

# National Control Line Racing Association

Editors: Dave McDonald & Lari Dziak

February 1997

## 7% Growth in Membership Expected

### ***What's Inside:***

**Making a Prop Mold;  
New Contest Calendar;  
Buy/Sell;  
Your Comments;  
Plus More**

**Change in on-line address:** With the new structure at aol, gnn is being phased out. Therefore the new e-mail address for us is [DMcD143@aol.com](mailto:DMcD143@aol.com) the new webpage address is <http://members.aol.com/DMcD143/> for a short time mail will be forwarded from gnn to aol. Sorry for the inconvenience, but it was not our decision to change, corporate America has decided this is better for us.

### **Presidents Corner**

The holiday season has come and gone. Let me extend belated holiday greetings to all of you. With the new year upon us, it's renewal time again. Your dues allow the NCLRA to enrich, support and promote Control Line Racing activities. If you haven't renewed, please do it now. We've come a long way in 3 years. Our membership has more than doubled from our first year. Indications are that a resurgence in racing is starting to take place. We want to continue this trend. There are several things we need from all of our members.

- ◆ Tell us what the NCLRA should do for you. We want to improve and we need your feedback
- ◆ Newsletter content. To allow the newsletter to grow, we need technical, for sale, building & flying tips, contest results, editorial opinions, photos and sources for equipment.
- ◆ Encourage others to try CL Racing, seek out those who have an interest and allow them to succeed and have fun.
- ◆ Spread the word to people about NCLRA we need new members to keep our group fresh.

This is also the time of year where most of us are busy building new Planes and working on those engines. Have you made your modeling resolutions yet?

Best of luck to everyone in the new year.

Lari

### **From the Editors Desk**

Yes the headline is correct. With this we have some ideas to expand the newsletter, however, doing this will require some assistance from the membership. We would appreciate your careful and thoughtful input toward our ideas.

- 1 Have a regular column on different events. We publish 6 newsletters a year, and would like to divide the basic 6 racing events into two groups, i.e. Mouse, NCLRA Fox Racing, and Goodyear into a group, then Fast Rat, Slow Rat, F2C into another group. Every edition one group would be featured. Now the 64 million dollar problem. We need people willing to step forward and contribute 3 articles per-year on a event. I know there are many extremely qualified participants who could contribute three articles, so join in, without your participation we will not be able to expand in this area.
- 2 The Contest Calendar will attempt to include events from around the world. To do this we need interested NCLRA members to send us the basic information.

