1970s price for their 1970s technology.

After that minimal breaking in, the new DS was bolted into a Time Machine. This version was built along conventional lines for a foam wing that included full sheeting - definitely a mistake as the weight came out slightly on the high side. So Time Machine builders are urged to follow the plan's advice and only partially sheet the wing before covering with a decent plastic. (I'm reliably told the new Ozcover is excellent.) Fortunately, the Patternmaster basics are good so the scaled down version does fly okay and it is of the currently fashionable 650 squares size.

The only bad aspect of the conversion to the new motor

was the need for extra nose weight. This new DS is light and with its rear exhaust and minimal muffler mass means it is more in line with the weight of a 50. My Time Machine was built for a Stalker Pro-61 so the conversion to the DS unavoidably called for nose weight. Adding weight always hurts.

A good 60 prop was fitted which in this case was an Eather CF three blade 12x5.75. Just 5% nitro was used. Line length worked out to 67 feet (centre to centre).

The new DS60 fires up to a loud beat as the small muffler has only a minimal back pressure and silencing effect. With just over a turn out of the needle, the engine quickly settles to a very steady and strong 4 stroke before adjusting the setting quickly gives the right linear variation of leaning to a 2 stroke before richening back to a 4 stroke.

In the air, the engine can be set to either a constant 4 stroke throughout the pattern with only a minimal breaking up top or a slightly weaker 4 stroke to give an effective 2 stroke in the manoeuvres. With the big Eather triple blade prop, these ground speeds were 7800 and 8000rpm respectively.

The fuel economy worked out to 110cc and 100cc for such runs. For such a powerfull engine, that is an exellent achievement and the result of efficient transfer port technology.

That low fuel use means less overall weight and less weight transfer as the load is reduced during the pattern. All good stuff.

This is a powerful engine and as strong a conventional 60 as I've ever experienced. It has no trouble coping with the prop, the plane weight, long lines and reasonable winds. Also, achieving the right setting every time is very dependable.

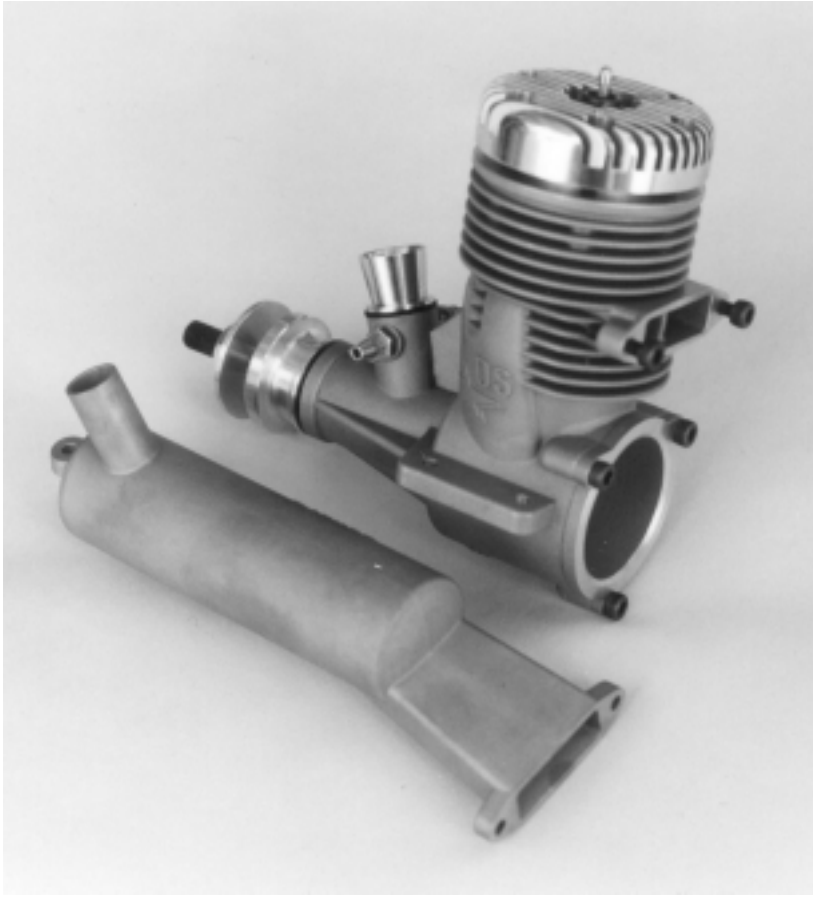
As this 60 barks out a traditional 4 stroke crackle throughout the pattern, the loud exhaust makes the kind of noise traditionalists love. It sounds great at all times.

Everyone who flew the new DS was very impressed. They all liked the light weight, the quality of materials and machining, the ease of adjustment and, above all, the excellent power from its dependable 4 stroke stunt run.

