



**WESTERN
OREGON
CONTROL
LINE
FLYERS**

THE WOLF CALL

Oct / Nov / Dec 2020

**ACADEMY OF MODEL AERONAUTICS
CHARTER CLUB #3464**

Upcoming Area Events

?

The "WOLF CALL" is the newsletter for the Western Oregon Control Line Flyers. WOLF members fly at the Bill Riegel Model Airpark facility at the Salem Airport.

WOLF membership is not required to utilize the facility, but fliers should be A.M.A. members. If you are not a WOLF club member, please consider joining us to help support control line model aviation activity in our area.

WOLF CLUB OFFICERS:

President: Craig Bartlett

Vice-President: Dean Singleton

Secretary-Treasurer: Mike Hazel

Safety Officer: John Thompson

Newsletter: Mike Hazel

For the latest Northwest Control Line news go to: flyinglines.org



Miscellaneous Ramblings from Ye Olde Editor

Greetings All! Yes, this newsletter issue is a bit late! When you receive this all of the holidays will be in the rear-view mirror. Hope all has been well with you and you did have a nice holiday season.

This issue will be a patchwork quilt of miscellaneous stuff including fun, frivolity, and some foolishness to help pass a few minutes of your time. Hope you enjoy....

Here's a message from our El Presidente:

Well fellow Wolfers and modelers, It's been a tough year, harrowing if you will. Our many events, contests and gatherings cancelled because of the Covid-19 crisis. Let's hope 2021 brings better times, and in the meantime...Build! Repair, refurbish, recover, and fly at your local venues, or even our circle. We salute John Thompson and his Prop Spinner gang for keeping the spirit going at their sites. Anyway, to all, Merry Christmas, Happy Holidays, and yes, Happy Control Line New Year!

Ciao, Craig

Dues are due department....

That's right folks, it's time to re-up for the coming year. A renewal form is included in this issue, but if your information remains the same just a check will do. Thanks to Loren Howard and Robin Mason for their early renewals.

An Obituary printed in the London Times Absolutely Brilliant!!

Today we mourn the passing of a beloved old friend, Common Sense, who has been with us for many years.

No one knows for sure how old he was, since his birth records were long ago lost in bureaucratic red tape. He will be remembered as having cultivated such valuable lessons as:

- Knowing when to come in out of the rain;
- Why the early bird gets the worm;
- Life isn't always fair;
- And maybe it was my fault.

Common Sense lived by simple, sound financial policies (don't spend more than you can earn) and reliable strategies (adults, not children, are in charge).

His health began to deteriorate rapidly when well-intentioned but overbearing regulations were set in place. Reports of a 6-year-old boy charged with sexual harassment for kissing a classmate; teens suspended from school for using mouthwash after lunch; and a teacher fired for reprimanding an unruly student, only worsened his condition.

Common Sense lost ground when parents attacked teachers for doing the job that they themselves had failed to do in disciplining their unruly children.

It declined even further when schools were required to get parental consent to administer sun lotion or an aspirin to a student; but could not inform parents when a student became pregnant and wanted to have an abortion.

Common Sense lost the will to live as the churches became businesses; and criminals received better treatment than their victims.

Common Sense took a beating when you couldn't defend yourself from a burglar in your own home and the burglar could sue you for assault.

Common Sense finally gave up the will to live, after a woman failed to realize that a steaming cup of coffee was hot. She spilled a little in her lap, and was promptly awarded a huge settlement.

Common Sense was preceded in death,
-by his parents, Truth and Trust,
-by his wife, Discretion,
-by his daughter, Responsibility,
-and by his son, Reason.

He is survived by his 5 stepbrothers;
- I Know My Rights
- I Want It Now
- Someone Else Is To Blame
- I'm A Victim
- Pay me for Doing Nothing

Not many attended his funeral because so few realized he was gone. If you still remember him, pass this on. If not, join the majority and do nothing.

More Stuff!

The English language has some wonderfully anthropomorphic collective nouns for the various groups of animals.

We are all familiar with a Herd of cows, a Flock of chickens, a School of fish and a Gaggle of geese. Less widely known is a Pride of lions, a Murder of crows (as well as their cousins the rooks and ravens), an Exaltation of doves and, presumably because they look so wise, a Parliament of owls.

Now consider a group of Baboons. They are the loudest, most dangerous, most obnoxious, most viciously aggressive and least intelligent of all primates. And what is the proper collective noun for a group of baboons?

Believe it or not... a *Congress*!

You can look it up! It is now becoming perfectly clear.

Just Wondering.....

If a deaf person goes to court, do they still call it a hearing?

More Ramblings.....

The question that must be on everyone's mind is..... When do things get back to normal? Perhaps they never will, or when things settle down a bit there will be a new normal.

Virtually all of the Northwest control line contests were cancelled, leaving only a couple of organized (more or less) fun fly events. Also went missing were the swap meets, which are popular among some of us. It's too early to start any predictions as to what the 2021 calendar will look like. Would be nice to see at least another fun fly event or two sometime this spring. Stay tuned.

Just another word about this newsletter issue.... we are hoping to at least in part make up for the lack of flying activity and the reports that come with it. Many of you like the "re-run" old articles and nostalgia pieces. For those of you who don't, sorry 'bout that! The cover date reflects when this issue should have come out. Sorry we are a bit late. Next issue will be for January/February. Maybe by then we will have at least a tentative activity calendar.

Speaking of activities, not sure we what we will do regarding our AGM (annual general meeting). This has always been a fun event to look forward to, but perhaps it will have to fall by the wayside this year. Club business will have to be conducted a bit different.

For more control line information and reading enjoyment, here's a shout-out for the flyinglines.org website. It's edited by WOLF member John Thompson, with the help of several Northwest (and elsewhere) individuals. This is the best place to find information on virtually every CL competition event, along with plenty of just-for-fun reporting as well.

There are several features included, so everybody should find something that's useful and interesting to them. Recently there was a link to a Swedish online newsletter which had an enormous amount of content. (yes, some was in Swedish but it also has English language included too!)

Content is added frequently, so check it out daily. You'll be glad you did!

Speaking of reading, is anyone here enamored with our official A.M.A. magazine, Model Aviation? The control line content has been greatly cut down over the years, and so many of the articles of a supposedly all interests publication are very "servo-centric". There also seems to be a dumbing-down of many of the general construction articles. Could just be this writer's perspective on things as he becomes more of an old curmudgeon.

Every few years the magazine seems to do an update or change in it's layout format. The last one includes one detail that must be some new "chic" feature of printed publications..... blank space! Personally I would rather see some useful content instead of white space just trying to be hip with other magazines.

WOLF member Gene Pape has said that he reads everything in the magazine looking for useful tidbits and techniques. He is right in that even much of the RC oriented content can still have information we could find beneficial. This would include construction techniques, where to get materials, and many other details.

In the last issue, regular M.A. columnist Bob Angel had an article detailing a flying system he calls "Uniline". I found this concept to be both bizzare and innovative. So much so that I gotta try it, so a testbed is under construction for it. Check out the magazine article!

Speaking of building, if you have not already checked out the goods from leemachineshop.com, you need to do so. Bushels of good stuff including all kinds of special hand tools, prop pitch gauge, engine venturis, line clip bending tool, gasket cutting tool, small spinners, and much more.

Okay, here's another reminder that dues are due. Remember whether we are flying or not, the expenses for the most part just keep on coming! Also make sure you A.M.A. dues are taken care of. We will be re-chartering our club soon and there ae some members whose A.M.A. membership has lapsed.

**Salem Fun Fly and Ringmaster flights
October 3 & 4, 2020
Bill Riegel Model Airpark, Salem, Oregon**

The Western Oregon Control Line Flyers opted to drop the annual Fall Follies contest this year and just hold a fun fly instead. The date coincided with the world-wide annual Ringmaster fly-a-thon, so two activities could be held at once.

Turnout was much lighter than had been expected. Weather was very pleasant all day long. WOLF club members showing up were: Craig Bartlett, Loren Howard, Fred Underwood, Jerry Eichten, Gerald Schamp and Mike Hazel. From Portland we had Don Curry and Roy DeCamara. From the south we had Gary Weems from the Eugene Prop Spinners club, and Dave Shrum from Roseburg.

Jerry was the first pilot up, and helped blow away some of the early morning fog. The rest of the flying was of the stunt and sport variety. Gary Weems flew the most number of planes, at least three, but no Ringmaster in the mix. There were only three pilots putting up Ringmasters, and each only did one flight. Don Curry had the most interesting Ringmaster; it was powered by a throttle-equipped four-stroke engine.

The most unusual plane of the day was Dave's DeHavallind DH-88 Comet racer. This scale plane has a wingspan of 72 inches and is powered with two .25 size engines. It was the last flight of the day and it looked spectacular in the air. Unfortunately by then only Dave and Mike were on the field to see it in action.



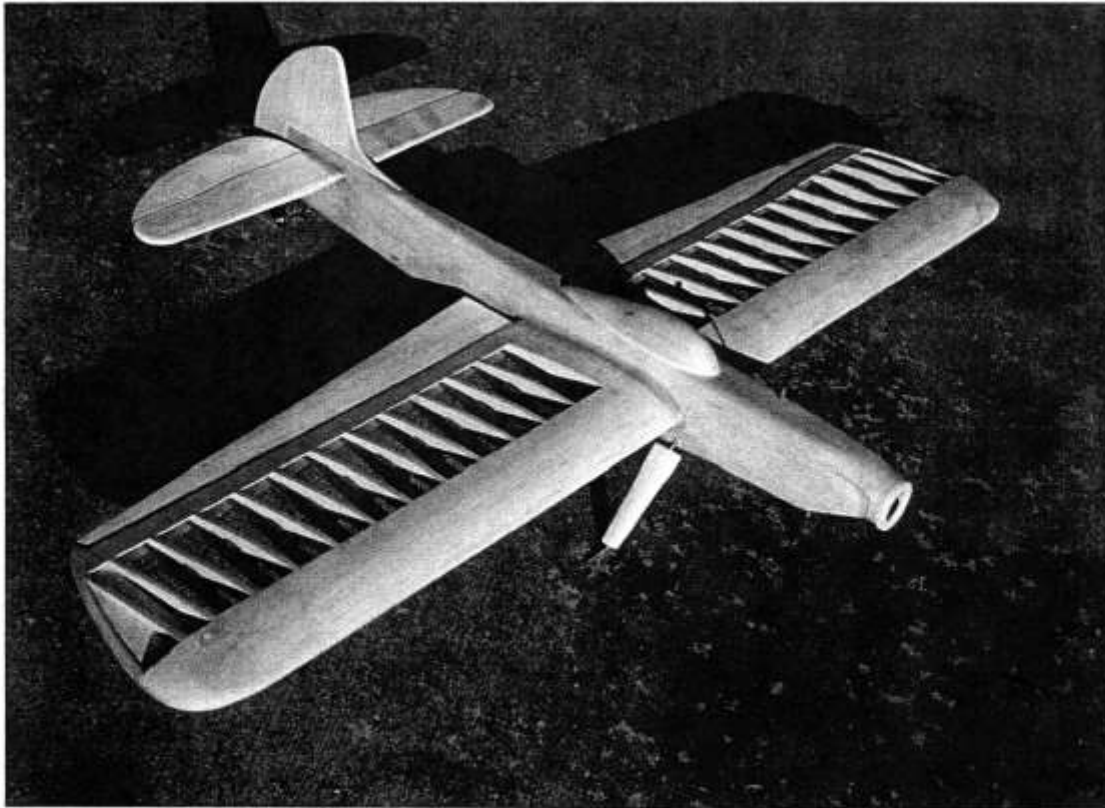
Not a Ringmaster, but the most interesting plane: Dave Shrum's DeHavilland Comet racer with two O.S. .25 engines.



Fred Underwood makes a Stunt flight.



Jerry Eichten flies in the morning fog.



One of the projects in ye olde editor's shop is finishing up an Oriental classic stunter. When I say finishing up, I mean getting back to it after a long delay. It was put aside sometime about 2003! Fortunately there was not too much hangar rash to deal with. Going to the old school route with dope and tissue wing covering. Power will be a Brodak 40, which has been hiding in a box for nearly 20 years.

