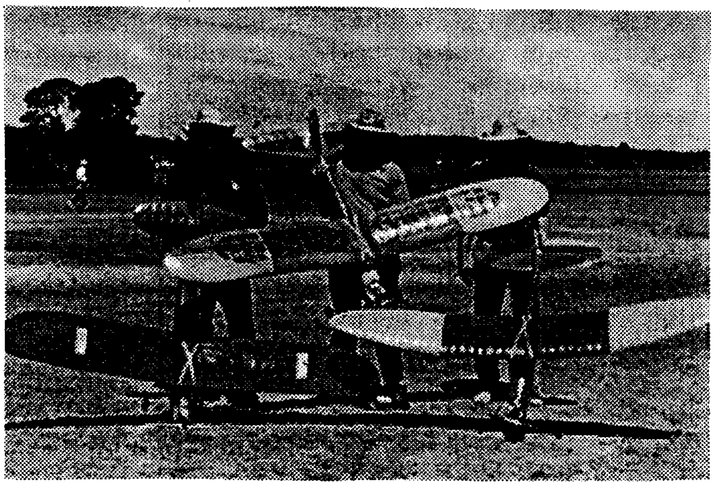
SAM 600 Inc.

VOTA — VICTORIAN R/C OLD TIMER ASSOCIATION

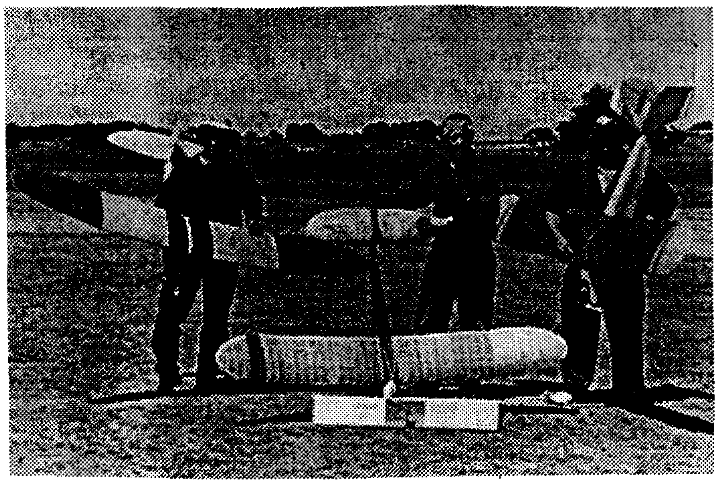
#47

http://www.sympac.com.au/ftboundy — *The voice of Old Timers from Victoria.*



38 antique

1/2 A



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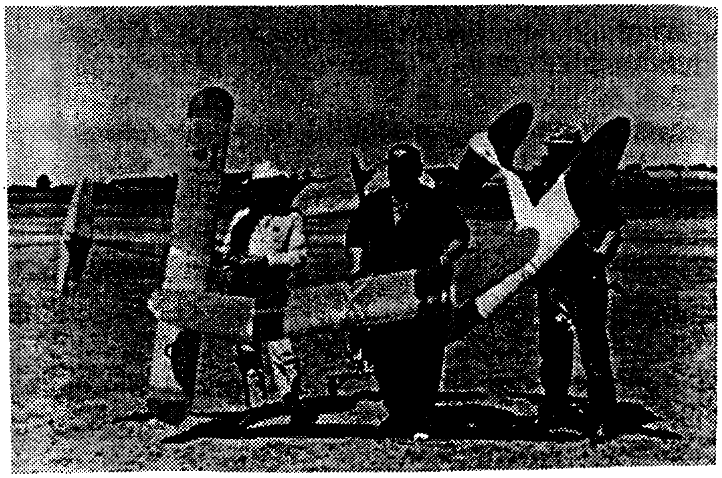
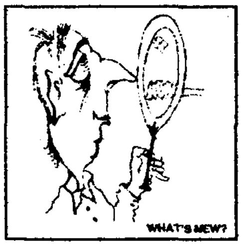


Texaco

SECOND ANNUAL FLY IN AT HADDON

November 23 & 24 1996



The RR is on Sunday January 26. at P&DARCS.

Read about the special IRVINE 40 Diesel Raffle.

(+18 min, 14 x 6 prop, 20 ml, 4,100 RPM.)

NEXT MEETING # 47

Is on Thursday, Jan 30, 1997 at 7:30 PM at the Royal Victorian Aero Club rooms Moorabbin Airport. (bar closes at 8:00 PM Club rooms close at 9:00PM) (Melway 87 G4).

COMING EVENTS

NSAC= National Sports & Aviation Centre Wangaratta.
RR=Roy Robertson Memorial Trophy.

Jan. 23 1997	Fly Day mid week	Lang Lang
~~**Jan.26 1997**~~	~~Roy Robertson Mem Trophy~~ P&DARCS	
Jan.30 1997		**Meeting #47**
Feb. 6 1997	Fly Day mid week	Lang Lang
Feb.9 1997	Monty Tyrrell Scale Rally	P&DARCS
Feb.9 1997	Glider Fun Fly	GMAA
Feb.18-23-1997	Avalon Air Show	
Feb.18-1997	OT Fly Day Warragul	LVMAC
Feb.20 1997	Fly Day mid week	Lang Lang
Mar.2 1997	Fun Scale (Keilor)	KDMAS
Mar.6 1997	Fly Day mid week	Lang Lang
Mar.15-16 1997	Vic.State Champs	Wangaratta
Mar.20 1997	Fly Day mid week	Lang Lang
Mar.23 1977	Open Fun Fly	P&DARCS
Mar.27 1997	**Last Meet before S/Hill**	**Meeting #48**
Mar.28-31 1997	Swan Hill OT	SHMAC
Apr.3 1997	Fly Day mid week	Lang Lang
Apr.17 1997	Fly Day mid week	Lang Lang
Apr.26-27 1997	WA State Champs	Monarto
May. 1 1997	Fly Day mid week	Lang Lang
May 4-1997	O/T Geelong	GMAA
May 11 1997	Mother's Day	
May. 15 1997	Fly Day mid week	Lang Lang
May 17-18-1997	Mammoth & Scale F/In	SHMAC
May 25-1997	Model Engines 4/sFlyIn	MARCS
May. 29 1997	Fly Day mid week	Lang Lang
May 29 1997		**Meeting #49**
Jul.5-12-1997	OZ. Nationals	Darwin
Jul.31-1997	**AGM Silver AnniversaryMeeting #50**	

☺

Weather for the day at Warragul, contact Trevor Boundy on 03 56287 688.