For this plan to succeed your participation is **REQUIRED!**

**Nats NCLRA Fox Racing  
July 14 2:00pm (approx.)  
Sponsored by Fox Mfg.**

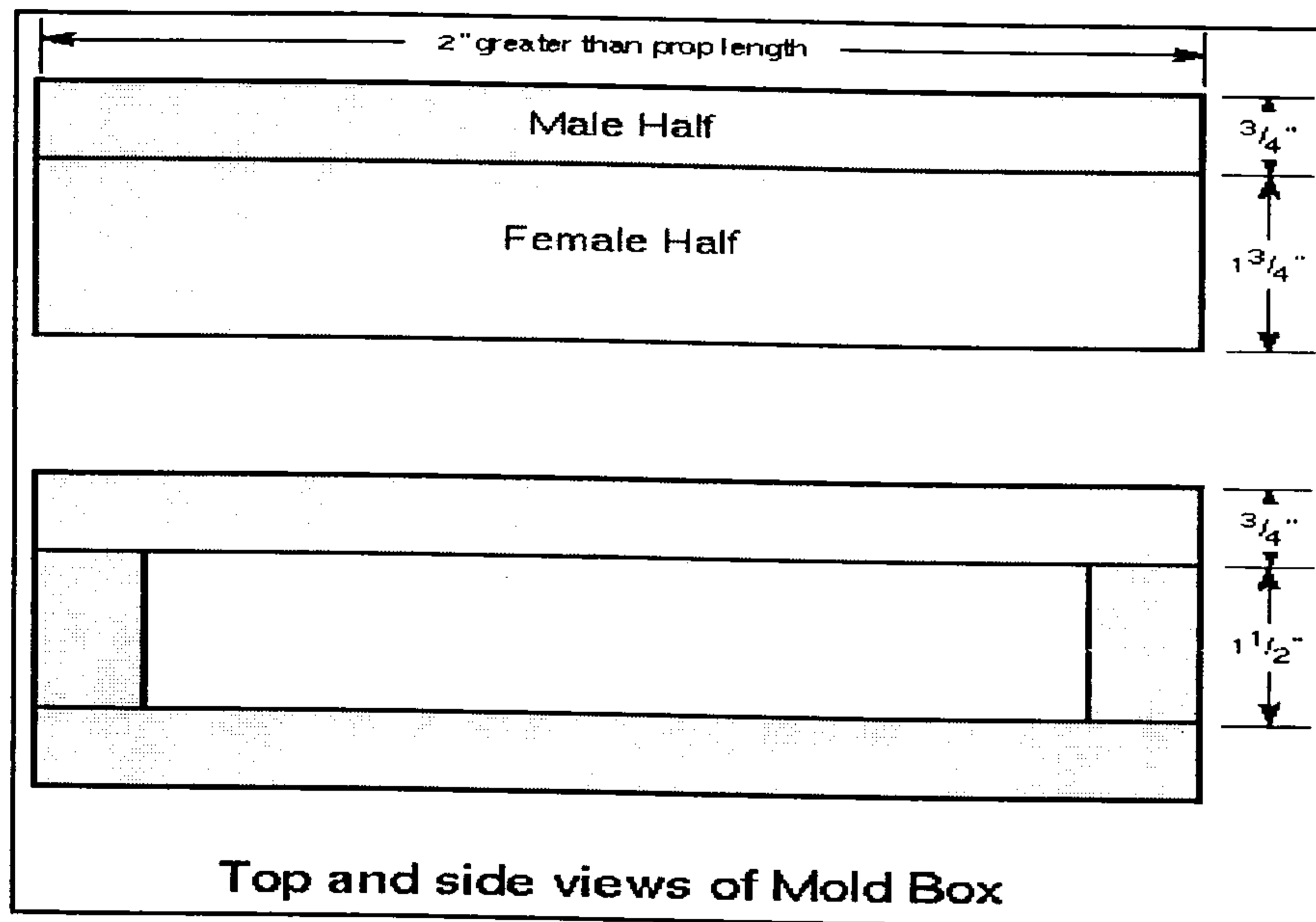
## Making a Prop Mold

Bill Lee

The first step in making a mold for a prop is to find a prop to use as the master. It must be as close to perfect in pitch, size, and finish as you can make it since it is very difficult to make the molded copies any better than the original.

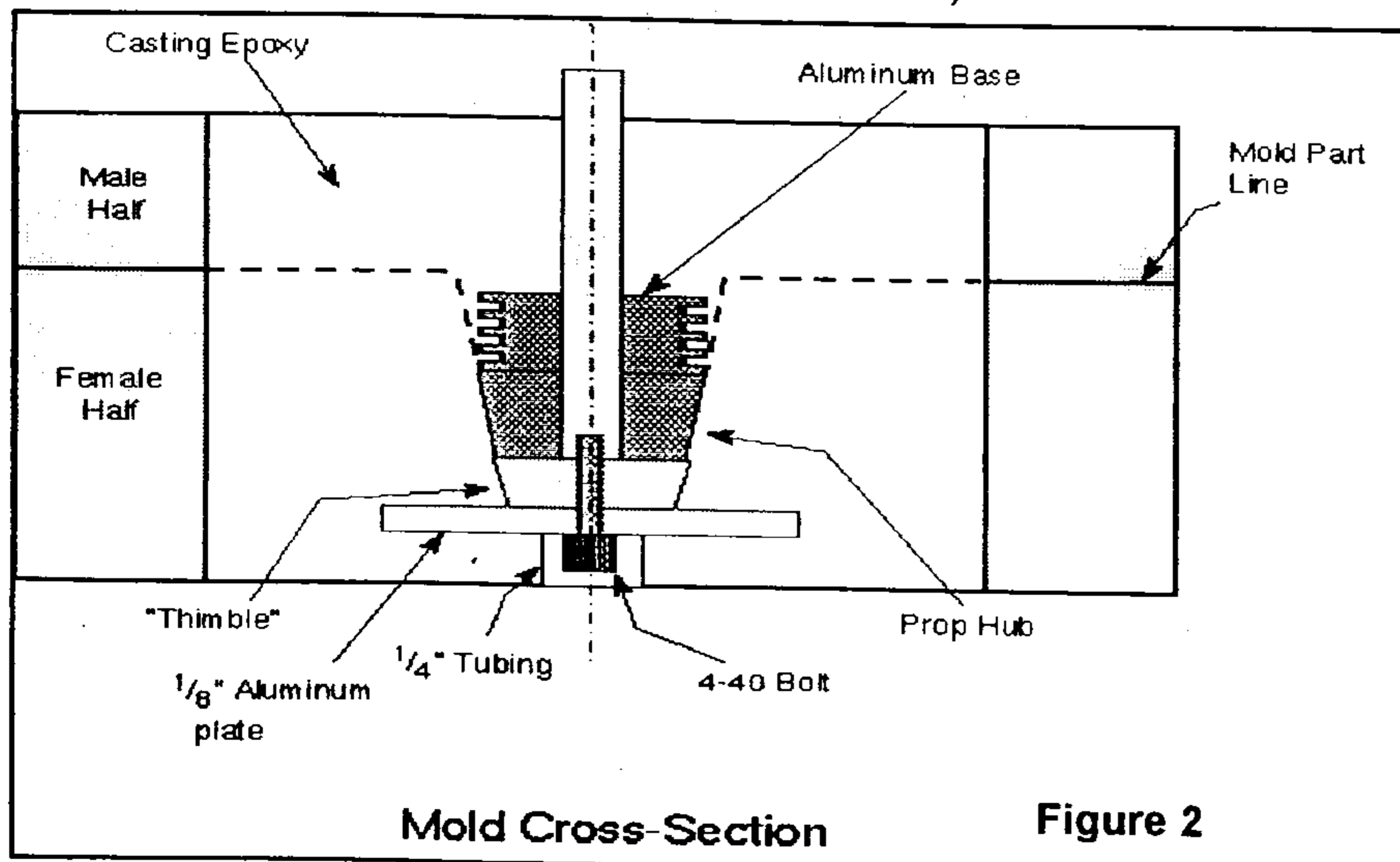
The mold is two-part with female and male halves. The outside of each half of the mold is a box made from pine. For a 7" prop, the box is about 9" long and 3" wide, made out of 3/4" thick material. The height of the box for the female half is about 1 3/4" while the male half needs to be only 3/4" or so. The boxes should be constructed as illustrated in Figure 1. It isn't too important how the boxes are assembled: CA or 5-minute epoxy is satisfactory.