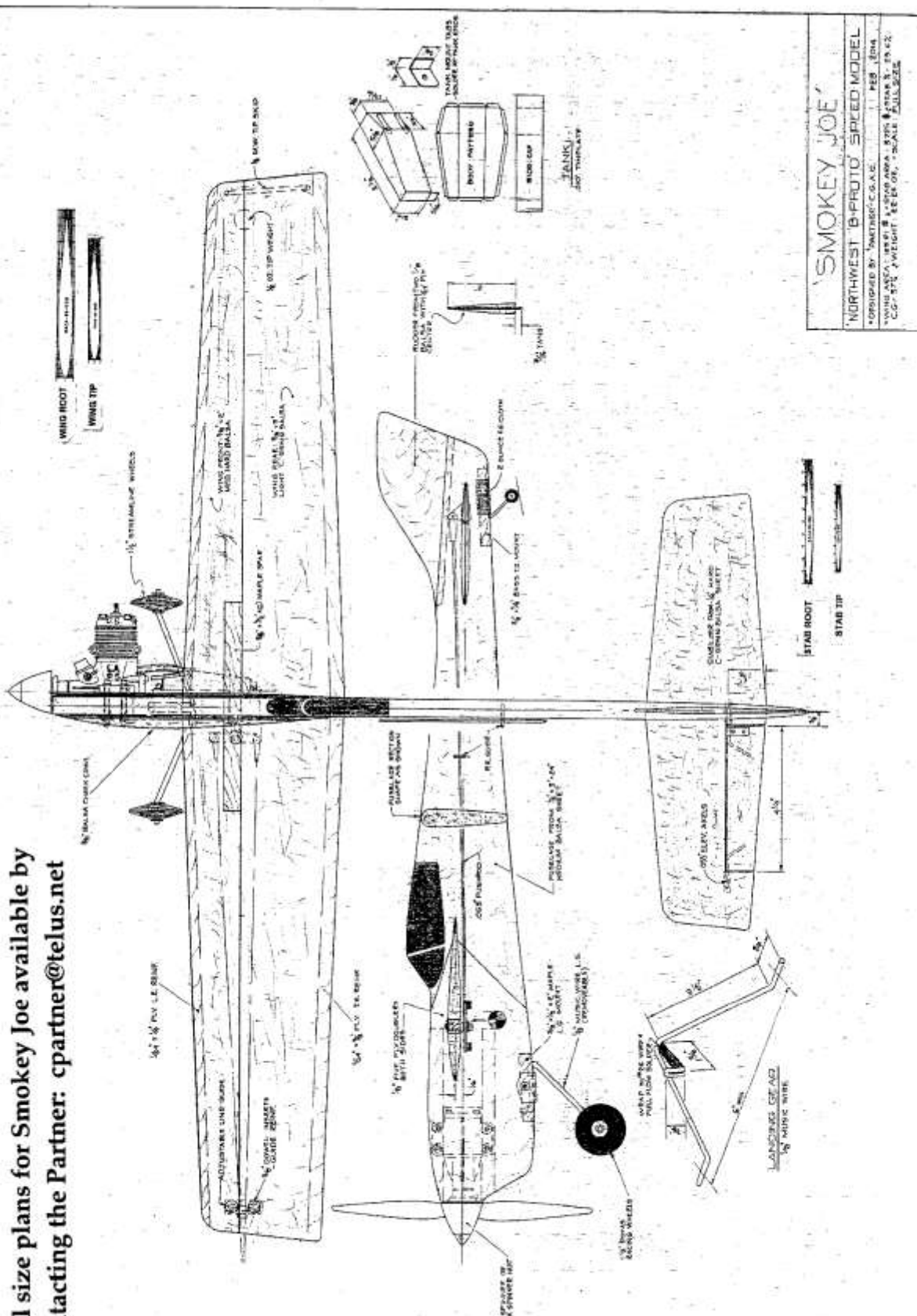
Go for the Gold!

Tips and Secrets for Racing Success

- Build for strength and dependability from the beginning. Don't over/under-engineer.
- Develop a working team from day one. Good teams win races!
- Perfect one race plane at a time. It's better to win with one than lose with four!
- Fly every chance you get. Use the "patch and fly" approach, until the pilot and plane are one.
- Build a second racer after perfecting systems and proving concepts with the first one.
- Use only products with proven track records and good customer support.
- Record every construction experiment and every flight test for later analysis.
- Make templates of each part of the aircraft. Plan out repair procedures in advance.
- Assume every hard landing produces hidden damage.
- Use only the highest grade hardware. Sport plane hardware is generally too weak.
- If you must add weight for balance, add reinforcement - not lead.
- Plan on ten flights to fully break in any new racer.
- Learning to land a new racer without damage is the single hardest lesson. Have patience!
- Engine vibration is still the number one killer of race planes. Solve it or lose it!
- Study the rules *before* you get to the races. It will save you grief.

from The Racer's Edge
Rob Wood, Editor
San Francisco, CA

Full size plans for Smokey Joe available by
contacting the Partner: cpartner@telus.net



'SMOKEY JOE'
NORTHWEST B-PROTO SPEED MODEL
*DESIGNED BY: JAMES H. COLE
*WING AREA: 200 sq. in. *SPAN: 10 in. *LENGTH: 11 in. *WEIGHT: 1.0 oz.
*C.G.: 8 1/2" *WING TIP: SEE OR. *SCALE: FULL SIZE

FULL SIZE PLANS AVAILABLE...

TO ALL THE KIDS WHO SURVIVED THE 1930's, 40's, and 50's !!

First, we survived being born to mothers who may have smoked and/or drank while they were pregnant.

They took aspirin, ate blue cheese dressing, tuna from a can, and didn't get tested for diabetes.

Then after that trauma, we were put to sleep on our tummies in baby cribs covered with bright colored lead-based paints.

We had no childproof lids on medicine bottles, locks on doors or cabinets, and when we rode our bikes, we had baseball caps, not helmets on our heads.

As infants and children, we would ride in cars with no car seats, no booster seats, no seat belts, no air bags, bald tires and sometimes no brakes..

Riding in the back of a pick-up truck on a warm day was always a special treat. We drank water from the garden hose and not from a bottle.

We shared one soft drink with four friends, from one bottle, and no one actually died from this. We ate cupcakes, white bread, real butter, and bacon. We drank Kool-Aid made with real white sugar and we weren't overweight. WHY? Because we were always outside playing...that's why!

We would leave home in the morning and play all day, as long as we were back when the streetlights came on.

No one was able to reach us all day and, we were OKAY.

We would spend hours building our go-carts out of scraps and then ride them down the hill, only to find out that we forgot about brakes. After running into the bushes a few times, we learned to solve the problem.

We did not have Play Stations, Nintendo and X-boxes. There were no video games, no 150 channels on cable, no video movies or DVDs, no surround-sound or CDs.

No cell phones, no personal computers, no internet and no chat rooms. WE HAD FRIENDS! And we went outside and found them!

We fell out of trees, got cut, broke bones and lost teeth, and there were no lawsuits from those accidents.

We would get spankings with wooden spoons, switches, ping-pong paddles, or just a bare hand, and no one would call child services to report abuse.

We were given BB guns for our 10th birthdays, 22 rifles for our 12th, rode horses, made up games with sticks and tennis balls, and although we were told it would happen—we did not put out very many eyes.

We rode bikes or walked to a friend's house and knocked on the door or rang the bell, or just walked in and talked to them.

Little League had tryouts and not everyone made the team. Those who didn't had to learn to deal with disappointment. Imagine that!!

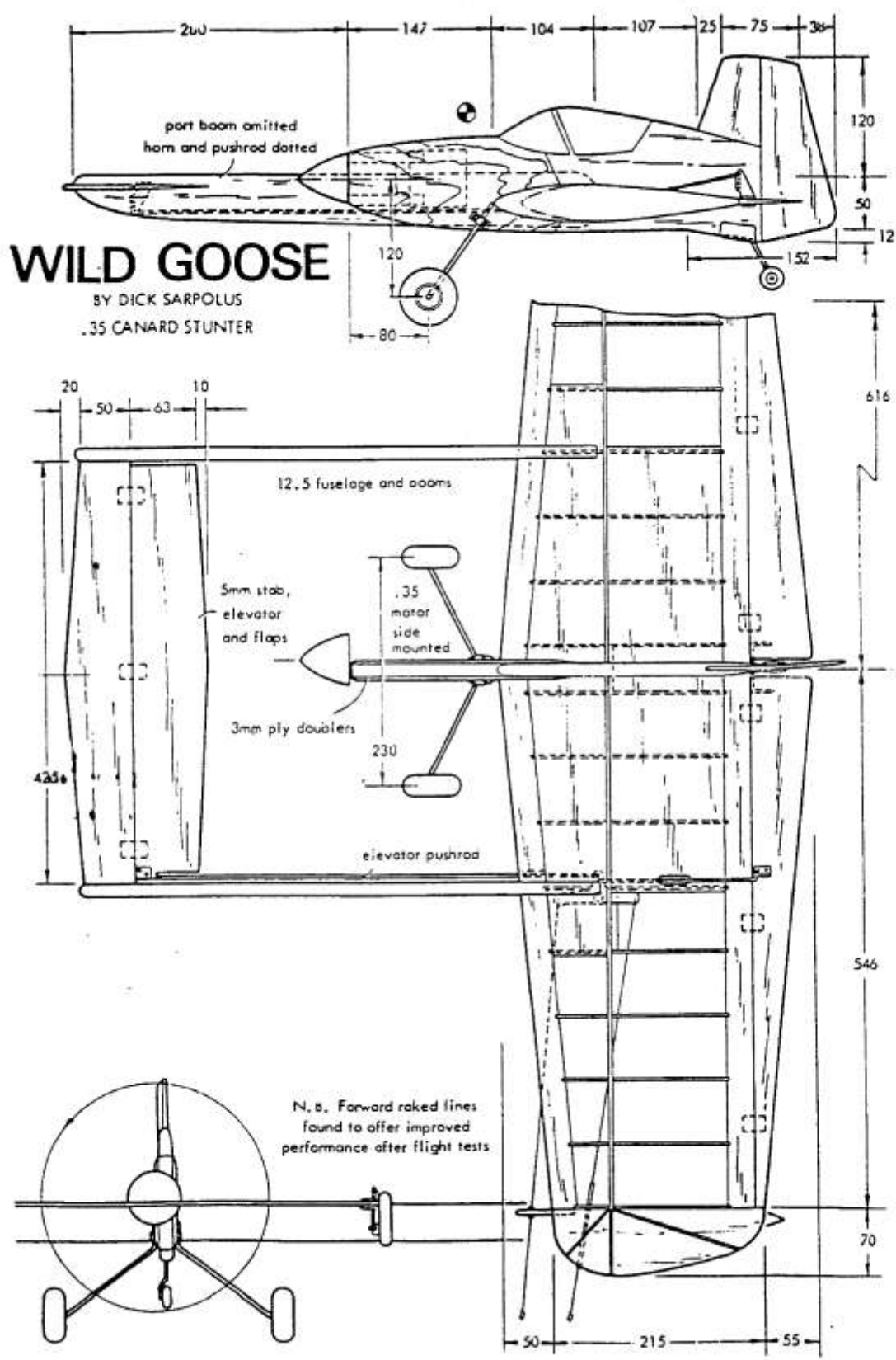
The idea of a parent bailing us out if we broke the law was unheard of ... They actually sided with the law!

These generations have produced some of the best risk-takers, problem solvers, and inventors ever. The past 60 to 85 years have seen an explosion of innovation and new ideas. We had freedom, failure, success and responsibility, and we learned how to deal with it all.

If YOU are one of those born between 1925-1955, CONGRATULATIONS!

You might want to share this with others who have had the luck to grow up as kids before the lawyers and the government regulated so much of our lives for our own good. While you are at it, forward it to your kids so they will know how brave and lucky their parents were.

Kind of makes you want to run through the house with scissors, doesn't it ?????!!!!

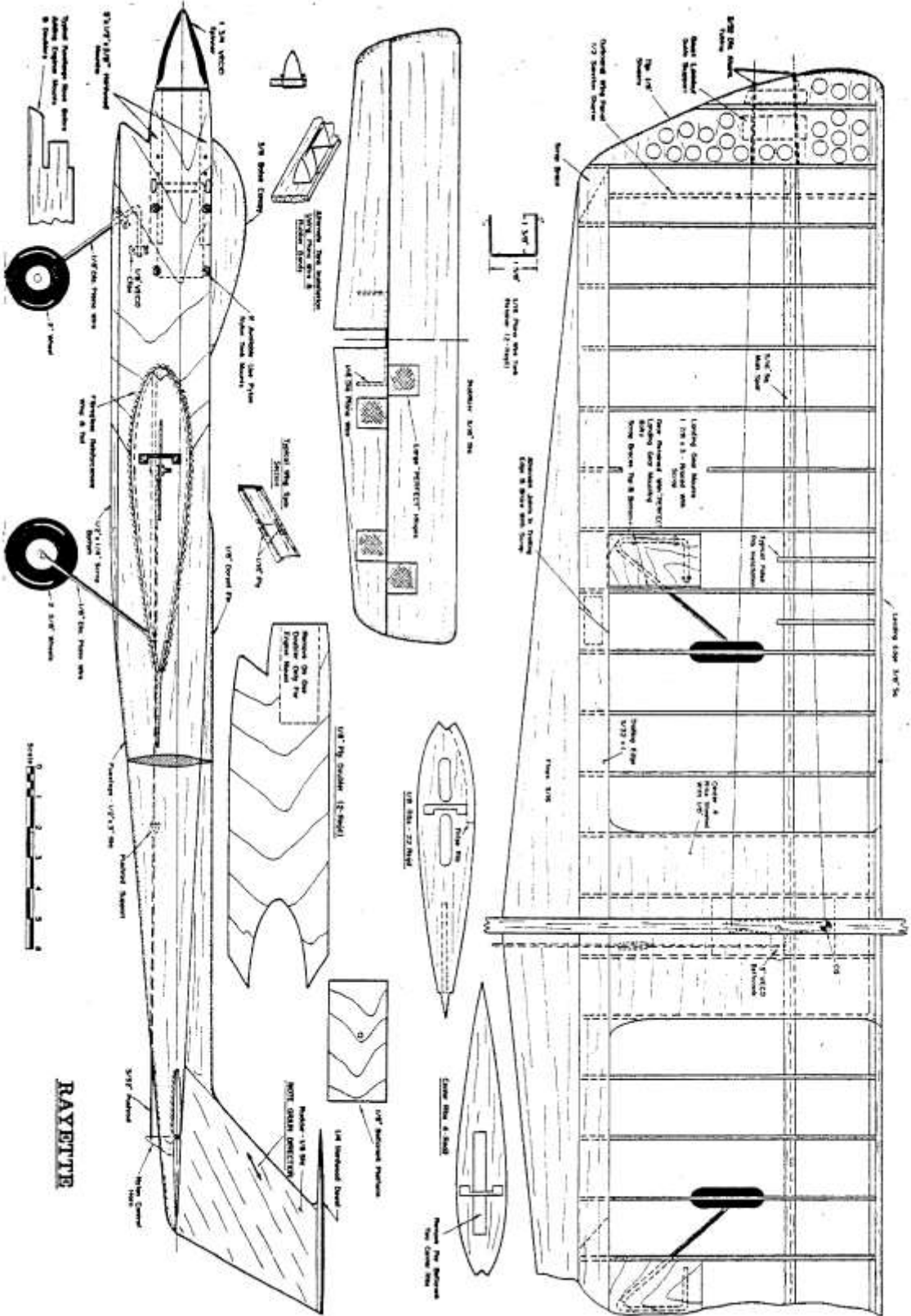


Okay, who's up for some craziness here? Note plans show metric dimensions. Wingspan is about 49 inches.