☺

On most Sunday afternoons there is casual flying on a private property at Lang Lang, (conditions permitting) by courtesy of Fred Chigwidden's son David.
Members especially those new to flying are welcomed to this field. Model and pilot training sessions are conducted by Peter Donovan and others. Location and local field rules can be obtained from Fred Chigwidden at home on 03 59975 675.

CONTRIBUTIONS FOR NEXT NEWSLETTER

Contributions to the newsletter should be sent to the editor at least 3 weeks before the meeting date. Pictures please.

NSAC WANGARATTA CONTACT

Claude Gillard Manager 03 57223 220
(ring Claude about camping canteen and general facilities)

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INTERNET ADDRESES

SAM 600 MAAA Rules, Committee members etc.
http://www:sympac.com.au/jtboundy
Model Aeronautical Association of Australia.
http://www.ozemail.com.au/~maaa
FAI statutes, by laws, competition calendar
http://www.fai.org/~fai/
SAM USA Home page, world listing of chapters etc.
http://www.napanet.net/~nedn/
Radio Control Soaring. (UK based)
http://biomednet.com/rc-soar/index.htm
1996 Word C/L Championships
http://www.plasma.kth.se/~olsson/wc96.html
Winfoil by Malcolm Hardy
http://www.ozemail.com.au/~malhardy
New South Wales FFS
http://www.ozemail.com.au/~barrylee
The NASMA (National Air and Space Museum of Australia)
http://www.nasma.com
Australian Weather MSL Prognosis & Analysis and Satellite pictures
http://www.aopa.com.au/weather/wthr.html
South Australia Gliding History Trust
http://wraith.internode.com.au/soaring/absaght.htm
SAM 27 The Society of Antique Modeler's Northern California Chapter.
http://www.napanet.net/~nedn/sam27home.html
Tower Hobbies Illinois USA
http://www.towerhobbies.com
Academy of Model Aeronautics USA.
http://www.modelaircraft.org/
Bolly Props including price list.
http://www2.hunterlink.net.au/~ddtd/models/bolly.html
RC Modeler Magazine.
http://www.mag-web.com/rc-modeler/index.html
Model Flight in S.A. Including price list and monthly bullitin.
http://www.camtech.net.au/modelflig

12th ROY ROBERTSON MEMORIAL TROPHY

The RR is on Sunday January 26.
Pilots briefing at 9:30
Texaco start at 10:00
Duration follows.

GRANT X12

C.H. Chrant may have been forecasting the future when he put this section on paper back in the early days of free flight modeling The Chant X12 is a more contemporary airfoil than any other section that I have seen published from the pen of Mr Grant. The X12 has a seven-percent high point and a slight bit of under camber. With the up swept leading edge, this section would be worth consideration in Lightweight gas powered free flight ships, such as any of the AMA gas classes in contrast to other Chant sections, this one should be considered if you are looking for something new for that winter AMA Gas project.
A couple of thoughts the leading edge would need to be either a large piece of lumber in over to get the upswept leading edge properly finished or it could be built up with the leading edge lumber set. on its edge. Since the section is quite thin, it would pay to investigate webbed spans or a D box type construction as well. Gook luck with it.

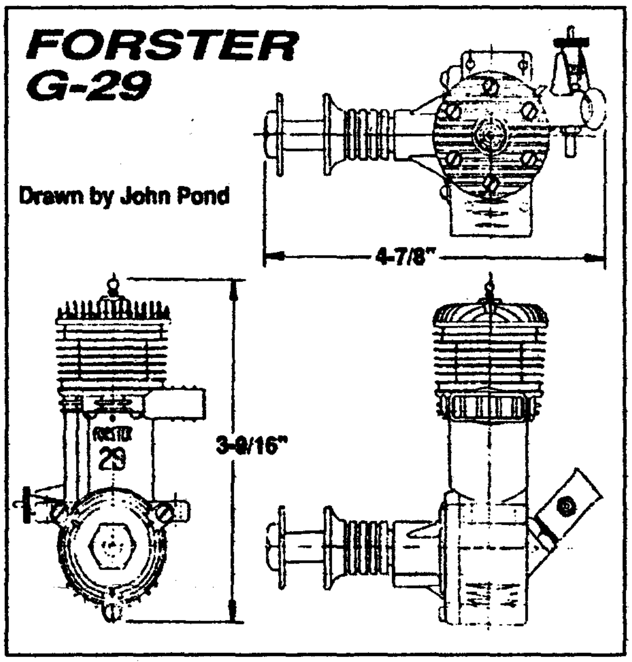
THE GRANT G-10

Here is another in the series of C.H. Grant airfoils. This one is patterned after the Goldberg "modern" style free flight gas sections. It uses a large section leading edge and is designed so that the trailing edge can be pinned flat on the building board during construction. It can be used wherever the early Goldberg airfoils; e.g., the G-5, G-6, or perhaps even the later G-610b, would be otherwise used. Stab section should be a lifting surface such as an eight or nine percent Clark Y. Probably the best use would be for those fellows who are actually building an Old Timer or Antique Gas Model and who are interested in replicating the section that may be blurred on the plans. Why? Well, why not?