Figure 1



The key to the interior of the mold is to remember that all mating surfaces **MUST** have at least a couple of degrees of relief angle: you will not get the mold apart if it is perfectly vertical or undercut.

Figure 2 illustrates what the center of the mold looks like in cross-section. (Imagine you are looking at the mold from the end)



Mold Cross-Section

Figure 2

The "Thimble" is turned out of aluminum and is sized so that it just matches the diameter of the front of the prop. (The "front" is the side of the prop which faces "front" when mounted on the model.) Its spike is the same diameter as the hole in the prop, and it tapers slightly from its base to its free end, about .004-.005". It mates with an aluminum base turned to just the size of the back of the hub of the prop. Taper on the head of the thimble is about 5 degrees.

There is a piece of 1/8" aluminum sheet captured in the epoxy to give something straight and hard to bolt the thimble to. The thimble is drilled and tapped for a 4-40 bolt.

The female half of the mold is made first. Find a large, thick sheet of aluminum and drill a hole in the middle just larger than the spike of the thimble. Make a shim about 1/8" thick and just the size of the aluminum base. Push the thimble through the prop, the base, the shim, and the aluminum plate. It helps if you can put a small bolt into the end of the spike to pull the whole stack together tightly. Next you **CAREFULLY** pack modeling clay under the prop blades and around the hub and aluminum base until you get a little mountain of clay with a prop on top. You don't want to flex the blades of the prop at all, so proceed slowly and carefully. Any flexing of the prop here will screw things up later.

Now you must carefully cut the clay around the periphery of the prop so that the clay "mountain" now has smooth steep sides, about 5 degrees off vertical. What you now have is a clay/prop "model" of the **MALE** half of the mold.

Carefully apply some paste wax (I use Johnson Paste Wax that comes in a yellow can and which can be bought at the grocery store) and then a layer of PVA mold release.

Bolt the 1/8" flat aluminum to the thimble with the 4-40 bolt. This aluminum plate should **NOT** be waxed or PVAed. You must also build a mound of clay or something on top of the bolt since you will be covering the whole thing with epoxy, and you want to be able to get the bolt out after the epoxy cures. I typically cut a piece of 1/4" brass tubing and hot-stuff it to the plate so that it surrounds the bolt. (See Figure 2)

Now take the female half wood box you've previously made. It should be just large enough to surround the clay "mountain" without touching anything. Place it carefully around the "mountain" and clamp it to the aluminum plate that the mountain is built on. The joint between the box and the thick aluminum plate should be as tight as you can make it since it must contain the casting epoxy you will be pouring inside the box.

I use Hysol casting epoxy EE0061. This is a black filled epoxy made specially for molds. I use Hysol HD3561 hardener. The ratio is 5/1 by weight.