WILD GOOSE by Dick Sarpolus .35 canard stunter

RAYETTE

A 1967 design by the late Bob Gialdini 55 inch wingspan, 600 square inches, .35 to .45 engine, 42 ounces



WING LOADING

Wing Area		VERY LIGHT	LIGHT	MEDIUM	HEAVY	VERY HEAVY
		9.88 - 10.65 oz/ft ²	10.66 - 11.43 oz/ft ²	11.44 - 12.21 oz/ft ²	12.22 - 12.99 oz/ft ²	13.00 - 13.77 oz/ft ²
IN ²	FT ²	Airplane Weight In Ounces				
480-490	3.37	33.3 - 35.9	36.0 - 38.5	38.6 - 41.1	41.2 - 43.8	43.9 - 46.4
491-500	3.44	34.0 - 36.6	36.7 - 39.3	39.4 - 42.0	42.1 - 44.7	44.8 - 47.4
501-510	3.51	34.7 - 37.4	37.5 - 40.1	40.2 - 42.9	43.0 - 45.6	45.7 - 48.3
511-520	3.58	35.4 - 38.1	38.2 - 40.9	41.0 - 43.7	43.8 - 46.5	46.6 - 49.3
521-530	3.65	36.0 - 38.9	39.0 - 41.7	41.8 - 44.6	44.7 - 47.4	47.5 - 50.3
531-540	3.72	36.8 - 39.6	39.7 - 42.5	42.6 - 45.4	45.5 - 48.3	48.4 - 51.2
541-550	3.79	37.4 - 40.4	40.5 - 43.3	43.4 - 46.3	46.4 - 49.2	49.3 - 52.2
551-560	3.85	38.0 - 41.0	41.1 - 44.0	44.1 - 47.0	47.1 - 50.0	50.1 - 53.0
561-570	3.92	38.7 - 41.7	41.8 - 44.8	44.9 - 47.8	47.9 - 50.9	51.0 - 53.9
571-580	3.99	39.4 - 42.4	42.5 - 45.6	45.7 - 48.7	48.8 - 51.8	51.9 - 54.9
581-590	4.06	40.1 - 43.2	43.3 - 46.4	46.5 - 49.5	49.6 - 52.7	52.8 - 55.9
591-600	4.13	40.8 - 44.0	44.1 - 47.2	47.3 - 50.4	50.5 - 53.6	53.7 - 56.9
601-610	4.20	41.5 - 44.7	44.8 - 48.0	48.1 - 51.3	51.4 - 54.6	54.7 - 57.8
611-620	4.27	42.2 - 45.5	45.6 - 48.8	48.9 - 52.1	52.2 - 55.5	55.6 - 58.8
621-630	4.34	42.9 - 46.2	46.3 - 49.6	49.7 - 53.0	53.1 - 56.4	56.5 - 59.8
631-640	4.41	43.6 - 47.0	47.1 - 50.4	50.5 - 53.8	53.9 - 57.3	57.4 - 60.7
641-650	4.48	44.3 - 47.7	47.8 - 51.2	51.3 - 54.7	54.8 - 58.2	58.3 - 61.7
651-660	4.55	45.0 - 48.5	48.6 - 52.0	52.1 - 55.5	55.6 - 59.1	59.2 - 62.6
661-670	4.62	45.6 - 49.2	49.3 - 52.8	52.9 - 56.4	56.5 - 60.0	60.1 - 63.6
671-680	4.69	46.3 - 49.9	50.0 - 53.6	53.7 - 57.3	57.4 - 60.9	70.0 - 64.6
681-690	4.76	47.0 - 50.7	50.8 - 54.4	54.5 - 58.1	58.2 - 61.8	61.9 - 65.5
691-700	4.83	47.7 - 51.4	51.5 - 55.2	55.3 - 59.0	59.1 - 62.7	62.8 - 66.5
701-710	4.90	48.4 - 52.2	52.3 - 56.0	56.1 - 59.9	60.0 - 63.7	63.8 - 67.5
711-720	4.97	49.1 - 52.9	53.0 - 56.8	56.9 - 60.7	60.8 - 64.6	64.7 - 68.4
721-730	5.03	49.7 - 53.6	53.7 - 57.5	57.6 - 61.4	61.5 - 65.3	65.4 - 69.3
731-740	5.10	50.4 - 54.3	54.4 - 58.3	58.4 - 62.3	62.4 - 66.2	66.3 - 70.2
741-750	5.17	51.1 - 55.1	55.2 - 59.1	59.2 - 63.1	63.2 - 67.2	67.3 - 71.2
751-760	5.24	51.8 - 55.8	55.9 - 59.9	60.0 - 64.0	64.1 - 68.1	68.2 - 72.2
761-770	5.31	52.5 - 56.6	56.7 - 60.7	60.8 - 64.8	64.9 - 69.0	69.1 - 73.1
771-780	5.38	53.2 - 57.3	57.4 - 61.5	61.6 - 65.7	65.8 - 69.9	70.0 - 74.1
781-790	5.45	53.9 - 58.0	58.1 - 62.3	62.4 - 66.5	66.6 - 70.8	70.9 - 75.0
791-800	5.52	54.5 - 58.8	58.9 - 63.1	63.2 - 67.4	67.5 - 71.7	71.8 - 76.0
801-810	5.59	55.2 - 59.5	59.6 - 63.9	64.0 - 68.3	68.4 - 72.6	72.7 - 77.0
811-820	5.66	55.9 - 60.3	60.4 - 64.7	64.8 - 69.1	69.2 - 73.5	73.6 - 77.9

Editors' note: The following was picked up off the internet from Hot Rod Magazine website. It's an interesting read with some useful dope on other fuel ingredients as well. If this article looks familiar, we ran it a few years ago, so this is a re-run.

What is Nitromethane, Anyway?

Written by Marlan Davis on March 27, 2013
Contributors: Ron Lewis

We Take a Look at the Ultimate, No-Holds-Barred, Greatest Power-Adder Ever for the Internal Combustion Engine

Over the last 75 years, hot rodders have tried souping-up their engines with every possible exotic fuel and power additive. After trial and error, they settled on nitromethane-a dry-cleaning solvent and sometime rocket fuel-as by far the most potent. High loads of nitro are so volatile and add so much power that engines run with it are literally skating on the edge of destruction. Nitro's volatility, its unique cackling sound, the flames shooting out the exhaust pipes-it's all become the source of myth and legend.

To get the straight scoop on using nitro, we consulted a number of experts, including nitro pioneer Gene Adams, who still builds fuel Hemis; Jim Archer, who has mixed just about every possible fuel with every other fuel; Jeff Prock, purveyor of high-end nitrous oxide systems (yes, you can mix nitro and NOS); and the very informative data at Ray Hall Turbo's Australian-based website (TurboFast.com.au). We think you'll find that nitro truth is a lot stranger than any fictional tall tales.

Nitromethane-or CH_3NO_2 -is one member of a family of explosive compounds that contain nitrogen and oxygen. Remember the old safecracker crime movies where the "specialist" had to be real careful with the small vial of nitroglycerin, lest any sudden impact cause it to explode? Then there's TNT (trinitrotoluene) and gunpowder (nitrocellulose). Yup, anything with "nitro" in it is bad stuff!

What makes them so bad is the oxygen in the nitro group, which breaks down into gaseous

combustion products that create large amounts of heat and pressure without the need for further oxygen. Nitromethane and its relatives have the potential to be monopropellants; they can combust without any air at all. That's why nitromethane was once used as a rocket fuel. Fortunately for hot rodding, nitromethane also has industrial-world uses-for example, as a cleaning solvent and as an aid for synthesizing pharmaceuticals, pesticides, and coatings-which is why it's widely available.

Who's On First?

Reputedly the first to use nitro as a fuel were model tether-car racers; the current descendants exceed 200 mph, circling a pole on a string. For fullsize race cars, the first documented use was in the mid-to-late-'30s Auto Union Grand Prix and land speed record cars designed by Ferdinand Porsche. These were subsidized by the Nazis, who wanted to prove the superiority of German technology. The open-wheel racers had streamlined bodies and were decades ahead of their time, but most of the technology was lost when the Third Reich collapsed at the end of World War II. The last version built before the war was a 340ci (5,577cc) V12 with nonintercooled, two-stage Roots superchargers rated at 485 hp and 405 lb-ft. The fuel is believed to have been a mix of 85 percent nitromethane, 5 percent benzole, 5 percent acetone, and 5 percent castor oil, with fuel consumption around 2.5 miles per gallon. German racing driver Berndt Rosemeyer was killed in one of these cars when running 268 mph on the Autobahn in attempt to set a new world land speed record.

Totally unaware of the Nazi efforts, American hot rodders reinvented the technology in the late '40s. According to most hot rod historians, nitro's first competition use in America was by Vic Edelbrock Sr. and his associates. As related by Vic Edelbrock Jr., who was there when the events went down, back in '49, Midget racer Ed Haddad came into the shop after he'd been given 1 gallon of a nitromethane-based fuel by model-car manufacturer Dooling Brothers, but didn't want any part of it because he had heard "it will blow up in your face." Edelbrock, Bobby Meeks, and Fran Hernandez added 10 percent nitro to the methanol in their 136ci V8-60 Midget car engine.

With no tuning or familiarity with nitro, Vic Jr. recalls that the strange brew "just about broke the beam on Dad's old 200hp-capacity Clayton dyno. The spark plugs were so hot they turned into glow plugs.

When they tried to shut it off, the engine kept running. They finally had to throw a towel on it to get it to quit." The engine was toast, but eventually they learned to add lots more fuel, colder spark plugs, and stronger internals to stand up to both the higher output as well as nitromethane's corrosive effects. The Stromberg 81 carbs had to be nickel-plated, as did the fuel containers (hidden from prying eyes inside cardboard boxes). Eventually, Edelbrock settled on a 20 percent nitro/80 percent methanol mix that added 40 hp.

Later in 1949, powered by the secret sauce, Edelbrock's Fran Hernandez's '32 Ford beat Tom Cobbs' blown Roadster at the Goleta, California, airport in the first sanctioned drag race ever held. But what really made everyone take notice was Vic Edelbrock Sr.'s circle-track Midget driven at the famous Gilmore Stadium in 1950 by future Indy 500 winner Roger Ward. At the time, Midget racing was the rage in Southern California. Purpose-built Offenhauser four-cylinder racing engines had a significant power advantage over other setups and dominated the top circuit. The Ford V8-60 flatheads were relegated to their own class. But on that historic night at Gilmore, Edelbrock entered its Kurtis Kraft V8-60-powered Midget in the Offenhauser class, fueled by his secret brew, and smoked them all. It was the only time a Ford V8-60 won at Gilmore over a field of Offys. In San Bernardino the following night, Edelbrock blew off the Offys again.

Edelbrock was able to keep the fuel a secret for a while, but with flames coming out of the exhaust, fellow racers knew something was up. Vic disguised the distinctive odor by blending in a little orange oil. By 1952, an Edelbrock Ford flathead running 40 percent nitro had run 201 mph one way at Bonneville (before the exhaust valves got sucked into the ports). Other racers experimented with fuel in the early '50s, including Joaquin Arnett of Bean Bandits fame. Tony Capana is said to have been the first to take nitromethane to the dry lakes, and, by 1954, to the Indy 500 (where it was legal at the time).