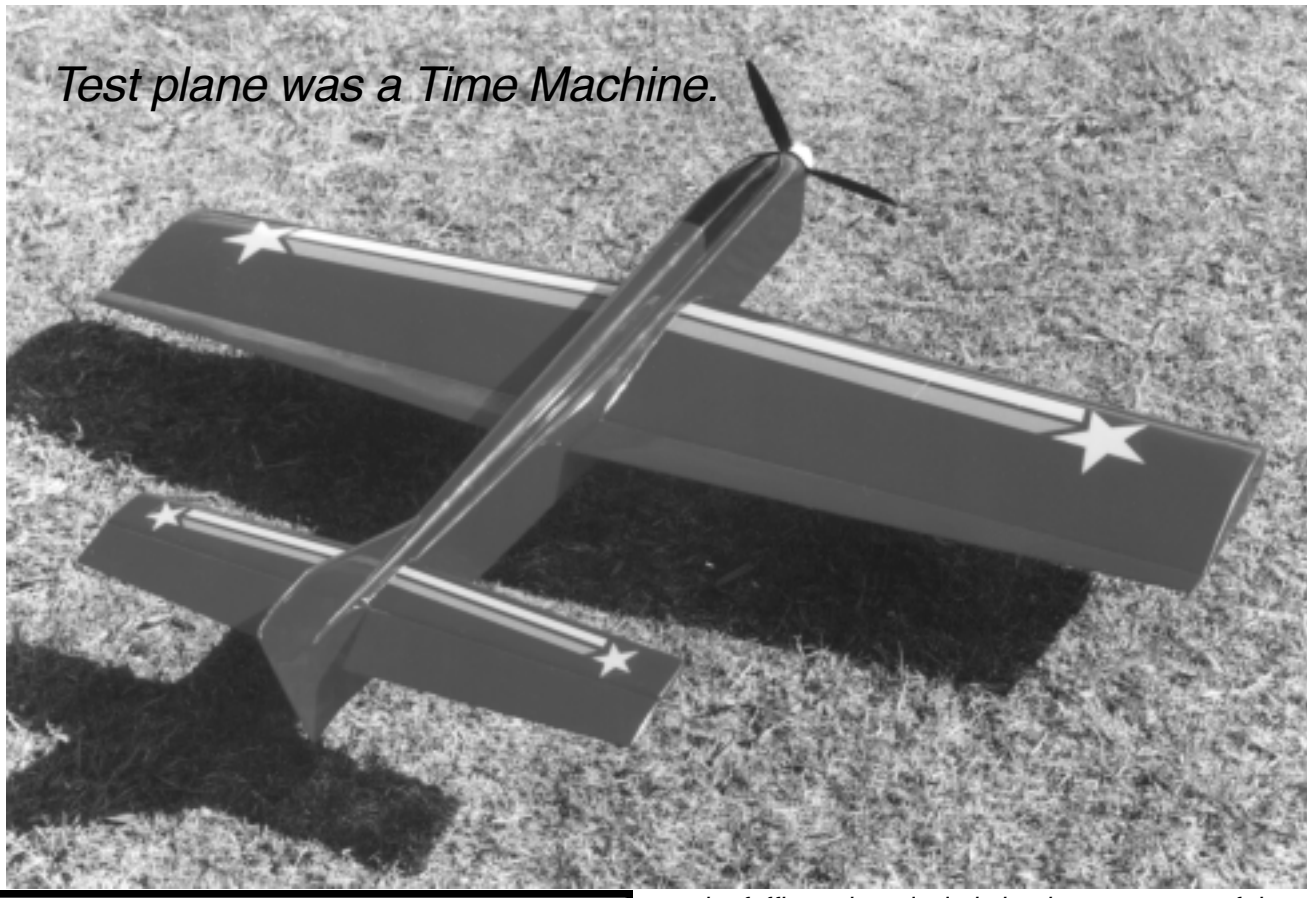
After the test was completed and the engine was being removed from the plane, the conclusion from those who flew it was that this new DS is as good a 60 as I've ever experienced. It offers the lot: very light weight, top quality, contemporary metallurgy, advanced design, strong power and superb air behaviour for only the minimal amount of fuel.

As tested in the application I used it------ absolutely top marks. The best conventional 60 I've ever experienced. It deserves the highest possible recommendation..

Declaration of interest: The engine was supplied as a loan for this test by Tom Dixon and was returned afterwards.



This latest version of the DS60 is a top conventional 60.



2-24 Appaloosa Court, GREENBANK Q. 4125

Gentlemen,

I really appreciated your inclusion of the Nats write up in the June edition and would like to thank the contributor(s) very much. I was also a bit chuffed to see two of the placegetters in both Junior and Open Combat holding my models. If (ex-Queenslander) Peter Anderson or Lachlan Fairall let me know their addresses I'll see what I can do to help. Obviously young Murray is doing very well by himself.

And what about that Charlie Stone? Not content with just becoming the next Tom Clancy (or perhaps Enid Blyton?) he's also shaping up as an agony aunt gossip columnist like "Dear Abby"!

Charlie's blockbusting, best selling magniloquence reflects the complete dedication of those who gave us "Braveheart" and "Erin Brockovich". Like the true professional, he doesn't appear to let the facts get in the way of a good story.

As State Champs Registrar and multiple CD, circle marshall, lap counter, timekeeper, fees collector, etc. I have been kept amused by the Vitamen "A" Team Race kerfuffle and particularly by the comments of the experts who weren't even there. The point is that once you bend, break or retrospectively amend one rule, every other rule becomes equally irrelevant by implication.

The rules for any event must be read as a whole and in my humble opinion should recognise both precedent and intent as well. To focus on one aspect in isolation could very well mean that chromed bore Olivers are illegal and that Nickasil (Nickel based AAN and ABN) bares are not! So if you were to directionally ("Schnuerle") port an Oliver, how would you go about it? Wouldn't it be somewhat identical to the "Timmy Tiger" How many of you have actually seen one of these gems?

Surely as rules "author". Johnny Hallowell couldn't have written "..would.." when he meant "could", would he? Talk about being hoist by one's own petard!

Q.E.D.

Regards

Brian Burke

Dear editor,

Just a quick note to say how much I enjoyed the Nats as a spectator.

The Control Line events were outstanding.

My only regret is leaving my copy of Moultons Control Line Manual at home.

The plan was to ask Bob Palmer to sign it. Never mind I asked him if he comes back to look me up, I'll be the one wearing a flak jacket racing a Gillott Oliver and carrying bolt cutters.

Cheers Jim Trevaskis (ex W.A.)