If you are using Hysol, mix 50 grams of resin and 10 grams of 3561 catalyst. MIX THOROUGHLY! Now carefully pour it into the mold. Turn the mold to make the epoxy flow into all of the corners and up over the prop and clay. This first application of epoxy will not even begin to fill the mold, but is about the maximum you should use to avoid an exotherm problem. Set it aside to cure. Once cured, mix and add another 50+10 batch. Keep it up, one batch at a time, until the wood is filled. At this point, you should have a wood box filled with casting epoxy with a brass tube sticking out the top protecting the 4-40 bolt.

As an alternative to the Hysol casting resin, you can use a mixture of epoxy and plaster-of-paris. Place 50 grams of Shell EPON 815 in a paper cup and add 50 grams of dry plaster. MIX THOROUGHLY! Add 7.5 grams of TETA, and again MIX THOROUGHLY. Then pour as detailed above. (Note: Experience has shown that some brands of plaster work a little differently than others. Mix the plaster in until you get a consistency of cool honey: too much plaster will cause the mixture to be too thick and will not fill the mold properly.)

Unclamp the (now) female half of the mold and pop it off the aluminum plate. Turning it over, you should see a mess of modeling clay covering the shim and the aluminum base. Carefully remove all of the clay, the shim, and the aluminum base. Get all of the clay out of the mold that you can, but be very careful to NOT break the prop loose inside the epoxy. If the prop gets loose, you might just as well pull it out and start over again.

Once the clay is removed, apply a coat of wax and a coat of PVA over the whole thing. Then put the aluminum base back down securely over the thimble and tightly against the hub of the prop. The aluminum base should be clean and NOT waxed or PVAed. Now put the male half wooden box on top and clamp it securely to the female half of the mold. Again, this should be a good joint to retain the molding resin you're going to pour in.

Mix a batch of your casting epoxy (Hysol or the 815/plaster mix) and pour into the box, filling the male half of the mold. Roll it around to get it into all of the corners. After it cures, add another batch, and again, and again, until the mold is full.

Once all is cured, unclamp the mold, turn it over and take the 4-40 bolt out of the female half. Now you must pry the two halves apart. This is tough. I typically use a

1 1/2" wide wood chisel inserted between the two halves of the mold, carefully prying and propping the mold apart until finally it comes apart. Not easy, and you will wonder if you ever will get the damned thing apart! Another trick is to screw a LONG 4-40 bolt into the thimble until it bottoms (very important to bottom the bolt) in the threads, and then tap on it with a hammer to pop the thimble and the prop loose from the female half of the mold. Once apart, you must remove the master prop from the mold: it typically will be adhering to one half or the other. You may have to tap the thimble back out of the male half of the mold to get it to come loose, but since it is tapered a few thousandths, it should come out fairly easily.

YOU STILL DON'T HAVE A MOLD! You need to sand a few thousandths of clearance into the mold so that excess resin has an easy route to get out. Take some coarse sandpaper and sand the sides of the mold cavity being careful to stay away from those places which actually form the surface of the prop. Sand the sides of the male half too, being careful to not mar the surfaces which actually form the prop. You also should grind a relief in the female half of the mold at each end of the prop blade to allow for an escape route for the excess resin at the ends of the blades. When you have the clearances sanded in, the mold should go together without any pressure, and should even tend to rattle around slightly.

The matting surfaces of the two halves of the mold (Not where the prop surfaces are located) should be exact mirror images and should fit very closely. This close mating presents a problem since, when the mold is closed on a prop, there will be no place for any excess resin to go except between the two halves. The excess resin will keep the mold from going completely closed, a Real Bad Thing. You must provide a path for excess resin to get out from between the two halves of the mold. I typically grind a LOT of the mating surface away on the female half of the mold, leaving undisturbed pads adjacent to the prop cavity on each side of the hub and on each side of each tip. This relief, typically no more than .050" or so, allows the mold to close giving the excess resin a "place to go".

Now you're ready to try to mold a prop which is another story in itself.

**Have you Renewed?  
Don't miss out  
Send to:  
Jerry Meyer  
8 S. Grace  
N. Aurora, IL 60542**

## For Sale

Have something to sell? Looking for that special item? Send us your information, not only will you get a listing here, but get a listing on the NCLRA Internet Site.

New rebuilt Vorobiev model with a good stiff wing. Your choice of combinations, model with Standard engine \$650.00. Model with Special engine \$750.00. Complete with (1) one regular V15D, and (1) one special V15D. \$1,000.00 ready to fly.

Dick Lambert  
4651 Ridgewood Ave.  
Port Orange, FL 32127  
e-mail: Rlamb10769@aol.com

Dave,

Howard and I have decided to let go of 3 of our composite rats. Info and prices follow if anyone is interested. Weights are without pan, tank, and q-fill. All use Harters full pan, trimmed to approx. 12 inches. All fit K&B 6.5. Work best with AAC conversion and lightened crank. Bare trimmed pans weigh approx. 96 gm. R-33 has pan, R-34 and R-36 will require you to cut and finish a new pan. These are our 2nd string, in that they weigh slightly more than the last 3 produced (390 gm range for R-37 to R-39).

