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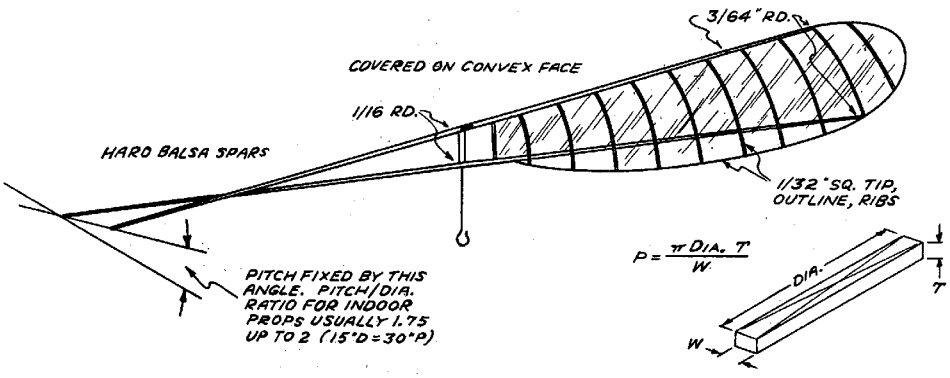
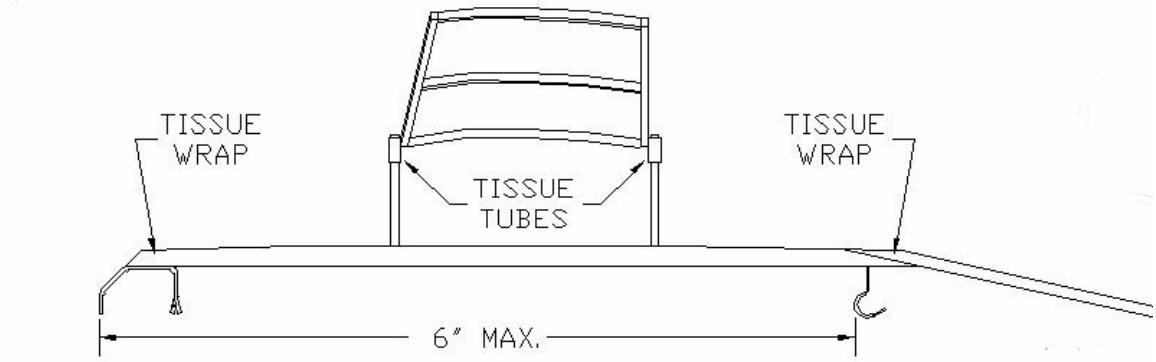
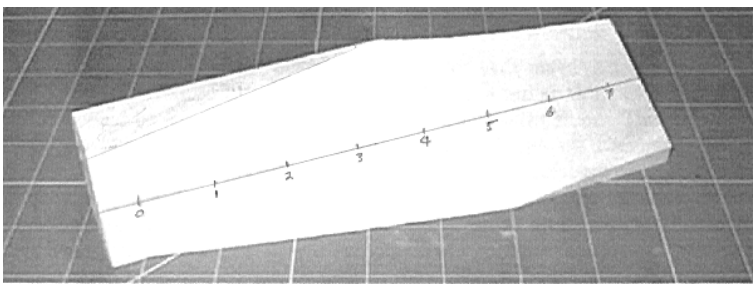


The Indoor Model, Part 2



A-6 by Jerry Combs



Precision Band Sawed Prop Pitch Blocks

FROM THE EDITOR'S DESK

This issue we continue with Part 2 of The Indoor Model, tracing the evolution of our hobby as we know it today. It highlights the difficulties of building such specialized aircraft, back then and now, and how many got to the motor stick, and gave up entirely. In line with this is our Golden Nuggets column featuring Sam B. Casey way down in Stuart, Florida. Sam and I became acquainted by way of S.L.I.M. and his expired INAV subscription, a man of many charter fishing boats, and as many addresses. He recounts his beginning in the dime scale period – how so many kits were available, but only two ever flew worth a darn, the Jasco Baby ROG and the Bandersnap. (The Baby ROG, in one of its many forms, was featured in the last issue.) We often forget that there were many, many kit models available in the post-Charles Lindberg era. The number of kit manufacturers went from 20 in 1927 to 2000 in 1928. But only a few of them really flew. I just finished my first dime scale Curtis Robin, and although it came out well, it did take an adult level of skill and patience. Plus being so small, it was hard to get on a man to man basis with the little bugger.
We also feature two of your Editor's pet projects: the Contest List and Current USA Indoor Sites. Many thanks to Bud Tenny for helping us start the latter listing, and we promise to keep it growing. It is for all the Sam B. Casey's out there, starting out or starting over.

- Carl Bakay

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Sample ad copy should be sent to Tim Goldstein at the above address for publishing details.

Publishers Desk:
Another few months and more crazy happenings in the world of indoor. A new covering film becomes available and it's announcement caused a controversy on the indoor mailing list. Just goes to show that if you want to feel like a punching bag in this hobby all you have to do is put aside your own modeling and try and do something good for the hobby. There will be plenty of people to take a swing at you.

RC at USIC has also become a reality. Our faithful leaders at NFFS and AMA tell us how good it will be for the sport. Of course without the AMA's budget bloating expenses USIC would not need this sort of outside rescue.

Seems that Indoor fliers need to get organized so that we are better able to speak for ourselves. We in the USA have allowed the highly political group of outdoor fliers at the NFFS to become our representatives with the AMA and the organizers of our USIC. We are now reaping the rewards of neglecting this ourselves. A few of us have been talking about resurrecting NIMAS as a special interest group just for indoor free flight modeling. If we are not willing to invest the time and effort to present a unified voice as indoor modelers we will have to accept the scraps we are given.

Tim

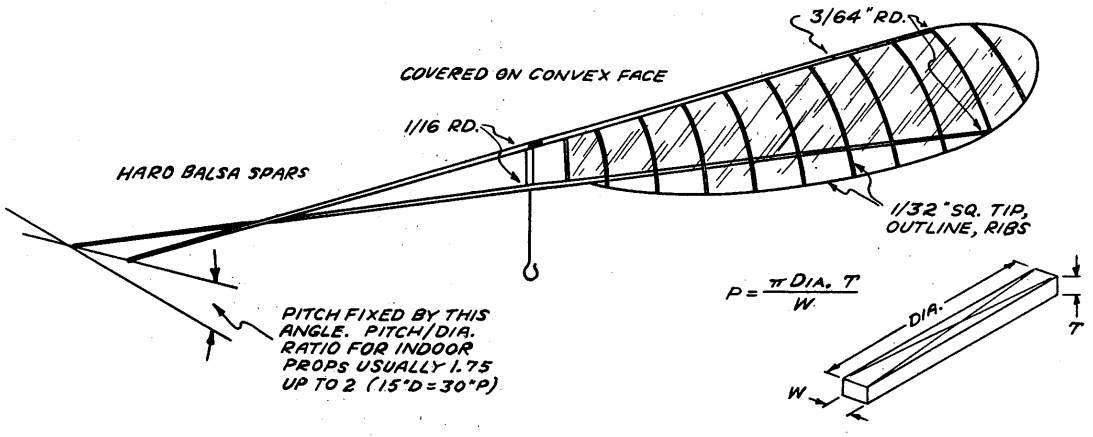
In This Issue:

THE INDOOR MODEL PART 2 (continued from last issue)

by Bill Tyler

INDOOR MODEL DESIGN

As indoor flying at the present time is governed by duration, it is a fact that all other factors being equal, the lighter the model is built, and the lower the wing loading, the longer the duration. Translating this into a definite design program works along these lines. Let's take a Class C hand-launched tractor. The only limiting factor stated in the rules is that the wing area must be between 100 and 150 square inches. Naturally, it's to our advantage to use the full wing area of 150 square inches rather than 100 square inches, as a lighter wing loading can be obtained by larger area, since microfilm covering weighs so little. To start laying out the model, the next step is to determine what wing span should be used to get 150 square inches. In other words, what's the aspect ratio? We don't believe that, at the low flying speed of indoor models (they fly at between three to five inches per second), there is any advantage to using high aspect ratio, nor have tests ever substantiated this. The thing to do is to use as small a wing span as possible (low aspect ratio). The determining factor here is adjustment, a too small wing span, in relation to the propeller diameter, making adjusting and flying very tricky, if carried to extremes. An aspect ratio of six to one probably is best from this viewpoint. The wing's planform is unimportant. Elliptical wings may look pretty but it's doubtful that they result in efficiency. Polyhedral wings are easier to adjust and, for dihedral, figure one inch per foot under each tip. Getting back to planform, do not make the tip chords too small as the airfoil's efficiency drops off. Wind tunnel tests have proved that the selection of an airfoil is important. These tests showed that the McBride B-7 section was best. Decide at this point whether or not to brace the wing and then determine spar sizes. On a Class C model, if unbraced and light indoor wood is used (wood weighing between four to eight pounds per cubic foot), the spars on a standard model should be 1/16" x 1/5" at the center and 1/16" square at the tips but sand the corners off to an oval section at the center and round at the tips. Ribs are 1/32" square, cut from quarter grained wood. The center rib, as well as tip ribs, can be made stronger to improve torsional rigidity. Standard motorstick length is fifteen inches and here again decide whether bracing will be used. What stabilizer area? Roughly speaking, 25% is ample, providing the length of the tail boom from the end of the motor stick to the end of the stabilizer is twelve inches. Rudder area can be 25%, less than one half the stabilizer area. Here again, stabilizer planform is unimportant and depends purely upon the aesthetic eye of the designer. Lifting-stabilizer versus non-lifting stabilizer is questionable because, as the lift increases, so does the drag. Several models have been brought out, mainly by the Chicago group, that had lifting stabilizers with nearly 50% of the wing area. Performance, however, didn't seem to be improved greatly. With an indoor model, as stated previously, the only really important thing outside of prop design, is how light can it be built and still be strong enough to-fly.