53rd National Championships results

GORDON BURFORD CLASS A TEAMRACE

		State	rd 1	rd 2	final
1.	G.Wilson/M.Ellins	V	4:47.15	4:04.68	8:28.08
2.	G.Potter/A.Kerr	N	4:03.69	4:03.74	8:47.19
3.	D.Bonello/G.Patterson	N	4:09.28	4:00.81	9:35.81
4.	H.Bailey/P.van Meurs	V	4:09.41	4:10.28	
5.	J.Stivey/T.Letchford	W	4:14.63	4:14.78	
6.	J.Hallowell/K.Baddock	V	4:19.91	4:15.72	
7.	P.Camps/D.Todd	N	4:18.37	4:28.28	
8.	G.Knight/J.Walker	N	4:46.97	4:30.12	
9.	K.Hunting/J.Hunting	V	4:40.56	DNF 41	
10.	R.Fitzgerald/B.Hoggan	S/A	4:53.72	5:02.31	
11.	J.Major/I.Garton	Q	5:23.56	W/Drew	
12.	R.Fry/A.Taylor	W	DNF 0	6:06.62	
13.	B.Sherman/J.Taylor	Q	DNF 0	DNF 74	
14.	C.Ray/J.Ray	V	DNS 0	W/Drew	

Photo:- From Left to Right
A. Kerr / G. Potter.
G. Wilson / M. Ellins.
D. Bonello / G. Patterson

CONTEST RESULTS

Vintage "A" Team Race Sun 25th June at Knox

		Heat 1	Heat 2	Final	Engine / Model	
1.	Hallowell / Ellins	3:37.65	DNS	7.27.43	CS Oliver /	Voodoo
2.	J. Hunting / K. Hunting	4:13.34	4.51.03	11.11.91	Mars /	Pluto
3.	Hetherell / Cresp	4:11.31	4.26.91	DNF 35 laps	CS Oliver /	Voodoo
4.	Bailey / C. Ray	4:20.57	4:57.47		Taipan /	Footprint
5.	J. Ray / C.Ray	4:30.65	4:22.34		CS Oliver /	Footprint
6.	K.Hunting / J.Hunting	5:19.59	4:43.21		Mars /	Voodoo

Australian "B" Team Race

		Heat 1	Final		
1.	Hallowell / Ellins	3:39.84	6.27.00	OS 25FP /	Flying Purple People Eater
2.	C. Ray / J. Ray	3:23.22	6:44.16	OS 25LA /	Firebrand
3.	Bailey / Roberts	3:51.69	8.47.08	OS 25FP /	Double Dice
4.	Hetherell / Cresp	3:46.24		Enya 30 /	Unknown

A modest turn out for both events on what turned out to be a pleasant winters day. The third event on the calender was Class 2 Team Race but it was not flown as by the end of the day there were nt enough people around to do C.D. duties and lap counting.

News from 2VA

By Charlie Stone VH 4706

TARMAC Notes for May and June

It must be that time of year again, as the State Championships for Vintage A have just been held. It was a fine, clear day but marred slightly by a gusty breeze that felt like it had come directly from the South pole. There were only six teams entered this year, but I think that the lower numbers represent only a temporary setback. 'Next year' was the word to be heard around the pits, and next year will undoubtedly be better. Next year is also when we have the Nationals here in WA, and as I write they are less than 11 months away, starting on April 21st. That is a broad hint to extract the digit and start preparing (not planning) for the events that you want to enter. If your typical building speed is like mine it may already be too late (Bob Fry can build a vintage racer in about 2 weeks and I take about 2 years).

For the second year running, I did not compete due to a chronic shortage of pilots. Norm Kirton, who usually flies for me was called away by work to cart a busload of business people off to the excitement available in the fleshpots of Kalgoorlie. Having worked there for a few years, I know exactly what that means. That effectively removed him from the running. Other regulars that did not appear when expected were Darryl Mills (last years winner), the Hoogenkamp/Leknys team (usually in the places) and Garry Turna who always represents a threat at any type of racing. The number of pilots that are fit enough to stand up, let alone run around for the duration of a race are sadly depleted at present. The trouble being that many of those that would once have been pilots (and wish that they still were), are now in much worse condition that the equipment that they are using. So there was some pilot sharing needed for the races to run. Fred Adler dragged himself from his sickbed to give his favorite Taipan it's annual outing, but was plagued with problems. There is always something new to occupy the mind on race day.

It was good to see both Adrian Dyson and Trevor Letchford taking time off from (respectively) R/C and Free Flight and becoming very involved in Control Line. They are both learning more about how to fly racers competitively and Trevor is becoming a dab hand in the very necessary black arts practiced by the better pitmen.

Hans Bertina arrived with the promised ex-Duggan 'Elliptic'. This is the first one of these that I have seen. It was, I believe, built by Dennis Prior; and as you would expect of a builder with his skills and experience, very neatly put together and finished in dark blue and clear epoxy. It was also very light, and featuring a Russian made Oliver Tiger copy containing parts from the US based engine modifier Tim Gillott, it was very, very fast. Once in the air, the plane showed that it had plenty of range and was definitely the fastest aircraft that we have had over here to date. However a missed catch in the first heat cost time that can never be won back and even though the resulting heat time of 3:44.41 was marginally the fastest of the day, it was not a fair representation of the capabilities of the outfit. I expected the second heat to produce a much more impressive time, but alas, that was not to be. After an instant start, I saw the plane climb away into a near wing over that terminated in total destruction about seven eighths of a lap later. The pilot, Peter Mundik, reported that the controls were locked from the time it left the ground. From examination of the remnants, it seems that the leadout wires had caught together so that the up control was locked on.