They all fly virtually the same. All have run in low 11's under the old 10% rules. These run 11.5-11.9 with our K&B 6.5s under current .25 dia. carb rules. All are capable of running under current Rat records with good race and pits. Variations in weights were from differing assembly experiments. All have approx. 25 gm non-removable wing tip weight. I will provide drawings for pan, mechanical quick fill and filler and engine head (K&B 6.5) or what ever is needed. Will assist (advise) whoever buys one as much as is needed ( setup, pressed tank ends, loan of tank forming mandrel, q-fill springs, repairs, etc.). These Rats are not pretty, but they are functional.

Will also sell complete tooling set and laminate schedules for the rats (15-20 molds, fixtures, tools, etc.) since I do not plan to make more.

R-33 (includes plane with pan,tank,q-fill {but not filler}, shutoff) \$350 2nd (of 8) rat produced from the current composite tooling. Ran 1st at Lincoln Nats. Full body painted K&B red (all others are only trim painted to save weight) has 1/8 wire gear instead of Ti strut (costs about .1 sec) Only rat who's pan is not interchangeable with R34-R39 Weight 430 gm. Pan with tank,q-fill,shutoff - 140 gm First Flown in '86, last used as backup '89 Nats?

R-34, \$300

3rd produced 2 (+?) times Nats winner and current record holder (won the most races and records- luckiest) Trimmed in yellow, clear coated Ti strut gear Weight 457 gm First flown in '86, last flown 94 Nats

R-36, \$300

5th produced 1 (+?) time Nats winner Blue trim, clear coated Ti strut gear Weight 465 gm First flown in '87, last used as backup '94 Nats

Harters pans, original package, still lacquered, \$40

Bob Fogg  
619-560-0892

Used Nelson 15's  
Used Supertigre 40's  
Supertigre 35's  
Flying Lines-all sizes  
Fast Fills  
Round Racing Tanks  
Fuel Line  
Props-Fiberglass and Graphite  
Speed and Rat Pans  
K&B 6.5's and parts  
All kinds of other goodies

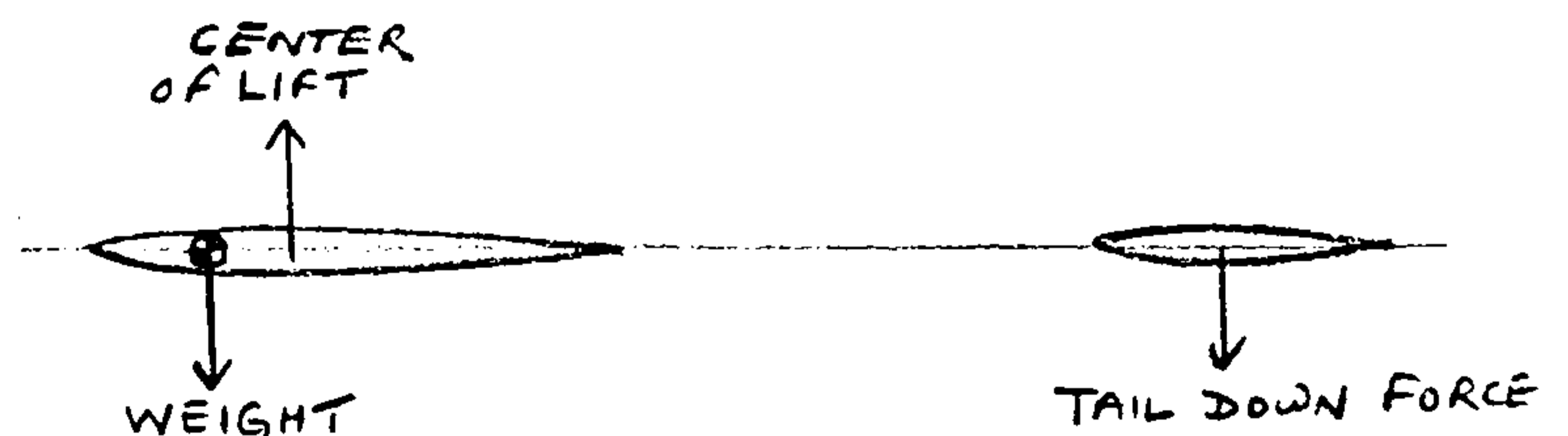
Please Call  
Larry Dziak @ 608-827-6779 or  
E-mail to dizman@inxpress.net

### Your Comments:

Dear Dave,

I am writing about Walt's discussion of T/R aerodynamics in the December 1996 Newsletter — typical pitman's perspective! His preferred setup - - "lifting section wing set at zero angle of attack generating lift equal to the model's weight allowing zero elevator deflection" - - does NOT maximize the opportunity for stable flight! What he describes would be highly unstable - might make a combat flier drool, but certainly not a T/R pilot! No wonder J.E.'s hair went prematurely gray!