Should it be a high wing or low wing? Theoretically, the wing should be right on top of the motor stick, as this produces the ideal force arrangement of the center of lift being at the center of gravity. While models of this type have been built in the past, they proved difficult to adjust and it is recommended for the first model that the pylon type mount be used. Two inches high is sufficient, however: Wing incidence-for a six inch cord, use 1/2" incidence. Propellers : Andrew's microfilm prop is easier to make than a hand-carved wooden job and appears to be just as efficient. Pete has experimented with various shapes for this type and the propeller illustrated will prove satisfactory. Roughly speaking, the propeller diameter should be one-half the wing span, although it is possible to go beyond this. For instance, a 34" model using an eighteen-inch propeller. Another determining factor of prop design is the power the model is going to fly on. At one time there was a school of thought that to obtain maximum duration the relation of the power and weight should be 60% power and 40% model. This idea now has been discarded and the latest school of thought is that there is no best relationship between model weight and rubber weight. In other words, build the model as light as possible and add as little rubber as necessary for flying. This Class C model we are talking about very likely would fly on 3/32" rubber on an eighteen-inch loop; when flown, should continue to fly until the rubber is very nearly unwound. A model landing with more than 50 turns left in the motor either needs the next size larger strand or the rubber should be shortened to decrease weight. Flying (assuming the model is built and assembled ready for flying): Don't make a test glide, then put in a few turns, and see what happens. Do it this way. Take off the prop, put a few turns in he motor, and secure it over the front of the thrust bearing and, squeeze onto the thrust bearing a small piece of modeling clay equal to the weight of the prop. Start making test glides from a standard six-foot height. Move the wing back or forward until best gliding time is obtained. Use a stop watch. In other words, you are now adjusting for the lowest possible speed. When this setting is found, carefully mark the wing position with ink, remove the clay, replace the prop, and you are now ready for trial adjustment flights. Don't move the wing setting at 'any time. Adjustments, if the model tends to stall or, mush, should be made on the thrust line. Usually with this method of adjustment, down thrust is necessary and a double thrust bearing should, be used to maintain a positive thrust adjustment. Downthrust is necessary and a double thrust bearing should be used to maintain a positive thrust adjustment. Here again, the advantages of a braced stick becomes apparent as the stick doesn't bend under power causing a varying condition in the thrust line.

Circle diameter is dependent, of course, on the building you are flying in and the draft condition. Most models fly in about 30 foot diameter circles. When test flights have demonstrated that model will fly level with about 500 turns of broken-in rubber without stalling or mushing, try adding more power and watch carefully to see how high the model climbs on a certain number of turns and also how many turns are left upon landing. As stated before, if landing condition shows more than 50 turns left in the rubber, change to a size larger or shorten the rubber. How to keep the model from going through the top? The answer to this is, once the model has been adjusted on test flights, not to wind it up full, yell for a timer, and let it go. Put in the maximum number of turns the model will stand. For instance, a 3/32" motor, eighteen-inch loops of rubber, should take about 2,500 turns. Wind in this many turns, then let out 1,000 and launch the model, watching carefully to see what height has been reached. Use this as a gauge, noting how many turns to let out on the next windup to either increase or decrease the height at which the model will fly.

Use a scale to weigh your model while building. A record of each part should be kept in a notebook so that, when building your next model, you will have a standard to work from and, if a part was weak, you will know how much to strengthen it and vice versa. For truly scientific indoor building, the use of an accurate scale and weight keeping record is necessary. Those scales may be handmade or bought from the Junior Aeronautical Supply Company, a company that caters to indoor builders. Their microfilm solution is the best available and there is little point to one messing around and mixing -his own solution when such a good commercial ready-made solution can be obtained.

During the war so many of the older boys were in the services or otherwise preoccupied in defense plants that indoor flying became almost extinct. Then, too, the armories were not obtainable which made

flying places unavailable in many towns. Within the last year, however, there has been a renewal of activity. New York, Boston, and Chicago and other cities are back in full swing with such a burst of enthusiasm that it promises to make the golden era of the thirties look insignificant. The New York Aeronuts have been reorganized and have an extensive fall, winter, and spring flying program in the works.

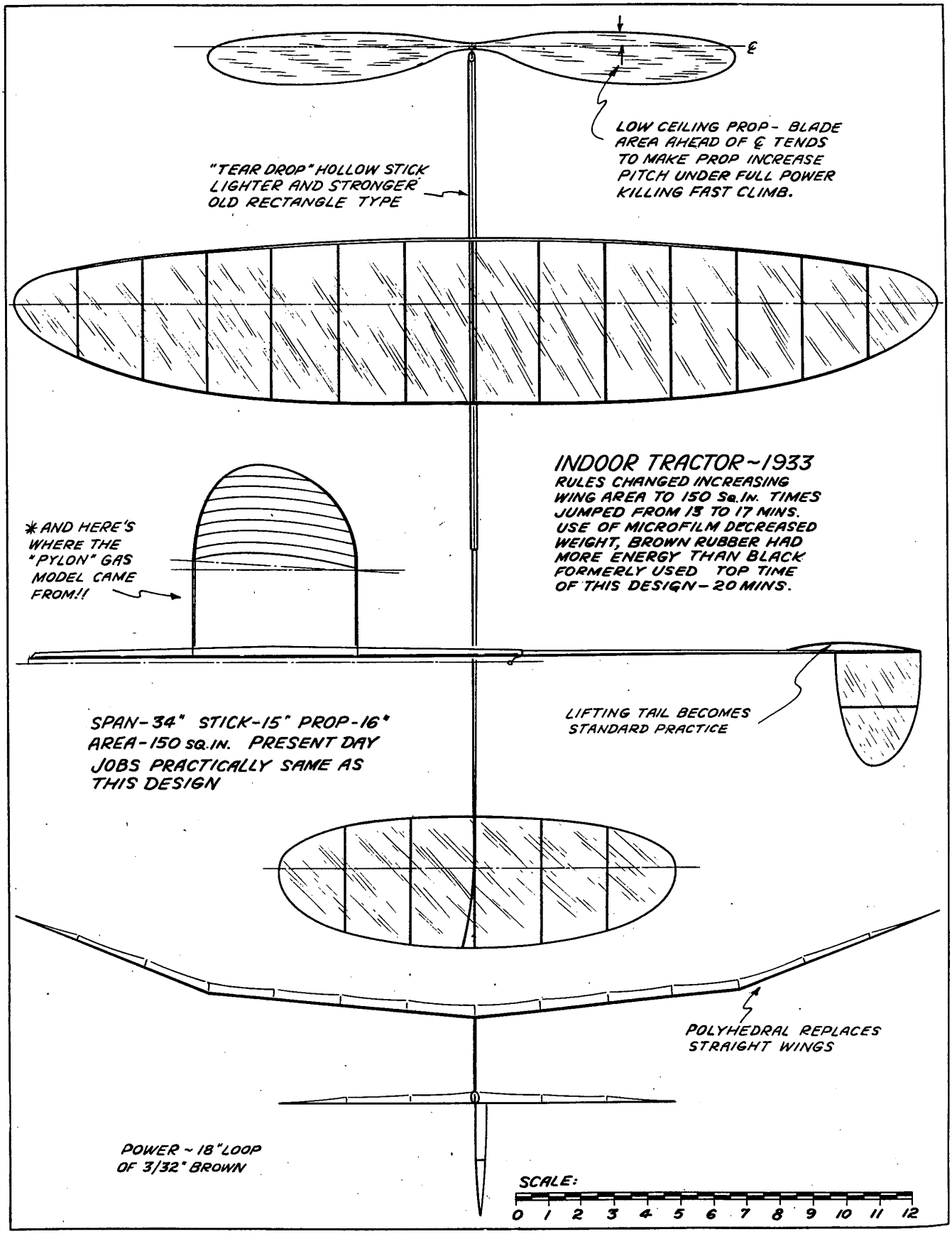
This is all well and good but if indoor activity is going to regain its former popularity, a well-organized program must be worked out to introduce it to the beginner. Most kids you see on the flying field smashing up one gas model after another never have heard of indoor models, let alone thought about building one. Nor would they know how, as the magazines evidently do not feel that they should devote space to indoor models. Old timers, who realize that indoor building is truly the most scientific of any other type, should get back in and start promoting things. Several immediate objectives should be set up. Active indoor builders should get together to form clubs and to start a regular flying program. Each member should take on an apprentice and show him the tricks. A well thought out series of beginners' indoor models should be designed (Any volunteers?-The *Editor)* and at least be made available in plan form to the various clubs, and beginners' contests using these models should be run off with the older boys acting as assistants to the juniors. If a boy can build and fly an indoor model, he learns the basics of model building and then is ready to branch out to outdoor rubber and finally free-flight gas. The fundamentals of adjustment, as learned from flying indoor models, are exactly the same as those used on gas models.

As a matter of fact, it is the opinion of the author that the Academy should set up a grading program whereby a boy must first demonstrate his ability to build and fly indoor models before he is allowed to be given a license to fly outdoor rubber and gas models in contests. Actually, this policy would improve the model business as it would make life safer for a spectator at a gas model meet-witness the New York Mirror meet (the biggest and worst brawl of all *time-The Editor)-and* do much to correct the bad impression that is left with the spectator. Good old pop who brings his kid out on a Sunday afternoon to see a model airplane meet must wonder how badly it's going to hit his pocketbook when he sees half the models making one-time flights. One second up, next second down. Result, new kit and motor. Cost to him, another 30 bucks.

Besides beginner projects and qualifying licenses for outdoor flying, indoor flying itself should be popularized for all. Watch the indoor purists tear their hair on this one, but the author believes that an idea proposed by Hewitt Phillips, one of the greatest of the indoor champs, that a payload event be established for indoor models. This idea would make flying equal in any town or city as the models could be handicapped to fly within a certain height by means of increased payload.

Now it requires a trip to one of the few 150-foot buildings in the country to even have a chance of hitting a new indoor record, whereas, by a payload event, records could be established in a 30-foot high school gym. Telegraph competitions between various clubs could be held, such as used to be done in the twenties. Don't get the opinion that a payload type model wouldn't require just as much skill as the present job. The payload would just be a handicap to limit the model's ceiling. The lighter model would, of course, still have the advantage and just as much skill and adjustability would determine the winner. How about some thought and opinions on this idea?