FORSTER 29

Air Trails Pictorial June 1950

Known for its dependability and ease of starting, the Forster "29" ignition model has been a popular engine with the free flight boys as well as early control-line enthusiasts: The latest model, a glow plug engine designated the "G-29," being manufactured by Forster Brothers of Lanark, Ill, one of the older model motor makers still active, now makes its bid.
In general outward appearance this new engine is somewhat like its predecessors. It features a disk type rotary valve with the intake venturi at the rear of the crankcase. However, instead of entering the crankcase at a 90 degree angle as on previous models, the venturi now enters at approximately a 50 degree angle. This change in angle gives some of the advantages of a down draft carburetor, and coupled with an increase in the diameter of the venturi throat and the inlet valve, has added greatly to the volumetric efficiency of the engine. The changes are responsible for improved performance.



Long prop washer end extended shaft distinguish new glow plugged G 29

By substituting an aluminium piston employing two rings for the steel fully lapped piston used on preview models, much of the piston drag or friction has been eliminated. During test runs it was noted that there was very little engine vibration even at reduced rpm, which may well be attributable to the lighter piston. To prevent scoring of vital parts, retaining rings are used on both ends of the wrist pin and also on the crankshaft where it eliminates excessive end play.
This crankshaft retaining ring should prove invaluable to those flyers who use electric or inertia starters and inadvertently apply too much pressure against the spinner. An excessive amount of pressure can force the crank shaft rearward against the rotary disk in some engines, which then scores this vital part. The Forster crankshaft remains mounted on a single 7/8" od. Fafnir ball bearing, but still bears against a bronze bushing with which the front crankcase cover is lined.
In place of the timer housing, the G-29 features an extra-long turned aluminium friction-drive propeller washer. Because of its length, it may be considered an extension shaft since it places the rear face of the propeller well forward of the cylinder barrel. This is an ideal condition to have when considering engine cowling. The special propeller nut which threads onto the crankshaft and into the drive washer makes it necessary to drill out the hole in the propeller to 5/16" diameter, but offers the advantage of adding a spinner without trouble. The engine is very clean both on the outside and internally. Two "raising blocks" are supplied with each engine, these for use when model plane plans call for the engine to be mounted on the exact centerline of the crankshaft.

Along with the engine the manufacturer includes a venturi tube which fits inside the air-intake tube. For sport flying and easy starting, the installation of the venturi tube offers an advantage. This is equally true when breaking in the engine, at which time easy starting is important. After the breaking-in period, when the owner wants topmost performance with perhaps small racing propellers such as 7/9, the venturi tube can be-removed.

For all-round good performance, however, Forster suggests the venturi tube be kept installed.
Crankcase: one-piece east aluminum alloy with exhaust stack east integral. Crankcase cover: cast aluminum alloy, bronze bushing. Held to crankcase with three machine screws. Cylinder liner and fins- machined from steel for an, easy slide fit with five square exhaust ports and four intake ports. Held down with four machine screws. Cylinder head: cast aluminum alloy. Held to the steel liner with six machine screws. Crankshaft: steel, ground to a smooth finish and mounted on a 7/8" OD. Fa£nir ball bearing. One retaining ring. Connecting rod: cast aluminum alloy with bronze bushing at the crank pin end. Wrist pin: hollow steel, full floating. Two retaining rings. Piston: cast aluminum alloy with two cast iron piston rings. Rotary disk: steel, ground and polished. Mounted on a steel pin and driven by the crank pin. Venturi: machined aluminum threaded to rear of crankcase and held in position by a lock nut. Needle valve body: one piece brass. Needle valve: steel, long tapered to sharp point. Knurled aluminum finger grip held in positive adjustment by double-sided spring steel clip. Factory-recommended propellers: 8/6 for free flight and sport flying, 7/9 for speed flying. Special features: beam mounted with extra blocks supplied for mounting on the crankshaft center line. Mounting bolts are also supplied.

The following rpm's with various propellers and fuels were recorded on engine "out of the box":

Top Elite 10/4, Testor's 39	-11,000.
Power-Prop 9/6, O&R #4 and Testor's 39	-11,000.
Rev-Up 8/9, O&R #4 and Testor's 39	-10,000.
Tornado 7/9, O&R #4 and Testor's 39	-11,000.

DON HOWIE ON THE SPITFIRE

Dear Trevor
Have enclosed a copy of notice by Mel Anderson Mfg. Co., so this must be the final proof, rather than more recent writers, who seem to have got it wrong.

Could you also publish notice by Mel so that there is no more confusion? Bill Britcher does not use his Anderson in competition, as it is not competitive; I think he will be using a Super Cyclone at Easter. I hope ~~to be using~~ something a little different at this event.
Regards. Don Howie.......

MYTHS OF THE AMERICAN ICON

by Don Howie

The Anderson Spitfire seems to be regarded by the Americans as a Super Motor; however, not all Spitfires fall in this category. During last winter Bill Britcher and myself did some tests on a number of ignition motors, one of which was an Anderson Spitfire.

The Spitfire owned by Bill did not perform any better than an OK Super 60, both turned 7000 revs on a 14" x 6" Topflite Super M prop using petrol/oil fuel. Another OK Super 60 (the writer's) was tested and this also turned 7000 revs on the same prop.

Bill's Anderson did not have sub piston induction (4 holes) and was a ringed motor. According to John Pond the ringed motors were bored out to .65 and the lapped motors were .60 displacement.

I recently purchased an Anderson that was advertised in the USA as .60 size and was a lapped motor. The motor when received had sub piston induction, so it must be a .60 size as it is a lapped motor. Looking at Bill's ringed motor and my lapped motor, I could not find any difference in bore size.

A friend in our club had an original Anderson, lapped motor without sub piston induction, but it had the points and tank missing as it had been used as a glo motor for control line, many moons ago. About this time I obtained the "Anderson Blue Book", a history of American Model Engines from 1931 to 1965. Looking under Anderson Spitfire it stated :-'47 Anderson ringed or lapped piston models .604 displacement. '49 Anderson - as previous/bored out .645.