The Rich Get Richer

According to Gene Adams, if you consider high-octane racing gasoline as the baseline fuel, replacing it with methanol-the best alcohol fuel-is worth a 5-to-10-percent power gain. But 80-to-90-percent nitro is worth two to three times the power of the alky.

What's the secret? Nitromethane carries its own oxygen, so it needs much less atmospheric oxygen to burn. The theoretical ideal or stoichiometric air/fuel ratio for gasoline is 14.7:1. That means, 14.7 pounds of air are needed to burn 1 pound of gas. Methanol, which also carries oxygen, has a stoichiometric ratio of 6.45:1. But with 100 percent nitro, the ratio is 1.7:1! Because the displacement of an engine cylinder is fixed, this means-assuming 100 percent volumetric efficiency (VE)-8.7 times more nitromethane than gasoline can be burned during one combustion cycle.

On paper, gasoline has about four times more heating value than nitromethane: at least 19,000 Btu/lb for gas compared with just 4,850 Btu/lb for nitro. But that doesn't take into account the fuel's specific energy (SE) value, which is derived by dividing the heat value by the air/fuel ratio (Btu/lb ÷ A/F), telling us how much heat energy is delivered per pound of air into the motor. At stoichiometric air/fuel ratios, the nitro's SE value is around 2.2 times greater than gasoline!

Racing nitro motors run far richer than the theoretical 1.7:1 ratio, and Adams says it's possible to dump nitro at ratios approaching 0.5:1. "At 80 percent nitro and above, the optimum air fuel/ratio no longer exists and the power output becomes well related to the actual amount of fuel fed into the engine by weight," adds Ray Hall Turbo. At 0.5:1, the SE potential of nitro could be six times greater than gas. "Gas is for washin' parts. Alcohol is for drinking. Nitro is for racin'!" -Anonymous Racer

Compared to methanol, nitro's theoretical SE advantage is nearly 40 percent at stoichiometric and more than 110 percent at theoretical max power ratios. When you add in nitro's high heat of vaporization (about twice that of methanol), you also get a significant cooling effect in the chamber. Since nitro wants to explode instead of burn in a controlled manner like a properly tuned gasoline-fueled engine, anything you do to reduce chamber hot spots is critical!

All this still doesn't take into account that at extremely rich ratios, the nature of nitro's chemical reaction under combustion changes, producing new end products including hydrogen-another compound that really likes to go "boom" (remember the Hindenburg?).

The 98 percent Solution

Although it's possible to run 100 percent nitro-Art Chrisman is said to have done so, with carburetors to boot-experts like Gene Adams don't recommend it. "Even if the rules allow it," Adams says, "cutting nitro with another fuel makes the car more consistent. It'll run cleaner and there's less tendency to drop cylinders. In my experience 98 percent is best overall."

Thanks to improvements in magneto technology, 98 percent is doable today. The ignitions of the past just weren't up to the job. Regardless, NHRA currently restricts Top Fuel and Funny Cars to a 90 percent nitro solution in an effort to hold down speeds. A normally-aspirated A/Fuel dragster can run 94 percent nitro. At Bonneville, it's still "run what ya brung."

Methanol Brews

Methanol remains the most popular fuel used to cut nitromethane, if only because many sanctioning bodies currently ban the alternatives. Nevertheless, there's a good reason to cut nitro with up to 10 percent methanol: It helps suppress detonation. Ray Hill Turbo recommends a 2.5 percent water/7.5 percent methanol cut to reduce both preignition and detonation tendencies with, it claims, "almost the full power capability of undiluted nitromethane."

Weird Science

When running nitro absent of rules restrictions, the following methanol-blend alternatives are known to either increase power, improve efficiency, and/or suppress detonation and preignition.

Propylene Oxide: Ray Hall Turbo says adding 10 percent propylene oxide is worth about a 10 percent power increase. It's possible to run up to a 50/50 propylene oxide solution, but with anything over 10 percent, additional power gains aren't proportional to the added amount. To prevent corrosion as well as polymerization in the container that could cause a possible explosion, store propylene oxide in a polyethylene container in a cool location (the fuel boils at 93 degrees F), or polymerization in the container could result in an explosion.

Acetone: Up to 5 percent acetone can reduce preignition by raising the autoignition point. On a

cold day, up to 10 percent acetone can ease initial start-up.

Benzene: Gene Adams and Jim Archer say cutting methanol with benzene or benzole (a coal-tar product consisting mainly of benzene and toluene) may produce better results than cutting nitro with methanol. There's one drawback: Benzene is a hard-core carcinogen. That's probably why just about every sanctioning body bans it.

Hydrazine: The most dangerous additive of all.

Hydrazine: Go Up Like a Rocket

Legends persist of mixing hydrazine with nitromethane for a significant power gain. Hydrazine (N₂H₄) was developed in World War II as a rocket fuel. It powered the first operational rocket-based interceptor, the German Me-163B, and is still used in some spacecraft and myriad industrial processes to this day.

A colorless, flammable liquid with an ammonia-like odor, hydrazine is so volatile that it's outlawed virtually everywhere. Jim Archer has some experience mixing nitro and hydrazine: "Yes you can do it, but it's dangerous as hell and very toxic." Nitro is slightly acidic, while hydrazine is slightly basic, and opposites attract, with a vengeance: When the two come into contact, a spontaneous chemical reaction starts that ultimately creates a salt-like, high-explosive compound that's extremely sensitive. So, any mix's efficacy for improving performance is extremely time sensitive. It takes a while for the reaction to really get going, so if you mix the two together and run it right away, nothing is gained. Somewhere around 25 to 30 minutes after mixing you will see a power gain over nitro alone. Around 45 minutes, the mix will blow up inside the engine or even self-detonate in the tank.

Nitromethane, dangerous as it is, looks like water compared with hydrazine. Don't breathe it, don't ingest it, and don't get it on your skin (it absorbs right through it).

Pass on the Gas

Nitro doesn't mix with gasoline—they separate, with the gas on top. You can, however, mix nitropropane (C₃H₇NO₂) with gas, and even 10 percent nitropropane in gas can provide small power increases. A test by Jeff Smith is available at HOTROD.com/techarticles/42018/. Klotz (KlotzLube.com) sells a product called Nitro Power

Additive, a mixture of nitropropane and antidetonation agents (nitropropane is extremely detonation sensitive). What about running straight nitropropane? It provides about the same gain as running 60 percent nitromethane.

Tipping the Can And the Bottle

Nitrous oxide and nitromethane? It's possible-but only preliminary development has been done because most sanctioning bodies outlaw it. Mike Thermos says he's built systems that run up to 25 percent nitrous oxide, but even at that level, supplying enough fuel is problematic. You need huge fuel-side solenoids with special internal orifices capable of handling thick, viscous, lacquer-like nitromethane-probably at least two 0.180-inch-orifice models.

Applied Nitrous Technology specializes in hard-core systems for just about every race venue; as owner Jeff Prock puts it, "We've put nitrous on everything from model cars and lawn mowers up to Fuelers." More than a decade ago, Prock built a system for Keith Stark's A/Fuel Dragster. The goal was to prevent dropped cylinders induced by ignition that had trouble lighting off the 100 percent loads of nitromethane. It was hoped that nitrous would speed the flame front, which would permit retarding ignition timing, reducing ignition stress. Expectations were met: instead of 65 degrees, the engine ran best at 50 with nitrous. The nitrous jet sizes were roughly the size used on a 125hp system for gasoline car, with eight 0.018-inch orifice jets-but with nitro, that added more than 300 hp. Fuel flow at 6,300 rpm had been 31.1 gallons per minute; with the small nitrous shot that increased to 35.5 gpm. Times plummeted from 5.40 seconds to 5.29, and eventually 5.08. The big problem was shredding clutches.

Stark reports that the engine combo was never optimized for nitrous oxide: "We would have taken out some compression ratio if we kept pursuing it." Nitrous contains 36 percent oxygen by weight; nitromethane about 52 percent. High compression isn't needed with all that oxygen and fuel-you just want max volume of fuel into the cylinder. "You no longer have controlled combustion but a pure chemical reaction," warns Prock. Prock feels that with sufficient development, the normally aspirated, nitro/nitrous combination could have given blown Fuelers a run for their money. On the other hand, another nitromethane combo running 0.030-inch-orifice nitrous jets is said to have blown the side of the block clean off!

White-Hot

Several explanations are offered for the phenomenon of flames shooting out the exhaust pipes. Gene Adams says it's due to superchargers that "blow through unburned fuel on overlap." Flames have gotten longer as fuel pumps and magnetos have improved, allowing higher fuel volumes to be pushed through the engine. According to Adams, more volume means longer flames. "Back in the '60s and '70s, 1- to 2-foot flames were common. Now it's more like 10 feet."

An alternative explanation is that not all the nitro has the time to ignite within the engine and goes out the exhaust, where it ignites on contact with atmospheric oxygen, burning with a characteristic yellow flame. If a rich mixture has entered a monopropellant phase, hydrogen and carbon monoxide are produced as a byproduct. Bright white flames are then generated by burning hydrogen.

Hard to Start, Hard to Stop

Initial start-up with high nitro concentrations is very tricky. Jeff Prock says, "You must get the engine cycling. It won't start up spinning at 200 rpm like a gas engine would. You need to get some heat in the engine and spin it at 1,800 to 2,000 rpm." There's so much fuel pouring into the cylinders that failure to get the engine spinning fast enough before controlled ignition can hydro-lock the engine, or even blow a head off. The common practice is to start and warm up the engine on gas or alcohol.

High percentages of nitro required massive breakthroughs in ignition technology. Today's top-of-the-line MSD units put out 50,000 volts and 44 amps on the top end. That's about the output of an arc welder at each cylinder-and the Fuelers run two of them.

Once you get a nitro engine going, it may not want to stop. At 7,500 rpm on the top end, there's so much heat in the engine it may keep running under autoignition even if you shut off the magnetos. Essentially, it becomes a diesel. Fuelers today shut down by turning off the fuel pumps as well as the ignition.

Don't Get Mixed Up

Correctly lending nitro involves far more than a mixing cup. The specific gravity (SG) of fuels varies per batch and purity; methanol's out-of-the-barrel concentration can vary 5 percent or so. The by-weight mixture is also dependent upon temperature,

both during the initial mix as well as if the temperature changes afterward. As temperature rises, the weight (as measured by SG) decreases. For tuning, it's the percentage by weight that's important, so it is necessary to mix the fuel using a hydrometer and keep track of mixture temperature.

Stayin' Alive

Gene Adams, one of the old masters, offers some tidbits: "Normally aspirated, nitromethane-fueled, engines don't like to rev as high as a gasoline- or alcohol motor. At high rpm, there's just too much volume of fuel and not enough time to burn it all. A blown alcohol dragster with a screw-compressor supercharger will run to 10,000 to 10,500 rpm; normally aspirated nitro cars in the same class run around 6,700 rpm and they make about the same power. If you try to rev them up higher, the power falls off. Adding a supercharger allows the engine to rev up higher, to about 8,200 on the top end.

"Lightweight parts are not as important since the engine isn't turning big rpm. Keeping everything together is, so we build things stouter-bigger piston wrist pins and heavier cranks, for example. Aluminum rods are obviously lighter than steel rods, but we use them for shock resistance, not weight savings. The 7075-T6 billet aluminum rods are much larger physically, so they are physically as strong as a mild-steel rod-but you can't keep bearings in a steel rod.

"Bearings, pistons, and everything have more clearance, and are run with heavy, single-weight 70W oil. This works better under nitro's tremendous loads. There's also a tremendous amount of blow-by even when running good, due to the tremendous internal pressure and rich fuel mixtures. There's a lot of cylinder-wall wash-down. Typically we use a Dykes top ring with a 0.017-inch-step, 116-inch second, and 316-inch heavy-tension oil ring.

"Nitro engines require lower compression ratios. Normally aspirated with modern race gas or methanol, 15:1 compression ratios are typical. With nitro, you're looking at about 10 to 11:1. A blown motor might run 6.0:1 compression with nitro, 8.5:1 with gasoline, and 12.0 to 13.0:1 on alcohol. "Even with 'low' compression the Hemi heads are O-ringed, with the receiver groove in the block's sleeves. The ports are so huge you can put your legs in the heads. Valves sizes are 2.450-inch intake/1.94-inch exhaust.

"Typical cam specs might be 280-to-290-degrees duration at 0.050 with around 0.750-to-0.800-inch valve lift. That's not as radical as a Pro Stock car

or alcohol dragster, but we don't turn the rpm, so why sacrifice durability? With so much ignition lead, excessive duration would only increase blow-through anyway. The cams are single-pattern because Hemis are not exhaust-side limited."

Running Out of Timing

Popularly, nitro is considered a "slow-burning" fuel, but the burn rate is between gas and methanol. The problem is that on high end, nitro-fueled engines, only about 10 percent of the fuel in the chamber is vapor when the burn starts; the rest is liquid. The vapor burns first, which ideally creates enough heat to vaporize the rest of the fuel. But it takes time to create that heat-hence the great amount of lead needed, about twice what you'd use with an equivalent gasoline-fueled engine. Adams says, "Normally aspirated we usually run 60 degrees of lead or 50 degrees with a supercharger. A gasoline-fueled, normally aspirated Hemi might only need 27 to 28 degrees."