What happened to race cars, and is rapidly happening with control-line models, happened long ago to indoor models, but the boys don't seem to realize it. Indoor modeling has become so expert and scientific that the beginner just shakes his head and says it's not for me. Irv Polk's famous remark, "I stopped indoor building after trying for a week to make a hollow motor stick," doubtless is typical of public reaction.


℄
LOW CEILING PROP- BLADE AREA AHEAD OF ℄ TENDS TO MAKE PROP INCREASE PITCH UNDER FULL POWER KILLING FAST CLIMB.
"TEAR DROP" HOLLOW STICK LIGHTER AND STRONGER OLD RECTANGLE TYPE
INDOOR TRACTOR~1933
RULES CHANGED INCREASING WING AREA TO 150 Sq.In. TIMES JUMPED FROM 13 TO 17 MINS. USE OF MICROFILM DECREASED WEIGHT, BROWN RUBBER HAD MORE ENERGY THAN BLACK FORMERLY USED TOP TIME OF THIS DESIGN- 20 MINS.
*AND HERE'S WHERE THE "PYLON" GAS MODEL CAME FROM!!
LIFTING TAIL BECOMES STANDARD PRACTICE
SPAN- 34" STICK-15" PROP-16" AREA-150 SQ.IN. PRESENT DAY JOBS PRACTICALLY SAME AS THIS DESIGN
POLYHEDRAL REPLACES STRAIGHT WINGS
POWER ~ 18" LOOP OF 3/32" BROWN
SCALE:
0 1 2 3 4 5 6 7 8 9 10 11 12

INDOOR MEMORIES THAT LAST
Condensed from the Jan 2004 Issue of PC Magazine
by Carl Bakay

Thirty years from now, will your grandkids be able to figure out what those silly round things in the attic shoebox are used for? Will they throw them out? Will anyone care?

There are ways to ensure that the digital images of you hobby, and everything else, will last for 30 to 50 years or longer.

I. Preserving Content for Printing

It is safe to say that people will want to view and print out photos from digital files for a good while to come. Most digital picture files are stored in JPEG format, the compression format supported by almost all imaging products in use today. Shoot and store your photos at the highest resolution and keep them in .JPG files. But this format uses lossy compression, which means that the image you get back is slightly different from the one you took. So if you plan to edit you work, convert to TIFF (a loss-less compression format) and then edit. But TIFF files are typically huge, so you will want to convert back to JPEG when done.

Speaking of huge file sizes, we at INAV like to make up photo album pages of contests and other events, and twelve photos on one page at today's megapixel clarity makes a Word file that is unprintable and too large to e-mail as well. So our main use of photo editing is to crop the photo to remove unwanted area, alter the contrast and brightness, and re-save it at a much smaller file size under a new name. So we might have one called RASH-EZB. JPG and another called RASH-EZB-SMALL.JPG. The new resolution is still fine for a 2 x 2 inch album photo, but makes more manageable Word and Adobe files for saving and sharing. However, our contributors need the large file sizes of the original photos if they are sending articles to Model Aviation or Flying Models.

You'll want to store your photo files in a safe manner so they cannot be unintentionally deleted. The best way to do this is to make them Read Only. In Windows Explorer, highlight the files and then right-click on them, select Properties, General, then Attributes - Read Only. Should you want to remove them later on after archiving, you can undo the Read Only option at any time.

Although the JPEG format promises to stay around for a long while for images, there is less of a guarantee for your documents, contest results spreadsheets, and newsletters. Many club newsletters, such as SLIM, INAV, SAM 86, Indoor Flight International and Free Flight Quarterly, start out life as word processor files, but IBM-PC and MAC-OS office systems may not be around in 30 to 50 years to read them. But the Adobe Acrobat standard crosses all machine boundaries, and Adobe has made a commitment to support its older versions down the road. Your machine treats Adobe as just another printer once it is installed, and you can print to it from any Windows or MAC application, so any newsletter, spreadsheet of results, or drawing of a plan or technique can be quickly converted to a PDF file, usually smaller in file size than the original, but otherwise identical page for page.

So we now distribute our newsletters to anyone at small or zero cost, in original color, 300 dots-per-inch Adobe Acrobat files, which you can view or print out if you want. Here's a tip: many club secretaries save a bunch in postage by e-mailing their news to as many members as they can, and mailing out the rest. To PDF for Free, download Adobe Acrobat at www.adobe.com, or go to Adobe's Create PDF Online Service at http://createpdf.adobe.com.

II. External Archiving

What's the best way to archive your photos and documents, now that they are all in JPEG and PDF files? GET THEM THE HECK OFF YOUR PC! and on to something external to your machine. This one step makes your worries of piracy, viruses, power outages and crashed hard drives a thing of the past. We have also heard of at least two editors who lost their day jobs, and found their hard drives wiped clean in the name of corporate security. They were going to backup their airplane files on their hard drives, but never did.

A. Organize first.

At INAV, we go through all the digital photos sent to us for an issue, maybe from 2 or 3 individuals, add our own to the mix, then choose 20 to 30 which seem to best typify KibbieDome 2003 (or whatever). We put them in a new directory called Kibbie2003, which is right after Kibbie2001 and Kibbie2002, and then rename the files with meaningful filenames. ST00158, ST00160, AB00060 becomes RASH-EZB.JPG, ROMASH-PP.JPG, and so on. You don't rename yours? Believe us, in 10 years you won't remember one from another, unless you name them now.

When you are finished, your hard drive many look something like this:

c:\My Documents\Airplanes

- Articles
- Newsletters
- Plans
- Photos
  - Kibbie2001
  - Kibbie2002
  - Kibbie2003
  - USIC2001
  - USIC2002
  - USIC2003
    - CarlsINAVBooth.jpg
    - Fhollingsworth.jpg
    - Rash-EZB.jpg
    - Romash-mini.jpg
  - WB2001
  - WB2002
  - WB2003

It is also a good idea, but not necessary, to include a Readme file in plain text format, describing what things are and how they were saved, perhaps with a copy of the directory structure. Now that we have our files converted, named and organized, we are ready to put them on external media.

B. Archiving

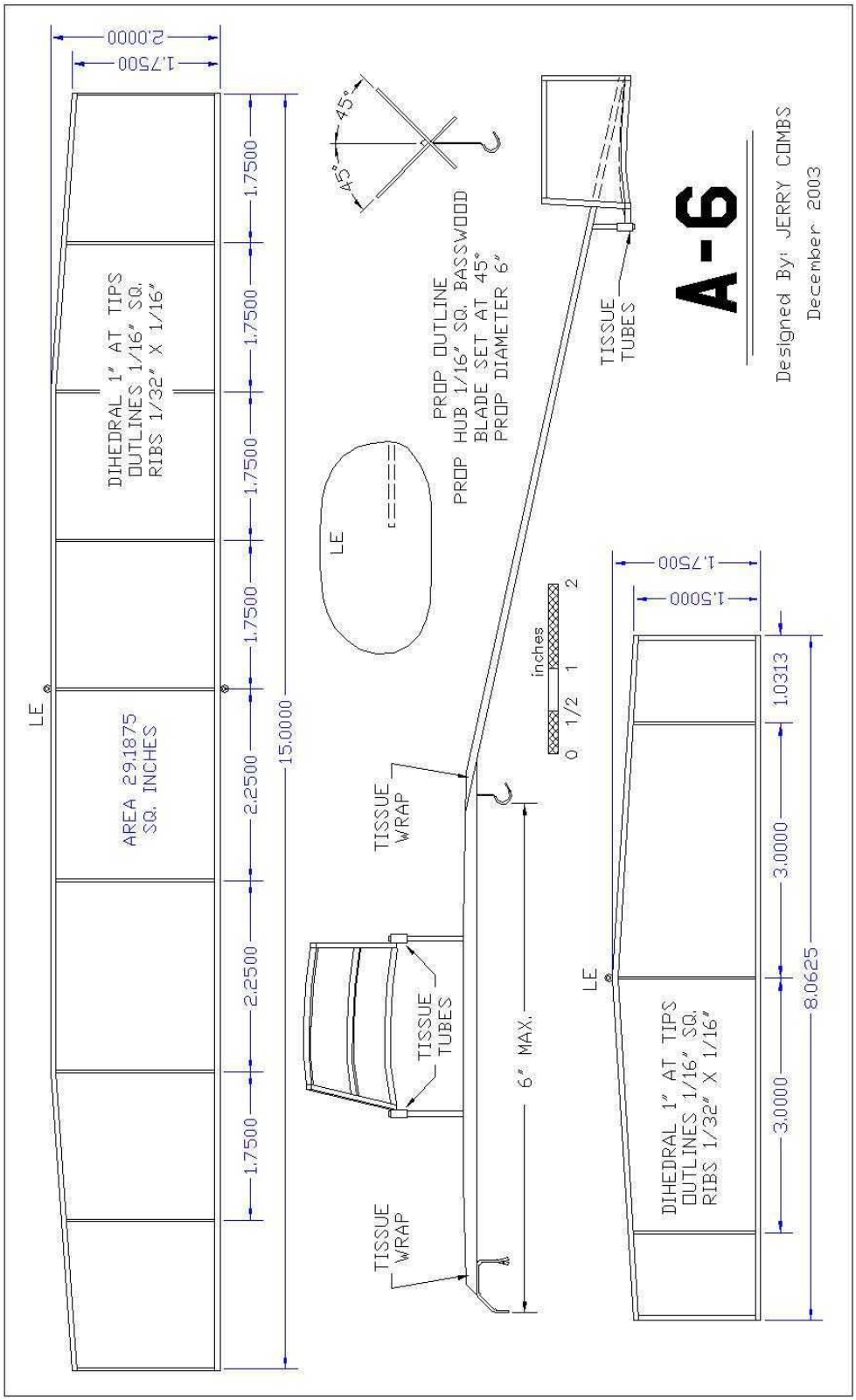
A look at today's technology shows that read-only compact disc, or CD-R, is the way to go for long term storage. It is also called CD-ROM, for Read Only Memory. CD-ROM has been used for storing and exchanging music, document, and photo collections for years, and we can be sure there will be

devices to read today's compact discs for many decades to come. There is a second version on the market called read-writable CD's or CD-R/W. But CD-R's are cheaper, and last much longer than CD-R/W. Current estimates are that your model picture files will last at least 50 to 100 years. The very best protection comes with buying only discs from major brands – Fuji, Kodak, Mitsui, or TDK, which use protective coatings, and only cost a little more than local retail brands such as Best Buy and Radio Shack. In any case, you can add files to CD-R discs as long as there is room, the disc is left open and unlocked, and you use the same CC creation software.