How do you tell the difference in capacity? The original crankcase casting states 6100 series and does not have any form of numbering, like many old motors. When I ordered the timer and tank parts, I was advised that Andersons came in two versions, the timer cam as part of the prop driver and the timer cam as part of the crankshaft. All three examples I looked at, had the timer cam as part of the prop drive. When I ordered the parts I wrote to Woody Bartlett, who had a number of Andersons for sale, about my confusion.

The result was a copy of a notice sent out by Mel Anderson in 1948. All Andersons had a bore of 15/16 inch. The .65 had an increased stroke of 1/16 inch, by relocating the crank pin. My lapped motor is now a .65 as it has sub piston induction. I remember Norm Bell tested an Anderson in Digest 1991; it looked as if it had a Denver head on sub piston induction so the compression would have been 10:1. No wonder it was hard to start and ran with much vibration.

The Anderson falls in two groups. The early 60 (no sub piston induction) should be in group 3, as it is no better than a Super Cyclone GR. The 65 (sub piston induction) can remain in group 2.......

ANDERSON AeroEngines

ANDERSON Spitfire

NOT ICE

MODIFICATION OF SPITFIRE SPECIFICATIONS

Effective as of July 1, 1948, all *SPITFIRE* engines manufactured have increase in piston displacement, to wit:

Bore, 15/16" Stroke, 15/16"
Piston displacement, .65 (.647) cubic inch.
Compression ratio, 7:1

External identification of the .65 *SPITFIRE* is by means of the four induction holes in the cylinder.

Manufacture or the 7/8" stroke .60 *SPITFIRE* is discontinued.

.60 *SPITFIRES* can be modified to .65 cub inch by installing 65 crankshaft and standard head #6101.

Blue "Denver Heads" designed to have a compression ratio of 8:1 when used on the .60 *SPITFIRES* will have a compression ratio of 10:1 when installed on the .65 *SPITFIRE*, and installation is <u>not recommended</u>.

For .65 glow plug operation we recommend "Power Mist High-Thrust" glo fuel manufactured by Francisco Laboratories.

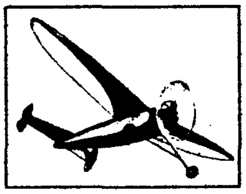
MEL ANDERSON MFG. CO.

EDITORIAL REPORT

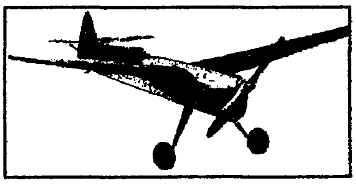
Haddon on 23 and 24 of November last year was a big success, good competition and lots of prizes.

In an attempt to keep you all informed this newsletter is a little early so that I can tell you that at the last meeting it was decided that this year's RR would be held at P&DARCS, and that in future we will be opting for a two day event. Hopefully that will be decided well in advance of the 1998 RR.

I am helping Wes Funk (SAM Design Review Board) compile pictures or line drawings of all approved SAM designs (some 750) that can be displayed beside each approved design. Have so far posted him 152 pictures, its slow work but we will get there one day.
They will look something like this:-



117
CHAMPION
BURD
1939
72"
NOCABFUS



336
LANCER
NEW CYCLONE
1938
72"
COKPITFUS

Back to scanning pictures.
Regards
Trevor Boundy.

HADDON 23&24 NOV 1996

by Trevor Boundy

This is the second annual contest run by the Haddon Aero modellers Chris Foley and Paul Neville.

There seems to be a genuine interest in Old Timer A/C in this club which when combined with their organisation and promotional skills results in relaxed well run contests with plenty of prizes.

Three of us camped over Saturday night at the field which was very convenient.

The only worrying moment came when we learned that on Saturday morning the Hon. Sec/Treas. admitted himself to the casualty department of the Ballarat Hospital whilst having a heart attack. I'm happy to report that he is now fully recovered and looking as fit as ever.

During Sunday afternoon a local vintage motor cycle club arrived at the field which provided much interest to those present, I understand Haddon MAC may be considering an expansion of this sort of dual activity.
The SAM 600 committee give a big vote of thanks to Haddon MAC for this second contest and we hope to be invited back for the next and third year of this popular contest.

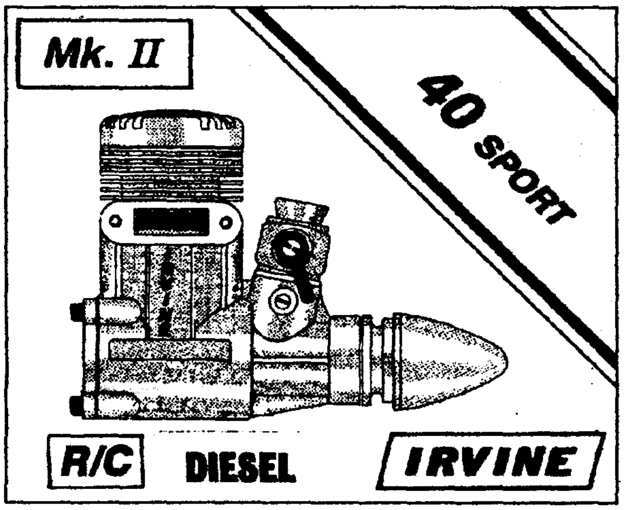
38 Antique			
Peter White	Cloud Cruiser	OK 60 2s spk	1685
Peter Donovan	Miss Delaware	Drone 5 diesel	1652
Norm Campbell	Flamingo	Anderson Spit. 65	816
Chris Lawson	T D Coupe	Amco 3.5 diesel	0
Trevor Boundy	Vee Tailed	Super Cyclone 60	0
Half A			
Chris Lawson	PB 2	Cox 049 2s	1131
Don Cameron	Coronet	Cox 049 2s	1096
Peter White	Bomber	Cox 049 2s	700
Paul Neville	Coronet	Cox 049 2s	643
Norm Campbell	Cumulus	Cox 049 2s	590
Trevor Boundy	Flamingo 56 %	Cox 049 2s	511
Barry Barton	Anderson Pylon	Cox 049 2s	236
Stevan Gullock	Coronet	Cox 049 2s	226
Duration			
Trevor Boundy	Albatross	Saito 65 4s	1540
Kevin Fryer	Playboy Senior	McCoy 60 2s	1433
Chris Lawson	RC 1	McCoy 60 2s	1195
Peter White	Playboy Senior	McCoy 60 2s	1089
Barry Barton	PB 2	Irvine 36 2s	969
Peter Donovan	Miss Delaware	Rossi 45 2s	870
Steven Gullock	Coronet	Frog 500 2s	178
Norm Campbell	Kerswap	McCoy 60 2s	0
Texaco			
Chris Lawson	Record Breaker	Saito 65 4s	2532
Derry Brown	Dallaire	OS 48 4s	2440
Peter White	Flamingo	OS 60 4s	2299
Peter Donovan	Miss Delaware	Enya 60 4s	2087
Trevor Boundy	Bomber	OS 60 4s	1892
Norm Campbell	Record Breaker	OS 60 4s	1862
Barry Barton	Record Breaker	Os 40 4s	1624
Don Cameron	Bomber	OS 61 4s	600
Steven Gullock	T D Coupe	Frog 500 2s	172