After that disaster, Hans produced his spare model, a Voodoo built from one of the Dave Bailey kits. Initially he was going to fit the new engine to that, but as often happens, different motors are not exactly the same size and it would not easily swap without time consuming modifications to either model or engine. When you are rushing to get ready for a final race, time is one commodity that is in short supply. So that engine was not used. While all this frantic activity was keeping Hans warm in the pits, the ambient temperature was dropping. Where it had previously been merely uncomfortably cold, it was now moving towards Artic. At last all was ready for the final and the three fastest, Mundik/Bertina, Fry/Taylor and Stivey/Adler readied themselves in the circle. Despite an instant start, and showing good speed, it was soon evident that Mundik/Bertina had severe problems as the engine of the Voodoo stopped after only six laps. That was all it would do before quitting. Thereby condemning them, had they continued, to a final with 30 pit stops. Not a competitive prospect. Stivey/Adler meanwhile were having their own troubles with the compression adjustment of Fred's Taipan special backing off by itself, leaving Jim strolling around the perimeter of the pilot's circle and the Yellow Pluto chugging around happily enough, but very slowly. The only plane showing any promise at this point was the Black and yellow Pluto of Fry/Taylor which was blasting around effectively by itself. Even those experienced racers had one painfully slow stop that cost them dearly in time and ruined any chance of breaking even the current Western Australian Vintage A record final time of 7:26 (held for some time by Bertina/Morrow). Nevertheless, they were there at the finish, and faster than everyone else, and it was a well deserved win to Fry/Taylor. The times were as follows:

Team	Heat 1	Heat 2	Final
Fry/Taylor	3:50.81	3:44.80	8:04.72
Stivey/Adler	3:48.25		DNF
Mundik/Bertina	3:44.41	DNF	DNF
Stivey/Morrow	4:16.18	DNF	
Dyson/Letchford	5:15.10	5:29.37	
Letchford/Bielby	6:22.57	5:43.96	

If anyone deserves a win at Vintage A, it is Bob Fry. Bob is the man that did the early work to get it started in WA. It is a long time since he saw Vintage A racing for the first time at the Nationals and came back to the West to promote the class here. He built the first Vintage A model (a PAW powered Footprint) and offered a range of plans for loan to anyone showing interest. Having checked my archives, I can tell you that it was reported in the Tarmac notes of February 1991 (last century even). Bob finished that 'Footprint' at blinding speed and then kept appearing at club meetings and the field nagging and grumbling about

the tardiness of the rest of us slowcoaches who had expressed interest, but not got on with the job quickly enough for him.

However, it was a long time before there were enough models ready to hold a race here, and by then Bob had relocated himself up North somewhere. So he wasn't able to fly at the first race when it finally happened on the 23rd of May 1992. By this time there were five teams ready to go, and four different model designs built and ready to race. They were 2 'Time Travelers', 'Footprint', 'Alien', and 'Pacemaker'. Vintage A was off and running in WA. Bob finally surfaced for his first competitive outing at the fourth race run (November 1992). At that time, he was at the other end of the lines, being the pitman, while Kim Haynes was the pilot half of the team. They placed 3rd at their first outing. Not too bad at all. As mentioned, these days Bob does the flying while the pitting duties are handled by his teammate, engine whiz and lover of diesels, Alasdair Taylor. A very effective team in all racing classes, and they play with jets too. (That was a Tarmac notes potted history.)

Several new models have been seen at the flying field of late. Ryan Martin has had his new Brodak Cardinal out there for it's bedding in flights under the watchful eye of Phil Trueman. This is a very nicely finished example of a stunt model that is becoming very popular and Ryan is to be commended on an excellent job. His regular partner in crime, Jason Washfold (they often sneak out to the field on weekends to commit aviation) has built and tested a brand new 'Flingel Bunt' vintage combat model. (From the name, it was obviously designed way back in the Pommy dreamtime by a Shadows fan). Another Vintage A racer, a newly built, 'Humpty Go Cart', made by Dave Gannon and resplendent in silvery finish was tested by the Gannon/ Walton team after the State Vintage A Championships. This one is a couple of ounces lighter than the yellow one they have been testing and seemed to be reasonably fast.

It has come to my notice that the Mercurians club has a supply (probably not endless) of pink (thin) Zap brand super glue, also zip kicker, and nitro methane. Ask Bob Fry for details.

News for those West Aussies that have an interest in war birds. I hear that a P51 Mustang has arrived at Jandakot and is in the last stages of preparation for flight. It seems to have sneaked in unobserved by me, but now I know that it is here, I will be waiting to hear the sound of a Merlin engine again.

I think that newspapers and news services such as television should be re-named 'Bad News' since that is all they distribute. Instead of being chock full of encouraging tales about enthusiastic aeromodellers who have just discovered an environmentally friendly, easy to use, fuel proof paint, or women's perfume that smells like diesel fuel (Tonjours d'Oliver), they are always full of unhappy stories. Mostly referring to brutal murders or unpleasant people in politics. For that matter, why do they constantly refer to 'brutal murders'? Where are the stories about gentle, caring and compassionate murders that we all long for.

Dennis Percival tells me that a bloke he knows went to comedy school to become a wit, but he only got half way through. I wonder who he was talking about?

Charlie Stone VH4706
Email<cestone@bigpond.com>

Prop News for June 2000

Well now, there's a catchy title for you! Here we are, the shortest day tomorrow and I'm still not rich. Not for lack of prop sales, just not enough profit.

Covered in Glory at the Nowra Nats, the guys were kind enough to set some records with my new 21 props. F2A props seem to have slipped into oblivion, shame that.

But the subject of why one uses a single blade has come up again. It was suggested to me that this allowed a larger diameter prop to be used, which is true: however, it is not the main reason. The fastest prop around in 1/2A pylon these days is a single blader by Bruce De Chastel. The blade is very thin and best described as tiny: it runs around 135MPH at 34000 RPM. You can scarcely turn over the motor with it. If the revs go up any higher on these little motors then you'll have to fly them without props!

So what is the problem? Its a thing to do with moving through air: the smaller the blade chord, and the slower it moves, the more lossy resistance it feels. If you've heard the term Reynolds number, then this is where its at. Low values of Reynolds number means your trying to push your prop through treacle. Don't tell me, you've never seen treacle either!

Props with one blade have double the Reynolds numbers of 2-bladed props, because they can be twice as wide. They find it much easier to cut the air. End of story.

Went to the AMPRA pylon racing championship in Bairnsdale for the Queens Birthday weekend in Victoria. Doppler was useful for checking out these models, plus I wanted to test my data collection radio microphones. The best piped 40's are turning around 31000 RPM at 190 MPH in the course, while the piped 21's are also turning 31000 but at 160 MPH.