What you need for longitudinal stability (pitch stability) is a balance of forces about a fulcrum (center of lift) as shown in the diagram - -



Tail down force is provided by up elevator (flying wing model) and/or negative stab angle of attack (conventional model). Note that lift does not equal weight - - lift opposes and equal the force of gravity PLUS tail down force.

Also, the closer the C of G is to the center of lift, the

more unstable the aircraft - - you need moment arms in there for stability just like the tightrope walker needs his long pole.

I think Walt is wrong when he implies that a flat bottom or lifting section airfoil has less drag than a symmetrical airfoil. Sure, it depends on relative angle of attack, but remember that T/R's have a very low wing loading and a high speed - - the required angle of attack for a symmetrical section is minimal.

Mr. Editor, perhaps we have an aeronautical engineer in the Association who can comment with more authority on this topic.

Regarding T/R myth #4, I think the opposite is true. I heard that the "Jackie Stewart Principle" applies equally well to T/R as it does to motor racing. Briefly stated, "If one model airplane gets behind another model airplane, the second model airplane gets literally sucked around the circle"!

Respectfully submitted, Stewart Willoughby

#### From Lead to Iron -

#### A Team Racing Fuel Development

by Goran Olsson, October 1996

A replacement for TEL (Tetraethyl Lead) has been found which is considerable less toxic and offers improved running characteristics.

Team racing fuels have remained remarkably constant over the years while engines, models, propellers and so on have been taken to performance levels never imagined. Oil reduction is the most striking change to the fuel. The base formula for a T/R diesel fuel of today is:

Kerosene (Paraffin, Petrol)	45-55%
Diethyl Ether	30-40%
Castor oil	8-10%
Some sort of Alkyl Nitrate, like Amyl Nitrate	1.5-2.5%
Some kind of detergent, like Lubrizol 52	~.1%

In this decade also the practice of adding tetraethyl lead (TEL) to the fuel has become widely adopted. The content is normally .6-.8 milliliters of "Ethyl Fluid" (containing also other substances) per liter of fuel. This allows clean running at a higher compression setting, giving an improvement in efficiency and power.

This was a Soviet secret for some time, but became known to the outside world around 1990. TEL, formula  $(C_2H_5)_4Pb$ , is the compound also used as an octane number improver (anti-knock) in petrol (gasoline) for spark plug engines, until catalyzers and environmental concerns have led to its phasing out. The use here is surprising at a first glance, since octane no. of a diesel fuel is something normally not called for.

TEL is extremely toxic and hazardous to use, since it contains lead in a form that is readily absorbed by the body through inhalation and absorption through the skin. It is therefore totally restricted in most countries, and the T/R community has resorted to sources from the former SU.

The hazard from exposure to the fuel is probably small, but it is considerable when handling the concentrated TEL. Therefore the TEL use has been under debate, and its ban has been suggested. The means of enforcing this ban by a useful field test have not been found, however. Even the resort to a standard fuel in T/R has been discussed. Such a thing would to my mind severely cripple T/R.

Fortunately, the use of TEL for cars has been under scrutiny for much the same reasons for at least 40 years, and an intense search for replacements has been undertaken. From studying this knowledge database, and testing various substances, I have found one that, while not useful for cars has proven to be an excellent replacement for TEL in T/R.

The compound is Ferrocene, (Dicyclopentadienyl Iron),  $Fe(C_5H_5)_2$ , or Fc for short.

This is an amber crystalline substance that dissolves easily in ether. It is essentially non-toxic. (the label caution text says "Harmful if swallowed", which indicates that it is no more harmful than any other T/R fuel component.) I have used it in my T/R fuel since the spring of 1995, at a concentration of .8 grams per liter. Other Swedish teams have been using it since the fall of 1995, as well as a few outside Sweden. (On my request, they have kept it a secret until now.)

The action is similar to TEL, in that a higher compression setting is possible, giving a performance increase. The only drawback I have found is an increase in deposits on the piston top. (Probably a ferric oxide/soot mixture.) This is not a big problem, since the engine should be cleaned thoroughly after each use for other reasons. My impression is that the running characteristics are improved compared to TEL. The take-off acceleration is better, indicating a broader RPM range. I am most interested to hear what others with no own-child bias will find.