IRVINE DIESEL RAFFLE

Life member of SAM 600 Bob Munn who is always enthusiastic in his promotion of O/T and our club in particular has donated a customised Irvine 40 diesel to be raffled for our club funds.

This motor has been specially converted in the USA for Texaco part of the instructions included with this motor are as follows:-

This Irvine 40 diesel engine was bench-run for about 90 minutes using various appropriate propellers, then installed in a 1200 sq. in. model for Texaco competition, in which it did very well during the one season flown. It is equipped with two special items: MVVS 2cc diesel carburetor, and a custom made exhaust baffle. If adjusted as outlined in the instructions accompanying the motor,



it has run for 21 minutes on the bench (leanest possible run) using only 20 cc fuel. It must be adjusted somewhat richer for reliable air runs of + 18 minutes, using a Taipan 14 x 6 propeller cruising at + 4,100 rpm. (Standard throttle and muffler also included).
Tickets can be purchased from:-
Fred Chigwidden
(H) 0359 975 675
343 Westernport Rd.
LANG LANG 3984
by posting him $2 for a ticket or $5 for three. The winner will be drawn at the Swan Hill Easter dinner.

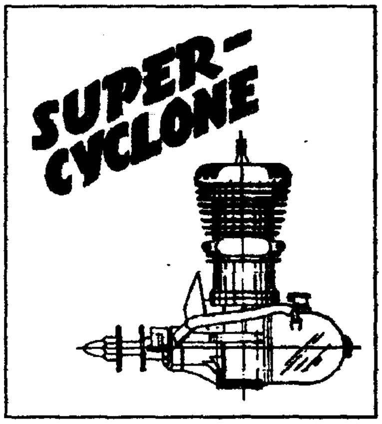
from

SAM SPEAKS

SUPER CYCLONE

By Charlie Bruce from SS #132

The Super Cyclone G model (15/16 bore & stroke: .647 cu. in.) was introduced in late 1939 by Aircraft Industries, Glendale, California, manufacturers of the famed Baby Cyclone series. This major advance in model engine design was the brainchild of Mel Anderson. Mel probably had plenty of help from two fellow employees, Bill Atwood and Ira Hassad. No wonder the Super Cyke was so successful with those three engine geniuses working on it. In 1940 the GR series was added. This reduced displacement (.604 cu. in.) was brought out to enter competition in the model race car field where the displacement was limited to 10 cc. The change was accomplished by decreasing the bore by 1/32 to 29/32. Early engines had very thin mounting lugs and/or thin cylinder flange. There were other minor changes (dropping the composite piston and changing the rod from die cast H section to machined bar stock, for example) but the basic design has remained a winner for nearly 60 years. Except for a gap caused by W.W.II and the glow plug doldrums of the early '50s the engine has been in production since 1939. After passing through several hands (McCord, Karlson, REMCO and Morrison) the Super Cyke is currently produced by Walt Huhn at Apollo Motors in California. Walt's engines are beautiful and excellent runners. Somewhere along the way the original casting dies were lost or worn out. Current engines are made from lost-wax castings using waxes from precision dies made by Larry Jenno. Try out one of Walt's Cykes, you'll like it.



Disassembly:
Timer: The cam is a snug press fit onto the crankshaft flats. It is best removed with a small gear puller. It can be removed after complete disassembly of the rest of the engine by pressing (don't hammer) the crank out the back of the case. With the cam off, remove the timer pinch screw and its lock nut completely. Fasten the engine down solidly. I trap one mount lug between wood blocks in a sturdy vise. Now gently pry the timer split open with a small screwdriver while pulling the timer assembly forward. You have to open the split enough to disengage a tiny ring cast into the housing, from its groove in the main bearing. Be careful! If you pry it open too much the timer casting will break. There is a thin spacer washer on the crank behind the cam and in front of the timer. This will come off with the timer. Keep track of it, you'll need it later. There are two detent holes in the case, one will contain a small spring and plunger which engages the ratchet teeth on the back of the timer casting. These are tiny pieces and easily lost. The lower detent hole is used for normal timer position; the upper is for the inverted timer position with the cam rotated 180°, not used much. Once removed the timer is easily disassembled by removal of the moving and fixed points. Hold up on the bottom of the moving point to ease spring tension when removing the pivot screw. Note the loose pivot bushing in the moving point. The flange end goes toward the timer casting.
Tank: The plastic tank is retained by a long 3-48 stud threaded on both ends. A brass sleeve nut with gasket screws onto one end and the other screws into the back plate. There is also a ring gasket at the large end of the tank.
Head: The head is retained by six 4-40 screws. There is an asbestos full face gasket, usually stuck tight. Heat will help removal.
This is a good place to mention the many after market high compression heads available for the Cyke. These

vary in construction having lobes of different lengths extending into the combustion chamber. They increase engine performance, particularly with alcohol fuel but result in rapid wear of the main bearing and crank. The stock Cyke head is flat.