Now that we have our Major Name Brand CD-R media discs, it's time to transfer our files. Here are some tips from PC Magazine on archiving:

- Use a felt tip pen, and avoid adhesive labels, which may cause discs to wobble, attract dirt to their gummy edges, or fall off entirely as they dry out.
- Use software such as Roxio's Easy CD Creator, which offers bit by bit verification of copied files.
- Make 2 CD's of each batch of photos, you may want to use different brands, and keep them in different places.
- Keep CD's in a cool, dry place away from sunlight, not in the attic, basement, or garage.
- Check you finished product on another PC, to make sure everything is there.
- Use jewel cases and not flexible envelopes for long term storage, and write up a description of the contents to put inside each one.
- Visit www.pcmag.com for more archiving tips.

Lastly, be sure and share your favorite digital photos with Indoor News and Views editors Carl and Tim. You can e-mail us if they are 1 MB or less in size, or send us a CD if they are larger. We'll even spring for a pizza lunch next time we fly together.


A-6
Designed By: JERRY COMBS
December 2003
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1.7500
DIHEDRAL 1" AT TIPS
OUTLINES 1/16" SQ.
RIBS 1/32" X 1/16"
AREA 29.1875
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BLADE SET AT 45°
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DIHEDRAL 1" AT TIPS
OUTLINES 1/16" SQ.
RIBS 1/32" X 1/16"

OPTIMUM TUNE FOR LOW-CEILING FLIGHT

From INAV March 1970
by Bob Meuser

When flying under a limited ceiling should you use a heavy motor partially wound? -- or a light motor fully wound? -- and should the model land just as the motor unwinds or should it land completely unwound?

When Hacklinger's paper, published in the Journal of The Royal Aeronautical Society, first came to my attention I became intrigued with the idea of extending his method of analysis to cover the limited-ceiling condition in order to answer those questions. Over the past winter, when I should have been building models, I did just that.

The graphs show the results, and here is how you would use them. First you decide, from experience, guesswork, measurement or a crystal ball, just how high your super Class D Stick would climb if it were set up to give maxi-mum duration in a hall having an unlimited ceiling height say ~ 250 feet. You divide your ceiling height -- say 90 feet -- by that number getting 250/90 = 0.36. This is your "relative ceiling height". Go to Fig. 1, find the 0.36 point along the bottom, and read the following three quantities from the curves:

Relative motor weight	= 0.67
Relative turns let out	= 0.07
Relative turns remaining	= 0.12

This means that the motor should weigh about 67% as much as the one you would use in a hall having an unlimited ceiling, and the motor tube and prop could be a little lighter with the lighter motor. Then you should back off 7% of the turns from the fully wound motor, or only wind 93% of the maximum turns in the first place. Finally the model should be tuned to touch down with 12% of the maximum possible turns remaining in the motor (NOT 12% of the 93%).

Now all you have to do is work out the prop-motor combination that will accomplish all of that. That's your problem! The graphs show you <u>what</u> to do -- it is up to you to figure out how to do it.

How long will it fly? First you decide how long your model would fly when tuned for unlimited ceiling height --say 50 minutes. (Dreamer!) Then from Fig. 2, again for a "relative ceiling height" of 0.36, you find a relative duration" of 0.67, so in the 90 foot hall you would get 0.67 x 50 - 33.5 minutes. Congratulations -- you have just broken the Class D Stick, Cat. II record by a cool four minutes!

A complete description of the theory and its application would be too long -- and perhaps too long-haired --to go into at present. However the assumptions or approximations used in developing the theory should be stated. A theory is only as good as the assumptions behind it, and all theories require some simplifying assumptions or approximations. So here they are:

1. The angle of climb is small (but even a 30 degree climb will result in only 1% or 2% error.)
2. The same values of CL and CD are used for all conditions.
3. The prop has constant efficiency all thru the flight.
4. The energy that can be released from a fully wound motor divided by the weight of the motor is independent of the dimensions of the motor.
5. The shape of the torque vs. turns graph is independent of the dimensions and weight of the motor. A particular graph is used in the calculations, and it is essentially the same as the one appearing in the Hacklinger paper.
6. The prop speed decreases throughout the flight according to the following recipe:
   RPM/RPM fully wound - (torque/torque fully wound)$^{0.17}$
   This gives a burst/cruise RPM ration of 1.2. (Hack-linger used a constant RPM.)

7. Ceiling-bouncing does not occur.
8. The structural weight varies with the motor weight in such a way as to make the optimum value of motor weight to airframe weight equal to 1.0 for the unlimited-ceiling condition. (Motor weight/total weight 0.5)(See my article, "Optimum Rubber Weight..." in the March 1968 Free Flight Digest.)

Except for the no-ceiling-bouncing condition, which is an entirely separate case, I think the assumptions are quite reasonable. Perhaps the burst/cruise RPM ratio is a little low, but I don't think the final results would be greatly affected.

Bear in mind that all three of the conditions shown Fig. 1 must be met for the tune to be optimum. For example, the curve of optimum turns let out and optimum motor weight might be quite different if you impose the condition that the model touches down with zero turns remaining, instead of touching down with optimum turns remaining.

Like most optimizations, the various curves--duration vs. turns let out for example; are quite broad near the optimum condition, so you don't have to worry if you are not exactly on the optimum point.

There are many fine points that I didn't feel it would be appropriate to discuss at this time. If sufficient interest is shown I would be glad to go into them later. I could consider the condition where ceiling bouncing does occur, for example.

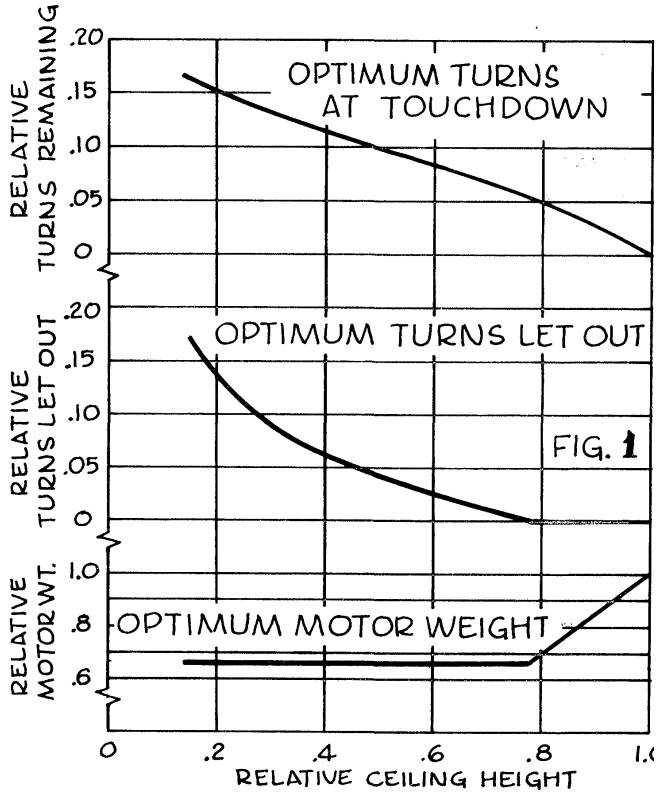


FIG. 1

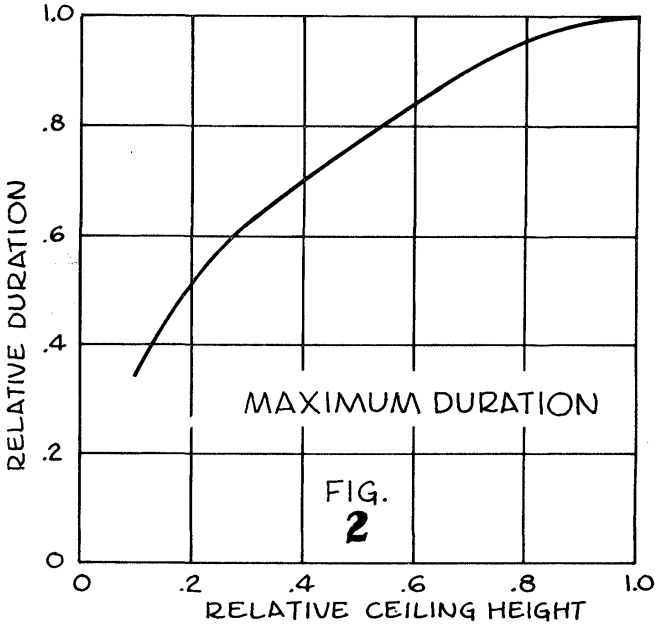
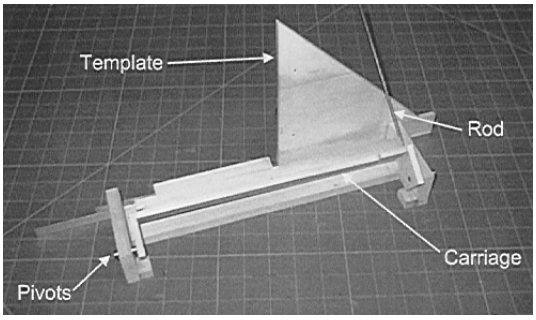


FIG. 2

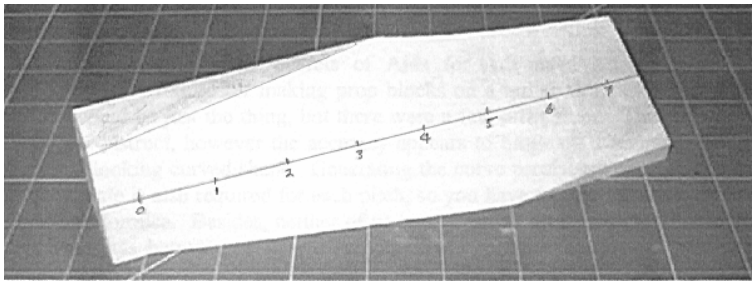
PRECISION BAND SAWED PROP PITCH BLOCKS

Steve Fujikawa and John Zseleczky
sfujikawa@intellitechmicrosystems.com johnz@usna.edu

Carving prop pitch blocks by hand can be time consuming and tedious and the results are often less than satisfactory. The procedure is so laborious that even many top fliers report making all their blades on only one or two different blocks. Wouldn't it be great if you could make a precise block for exactly the pitch you need in only a few minutes? And even better if you could do it without any expensive numerical control machines? This article describes a fixture for machining precision prop blocks on an ordinary bandsaw. The fixture is easy to construct and is adjustable for a wide range of pitches. The resulting blocks are accurate to a fraction of a degree. And as an added bonus you get two identical blocks from each piece of wood.