It is interesting to note that the fuel will contain two substances that essentially counteract each other:

	Cetane No.	Octane No.	Compression
Alkyl nitrate	+	-	-
TEL or Fc:	-	+	+

Just reducing the nitrate will also lead to a higher compression setting, but no increase in power, and no clean running at high RPM. My speculation is that lowering the nitrate will reduce the combustion speed, and that the combination with TEL of Fc means that ignition can be delayed while the combustion speed is kept.

Ferrocene is available through chemical retailers. Sigma/Aldrich sell 25 gram and 100 gram jars. A 100 gram jar is around US\$50.00.

I am able to sell 4 gram quantities for your testing, enough for 5 liters of fuel. Send me a request with US\$5.00 in notes, and I'll send you 4 grams in a letter (in a sealed plastic bag.). This cost covers handling and

postage. ( I have enough for around 20 doses only. Money back if stock runs out.)

I have found it convenient to dissolve 4 grams of fc in 100 milliliters of ether and then replace 2% of the ether in the fuel with this solution. Unless you have a milligram scale.) it is important to ensure that the ether does not evaporate during storage, or the solution will become more concentrated. Use a tightly sealed bottle and make a level mark after each use.

A few curious asides:

- \* TEL was developed as a fuel additive in the early 1920's by one Thomas Midgley, Jr. The very same person later developed FREON for refrigerators. An Antichrist to the environmentally concerned!
- \* Ferrocene is a molecule of some beauty: A sandwich of two hydrocarbon pentagons with an iron atom inbetween.
- \* Ferrocene was first synthesized as late as 1951. Its discovery has led to a new field of science, studying related compounds, which was awarded with a Nobel prize (Fisher & Wilkinson, 1974)

If you test Ferrocene, good luck. I would be grateful if you send me a note with your findings, or any developments of your own in this area.

E-mail: [olsson@plasma.kth.se](mailto:olsson@plasma.kth.se)

Goran Olsson  
Valhallavagen 14, n.b. S-114 22  
Stockholm Sweden

This article is also available from my web page, with a molecular model of Ferrocene included:  
<http://www.plasma.kth.se/~olsson/fc.html>

You are encouraged to copy and distribute this to all T/R fliers as long as my attribution is kept. For commercial publishing, contact me.

## Contest Calendar

We are attempting to expand the Contest Calendar for the benefit of our members from around the world. If you have an event to list please send it to Dave McDonald.

### US

**Feb. 23** St. Louis, Buder Park. Ice-O-Lated Racing Contest. Events: NCLRA Fox Racing, Mouse I, CD Robert Arata, 561 Goldwood Dr. Ballwin, MO. 63021 314-391-0272

**April 12-13** S. El Monte CA, Whitter Narrow Recreation Area. US Team Race Championships. Events: F2C, "B" Team Race - Per. S. CA. Assoc. of Racers Rules. CD Kenn Smith 521 Jansen Ave. San Dimas CA, 91773 TX#

909-592-2100

**May 23-25** Roseburg OR. Roseburg Airport. Northwest C/L Regionals. Events: 311, 312, 313, 314, 317, NW Goodyear, NW Sport, NW Super Sport, NW Clown. CD Craig Bartlett, 205 N.E. Cedar Lane, Corvallis, OR 97330 TX# 541-745-2025

**May 25** Sugar Grove IL, Waubense College, Midwest C/L Championships. Events: 317, 313, Fox Racing. CD Bill Calkins 317 Snow St. Sugar Grove IL 60554

**May 31-June 1** Muncie IN, AMA National Flying Site, Mid-America Championships. Events F2C (both days), #317, NCLRA Fox Racing. CD Dave McDonald, P.O. Box 384 Daleville, IN 47334 TX# 378-7228

### International

**May 10-11** Breitenbach 13. International Jura-Cup 1997

SWITZERLAND F2A, F2B, F2C  
WORLD CUP  
(Borer Heiner, unt. Leberweg 14, 4208 Nunningen, Switzerland, Tel. & Fax. +41 - 61 - 791 08 09)

**May 17-18** Madrid III Open International "San Isidro"  
SPAIN F2B, F2C  
(Alfredo Javier Morales Zumel, c/ Mirabel, N15, 3, C, 28044 Madrid, Spain, Tel. + 34 - 1 - 7052276, Fax. + 34 - 1 - 5930716)

**May 17-19** Saint-Etienne 1997 Internationals of Saint-Etienne FRANCE F2B WORLD CUP  
F2B F2A, F2C

(Gilbert & Veronique Beringer, 42940 Chatelneuf, France, Tel. + 33 4 77 76 82 95, Fax. + 33 4 77 76 80 09)

### Have You Renewed?

This is a list of paid members, is your name here? If not this will be your last edition.