Rear Cover: The rear cover is threaded and should be removed by a special tool, easily made from a 1-3 /16 dia. hard wood dowel with cross saw cut (5/32" wide) in the end of it. The cross cut engages the lugs cast into the back plate recess. Hold the tool in a vise and turn the engine by hand. A little heat sometimes helps. There is a fiber ring gasket at the joint; save and re-use it.

Cylinder and Internals: The cylinder is retained by four 5-40 screws and there is a very thin composition gasket. The exhaust stack may be removed first for easier access to two of the cylinder flange screws, but this is not necessary. Incidentally the original engines had a rather thick gasket at the exhaust flange, It is very easy to over-compress this gasket when tightening the screws, resulting in breaking off the exhaust stack lugs. The gasket is not really necessary and I recommend it be left out.

At this point the crank can be turned to bottom dead center and the rod slipped off the crank pin. The padded wrist pin is an easy push fit to remove the piston. The crank will now slide out the rear. There is a loose 3 piece ball thrust bearing on the crank. The caged ball race is sandwiched between two hardened steel rings.

The sleeve is a tight shrink fit in the cylinder. If you must remove it, heat to 350 to 400°F and use a press or large vise with proper size bushing to push the sleeve out the top of the cylinder. Protect the gasket surfaces properly.

The needle valve assembly can be removed if desired. Be sure the fuel hole points back or down when replacing the body.

Reassembly: Once again, lube all the moving parts (I use Marvel Mystery Oil) and reverse the disassembly procedure. Here are a few special points to watch.

If you removed the sleeve be sure it's firmly seated on reinstallation and that the flat on the sleeve flange fits into the cylinder recess. Heat the cylinder to removal temperature first.

Be sure the ball thrust bearing is on the crank before inserting it into the case. The rod is symmetrical front to back. Be sure the wrist pin pads are in place. The cylinder can be installed with exhaust on right or left, the piston baffle must match your choice, wide side to the exhaust. Drop the cam spacer washer over the end of the crank before installing the timer, and don't forget the spring and detent plunger. To install the cam for normal timer position, set the piston at top dead center. The cam drive flats should now be horizontal. Hold the cam with the flat portion (the cut that operates the points) up and slip it onto the crank being sure that the internal flats engage crank flats. This is very important since the shaft is soft and the cam very hard, any misalignment may result in a ruined crank or a mis-timed engine. Once you are sure everything is in line, put on an old prop, washer and nut and with plenty of oil on the threads tighten the nut to seat the cam completely.

There must be no binding and there needs to be .005" to .008" end play in the crank.

Original Cyke instruction booklet calls for a spark plug gap (V or V-1, 3/ 8" plug) of .012" and a breaker point gap of .015" to .020". I believe these are reversed in the booklet. Point gap is adjusted by moving the fixed point between the lock nuts. The fiber insert is threaded. Be sure and check gap at both advance and retard positions as there is sometimes enough eccentricity in the parts to vary the gap.

Recommended fuel is 3/1 gas/70 oil but alcohol/castor works fine. Just don't put alcohol in the plastic tank.

Parts: For new engines, parts and service: Walt Huhn—Apollo Motors 665 Chaparro Rd. Covina, CA 91724, phone (818) 332-0023.

Test Run: Super Cyclone G turned a 13-6 Rev up prop at 9000 rpm on 3/1 mix of unleaded gas/ 70 oil. Next Analysis: Vivell 35

If you have any other engines you would like to see analyzed here please drop me a line. I still plan to publish the entire series in a book with pictures and added information. Thanks for your interest. Charlie Bruce. Rt. 1, Box 766, Milano, TX 76556

PRINCIPLES OF STABILITY AND PERFORMANCE

Hi-Speed vs. Low-Speed Forces. by Ron St. Jean

The basic idea is that some adjustments or offsets are mainly effective at low speeds, while others have a greater effect at high speeds. When we understand which is which, and the interaction between forces, it not only allows us to explain why we may be having a problem in flight, but this knowledge permits us to take effective corrective measures. Adjustments and offsets may be categorized into the two types. This list is not necessarily all-inclusive: High Speed - rudder offset, wing wash, decalage (relative incidence) and wing cocking (changes wash-in/out). Low Speed - stab tilt, down thrust, side thrust, spiral prop wash effect, CG location, weighted wing tip, drag flap and engine torque.
A few examples should serve to provide the understanding needed to utilize this principle of high

speed and low speed adjustments. Although they are probably most useful in free flight power events because of the vast speed difference between climb and glide speeds, they should be of equal use in HLG and some use in rubber events, as well as in RC. The following illustrations generally assume a power model:

First Condition: Model tends to dive when first launched, but noses up as speed is gained.
Explanation: At low air speeds either down thrust or a nose heavy condition (low-speed) will nose the model down. Incidence, being high-speed, noses the model up, overcoming the low-speed factor as speed is gained.
Uses of Condition: The combination of down thrust and incidence produces a stabilizing force in the longitudinal mode. Should an under powered model tend to power stall (e.g. a 1/2 A Texaco) the down thrust would predominate at low speeds approaching the stall, lowering the nose before the stall is encountered. The nose lowering would then cause speed to increase, and eventually the incidence would take over. Oscillations would eventually be replaced by a condition of constant speed and angle of climb. Once equilibrium is established, power changes will mainly change climb angle.