Prototype Hardwood Fixture with Fixed Template



Beautiful Band Saw Machined Prop Block

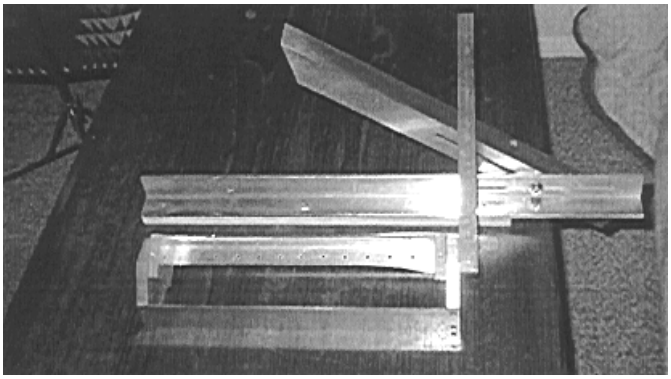
In his wonderful book "Secrets of Aids for Advanced Aeromodeling" Joe Maxwell describes a fixture for making prop blocks on a radial arm saw. We initially thought this would be just the thing, but there were a few difficulties. The fixture itself looks easy to construct, however the accuracy appears to hinge on a template having a transcendental looking curved shape. Generating the curve precisely appeared daunting. A unique template is also required for each pitch, so you have to spend some time laying out and cutting formica. Besides, neither of us owns a radial arm saw! We do however own two bandsaws between us so we put our heads together and came up with the concept presented here.

Fixture Design Concept

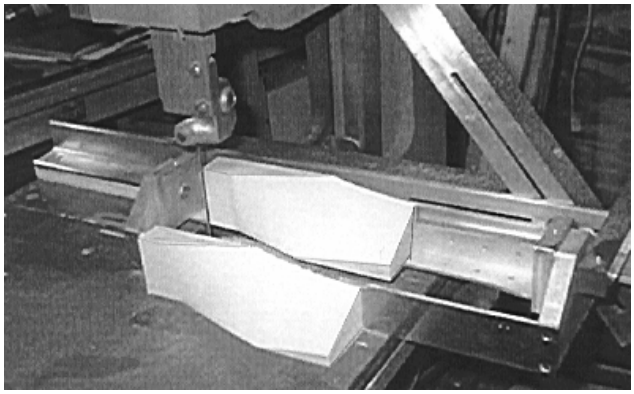
Our fixture guides a hardwood block through a band saw blade using a sliding carriage. As it is sliced in two by the blade, the block is rotated at the required arctangent rate to give a helical angle distribution. A lever arm similar to Maxwell's follows a template. However, since we have rotated our cut by 90 degrees, our templates are straight lines rather than curves which makes them easy to make. Furthermore, you don't even need to make different templates, we just use a hinged straightedge. In a few seconds, the hinge angle can be adjusted to any pitch. And because our blocks are sliced cleanly in two, there's no finish sanding required, no waste, a lot less sawdust, and you end up with two identical blocks from each cut.

We made an initial prototype out of hardwood in only a couple of hours. It was made by gluing parts made out of 1/4" Aspen from Home Depot together with CA. It used brass tubing for the bearings and had a fixed angle template which was followed with a 1/8" piano wire rod. With the aid of a machinist's caliper, the component tolerances can be easily held to 0.005". We made a few test blocks out of balsa and were delighted when their accuracy exceeded the ability of a protractor to measure any error.

Encouraged by our initial successes, we made a heavy duty model out of aluminum. This improved version allows us to cut blocks up to about 10" in length and has an adjustable arm instead of a fixed template.



Improved Adjustable Aluminum Fixture



Two Identical Blocks from Each Piece of Stock!

Making A Fixture

There are a few things to consider when making a one of these fixtures; first and foremost is stiffness. For the finished prop block to be accurate, both ends of the rotating carriage must turn at the exact same rate and follow the exact angle set by the lever arm. As the bandsaw blade cuts, it resists the rotation of the wood block so any flexibility in the system will result in a variable error in the pitch angle.

• Carriage frame – We decided to build the outer carriage frame of our aluminum fixture in the form of a closed box, as viewed from above, to increase the stiffness of the system. The down-side of this approach is that in order to put the blade next to the wood, we have to take apart the box each time we put the fixture on the bandsaw. Fortunately we only need to remove two screws at one corner to sneak the blade in. Our prototype fixture had an open 'U' shape as viewed from the top. With this arrangement there was no need to take anything apart but the frame deflected and twisted when loaded by the blade forces.

• Lever Arm – Our prototype used a heavy piano wire rod to ride along the template and rotate the carriage. Surprisingly, there was a noticeable deflection in the rod under certain conditions. The newer design uses a more solid ½" square aluminum bar. The bottom edge of the bar is aligned with the center of the carriage rotation axis and only one corner of the bar rides along the template. This feature eliminates any small error associated with the changing cross section of the rod as it rides along the template.

• Pivots – The larger the diameter, the stiffer the system. We used ½" diameter rods as pivot axles for the rotating frame but any gain in stiffness from using large diameter rods may be offset by the difficulty in drilling a larger hole with precision, depending on what tools you're using.

• Wood Attachment – We started out using double-stick tape to hold the wood block on the fixture but it gave way when cutting one time so now we always screw the blocks on.

• Rotating Carriage – You have to plan ahead a bit to make sure that you don't end up cutting through your carriage. We used a 90 degree aluminum angle for the carriage frame as shown in the photos. Our fixture is set up for 2" x 2" wood blanks so part of the angle had to be cut back to about 7/8" to clear the bandsaw blade and its widely set teeth.

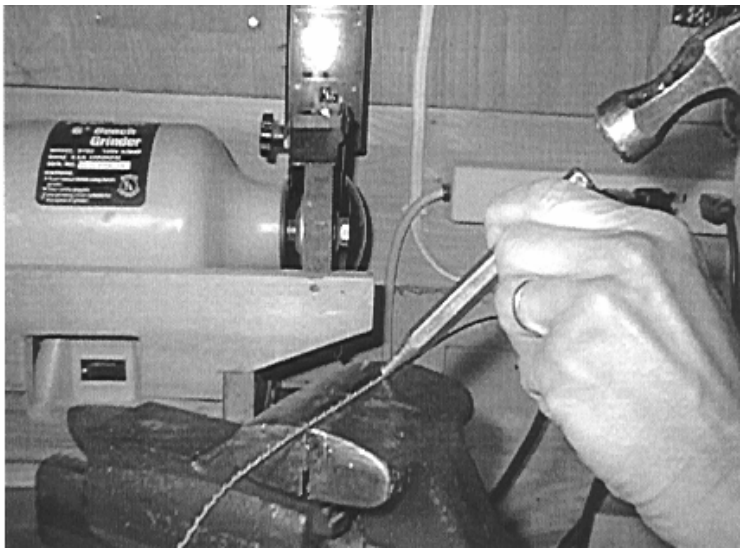
• Template – One of the beauties of this system is the lack of complex templates. In fact, we don't use any templates at all! Instead, we use a sliding bar that can be adjusted to the proper angle and locked in place. We have a simple equation that tells you the angle needed. All you need to know is the pitch of the block and distance from the bandsaw blade to the template edge. The only real trick is that you have to set up the bar to work within the clearance limits of your bandsaw and the range of block pitches that you intend to use. A block with smaller pitch requires a taller template. This description would be easier to follow if you build a simple wood mockup first. We ended up using fairly substantial slotted aluminum angle sections for our template bar system because a side force is applied when the lever arm is tilted up.

• Fence – The bandsaw that we use doesn't have any fence guides or grooves in the table so we use the base of our template bar as a fence. With this arrangement you push the fixture sideways, into the base as you push the block of wood into the blade. It is important to keep the carriage axis of rotation in line with the center of the blade so we set up carefully one time and then drilled and screwed our template base right into the table of the bandsaw. Now the base always goes back in the same spot and we don't have to fuss with aligning it.

Importance of Kerf

They say that the devil is in the details and this critical detail almost brought an end to our project. The first time we cut a block using our prototype fixture, we found that the blade wandered as the carriage rotated. After examining the blade as it began to jam we found that the width of the cut, or kerf, wasn't wide enough to allow the wood to rotate while the blade stayed vertical. Looking down at the blade from above, you could see that angled blade teeth were cutting away fresh wood on both sides of the kerf but the back edge of the blade was rubbing on one side. As the carriage rotated the block of wood, the back edge of the blade that was rubbing would steer the blade away from its intended path and the entire side of the blade would rub that much harder. This spiral of destruction would continue until the basement was filled with the rustic smell of burnt wood. A similar situation was going on at the bottom of the block, but in the other direction. It became obvious that we needed a narrow blade (measured front to back) with widely set teeth to cut a wide kerf.