When you consider the unpiped 11's are turning 34000 at 135 MPH, this suggests something is out of kilter. When you also consider a very good dyno is available for something like $200, you would think our experts would be right into getting their RPM versus power curves. But

the only guy I know doing this is Grant Lucas, and his performance can only be described as terrifying.

What I want to know is this. How can you get top speed when you don't even know what RPM to prop the motor for in the air? Beats me. Guess nobody has the time these days.

Also of interest at Bairnsdale was the effort the top guys go to to get good wings. Two sets of wings are now available pulled out of metal machined moulds. They are as thin as the rules permit, very rigid, and very fast. I know the electric pylon guys have invested in a metal mould, as have some team race guys. Watch this space.

Have also been struggling vainly with Doppler studies. Automation of this process is proving elusive. I have discovered there is a whole field of maths called Digital Signal Processing (DSP). Boy, is it tough. The computer code used for most DSP applications is C++.

This is a really ghastly language to learn and use. I did a TAFE course in it, learnt enough to know I don't want to use it ever in my short remaining life. Problem is, its very fast.

Much of Windows NT is written is this gobbledegook, no wonder its full of bugs.

As an alternative, I've discovered Power Basic, which can be written for DOS or Windows. Much faster than Quick Basic due its full compiler, and with some very powerful commands. Even so, its struggling to do DSP.

Main problem has been figuring how to read the sound card in the computer. I'm close, will let you know when I succeed. Sound cards are a terrific bargain if you are looking for a fast analog-to-digital converter. I have purchased 3 Sound Master cards for just $40 each. Thats one-tenth or less then professional PCI ADC cards. The trick is to figure how to get the reading, and I can tell you the manufacturers are not very helpful at all.

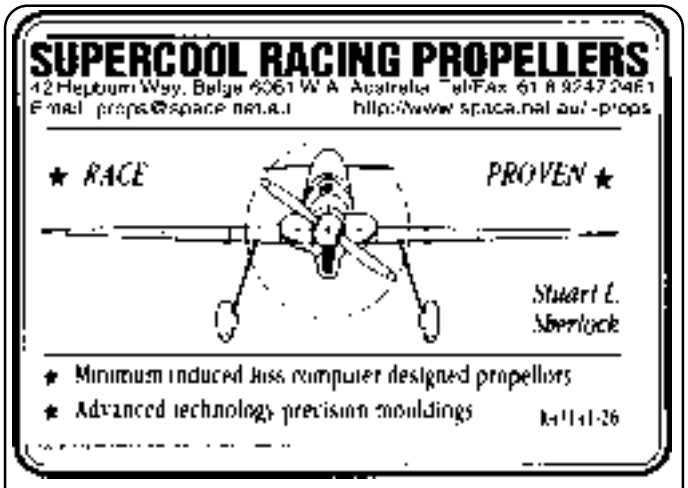
Most of my efforts with DSP have been in trying to clean up the sound signal into something easy to analyse. The sort of words you meet are Fourier Transforms, auto-correlation and cross-correlation. At first I thought there may be some magic in their procedures, but you get nothing out of bad data, believe me. So I'm going back to the raw signal to get things right there first. Built my own ADC from a kit. Again the manufacturers weren't too helpfull, but I did get it up to 10000 readings per second, 5 times better than the supplied software. This is useful, but does not compare to a sound card with 2 channels at 50000 readings per second each.

The problem is that the models are so fast. In pylon, they can change direction 180 degrees in 0.4 seconds, while in C/L 1 second is typical. To track this, you need to sample the sound wave at least 20 times in 1 second. Since each sample needs about 1000 readings, you are up for 20000 readings per second, which is pretty darned fast.

To finish off, a new observation. My latest racing propellers have the spinner as part of the moulding. This eliminates the spinner-cutout gap, and hence the drag and dirty airflow in that region. The guys report a reduction in noise as a result. Since these guys run 110dBA, that means a very significant reduction.

See you next month.

Stuart L. Sherlock



F2ACW01	6 X 6.2	Bendix01 9 x 6
F2ACW02	6 X 6.3	Bendix02 8.5 x 6.5
F2ACW03	6 X 6.4	
F2C04	6.3 X 6.1	
F2C05	6.3 X 6	Supercool .....
F2C06	6.8 X 5.8	

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This letter has been forwarded to me and I am sure it will come as a surprise to our readers as much as it did to me. Perhaps I am missing the point but it appears to me that an effort is being made for a two - tier membership of the M.A.A.A. for the sake of saving the non contest flyers the princely sum of five dollars. Less than the cost of a Glow plug!

Model Aerosport S. A. Incorporated

20/6/200

At the 2000 M.A.A.A. Inc Council Conference we were tasked with preparing a proposal for 2 tier membership.

It is evident that the majority of modelers in Australia are not interested in F.A.I. competition or involvement. Perhaps we should call this majority "Sports" modelers. A definition of a Sports modeler would be – "a modeler who does not participate as a competitor in any F.A.I. State, National or International competitions."

There is a word wide movement towards non F.A.I. affiliated sport modeler groups. The largest is in Germany;

47,000 members.
DM4,500,000 cash in the bank.
DM70 per member fee.
Bi-monthly magazine.
5 full time staff.
Youth training.

This group is not affiliated with the F.A.I. but has run two Word Championships. During the next six months Sports Flyers (Europe) and Sports Flyers (Asia) will be established.

Unless we provide for the Sports flyers within the M.A.A.A. structure, and represent these members a separate group will be formed in Australia within the next 12 months.

For the purpose of the exercise, assume we have 8000 Sport Modelers and 2000 F.A.I. Contest Modelers.

From our current Financial Statements, some costs associated with F.A.I. membership are:

Attendance at C.I.A.M meetings	$2.787.00
W/C uniforms	$2,300.00
Other expenses associated with W/C	$7,923.00
Affiliation Fee	$28,461.00
Total	$41,271.00

This would mean a $5.00/member reduction for "Sports Modeler" and $20.00/member increase for the "F.A.I. Contest Modeler"

We recommend that this two – tier proposal be adopted.