In the VTO era, vertical takeoffs were facilitated by down thrust working against incidence. With 10° down and normal incidence on the moderately powered models of the era, models could be launched straight up against a moderate breeze without looping in. In those days, the model had to stand on three pegs for takeoff. The low speed effect of the down thrust would cause the nose to pull into the wind while speed was increasing.
Incidence and CG location are balanced for each airplane to produce the same kind of longitudinal glide stability discussed above in regards to a low powered model in the climb mode. Here, however, a forward CG is the force opposing incidence so as to establish equilibrium. But as the CG is moved aft and the incidence simultaneously reduced to produce a slower glide and less drag due to incidence, a limit is reached where incidence is no longer effective. Stability is then totally lost, and the model "zeroes out." For each design, then, there is an optimum CG location. At such point, there will be sufficient decalage to provide minimum stability and maximum performance. Moving the CG farther aft of this point will require decalage reductions in order to maintain a stall-less glide, and thus increase performance at the sacrifice of stability. Conversely, a forward CG shift will require more incidence to compensate, and stability will be increased, but at a sacrifice of performance. Models that are too nose heavy need excess incidence in order to glide, and therefore will loop under power.

Second Condition: Model tends to go strongly to the right when launched (perhaps crashing), but assumes normal climb turn after picking up speed.
Explanation: Two low-speed factors can cause a model to bank sharply to the right upon being launched-right thrust and the effects of spiral prop wash. In the case of the latter, the rotating prop wash impinges upon forward fuselage areas creating both roll and yaw forces to the right. It continues, though somewhat diminished, to similarly impinge upon the fin, creating a compensating left yaw force.
Uses of Condition: In some cases a model will loop before going into a normal climb turn. When this happens side thrust may be added to help establish the turn before the model loops. Or the design may be changed to utilize spiral prop wash and thus avoid side thrust:
Assuming single engine tractor models with normal prop direction of rotation, a stronger right hand tendency may be had by (a) deepening the forward part of the fuselage (or raising the pylon), (b) moving the thrust line toward an extreme position (either very high or very low), (c) reducing fin area, (d) moving the fin forward to make its area less effective, (e) moving part or all of the fin area to the stabilizer tips to free it from prop wash impingement, and (f) increasing dihedral, which works similarly to decreasing fin area. Conversely, doing the opposite of any of these will reduce an excessive low-speed right hand tendency.

One of the major reasons for the success of the Ramrod design in the 50s was its strong natural right-hand tendency. It was so strong that left rudder and left wing warp (right wing washed in) was required to compensate and cause a normal climb turn to the right. This produced what is called top rudder by full-scale pilots. That is, the left rudder helps hold the tail down in a right turn, thus preventing spiral dives. These left offsets then aided longitudinal stability by forcing the model into a tight left glide circle at the bottom of a stall recovery. The high speed encountered at the bottom of the stall makes rudder and wing offsets strong enough to result in about a 45° bank to the left. This prevents further stalls. At the same time, the stability provided by ample dihedral and incidence prevented spiral dives in the glide. 3.

Condition: Glide circle is nearly independent of rudder or wing offsets.

Explanation: A low-speed factor is causing glide circle.

Use of Condition: Prior to the discovery of low-speed adjustments with which to control glide circle, adjusting a power model often required much dangerous trial and error if there was no natural glide circle. One method of achieving the needed circle was to add rudder offset while compensating with opposite side thrust. Quite often the two adjustments were not balanced, and a crash resulted. Today we can control power and glide circles almost independently of each other. Rudder is typically used for the power pattern, while one of several low-speed adjustments may be used for glide, stabilizer tilt being the favorite. But drag flaps and weighted wing tips will work just as well.

Fourth Condition: A typical full scale light plane requires right rudder offsets during climb and left rudder offsets in the glide, in order to maintain straight flight.

Explanation: Torque is an insignificant factor in most FF models because it is overpowered by the effects of spiral prop wash. But because of vast airframe differences, most full scale air-craft are especially susceptible to the effects of engine torque. Some manufacturers have compensated for this low-speed torque factor by introducing fin offset, a high speed factor. But it is normally only in the cruise mode that the two are balanced to produce hands-off straight flight. During climb, speed is reduced, but torque is increased due to added RPM. In this condition the torque easily overpowers the small fin offset, requiring right rudder to compensate. In a similar manner, torque disappears in the glide, the fin offset takes over, and left rudder is required.

Problem Solution: If right thrust were used to compensate for torque instead of right fin offset, the effect of one lows peed factor could be balanced with another. In addition, the effect of the thrust offset would grow and diminish with the torque, as both are functions of RPM. The Beech Bonanza for example has had right and down thrust since 1964, when the horsepower was increased from 225 to 285. Ron St. Jean, PO Box 149, Yerrington, NV 89447.

July 26, 1982. Dear Ron,

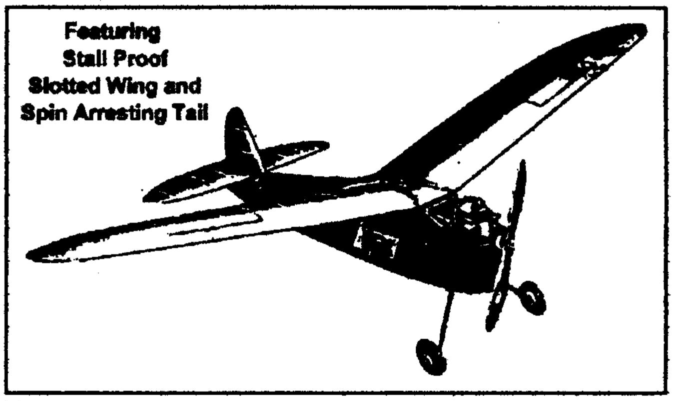
Thought I'd write a few words of appreciation for your article on Stability And Performance. It really is the best thing I've ever read of its kind. Considering the hazardous nature of a high performance free flight in general, and the difficulties of obtaining a suitable balance of the forces involved, it seems to me that anyone struggling with these forces might well find the answers he needs in your article.

I gather the article first appeared in the September-October issue of Free Flight. I also saw it recently in Bugs Buzz, the newsletter of the Thunderbugs club. Ed Lidgard evidently recommended the article to Jim Scarborough, the editor.