Hammered

Nitromethane is weird stuff. You can strike a match next to a puddle of it and nothing will happen. But Jeff Prock says-based on personal experience when he was a kid-if you put a few drops of it on an anvil and hit it with a hammer, there will be a small explosion, somewhat akin to an old cap going off in a toy gun. More seriously, that means you don't want to risk dropping barrels off a truck. The explosion chance is remote, but it is possible, especially on a hot day.

16 HP/CI. With the current rules-restricted 90 percent nitro/10 percent methanol blend, modern Top Fuel 500ci Hemi engines make about 8,000 hp. That's 1,000 hp per cylinder or 16 hp/ci. It takes about 15/100 of a second for the power to reach the rear wheels.

Knock Your Block Off

If spark fails early in the run, unburned nitro can build up and then explode with a force that can blow the heads off the block-or even blow the block itself in half.

GERMAN AVIATION TERMS

AIRCRAFT --- Der Fliegenwagen

JET TRANSPORT --- Der Muchen Overgrossen Biggenmother Das Ist Fliegen Highenfaster Mit All Der Mach Und Flighenlevels. (Built by Boeing)

PROPELLER --- Der Airfloggen Pushenthruuster

ENGINE --- Der Noisenmaken Pistonpusher Das Turnens Der Airfloggenfan Pushenthruuster

JET ENGINE --- Der Schreemen Skullschplitten Firespitten Smokenmaken Airpushenbacken Thruustermaker Mit Compressorsqueezen Und Turbinespinnen Bladenrotors. (Made by Pratt & Whitney)

CONTROL COLUMN --- Der Pushenpullen Bankenyanken Schtick

RUDDER PEDALS --- Der Tailschwingen Yawmaken Werks

PILOT --- Der Pushenpullen Bankenyanken Tailschwingen Werker

PASSENGER --- Der Dumbkopf Das Est Strappened En Der Backen mit Der Other Dumbkopfs Das Est Expecten To Leave und go On Schedledtinen Und Arriven mit Der Luggagebags Somplaceneisen (alternate DEG defn: der pushy whinen sheisskopf mit teumuch crapinhand)

STUDENT PILOT --- Der Dumbkopf Das Learnen Fliegen Un Hopen To Jobenfinden mit Der Airlines

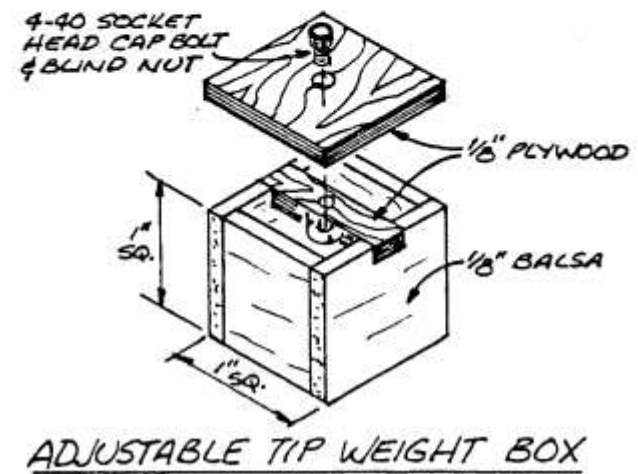
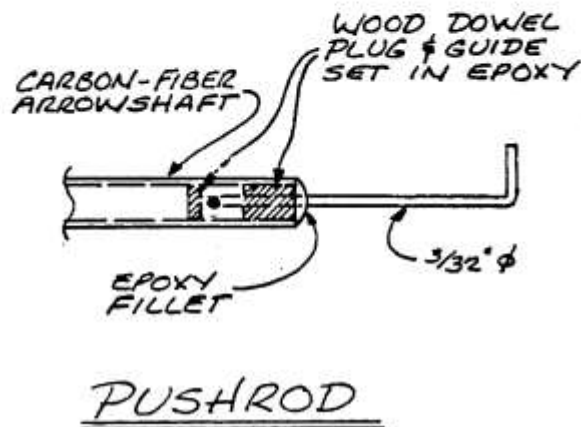
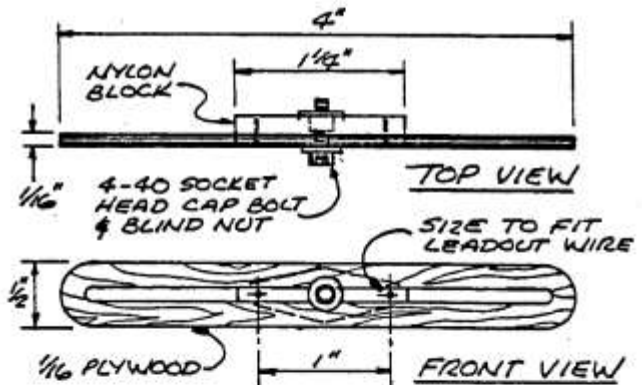
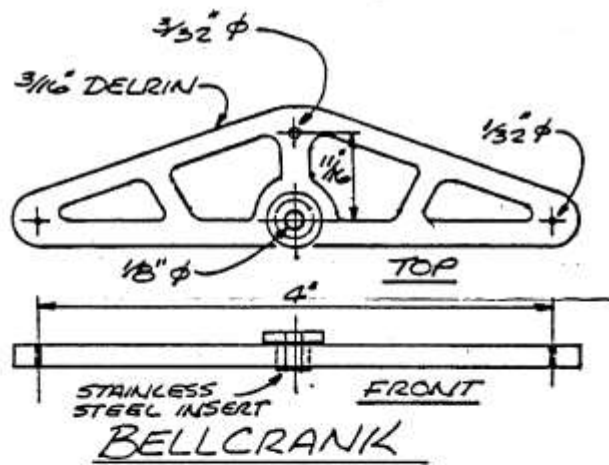
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AIRLINE TRANSPORT PILOT --- Das Grosse Overpaiden Und Under Werken Whinencomplainer Biggen Schmuck Dat Fliegen Mit Das Big Airinen

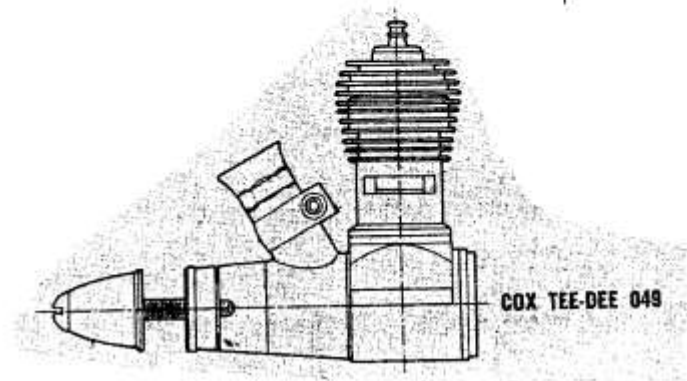
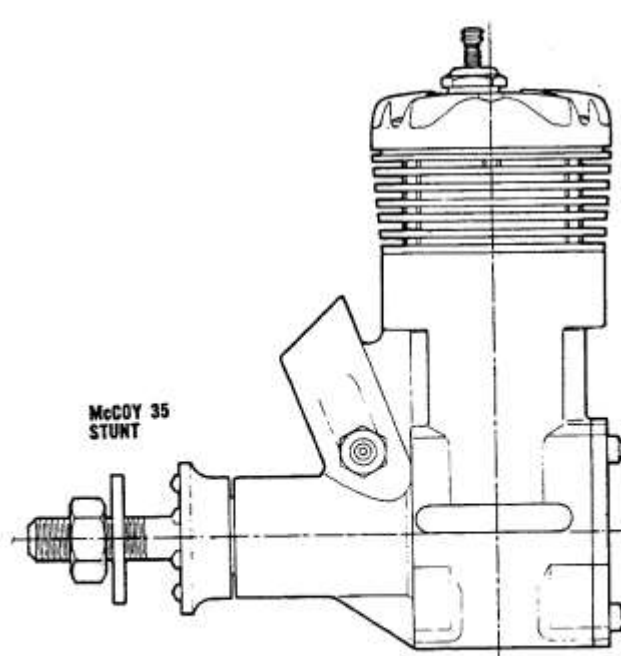
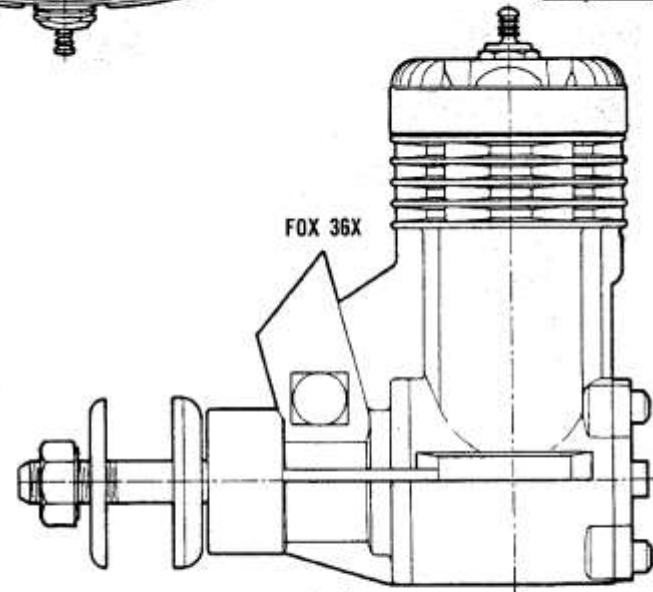
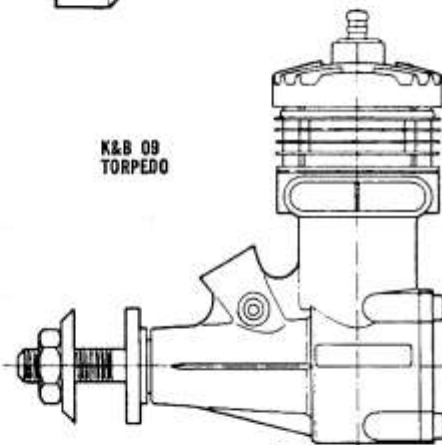
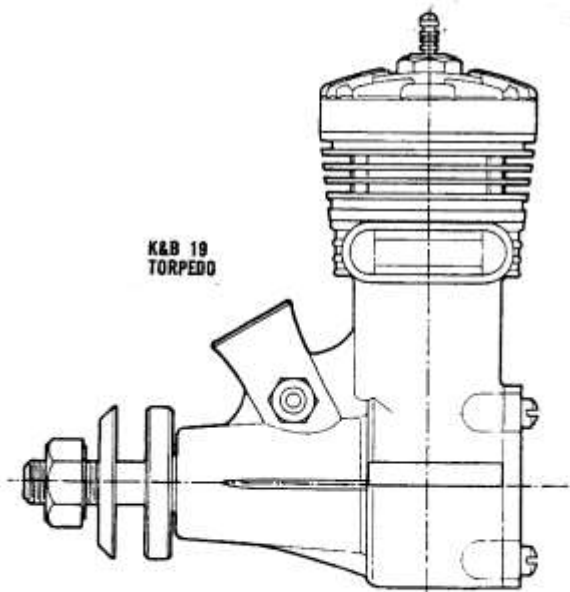
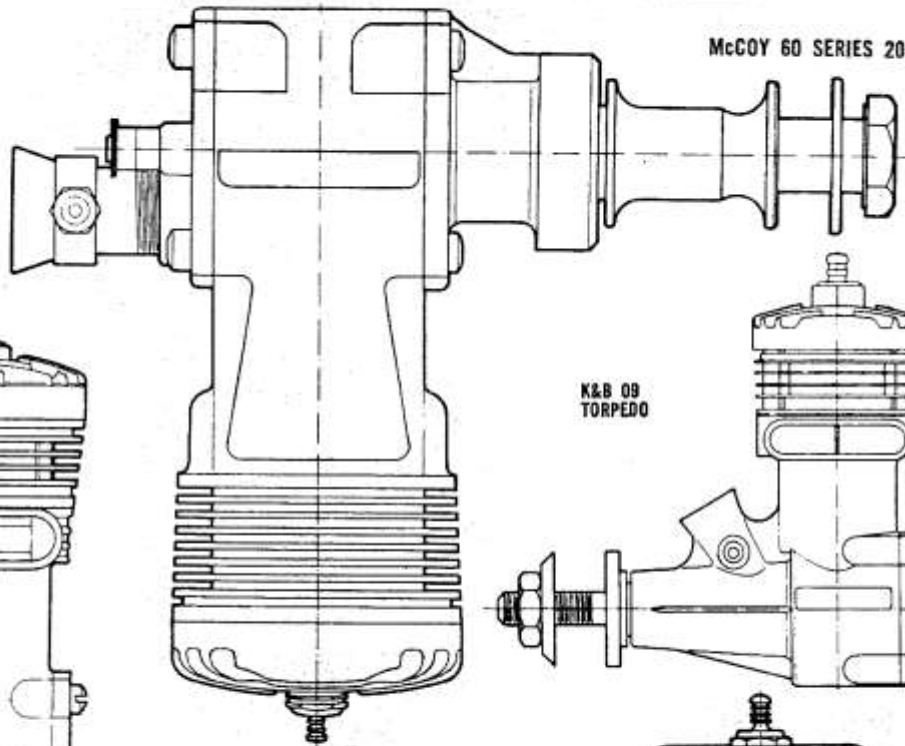
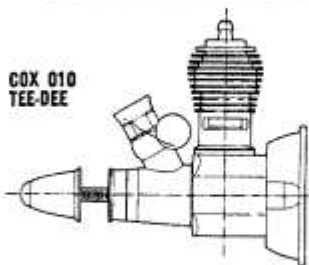
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FAA --- Der Friggenfliegen Dumbkopf Schmucks Das Maken Alder Rulens Und Regulations