Leo O'Reilly
Joe McGuffin

Imagine the situation of a sports flyer turning up at a club competition with a model and requesting permission to compete!

Can we see your membership card? Oh no you are not allowed because you have not payed the extra $25.

The idea seems pointless and if you agree you should let the M.A.A.A. Secretary know of your opinion before the situation becomes serious.

His address is :- Mr. C Greenwood
6 Coppelius Cl
Sunbury
Vic 3429

Remember! Not all modelers get this newsletter, so spread the word.

Contest Rules and Rule Changes.

The M.A.A.A. will be having a rules conference in February 2001. At this conference all proposed rule changes will be discussed and voted upon.

Any proposed rule changes must be submitted to the M.A.A.A. by November 17th 2000.

All contest fliers now have the opportunity to put forward proposals for changes to M.A.A.A. contest rules to their respective State Delegates.

The method that was used to co-ordinate the proposals before the last rules conference will again be used this year.

1. Submit your proposal to your State Delegate, or post direct to G. Wilson. P.O. Box 298. Seaford. 3198. (As soon as possible)
2. Your State Delegate will then forward the proposals to the Control Line Co-ordinator.
3. The co-ordinated rule changes will be sent out to you the competitors for the opportunity to vote.
4. Return your voting form as soon as possible.
5. A final list of rule changes will be made to reflect your voting.

Your State Delegates are listed below.

John Major.
55 Bellay Rd.
Beachmere. Qld. 4510

G. Bevan.
2 Kamilaroi Rd.
Bayview. N.S.W. 2104

Ray Harvey
12 Sherwood Circuit.
Gordon. A.C.T. 2906

M. Dislars.
67 Glengyle Tce.
Glendore. S.A. 5037

R. Morrow.
11 Ropele Dve.
Lynwood. W.A. 6155

P.Van Munster.
P.O. Box 169
Berrimah. N.T. 0828

G.Wilson.
P.O. Box 298
Seaford. Vic. 3198

Control Line Aeromodellers of Gippsland.

From Peter White

There's very little to report from the get together at Warragul on Sunday June 4th, as we were quite soundly beaten by the weather which was wet, cold and windy. Andrew Beevor was the only one to brave the weather, putting up four flights on his Delta powered by an OS46LA.

Following a discussion on our prospects of a days flying, we retired to the relative comfort of my garage for a B.S. session and barbecue.

Absent from the gathering was Paul Richardson, whose mother passed away earlier in the week. To Paul, Wendy, Robbie and Peter we offer our condolences.

Hopefully the weather Gods will be a little more benevolent for our meeting at the racecourse on July 2nd and Tralalgon on August 6th.

Keep in mind also the scheduled contest day at the Warragul Showgrounds on September 3rd.

With winter upon us and the building season warming up, some of us will be building wings for our new birds using the "sandwich" or "stack" method to make up a set of ribs. Without a complete set of templates, one for each rib in a tapered wing the stack method is probably the quickest or best approach.

Nearly every plan for such a wing gives a root and tip rib drawing exactly the size that is needed. Now if you begin by making up hard templates of ply or metal, slipping the required number of blanks between them, carving and sanding until you've gone as far as you can go without digging in to your templates, you'll have a set of accurate ribs ready to build your wing around, right? Wrong!!

If your root template is exactly the right size to the plan, then, because of the taper towards the tip rib, the next rib to it, the rib you are going to call number one rib, will be a little smaller than it should be in chord and depth. Back at the other end of the stack, the reverse will be happening. The tip rib will be a little larger than the tip template, again because of the taper.

Because the trailing edge depth is usually constant, there is little or no taper here but towards the high point the a mount of taper increases and then decreases towards the leading edge, again because the leading edge spar is usually of a constant thickness. (Check this out by laying the tip template on the root template). All of this leads to inaccuracies in the rib shapes in the important area from the leading edge back to the high point.

To get around this, the root template needs to be made approximately 1/16 – 3/32 deeper top and bottom at the high point, decreasing towards the leading and trailing edges, using a French Curve or a copy of the root rib drawing to blend the curves of your now distorted rib

template. I've used the word "approximately", as you'll probably need to do some fine-tuning of the template to produce an accurate root rib.

The mathematically inclined amongst us could most likely calculate the extra depth needed on the template, taking into account the wing section taper, the rib blank thickness and the number of rib blanks in the stack.

Make up the stack, (more on this later) and hack, carve whittle and sand until you've started to kiss the templates. When you take the stack apart you'll see that each rib has a tapered or bevelled edge which –

A. Gives a poor-gluing edge for sheeting or poor support for silk or tissue covering.

B. Creates an oversize rib.

Sanding the edges of the ribs square should bring them down to the correct depth.