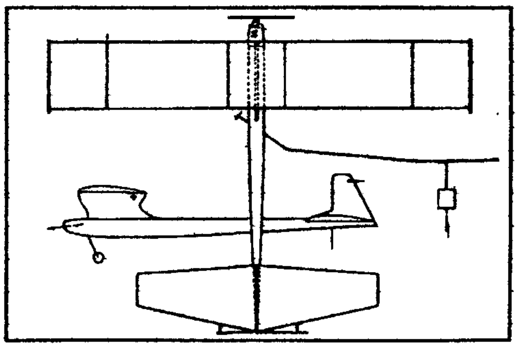
If you have any interest in having the article reach a wider audience, it seems to me it might well appear in one of the model magazines, and preferably with illustrations. In fact, that's my single significant criticism - as is, it's a bit cerebral and illustrations would greatly relieve that, and increase its effectiveness.

In any case, let me congratulate you on writing it, and also for writing the article on why the Sweepette was so successful.

Carl Goldberg, president, Carl Goldberg Models, Inc.



83
BUCCCANEER B SPECIAL
BERKLEY
56"
CABFUS
WING SLOTS



568
RAMROD
St JEAN
Various wing spans

ERIC CLUTTON ON DIESELS

from SAM SPEAKS

Interest in diesels is growing in this country so we really need a clearing house to deal with problems and perhaps to share experiences, so let me have your comments. photos etc.

One of the main areas for diesels in competition is in the RC Texaco events where the fuel economy of the diesel is hard to beat.

As an example, I have a scale RC B-24 (non Texaco) with two PAW .03 RC diesels swinging Cox 5-1/ 2 x 3 props and using Perfect 1/2 ounce fuel tanks. I get consistent 9-1/2 minute engine runs at full throttle. Hard to beat that!

The diesels ability to swing really big props can be used to advantage in Texaco although some additional drag in the glide must be tolerated.

An .09 diesel will easily handle an 11 x 4 prop which should give a reasonably light model a steady climb. At the relatively low rpm achieved on the larger size props, the amount of oil required in the fuel may be reduced quite a bit. I would suggest 10% to 12% castor, but only after a good break-in period. Try a ground run using this fuel and prop combination. If the engine seems to be running hotter than normal, oil content probably needs increasing, although it may be possible to add a little ether instead. In any case I would recommend at least 35% ether for Texaco.

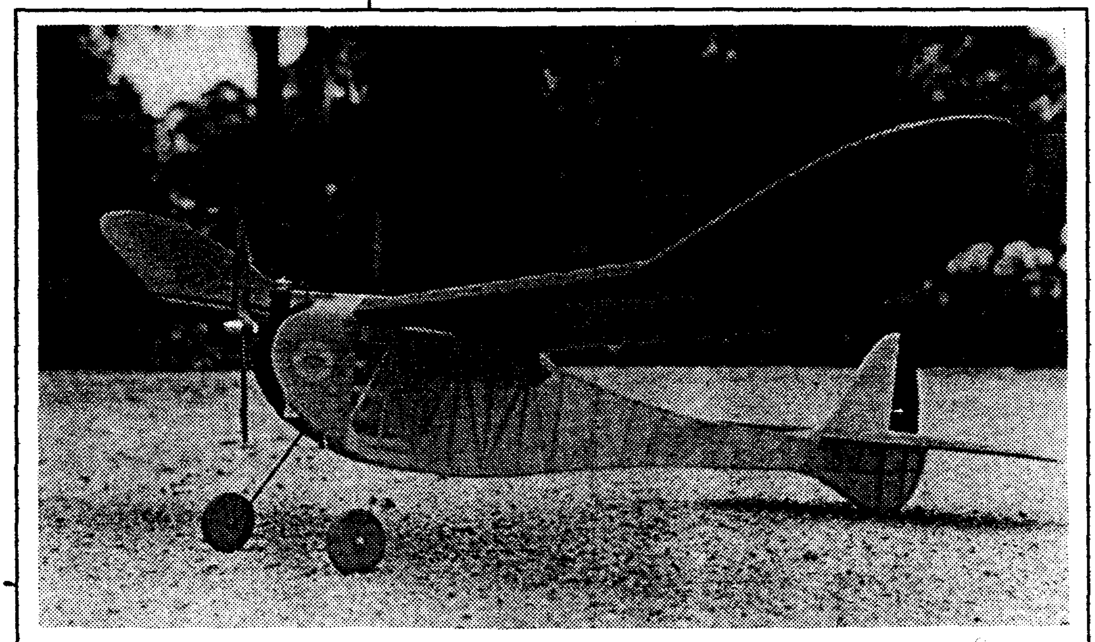
With large props turning slowly, the ignition point needs to be retarded just like a sparker. Reducing the compression setting does this and normal compression adjustment procedure achieves it without having to think about it.

Shut-offs can be a problem with diesels. They will continue to run on the slightest smell of fuel and because they have very strong induction suction, simply squashing the fuel line does not always work reliably. A more positive fuel shut-off is needed and an RC throttle will accomplish this. An RC smoke oil valve may also have possibilities.

Replica engines are almost essential to the continuance of SAM and the Chinese are producing a whole range of replica diesels. They have even been brave enough to tackle the Amco 3.5 cc.

My honest opinion of these engines is that they are, in the main, well made and executed; in some cases better than the originals. They do tend however sometimes to be put up squeaky-tight and with other small grievances. Basically good engines in the right hands but I would not recommend one as a first diesel in most cases. Eric Clutton, (Dr. Diesel) 913 Cedar Lane, Tullahoma, TN 37388. (615) 455-2256.

Derry Brown's new ARF WINDSTAR EP by Thunder Tiger, featuring folding prop and surprising electric performance, pictured at Haddon November 1996.



Ed has another go at !/2 A Texaco.
yes is a 47" Albatross.

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