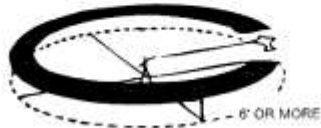
STUNT AIRCRAFT COMPONENT CONSTRUCTION TECH TIPS:



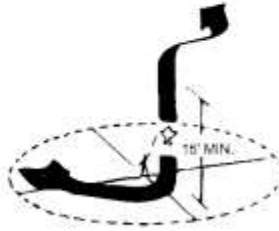
SOME OF OUR FAVORITE ENGINES FROM THE 1960'S



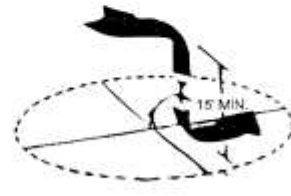
OLD TIME STUNT



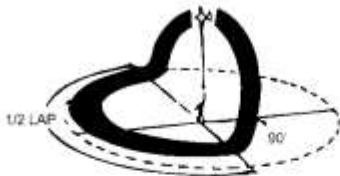
**TAKEOFF &
LEVEL FLIGHT**



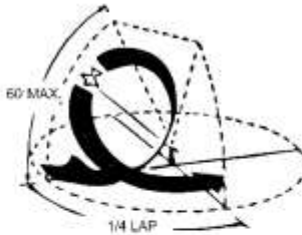
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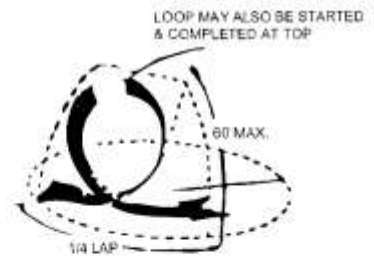
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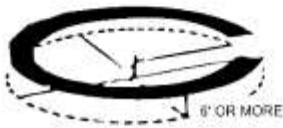
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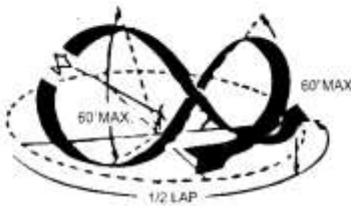
**CONSECUTIVE
INSIDE LOOPS (5)**



**CONSECUTIVE
OUTSIDE LOOPS (5)**



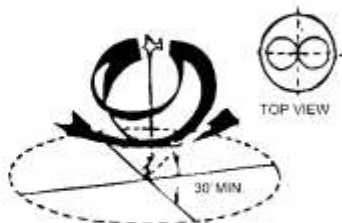
**INVERTED
FLIGHT (2 LAPS)**



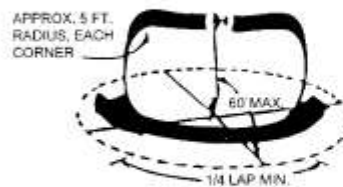
**HORIZONTAL
FIGURE EIGHT (3)**



**VERTICAL
FIGURE EIGHT (3)**



**OVERHEAD
FIGURE EIGHT (3)**



**SQUARE
LOOP (1)**

"Wood" You Believe It?

by Craig Bartlett

During my time downtown as a property manager and making walks through the downtown alleys I once spied some new pallets stacked up for disposal. Admittedly, I'm a wood collector and so I collected them.

Sometimes pallets can be cut up into nice kindling for your BBQ or fire place. One pallet I gathered awhile back I started to cut it up and realized it was nice light colored wood! Further checking with the bookstore that shared our alley, revealed they regularly got shipments from Michigan, and the upper Midwest.....that's where basswood trees grow.

So, if you have the opportunity, watch them pallets! This basswood pallet I cut up, I got enough bass for another lifetime!

Ciao, Craig

Thanks Craig! If you "wood" bear with me, that reminds me of a couple of stories.....

Back in the 60's and 70's, Mike Hoyt in Iowa supplied many Jet fliers with his kits. His planes were built primarily out of basswood, and he sold them for a very reasonable price. A big factor of that was he had basswood trees on his property. Every few years he would harvest one and have the wood milled into modeling size lumber. So essentially, the basswood in his kits was zero cost for him.

A few of you are familiar with my (very old) Cro-Magnon AF-1 plane. (sometimes referred to as the scourge of the carrier deck). While there is no basswood in that plane, there is a non-standard size of balsa used for the fuselage. The source for that was a plank out of a shipping crate!

Nats Quotables — 1996

Jim Ricketts this year gave us the idea to produce a list of Nats Quotables. As the week went on, the pages began to fill up. We hope you enjoy reading some of the many comments that were made throughout the week.

"when it warms up it gets hotter" by Mike MacCarthy

"as it gets quicker, it gets faster" by Jim Ricketts

"the piston is moving, but it's locked up" Unknown

"this is getting more and more like work" by Stoo Willoughby

"shall I hold it while you whack it" by Don Caron

"It's gonna take more than that ball-peen hammer to fix that crank" by John Ballard

"there ain't nothing I haven't seen" by John Ballard

Five minutes later "I never seen anything like that" John Ballard

"this end goes in" (upside down glow plug) Jerry "Who" Meyer

"it still ain't right-is that up?" by The Backatit Racing Team.

Jerry Meyer explaining the secret to going fast "all you need is a slow watch"

"I have been to the Demetrius Washington School of Slow Rat" by Biscuits & Gravy

"light on pilot and light on pit is a bad combination" Unknown

Dave McDonald explaining about whipping "he is not whipping, he is establishing the appropriate amount of line tension"

"it hurts me when they go fast" Jim Ricketts Jr.

"did we pit yet?" Jerry Meyer during Slow Rat, showing his usual calm nerves.

"something is wrong when it does that" Mike MacCarthy

Lari Dziak explaining T/R "when it sounds the worst, it is running the best"



Easy Engine Cleaning by Rich Kacmarsky

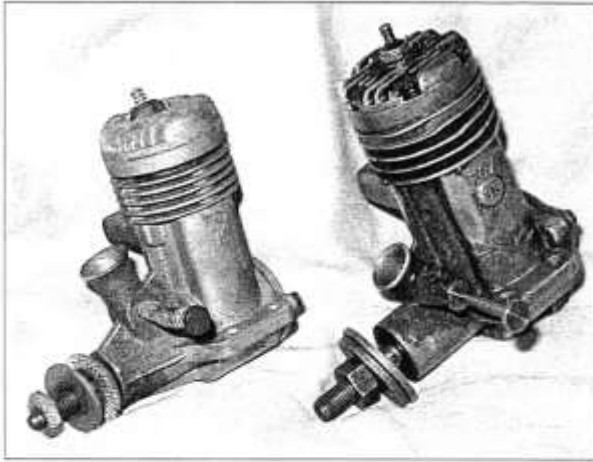
NOTE: This is an article I wrote for *Control Line World* several years ago. I hope it will be useful for seasoned and new engine collectors alike.

Although most of us like to acquire engines that are in pristine condition, the real bargains at swap meets and on Ebay are usually the crusty 'diamonds in the rough'. Bringing a dirty engine back to life can be more rewarding than adding that 'ready for the shelf' engine to the collection. I have tried many methods over the years including fuel, MEK, paint thinner, anti-freeze in a crock pot, etc. with varying degrees of success. The one thing they all had in common was the need to use these volatile solvents outside along with the application of liberal amounts of elbow grease if one was to expect any degree of success.

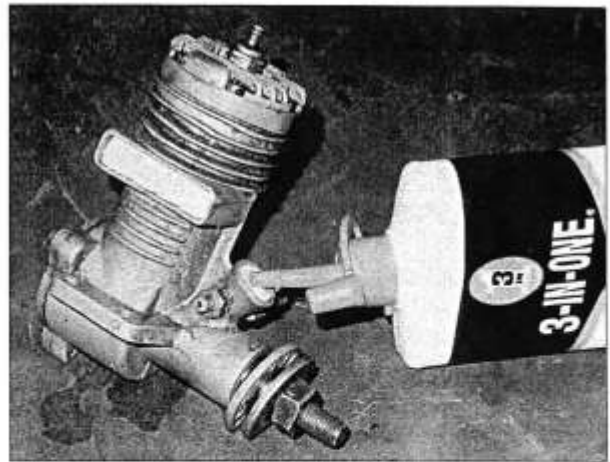
That all changed when I discovered Dawn Power Dissolver®. To say this stuff was amazing is a vast understatement! I applied it to a particularly grungy engine, waited 5 minutes, and lightly scrubbed with a bristle toothbrush. To my great joy, the crud came right off with very little effort. Wow! The label states it is "Ideal for use on dishes with baked and burnt-on grease." Well that is pretty much what the brown oil buildup is on an engine, so no surprise that it works so well. In addition to the quick and easy cleaning which did not require a potentially damaging wire brush, since this stuff is made for dishes, here is no problem using it indoors at the kitchen sink (when your wife is out).

The label advises cautious use on painted metal surfaces and suggests testing a small area first. I have found it to work perfectly well on painted heads and have restored McCoy red heads and K&B green heads to like new condition with no damage to the paint. The occasional tough bit of baked on crud remaining after the first application of the Power Dissolver® will usually go away by spot treating the area. I have found a length of 1/8-inch hardwood dowel sliced at an angle to form a point is very useful for scrubbing tight corners and between the head fins. Then sit back and admire your pristine engine!

The process I use is illustrated in the pictures. Most of the steps are aimed at keeping water out of the engine and removing any moisture that does creep in. I only use this process to remove the baked on crud from dirty engines that have not been subjected to a crash or other incident where dirt or other debris might have been introduced into the power plant. If your engine has been the victim of an agricultural flying incident, it should be immobilized, transported, and disassembled for cleaning. A shiny exterior will be of little value if dirt has scored the piston and cylinder. Also, do not skip the final oiling step. Although WD-40 does contain a lubricant that remains on the surface to prevent corrosion, it is not a substitute for a good oiling. Invented in 1953, WD-40 was originally designed to repel water and stands for "Water Displacement - 40th Attempt."



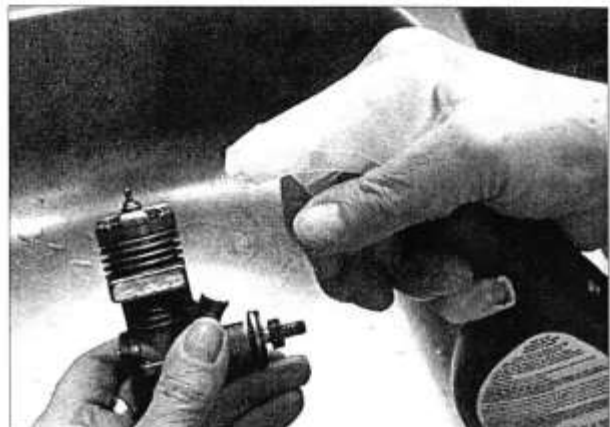
A Fox 35 and a Fox 15 in need of some cleaning



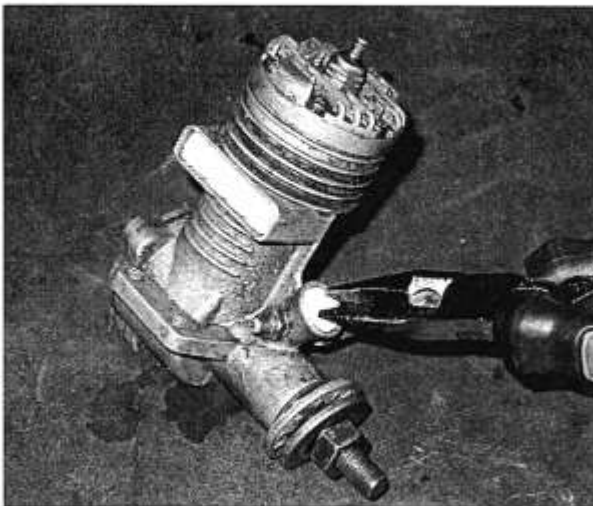
STEP 3 – Soak the paper towel packing with oil to make it water resistant



STEP 1 – Rotate the piston so the exhaust port is closed off to water entering the cylinder