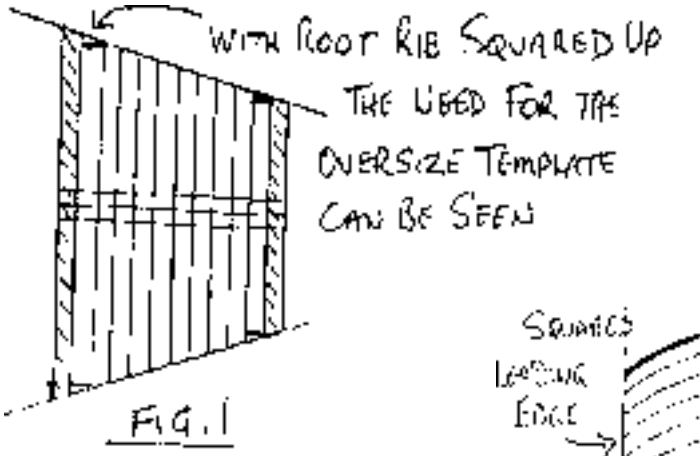


FIG. 1

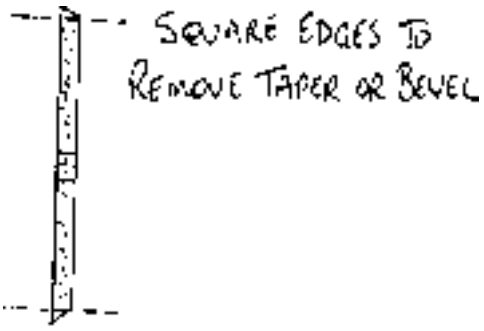


FIG. 2

Do this first with the root rib and check it for profile against the plan drawing, ignoring the trailing edge area for the moment. If this rib is to large, take some material off the template, reassemble the stack, carve a little more, square up the rib and check it against the plan. Repeat this procedure until your happy with the results. On the other hand, if you have produced a root rib that is too small, you're stuck between a rock and a hard place. Do you use the undersize ribs in your new plane and not tell anyone or do you make up another larger root template and carve another stack of ribs? The choice is yours!!

At the top end of the stack, life is a little simpler. When you square up the tip rib it should finish up the same size and shape as the template and the plan drawing.
To achieve this the template must be of very thin material or have a bevel worked into its edges.
My early encounters with the stack method suggested setting up the stack with the trailing edge square and all the taper and sweepback being carved from the front of the stack. All at once I was on the wrong road. Not only did this produce the inevitable root to tip taper or bevel on each rib it also added the sweepback taper to the forward section and on the rig to leading edge spar gluing point.

After all these tapered or bevelled edges were squared up my Thunderbird ribs now began to resemble Nobler ribs in section and chord.

The next approach was to assemble the stack with the leading edge square and shape it, leaving the trailing edge point of each rib untouched for the time being. After the rib edges were squared and checked for profile they were placed on the plan view of the wing at their appropriate position so that the trailing edges could be marked and trimmed accurately.

To hold the stack and templates steady for carving, you can pin them, clamp them or run a couple of 1/8inch bolts through the lot. I find the bolts the best way to goas they hold everything steady and don't get on the way.

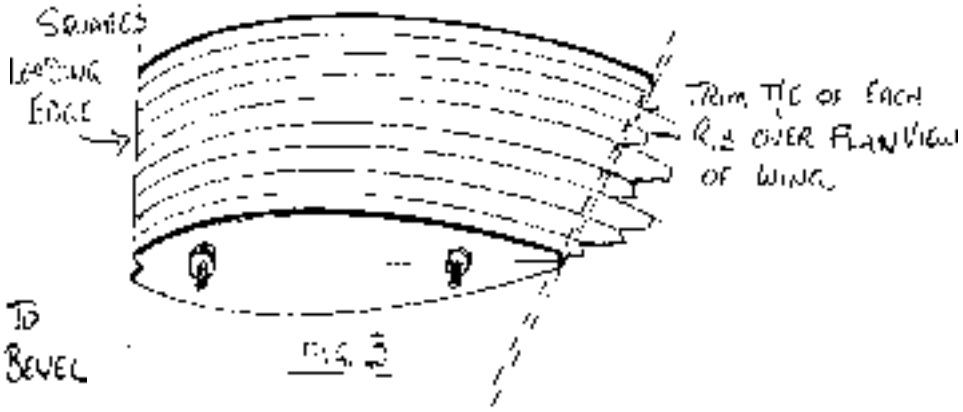
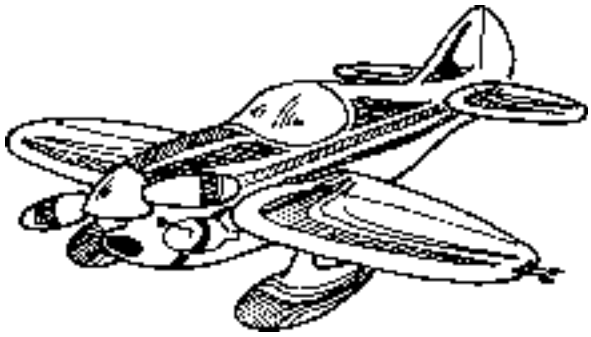


FIG. 3

As you can see, there's a bit of messing around for what appears to be a simple operation, but when the dust settles the extra effort will have been worthwhile.



THE "MAGIC" STUNT RUN.

By Kim Webby.

Why is it some modeller's engines just purr along and seem so effortless about their task?

PRELUDE: This article is written primarily to help the advanced beginner through the difficult transition to competition flying The information is a collection of observations and remedies from years of experience with stunt engines in New Zealand conditions It is also intended to highlight many of the simple solutions to problems before getting seriously side tracked into engine modifications.

There is a lot written about getting engines to run well, but still every time at stunt contests I seem to end up helping sort out models and engines It seems that old basic problems keep showing their faces

There are no real secrets but my belief is that you have to ***KEEP THE SET-UP SIMPLE, EASY TO MAINTAIN***, and most of all ***BE THOROUGH ABOUT IT.*** A simple set-up can rake a lot of time initially but it will require the minimum of maintenance to keep operational

Before you get anywhere near the flying field, there are a lot of things to check and possibly remedy, some of which would be best done in the process of building the model I will break it down into sections and will try to keep it as brief as possible Be methodical about it and check off each item when it has been given the ***"Stuntmans seal of Approval"***.

ENGINE MOUNTING: Mount the engine on rigid mounts securely, preferably using additional lock nuts to avoid the bolts vibrating loose.

TANKS: Design the tank mounting to be **AS CLOSE AS POSSIBLE** behind the engine

Make provision for it to be adjustable above or below the centreline of the needle valve. Profile models generally require the tank to be higher than the centreline of the prop shaft

Tank adjustment is extremely important for "trimming" the engine run to be equal upright and inverted It also helps to skew the tank sideways in the fuselage to help make the engine cut cleanly at the end of the run. (Back outboard corner - outboard.)