We tried all of the blades in the basement with no better luck and then went on to order specialty blades. One blade was designed to cut an extra wide kerf for just this sort of thing but had a relatively large blade width of ¼". Another blade had a very small width of 1/16" but had tiny teeth and produced a narrow kerf. We ended up trying a number of blades: 1/4" - 6tpi, 1/8" - 14tpi, 1/16" - 20tpi, 1/4" - 4tpi, but we finally settled on hand setting one of 1/8" - 7.5tpi. Hand setting involves carefully bending the teeth to a greater angle as in the photo below. The final solution was inelegant but did the job surprisingly well. Unless someone comes up with a source for a better blade or a clever gizmo for setting small teeth, this may be your only option.



Setting Kerf By Hand

At first look, resetting the teeth of an 80" blade with 14 teeth per inch looks a little daunting (1,120 teeth!) In reality, it isn't that bad if you're not too picky and can spare half an hour. We held a section of the blade at a time in a vice with 3" wide jaws and gave each tooth in that 3" span one solid tap with a hammer and punch. We set the teeth so that every other tooth was in the opposite direction. There may be better ways to do this but we found that the blade produced a very smooth cut if you just pushed the block slowly through the bandsaw. This is similar to the concept that Joe Maxwell described in his book: one tooth of any circular saw blade will have a larger radius than all the others and will set the depth of the cut.

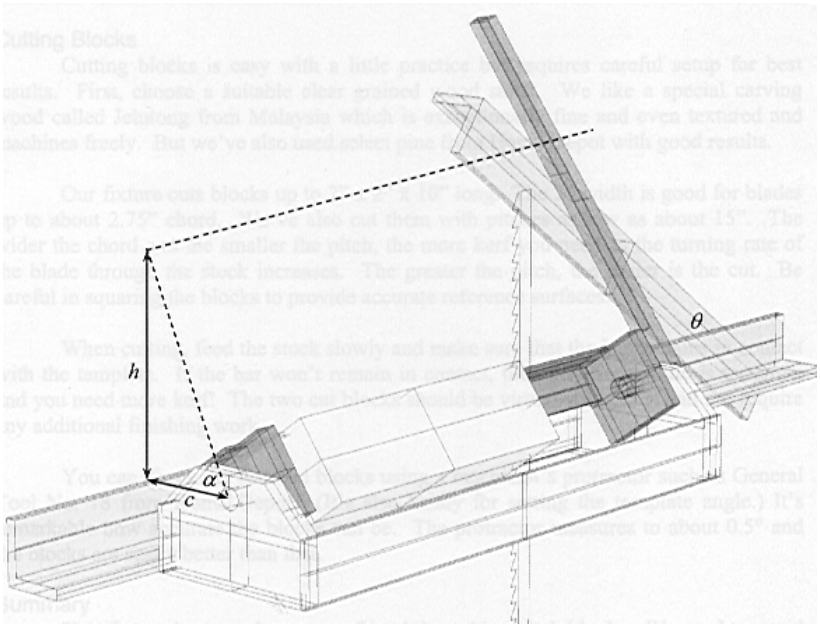
Fixture Geometry

To set your fixture up for accurate cuts is not difficult but requires a little elementary computation. As every fixture will differ slightly in dimensions, we first derive a general formula to set the angle of the template.

The helical pitch equation is:

$$\alpha = \tan^{-1}(P/2\pi r)$$

where α is the helix angle, P is the pitch and r is the distance from the hub. When r is zero, α is 90° and when r is large, α is zero.



Fixture Geometry

In the figure above, h is the height above the carriage pivot that the rod contacts the hinged template arm, c is the lateral offset of the pivot from the template (3" in our case), and α is the resulting helix angle. So we have:

$$\alpha = \tan^{-1}(c/h)$$

And equating the two equations gives an expression for template height as a function of distance from the hub:

$$h = 2\pi rc/P$$

Note that h is a constant times r, in other words a linear function of r, and that's why the template is a straight line!

The hinge arm angle θ with the horizontal is then:

$$\theta = \tan^{-1}(2\pi c/P)$$

If your pivot offset c were 3", you would use the following angles for your template bar:

Pitch	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	25"
□	51.49°	49.67°	47.95°	46.32°	44.77°	43.30°	41.91°	40.59°	39.34°	38.15°	37.02°

Template Bar Angles for a 3" Offset

Cutting Blocks

Cutting blocks is easy with a little practice but requires careful setup for best results. First, choose a suitable clear grained wood stock. We like a special carving wood called Jelutong from Malaysia which is exceptionally fine and even textured and machines freely. But we've also used select pine from Home Depot with good results.

Our fixture cuts blocks up to 2" x 2" x 10" long. The 2" width is good for blades up to about 2.75" chord. We've also cut them with pitches as low as about 15". The wider the chord and the smaller the pitch, the more kerf you need as the turning rate of the blade through the stock increases. The greater the pitch, the easier is the cut. Be careful in squaring the blocks to provide accurate reference surfaces.

When cutting, feed the stock slowly and make sure that the bar remains in contact with the template. If the bar won't remain in contact, then the turning rate is too great and you need more kerf! The two cut blocks should be virtually identical and not require any additional finishing work.

You can check the finished blocks using a machinist's protractor such as General Tool No. 18 from Home Depot. (It's also handy for setting the template angle.) It's remarkable how accurate the blocks can be. The protractor measures to about 0.5° and the blocks are easily better than that.

Summary

This fixture has saved us a ton of work in making pitch blocks. We used to avoid carving new blocks by making do with existing ones which weren't the right pitch and may have been inaccurately made. Now we just head to the bandsaw and zip out the exact one we need in about 10 minutes! This is just the ticket if you want to do a lot of optimizing of prop pitches. We hope you will make your own bandsaw prop block fixture. If you have any questions, please don't hesitate to contact us.

UPCOMING CONTESTS AND FLYING FOR 2004

July 24 – 27 Kibbie Dome Indoor. A 4-day contest with the Wally Miller EZB contest (1.2 gm) flown in the middle of the main event. All AMA and FAI events flown. This is a world class 145' ceiling site. Normally an FAC contest is held at the same time. CD Andy Tagliafico at 503-452-0546

MASSACHUSETTS – CAMBRIDGE

Tech Model Aircrafters Indoor Flying Sessions at MIT – Flying from 6 pm to 10 pm at MIT's Dupont Gym, the corner of Vassar and Massachusetts Ave. in Cambridge, Mass. Call Ray Harlan at 508-358-4013.

MICHIGAN – FLINT

May 2 Cloudbusters MAC 2004 Spring Indoor Fling. At the Inside Swing Golf Dome, Flint MI, 8 am to 8 pm Sunday May 2, a Cat III site. Most Indoor AMA and FAC events, plus Science Olympiad, Blatter 40, Phantom Flash/Jetco ROG. CD's George Lewis 810-329-6833, Fred Gregg Jr. 586-264-1018, and

Don Lang 586-751-3281.

NEW JERSEY – LAKEHURST

Indoor Flying at Lakehurst – The East Coast Indoor Modelers (ECIM) have the use of Hangar

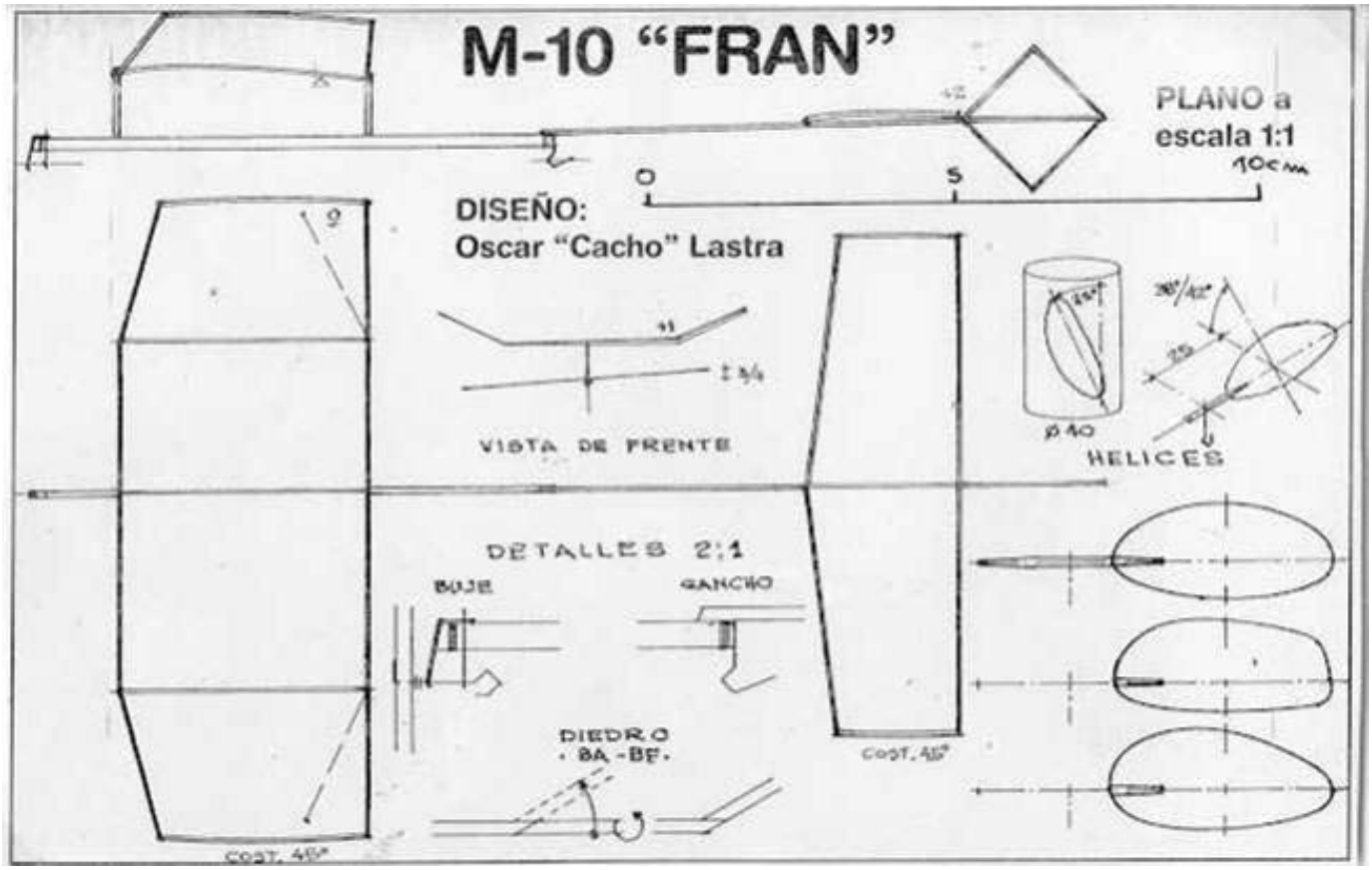
#1 every week from sunup to sundown. The hangar is 800 ft. long by 250 ft., and 180 ft. high. To join ECIM. Contact Rob Romash at 856-985-6849. E-mail cgrain1@yahoo.com . Dues $15 a year with current AMA card.