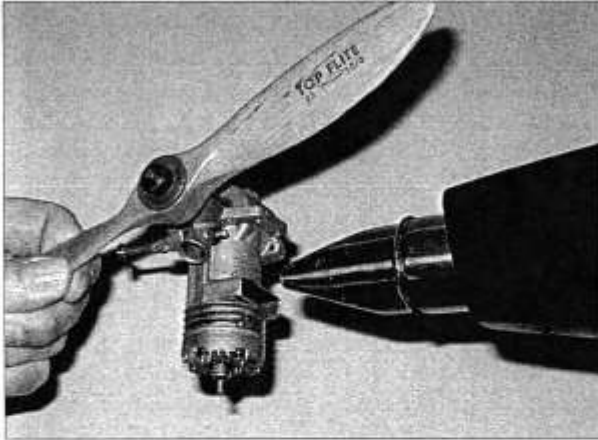
STEP 4 – Spray on the *Dawn Power Dissolver*[®] and wait five minutes



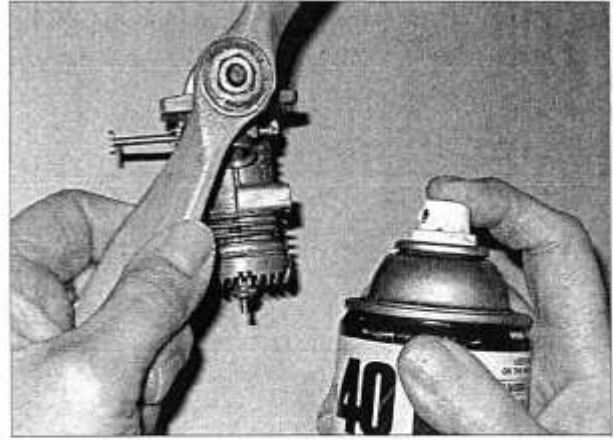
STEP 2 – Pack the exhaust port and venturi with paper towels. Leave the needle valve in place to block water entry thru the spray bar



STEP 5 – Using a bristle brush scrub away the baked on oil and dirt. Place a finger over the exhaust and venturi to keep the water out



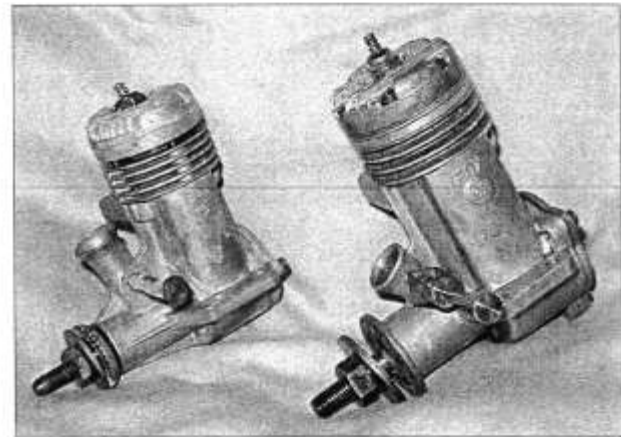
STEP 6 – Towel dry the engine and remove the paper towel packing. Mount a handle such as an old prop and heat the engine to at least 212 degrees to evaporate any moisture that may have entered the engine



STEP 7 – After the engine is completely cooled, spray WD-40 into the exhaust port and venturi to remove any lingering moisture (Remove the packing first!)



STEP 8 – Finally oil the engine thoroughly before storing



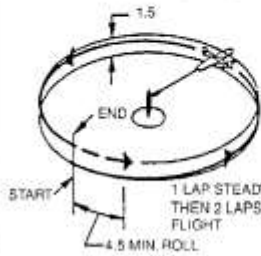
STEP 9 – The end result speaks for itself!

Now some of you may be aware that this product is no longer available in your local supermarket. A few years ago Proctor and Gamble withdrew Power Dissolver from the retail market, probably due to a single complaint and the fears of some corporate lawyer. However it is STILL AVAILABLE from restaurant supply companies and on Ebay. The cost will vary from around \$14 to \$24 per bottle with the difference being the quantity you buy. A case of six is much cheaper per bottle than a single bottle. Get a few guys together and buy a case and save! This price is not bad considering the old supermarket bottles contained 12.8 ounces while the new bottles are nearly triple that amount at 32 ounces.

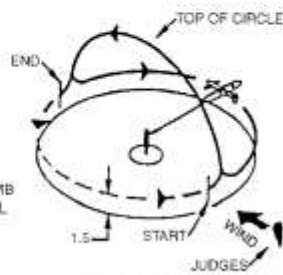


The old (left) and new (right) bottles

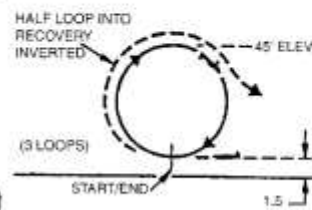
CONTROL LINE PRECISION AEROBATICS



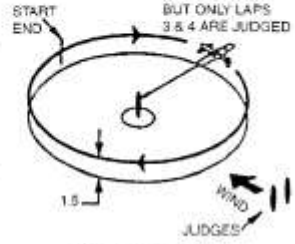
TAKEOFF & LEVEL FLIGHT



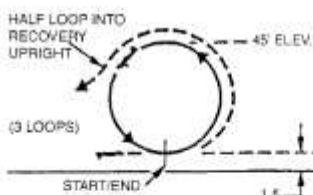
REVERSE WINGOVERS



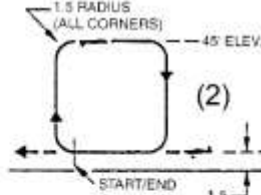
INSIDE LOOPS



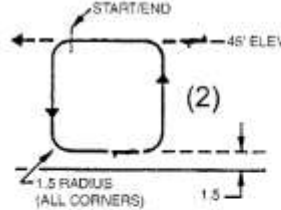
INVERTED FLIGHT



OUTSIDE LOOPS



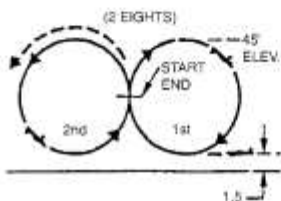
INSIDE SQUARE LOOPS



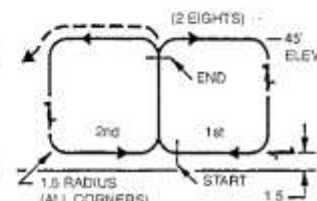
OUTSIDE SQUARE LOOPS



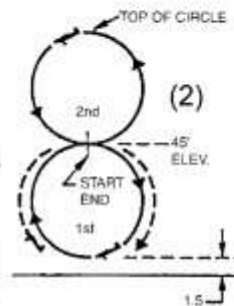
INSIDE TRIANGULAR LOOPS



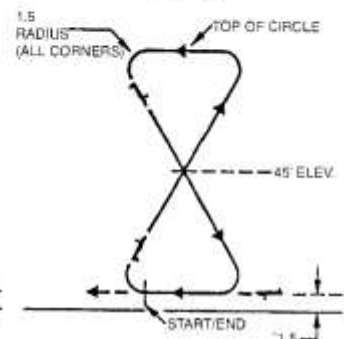
HORIZONTAL EIGHTS



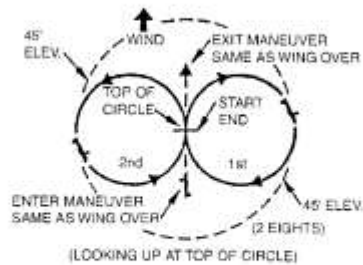
SQUARE HORIZONTAL EIGHTS



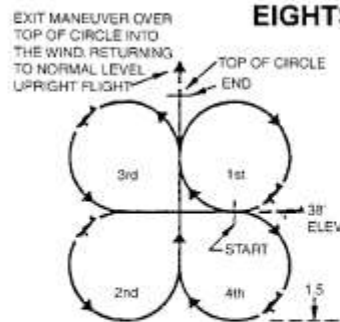
VERTICAL EIGHTS



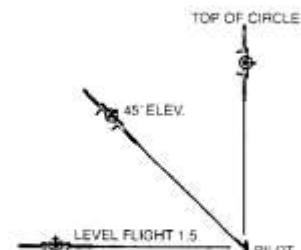
HOURLASS FIGURE



OVERHEAD EIGHTS



FOURLEAF CLOVER



ELEVATION GUIDE

Reginald Denny

by

Rich Kacmarsky and Joe Francis

Back in the day, many Hollywood actors were actually real individuals who led relatively normal lives outside their screen images. One such person was Reginald Denny who besides being a stage, film, and TV actor was also an aviator, a UAV pioneer, was once an amateur boxing champion of Great Britain, and most important to us, a model airplane enthusiast..

Born **Reginald Leigh Dugmore** on 20 November 1891 in Richmond, Surrey, England in Richmond, Surrey, England, he began his stage career at age seven in *The Royal Family*. At age 16, he appeared in *The Merry Widow*. That year he left the Jesuit school that he had been attending, St Francis Xavier College in Mayfield, Sussex. He began his film career in 1915 with the World Film Company and made films both in the United States and Britain until the 1960s with his final role in the TV *Batman* series in 1966.

Denny died on 16 June 1967 at the age of 75, after suffering a stroke and is buried at the Forest Lawn / Hollywood Hills Cemetery in Los Angeles, California.



Reginald Denny in his Royal flying Corps uniform

During WW1, Denny served as an observer / gunner in the Royal Flying Corps. After the war he emigrated to the United States to seek his fortune in Hollywood as an actor. He was successful as a supporting actor in a dozens of films and made a good living. Like many actors of the era, he took up flying for sport in the 1920s. One day Denny overheard a racket next door and went to investigate. He found the neighbor's son attempting to start one of the earliest radio control model airplanes. Denny attempted to help, but they instead ended up destroying the model. While attempting to get it fixed, Denny became acquainted with the newly forming model industry and to take it up as a hobby. He opened a model plane shop in 1934 known as the Reginald Denny Hobby Shops.



Denny and kids at the hobby shop counter

In 1935 Denny and his business partner Nelson Paul Whittier formed Reginald Denny Industries to develop a new radio controlled model. They were joined by electronics engineer Kenneth Case and for the next three years they attempted to produce a design known as the Radioplane One, or RP-1, essentially a greatly enlarged model airplane.

In 1936 Denny met General W.S. Thiele at Fort MacArthur in Los Angeles, who complained that it cost \$300 to have an aircraft tow a target for gunnery practice. He also noted that the target flew in a straight line, which made it

unrealistic. Denny suggested that a radio controlled model might be a more cost-effective solution. In an effort to interest the US Army in the design, they had demonstrated the RP-1 at Dale Dry Lake on 21 February 1938, but the radio failed and it crashed.

In spite of the crash, the Army agreed to purchase three models for \$11,000 if they met certain performance requirements. In 1938 they purchased a new aircraft design by Fred Hardy and its associated engine from Walter Righter, who had supplied the engines for their previous designs. They began marketing them as the "Dennyplane" with the "Dennymite" engine. After continued development, they demonstrated the design to the Army in March 1939 as the RP-2, and this was far more successful.

This was followed by the RP-3, which used welded steel tubing in place of glue-and-screwed balsa wood for the framework, and added a parachute that could be activated when the flight was over, making landings a simple push-button task.

Another year of significant development produced the new RP-4 design that featured contra-rotating propellers to counteract engine torque from its new Sidewinder engine, and tricycle landing gear. The RP-4 also used a new joystick-based control system that operators found far easier to use. Three examples were delivered to the Army, which placed an order for an additional 53 examples.

The production models were further modified. Known to Radioplane as the RP-5, and to the Army as the Radioplane OQ-2. These began to be delivered in June 1941. In total, nearly fifteen thousand drones were manufactured for the US Army during the Second World War.

Northrop purchased the company in 1952, becoming the Radioplane Division of Northrop. The factory later moved to a Northrop plant at Newbury Park, CA, and the name was changed to the Ventura Division,



Reginald Denny's Radioplane OQ-3
SIDE NOTE



It was at the Radioplane factory at the Van Nuys Airport on June 26, 1945 that David Conover, an Army photographer assigned by Denny's friend, Army publicist (and future President) Captain Ronald Reagan saw a young woman assembler named Norma Jeane Dougherty, whom he thought had potential as a model. She was photographed in the plant, which led to a screen test for Norma Jeane, who soon changed her name to Marilyn Monroe

**MODEL ENGINE DESIGNER AND
MANUFACTURING PROFILES
THE DUKE OF FORT SMITH;
A FEW COMMENTS ABOUT HIM
AND HIS FOX TWIN 1.2 R/C ENGINE**

**No. 92 in a series compiled by
David R. Janson,
SAM #273, AMA #78416 and MECA #210-04.**

"So how did you get the nickname Duke, Mr. Fox"? "Well, son, it just happens to be my 100% given name". "Oh"! And Duke Fox had politely answered the time-honored question once more.

When he died on February 15, 1991, the FOX MANUFACTURING CO. of 530 Towson Ave., Fort Smith, Arkansas 72901 wrote a gentle and loving commentary on his life in their March 15 "Fox Newsletter", noting he had been a major force in the hobby for over 43 years. And he surely had!