Mount the tank securely but on a layer of foam plastic to absorb some of the vibration

Tank construction: Some sort of symmetrical metal wedge tank. The joints **MUST** be overlapped and clean solder joints with no leaks

Tank Plumbing: USE uniflow venting.

Feed Pipe: This should end approximately 1.5mm from the back outside corner of the wedge.

Uniflow Vent: This needs to be between 15 & 16mm directly forward of the feed on the horizontal centreline of the tank. The vent pipe needs to exit the fuselage above the top level of the tank and pointing forward into the breeze (The tank can be connected to the exit tube with a length of silicon fuel tubing). The uniflow vent also serves as the filler.

Overflow Pipe: This is usually drilled through the bottom of the tank and goes to the top inside corner of the tank. The overflow must be BLOCKED OFF in flight with a cap that is air tight. Plug a piece of fuel tube with a solid rivet, bind with cotton and cyano

Note: 1/8" or 3mm, thick walled copper tube is better than the thin walled brass tube because it is easier to bend and it helps control fuel surging. Be sure to solder each pipe in two places in the tank, firstly where the pipe enters the tank and secondly where the pipe ends inside the tank

After completion of soldering, flush the tank thoroughly with lots of water to neutralise the flux and then flush with fuel.

MUFFLER PRESSURE: ***DO NOT USE MUFFLER PRESSURE!*** I have seen people struggling for years using muffler pressure and it is more trouble than it is worth for stunt. Set up your engine to run on suction feed with a suitable sized venturi to achieve the run you require For .40 to .50 size engines a 7mm inside diameter venturi using a 4mm diameter needle valve spray bar is a good starter

FUEL LINES: The feed line from the tank to engine must be on the OUTBOARD SIDE of the fuselage and the most direct route possible. i.e. On the horizontal centre line of the needle valve for inverted engines. Use an in-line fuel filter. Fuel lines that can flap around are NO GOOD. Use sensible sized fuel line, not the 'garden hose' variety used on large radio models. Adjust the length of the fuel line so that bends are smooth with no kinks. If the needle valve - fuel tube junction or any others are not a tight reliable fit, wire them on with 15 Amp fuse wire or try smaller tube.

NEEDLE VALVE ASSEMBLIES: Personally I prefer the Super Tigre style N V.A. that has a collet

NEEDLE VALVE ASSEMBLIES: Personally I prefer the Super Tigre style N.V.A. that has a collet to lock the needle in position. These should be tightened so you can just turn the needle without excessive force. The O.S. style N.V.A. do not give a reliable setting because the needle can vibrate like a tuning fork, and sometimes you need a half a click!

The spray bar jet hole should be just past horizontal pointing downwards. You should not be able to see the hole Periodically the needle and fuel lines need to be removed and the spray bar back flushed *NOT* back into the tank!

FUEL CLEANLINESS: Fuel Cleanliness is vitally important! Filter your fuel into your bottle, have a filter on the outlet of your bottle and another in the model **MAKE SURE THE FILTERS ARE EFFECTIVE!** I replace the gauze in commercial filters with much finer gauze and ensure the gauze is a tight fit inside the filter case so crap can't sneak around the side.

ENGINE CLEANLINESS: Remove the muffler and examine the piston through the exhaust port while turning the engine over. If there is a brown lacquer build up on the piston the engine is due for a clean out.

It would be wise at this stage to look at the cooling system because chances are the engine is running too hot. For cowled engines the outlet area must be considerably larger than the inlet area As a rule of thumb the outlet should be twice the size of the inlet.

If you are nervous about dismantling the engine, try and find someone to help you who knows the "Art" of engine dismantling and cleaning For a reliable engine run it is important that there is no brown lacquer build up, particularly on moving parts.

When the engine is dismantled, look carefully at the following areas:

1. Piston and the inside bore of the liner.
2. Outside of the liner and inside of the cylinder jacket.
3. Piston ring and groove.
4. Inside of the gudgeon pin hole in piston.
5. Top, little end of con-rod (bearing)
6. Edge of cylinder head / combustion chamber that slips into the liner.

I like to put all the parts in a sealed golden syrup tin or screw top jar to soak for several days in lacquer thinners Avoid soaking plastic or rubber parts

To remove the lacquer from holes, wrap a small piece of 1,200 grit wet & dry paper (2,000 grit is better) around a suitable sized drill shank so it just slides into the hole. **VERY CAREFULLY** sand trying not to remove any metal.

After spot sanding the worst areas, the internal bore of the liner can be done in a similar way with 400 - 600 wet & dry paper wrapped around a piece of smoothly machined bar for support Sand in a spiral pattern in both directions.

Check that the piston ring is free in its groove. If gummed up it should be very carefully removed and the ring plus the groove cleaned.

The external parts of the engine that are castor oil baked can be cleaned by boiling them in a pot with a teaspoon of Cold Water Surf or dishwasher powder for 10 to 15 minutes then scrubbing well with an old toothbrush. This also works well for the piston and liner but avoid this treatment on ball races. After this, scrub everything thoroughly in a tin of white spirits or kerosene and flush parts individually with a squeeze bottle, placing them to drain on a clean newspaper .

Reassemble the engine, then before fitting the cylinder head and back plate, flush the engine one last time and give it a squirt of CRC 5.56, WD40 or sewing machine oil Ensure the cylinder head and back plate gaskets seal properly and the screws are tightened evenly.

The engine will take about 6 runs for the moving parts to seat in again and you will probably need to lean out each run. Once run in, the oil from the exhaust should be clean. If it is not then something in the engine is wearing or the muffler is loose.

Note:- The above article was taken from the December 99 & February 00 edition of Revolutionary Torque.

Part two of this article will be published next in next months edition of A.C.L.N. Thanks to Kim Webby for giving his permission to re print his article.

REMINDER : TEAM RACE AND SPEED WEEKEND

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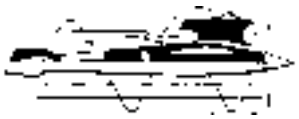

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