TENNESSEE – JOHNSON CITY

May 26-30 AMA/NFFS Indoor Nationals, Johnson City, TN. Flying is in the MiniDome fieldhouse of East Tennessee State University. CD Abram Van Dover, 112 Tillerson Dr., Newport News, VA 23602, or csmvan@msn.com.

Please help us out by sending you contest announcements for 2004 to carl@sd-la.com to be included here.

THE NEW 10CM SPAN M10 CLASS



M10 class that is growing in Argentina

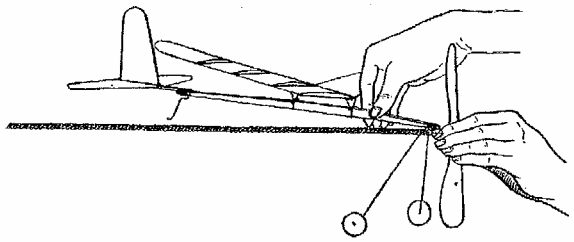
Here are the rules as best as we can make out. The article that was submitted is in Spanish and as a last minute addition this is the best I could do with my lack of ability in the language.

Monoplane with a single rubber motor.
Max wing span 10 cm. max stab area 50% of wing. Max prop diameter 8.5 cm.
Construction of solid balsa only
Covering any commercial plastic or paper. Microfilm not allowed.

There were additional rules regarding flights, timing, attempts, etc but I was not able to translate sufficiently to include the details.

This information and the Spanish language articles were provided by:
Dr. Héctor Mario Pucciarelli of Argentina
e-mail : hmpucci@fcv.unlp.edu.ar

GOLD NUGGETS



How I Invented Indoor Flying

by Sam B. Casey
Stuart, Florida

I was a flyer of "toy airplanes" long before I was certified by the U.S.C.G. as being insane enough to drive boats fro and to. My building activities have been limited by time and such. It is difficult to build much when you are, for all practical purposes, living aboard one boat or another as I have for the past 20 years.

Unfortunately, over the years, I've not had the opportunity to fully utilize all these goodies but retirement will soon alter that situation. At the moment, my Indoor fleet consists of a box full of tattered "Parlor Mites", one "Bandersnap" and a few "Peanuts".

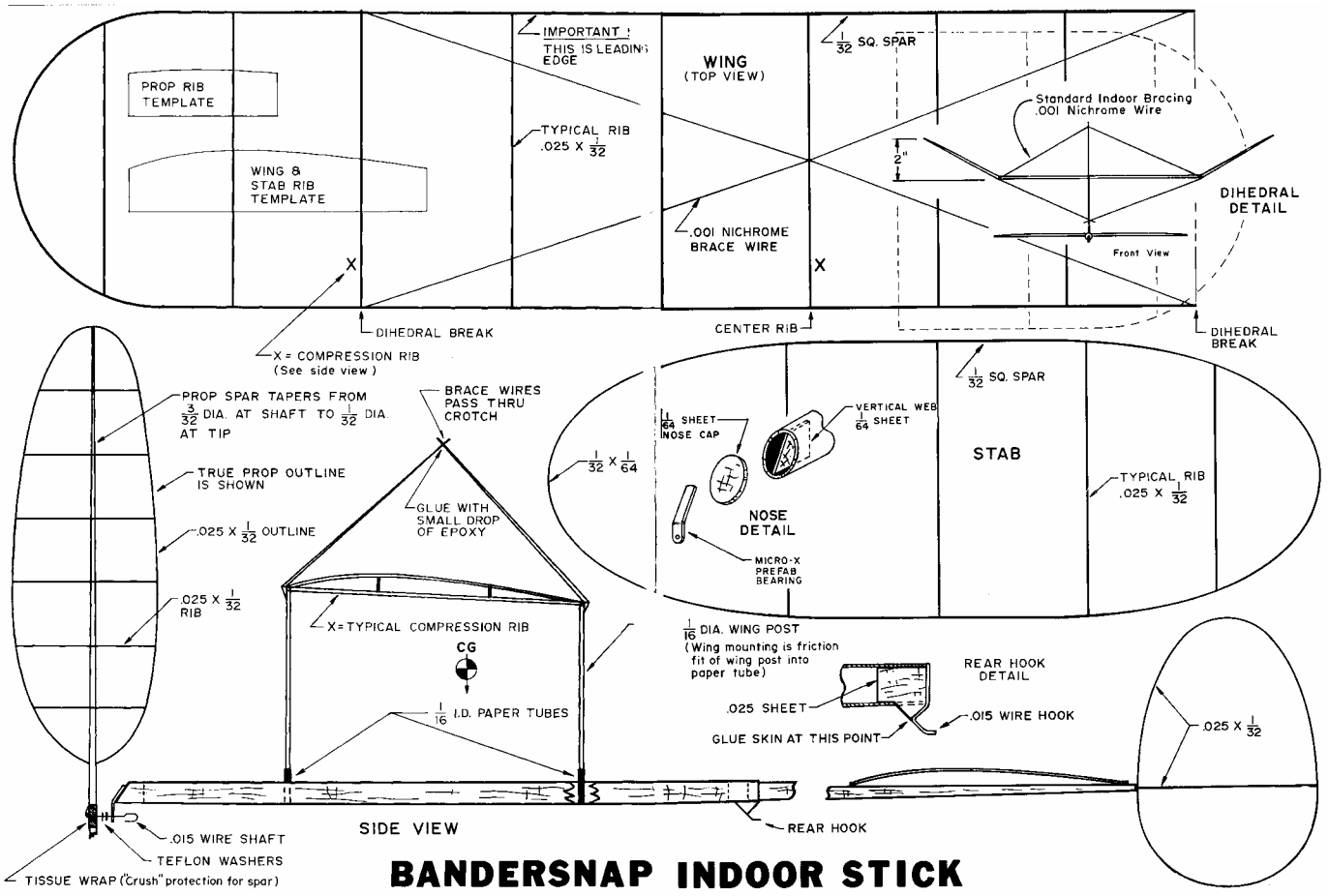
The "Parlor Mites" and "Bandersnap" (remember Tom Valee? Great model and great trainer for indoor techniques) I maintain for one reason - bar bets! The statement, "I can make a rubber (band) powered model fly for 3 minutes - in this room" never fails to draw willing bettors! Always stipulate, A/C off. It's not the money that makes this odious practice worthwhile, it's the expression on people's faces. Guerilla flying at a profit!

At any rate; so stands the aeronautical empire of S. Casey. What started my interest? Like most my age, I suppose, the immediate post WW-II general interest in aviation combined with the common dime store availability of Comet, Megow and Whitman model kits. None of those models were ever about to fly a distance greater than from hand to ground. Not when built by me anyway. Not then.

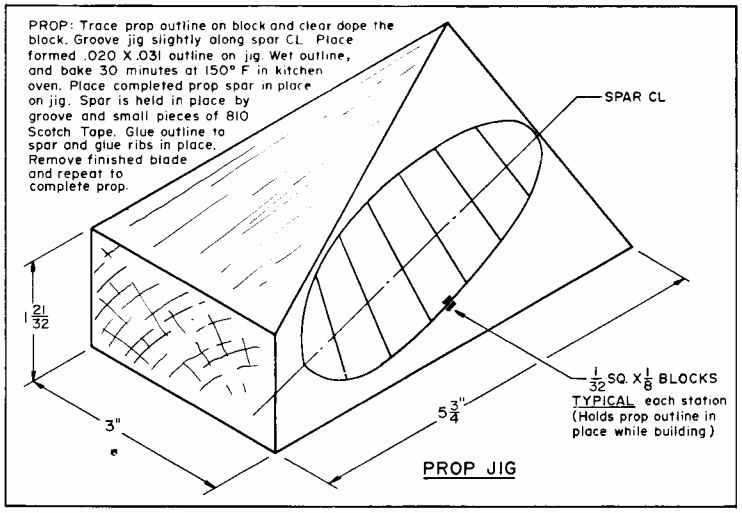
The great epiphany came boxed as the "JASCO BABY ROG". That model, of which I built dozens, FLEW. It also allowed me to invent indoor flying. At the time, I did not know that people flew models indoors. I did know, however, that West Texas was too windy and that the High School gym was two blocks up the street - usually unlocked and unattended. O.K. I independently "invented" indoor flying. The "JASCO BABY ROG" was that great epiphany that dictated a lifetime obsession with small flying things.