George Aldrich	Lenard Ascher	John Ballard
Dave Braun	B.B. Brown	Les Byrd
Ron Carr	Michael Cothran	Larry Driskel
Lari Dziak	Brian Fairey	Lester Goldsmith
Michael Hawk	Bob Heywood	Jeanine King
Krystal King	Larry King	Dick Lambert
Dr. Adrian Land	Bill Lee	George Lieb
Chris Malcolm	Gabe Manfredi	Pat Matson
Dave McDonald	Roger McIntyre	Charlie Melancon
Jerry Meyer	Will Naeumura	Jerry Noice
Ronald O'dell	Bob Oge	Richard Palmer
Tim Pansic	Nelson Pedro	Kenny Perkins
Frank Puleo	Jim Ricketts	Jim Ricketts Jr.
Martyn Rowe	Melvin Schuette	Kevin Seaton

Brian Silversmith	Alfred Stebbins	Phillip Valente
James Vansant	Dave Whitesel	Steve Wilk
Eric Williams	Stewart Willoughby	

If your name is not here, and you feel it should be, contact Jerry Meyer, 8 S. Grace St. N. Aurora, IL 60542, TX 608-897-1306

**NCLRA Fox Rules:**

We have received a high volume of calls concerning Fox Racing at the Nats. Along with this has been a request to again publish our Fox Rules, so here they are, hope to see several of these at the Nats.

**General Rules:**

AMA Unified racing rules to apply/ along with AMA Safety Provisions, with the following exceptions.

**Airplane:**

Any present or passed .35 size kit or kit planned airplane built to kit dimensions the wing must have a minimum wing area of 300 sq. in., and a **minimum thickness of one (1) inch when measured at any point along the span, with the exception of the last two (2) inches before each tip.** Obscure or rare kits, some documentation, such as a set of plans may be required by the contest director for confirmation of the airplanes kit status. Inboard cheek cowls are permitted. Airplane must ROG one wheel configuration permitted. Airplanes are to be of the profile type.

**Engine:**

Box stock Fox .35, Only permitted alterations are: Needle valve / Spray Bar, different bolts may be used. No metal removed or added, No Hemi heads, button heads, stuffer back plates etc. Engines must be stock. Claim it rule to apply equal to MFG. **suggested retail** price of new Fox .35.

**Props:**

Propellers to be 9-6 or 9-7 wood or plastic commercially available. Only re-working to be permitted is balancing

**Lines:**

60 feet line length +/- 6" as measured. **.015 Minimum** braided dia. only No Solids. Pull test to be 35lbs

**Fuel system:**

2 oz. tank **Suggested.** No pressure, vents may be directed forward, fuel must enter tank through 1/8" dia. tubing.

**Races:**

Races to be 100 laps with 2 mandatory pit stops. Races should be flown 3 up.

**Prohibited Equipment:**

No Hot Fingers, Shutoffs, Fast fills.

**Other notes:**

The Contest Director may disqualify any entrant who in his opinion is not keeping with the spirit or intent of this racing event.

**Send SASE to Dave McDonald P.O. Box 384 Daleville, IN 47334 for more Info.**

**1996 NCLRA Points Winners!!**

**Congradulations to the Winners of the 1996 Points Championship.**

NCLRA Fox Racing  
AMA Scale Racing  
AMA Slow Rat  
AMA Fast Rat  
AMA Mouse I  
F2C

Les Byrd  
Team Willoughby/Oge  
Jerry Meyer  
Roger McIntyre  
Rich McIntyre  
Team Willoughby/Oge

**NCLRA Membership Application**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

AMA# \_\_\_\_\_ TX# \_\_\_\_\_

E-mail \_\_\_\_\_

New \_\_\_\_\_ Renewal \_\_\_\_\_

Send to: **Dues \$10 US, \$12 Outside US**  
Jerry Meyer  
8 S. Grace St.  
N. Aurora, IL 60542

**Wanted Nats Volunteers**

We are pleased to announce that Roy Gould will be our Event Director again in 1997. Roy did a super job last year, along with all the other volunteers. Again this year we will need assistance in making the Racing Events the best events at the Nats. So if you are going to be in Muncie, why not take a day and support C/L Racing by being a volunteer.

If you would like to volunteer send your name to the AMA Competitions Dept. (make sure you mention C/L Racing) or Contact any officer of the NCLRA. See you at the Nats!!

**Whats Coming**

Some ideas on Fox Racing.  
Make a elevator hinge.  
Tail skids for windy weather:  
Goodyear: Recessed landing gear  
Your Comments  
Contest Calendar  
Plus More!!