Duke's father was in the automobile business and young Fox became quite familiar with cylinders, pistons and how the engines operated. Around the age of nine he encountered his first model airplane ads in "Popular Mechanics" and "Bill Barnes" who started putting a model plane in each issue. Duke was hooked and at the time in 1928 there were no model shops so magazine ordering was it. The Junior Birdmen stirred things up in the San Francisco area with contests every weekend where the Foxes lived. After high school graduation in 1938 Duke went to Modesto Jr. College (Aircraft engineering) and worked for Hughes.

His service years were spent at Wright Field while keeping up his active modeling. While in the service he worked out the design and production drawings for the long shaft Fox .59 spark ignition and after finding a partner (Arnold) who owned shop facilities, managed to put it into production, only to see failure after a few months of production by the partners business troubles. Duke went to work for Douglas while building some 20 experimental engine types in his home workshop.

Using the Ohlsson 23 for weight and dimensional guides, but wishing a much more powerful engine, Duke brought out his first 35 with production in his Mother's garage. The first 35s were

sold successfully and quickly found a "home" with the new control line stunt fellows!

With production increasing he moved his shop/facilities to North Hollywood and there brought out the 29 stunt and 29R, resurrected the 59 as a glow and basking in the success of his engine sales made an exhaustive search for an area suited to his type of business. Thus in 1955 he chose Fort Smith, Arkansas for central distribution, lower production costs and the ease of getting to model meets around the country.

From Ft. Smith he began one of the most prolific design and production efforts in the USA, from the 049s to the huge 1.20 twin R/C and the current 15s, 25s, 40s and 60s, some of the most powerful model engines ever manufactured. But Duke avoided the "new" four-stroke field which he left to others. Looking back on his production in earlier years, Duke noted that one of his very best designs was the .07 cid, developed for and sold exclusively to Comet for their ready-to-fly plastic control-line airplanes.

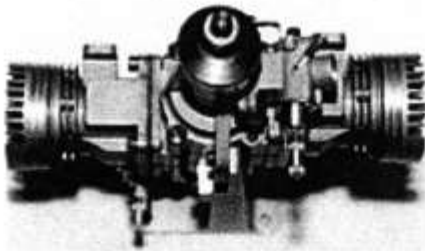


In later years he published some of the most beautiful product catalogs and also had beautiful red, white and blue engine ads to tout his wares, also packed in his "Made in USA" colorful boxes.

The Fox "line" was expanded to include his universally used glow plugs and castor oil based fuels (he started a small revolution in the fuel field when he put the formula of the contents on each can). Duke branched briefly into the making of Kart engines and in later years, spinners, motor mounts, shaft extensions, prop reamers, wrenches, taps, silencers, many "U" control products, pressure fittings, fuel line, bulbs, filters and all of the highest quality. Most have come and gone from his catalogs over the years.



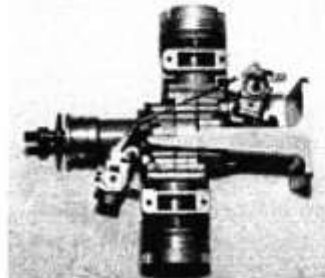
In the 70's, rumors of Duke's incarceration for child pornography were whispered around the industry but never discussed in "polite circles." Sadly it was true. Afterwards he delved more strongly than ever into his model business and the 80's brought some of his best work..the "Eagle 60" was low cost to compete with the new imports and the all new Fox 60 "Hawk" gussied up with bright red anodized head and prop driver/bearing cover and the power to meet the competition. The huge "78" was the largest US mfg engine at the time. In 1977-78 Duke had begun work on the totally redesigned and massive "Eagle II" 60, while also planning for his first production twin 1.20 R/C two-cycle model engine.



This air-cooled, horizontally-opposed, simultaneous-firing, twin-cylinder, two-stroke cycle with dual shaft rotary-valve induction and Schnuerle scavenging model airplane engine, was manufactured in a single 2000 engine "batch." It came onto the market in the summer of 1980 at \$250 retail and was the most powerful two-stroke for sale rated at 3.0 hp, at 14,000 rpms on a 13/6 propellor. It shared most of the big Eagle II features, could be regarded as two sixties placed back to back, each with its own carburetor and rotary valve and almost with its own crank chamber. Modelers fell all over themselves to be the first to own one in their area.

Most unfortunately this powerful engine had two problems right out of the box. First, it had the "old style" Fox carbs which were difficult to master.

A few weeks after the introduction Duke Fox replaced the carbs with his new MK.X with conventional barrel throttle. This helped the second problem of the tendency of one cylinder to die but by no means cured the problem. Modelers had "cooled off" on the big twin because of the problems and sales dropped off. Clarence Lee's full page commentary in RCM put it this way...*"shortly after release of the engine, fellows began to experience idle and acceleration problems. As is typical of all glow twins, one cylinder would have a tendency to load up and die."* Clarence went on to note the time he spent with little success in trying to adjust the carbs and eliminate the problem, and the interesting solution.



In November 1980, Clarence and Duke were at a U-control contest in the Sepulveda Basin, (Calif.) and struck up a conversation regarding the flameout problem of the twin, and Duke noted "they" had found by blocking off the two boost ports this would eliminate the problem with a minimum power loss. Simply put, blocking off the boost ports directly opposite the exhaust stopped the incoming fuel charge from putting out the glow plug. This was accomplished by rotating 180 degrees the paper gasket that seals the joining surface of the cylinder to the crankcase. But by then the market for large and powerful engines was growing with new four-strokers and "chainsaw" type engines and the twin's potential was lost. And loud...gosh one can't imagine its vroooooommm!

This incredible twin, American made, limited production, and the only genuine Fox ever manufactured, is just now some 15 years off the market, beginning to catch on with multicylinder engine collectors. Peter Chinn, in the July 1980 MAN has a detailed (as only he could) article on the Fox twin, but treads lightly on the "problems."

duke's mixture

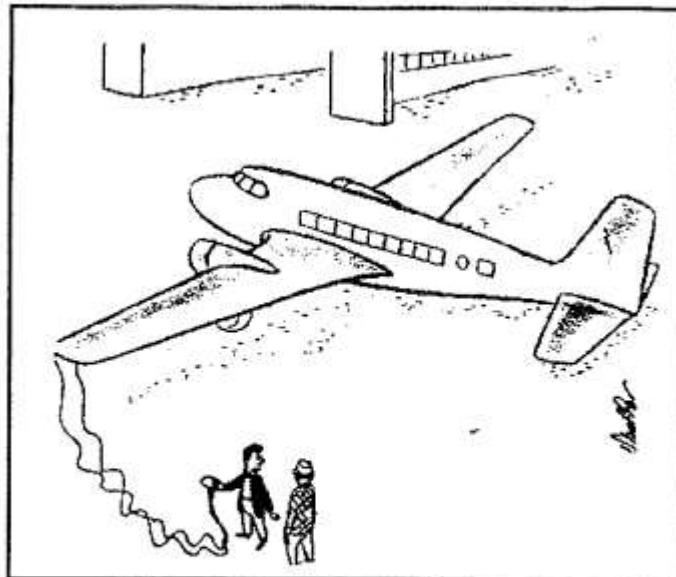


In the 1980s Duke Fox began to write a series of advertisements come commentaries called "Duke's Mixture" in MAN and his expertise resulted in two definitive articles of the dozen or so he wrote. In his August, 1989 MAN Article, on model engine fuels, (methanol, nitromethane, temperature ranges, castor oil, and percentages of mixture) he wrote the best information ever published. In a previous column, in June, 1988 also in MAN he wrote on "the merits of ball bearings, vs bronze bushings, vs aluminum for crankshaft main bearings and also on the relative merits of lapped-ring and ABC piston/cylinder combinations"...a genuine treatise. I quote his last paragraph which more than any comments I have found, sum up the Duke Fox lifetime of work.

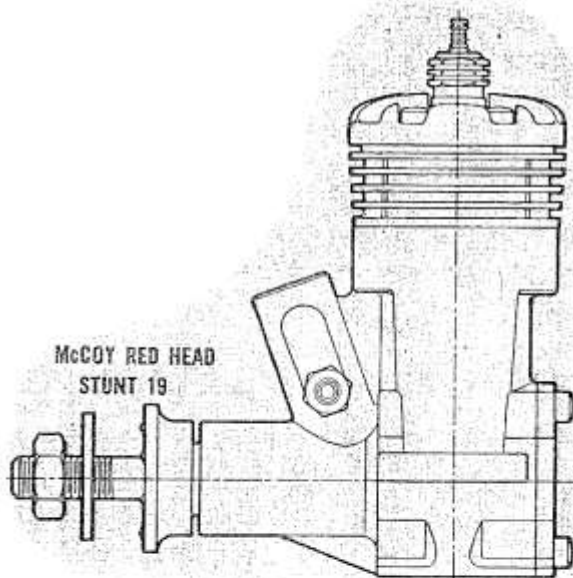
"Our Fox 19BB, 40BB and 50BB are our top line motors. Materials used are top quality and the best we have found for the purpose. All cylinders and bearing surfaces have been hand fitted for optimum clearance. All motors have been test run at full power and all needle valves have been adjusted to normal operating adjustment. We pay less attention to cosmetics than our competitors, but nobody takes the care we do to insure that your motor will start readily, run right, and fly your airplane with authority. Buy one-you will be happy that you did!"

Anyone got an extra "split case" 19 or "bathtub" 29 for sale or trade?

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"What makes you so sure I can't?"



"I dunno, what do you think? A bit nose heavy?"

NINE LIVES? This craziness from 1967

They could call it the "Spirit of Leroy Cox!" At least, Roy will have to build a new plant if this sort of jazz becomes popular. You begin by forming a club . . .

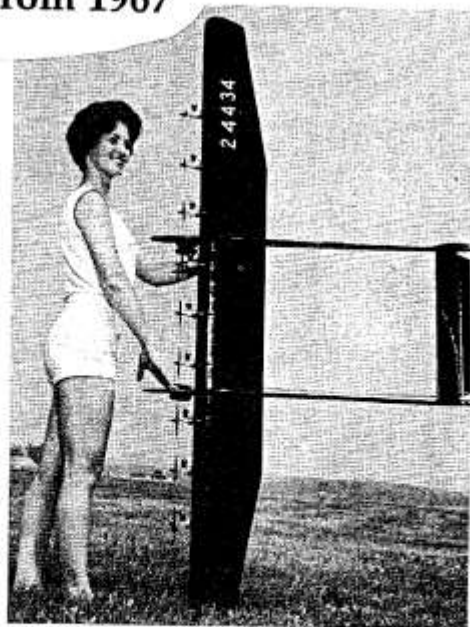
Photographs by TERRY D. ALDRICH

All I did was ask "How many 1/4A engines we had in the Edgewood Modeler, AMA Flying Club." The total count was ten. Thus was born the XB-9—one motor for a spare.

The first problem was a suitable flying platform for the engines. After some hard thinking, I picked the F-82 Twin Mustang for the basic profile, well modified. Wing span 82", normal construc-

tion with sheeted leading edge. Motor mounts are 6 1/2" apart, countersunk into leading edge. Fuselage is a 44" piece of 1/2" hard balsa. Tail is 1/8 sheet balsa. Total weight 5-1/4 lbs.

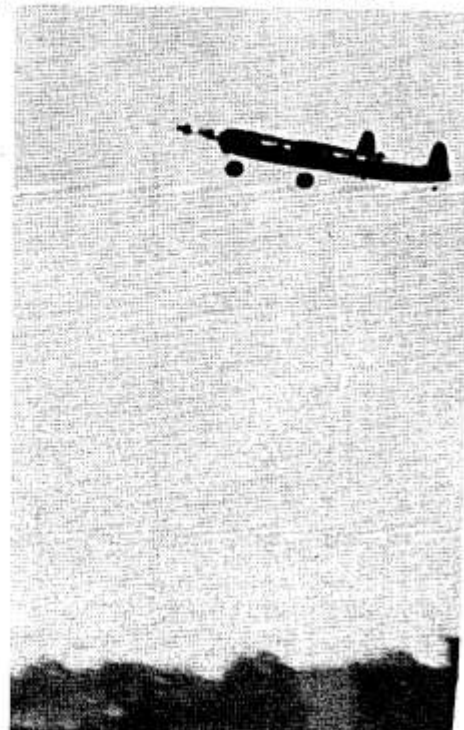
Takeoff is excellent, and it is really stable in the air. Plenty of power. It sounds like a bee hive. I call it the XB-9. Will stay airborne on three engines. Landing with two is excellent.



Build it? You'd need this ground crew. Three starters (3 engines each); three fuelers (ditto), and one anchor man. He has all the fun. Designed built and flown by Terry.

Beauty and the beast? With an 8-man ground crew it takes 30 to 60 seconds to start 'em all, double that if a restart needed. You know, engine running backwards, flooding while fueling—all sorts of things!

Sure it flies—it had better after all that trouble. Main gear has four 3" wheels.



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Membership Categories:	Adult	\$25 year
	Youth	\$5 year
	Family	\$40 year

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