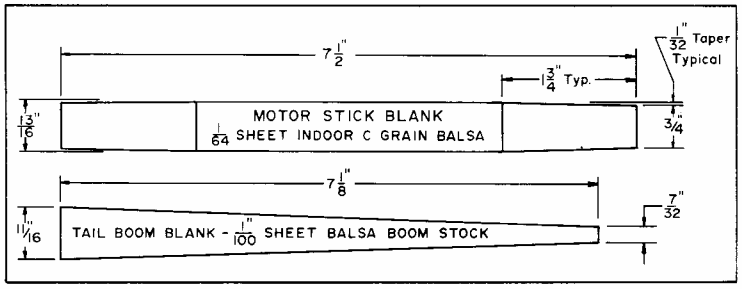
Indoor has always been of prime interest to me and, over the years I have managed to accumulate or collect near everything an indoor flier could need or want, except a good rubber stripper, and that's on order. I full well intend to, in the very near future, indulge that obsession to my heart's content! I can't wait! When my interests will be F1M, Intermediate Stick, EZB, PP, LPP, and everything else except HLG and CLG. Since F1M was thunk up during one of my many enforced vacations from model building, I am but the barest of babes in the wood. Any direction you might choose to provide would be sincerely appreciated.

Editor's Note. Tom Valee's Bandersnap plan appears on the following page, along with prop and boom templates. It is a good-looking and viable design even today. It appeared in the January 1971 issue of American Aircraft Modeler, and we owe thanks to Dave Livesay for digging it out, scanning it, and sending it to us. Enlarge the plan so that the total wingspan is 18" flat.



BANDERSNAP INDOOR STICK





UNITED STATES INDOOR CHAMPIONSHIPS 2004 SCHEDULE

	7:30 2:00	2:01 2:30	2:31 6:00	6:01/6:30	6:31 10:00
WEDNESDAY	IHLG	P-24 LAUNCH*			
26 MAY 2004	STD. CATAPULT	AT 2:15	INTERMEDIATE STICK		INTERMEDIATE STICK
	UNLIM. CATAPULT		35 CM *		35 CM *
	RTP SPEED *		F1D		F1D
	STRAIGHT LINE SPEED *				
	RACE TO THE ROOF *				
	7:30 1:00		1:01 4:00	4:01/4:30	4:31 10:00
THURSDAY	FAC PEANUT *				
27 MAY 2004	BOSTONIAN				
	HI WING MONOPLANE *		F1D		F1D
	MODERN CIVIL PRODUCTION *		HAND LAUNCH STICK		HAND LAUNCH STICK
	WW 1 MASS LAUNCH * 1130				
	BOSTONIAN MASS LAUNCH 12:30 *				
	UNLIMITED RUBBER SPEED *				
	7:30 12:00		12:01 4:00	4:01/4:30	4:31 10:00
FRIDAY	AMA SCALE		MINISTICK		MINISTICK
28 MAY 2004	DIME SCALE *		EZ-B		EZ-B
	SCIENCE OLYMPIAD.*		F1L *		F1L
	FAC SCALE *				
	GOLDEN AGE *				
	7:30 12:00		12:01 3:00	3:01/3:30	3:31 10:00
SATURDAY	COCONUT SCALE *				
29 MAY 2004	NO CAL SCALE *		PENNY PLANE		PENNY PLANE
	AMA PEANUT		MANHATTAN		MANHATTAN
	SCIENCE OLYMPIAD *				HELICOPTER
	WW II MASS LAUNCH 10:30 *				A-6
	COCONUT MASS LAUNCH 11:30 *				
	ELECTRIC INDOOR R/C DURATION				
	EVENT 627				

	7:30 11:30	11:31/12:00	12:31 3:00	3:01 6:00	
SUNDAY	LIMITED PENNYPLANE		LIMITED PENNYPLANE	PREPARATION TO DEPART	
30 MAY 2004	F1M*		F1M *	THE BUILDING MUST BE CLEARED	
	ELECTRIC DURATION		ELECTRIC DURATION	PRIOR TO 6 PM	
	Event 221		Event 221		
				*= NON AMA EVENTS	
				HAVE A GREAT WEEK !!!!	

CURRENT ACTIVE U.S.A. INDOOR SITES

Site	Location	Host Club/Contact
Akron Air Dock	Akron, Ohio	Indoor Team Trials
Albany, Oregon gymnasium	Albany, Oregon	Willamette Modelers
Alliance Sports Dome	Valley View, Ohio	Don Slusarczyk
Arlington Convention Center	Arlington, Texas	SW Aeromodeling Conf.
Arthur W. Coolidge Middle School	Reading, Mass.	Merrimac Valley Air-Istocrats
Bedford Boys Ranch, Dallas	Bedford, Texas	NIRAC, Bob Wilder
Bethany Lutheran Church	East Hartland, CT	MCIFC, Jerry Knoblauch
Boeing Everett Hangar	Everett, Washington	BEAMS
NE City Auditorium	Beatrice, Nebraska	Nebraska Free Flighters
Cocoa Expo Center	Cocoa Beach, Florida	Indian River Kontrol Society
Colorado Springs City Auditorium	Colorado Springs, CO	MMMFFC, Don Deloach
Everett and Oxbow Recreation Center	Seattle, Washington	Boeing HAWKS
Full Scale Tunnel, Langley AFB	Hampton, Virginia	Brainbusters, Abram Van Dover
Glastonbury High School Gym	Glastonbury, CT	Glastonbury Aeromodellers
Hangar #1 and #6	Lakehurst, New Jersey	ECIM, Rob Romash
Heritage Junior HS	Sterling Heights, Michigan	
Inside Swing Golf Dome, Burton	Flint, Michigan	
Kent State University Field House	Kent, Ohio	Cleveland Clowns
Kibbie Dome, U. of Idaho	Moscow, Idaho	Andy Tagiafico
Memorial Hall, Fairmont Park	Philadelphia, PA	SOTS, Alan Mkitarian
Memorial Hall	Racine, WI	BONG Eagles
MiniDome Fieldhouse, ETSU	Johnson City, TN	U.S.I.C., Abram Van Dover
MIT Dupont Gym	Cambridge, Mass	Tech Model Aircrafters, Ray Harlan
National Building Museum	Washington DC	DC Maxecuters, Stew Meyers
National Guard Armory	Oklahoma City, OK	Nebraska Free Flighters
National Guard Armory	Tampa, Florida	Tampa Bay Indoor Fliers
New Covenant Fellowship, Penfield	Rochester, New York	Rochester Indoor Fliers
North Cobb High School Gym	Kennesaw, Georgia	TTOMA, Gary Baughman
Oakland Yards	Waterford, Michigan	NIRAC, Dave Robelen
Perry Field House, B.G.S.U.	Bowling Green, Ohio	Cleveland Cowns, Don Slusarczyk
Prime Osborn Center	Jacksonville, Florida	NEFF, Bill Carney
Ralph C. Wilson Jr. Fieldhouse	Buffalo, New York	Western NY FF Society
Teachers Memorial JHS	Norwich, Conn. (inactive due to fire)	John Kaptonak
Teaneck Armory	Teaneck, New Jersey	Don Ross
Tropicana Dome	St. Petersburg, Florida	North East Florida Fliers, Bill Carney
UniDome, University of Iowa	Cedar Falls, Iowa	Indoor Aces FF Club, Bob Nelson
U. of Illinois ROTC Armory	Champaign, Ill	Chicago Aeronuts, Bob Warmann
West Baden Resort	West Baden Springs, Indiana	Record Trials
Wheeler High School	Marietta, GA	TTOMA

Abbreviations:

BEAMS	Boeing Employees Model Society	ECIM	East Coast Indoor Modelers
SOTS	Scale Old Timers Society	TTOMA	Thermal Thumbers of Metro Atlanta
MCIFC	MassConn Indoor Flying Club	NEFF	North East Florida Flyers
MMMFFC	Magnificent Mountain Men FF Club		
NIRAC	National Indoor Remote-Controlled Aircraft Council		
U.S.I.C.	United States Indoor Championships		

last updated 1/24/04

Many thanks to Bud Tenny and his Model Aviation column for getting this started. Please let us know if you have any additions or corrections.

THE KING IS DEAD, LONG LIVE THE KING.
(The future: A European perspective.)

It's official; there will be no more indoor duration contests in the 'CargoLifter' hanger in Germany. Despite exhausting and exhaustive efforts by Gerhard Woebbeking to secure an agreement to host the 2003 European F1D championships, the contest was cancelled due to insurmountable insurance problems. There was a slim hope that the next F1D World Championships would take place there. We hear that the hanger is being turned into a vast theme park - the largest indoor tropical rainforest in the world, sporting two hotels, a beach and lagoon. I understand that the project has been fronted by Malaysian money and that market research projects 3 million visitors a year. Top British flyer John Tipper is already dreaming of 'Gorilla' flying there!

In writing this, I bear in mind the fact that INAV is an American publication, that the USA has by far the greatest number of active indoor duration flyers, and that most INAV readers are also American. The majority signed up to the indoor duration chat group are also from the USA. Therefore, many of you may ask 'OK, what the hell has this to do with me?'

The facts are obvious – the annual 'CargoLifter' meetings acted as a magnet for European fliers, something to work and plan towards and something to build and test new models for; designed only for flying in this unique building. This was a great incentive and as an example, I cite the fact that Marian Krause flew a new unofficial F1D World Record, at the very last 'CargoLifter' meeting - 42.10. The knock-on from this was the phenomenal record entry for the re-scheduled European championships that took place last year at the Millenium Dome in London.

Anticipating a team place for the next World Championships at the 'cargoLifter', some top American flyers were also attracted by this German 'magnet'. That incentive has now gone and all prospective team members may have to steel themselves for yet another trip to the Stygian gloom of the unsanitary Romanian salt mine.

This is a mixed blessing. Although motivated to some degree by financial considerations – at least one country is willing and able to keep our sport alive at the highest level: (where are the offers from other countries?). Prospective team members will now decide how to build models that will theoretically be able to extract every second available from 0.6gms of rubber in that particular site.

The loss of the 'CargoLifter' is indicative of a depressing trend. In the USA, most of the traditional hangers are now out of bounds. Very late on, the last American F1D final team trials were switched to Lakehurst after Akron became unavailable. In the UK, the one usable hanger remaining at Cardington is now so full of holes in the cladding that according to Laurie Barr, 'It's possible to get a suntan indoors'. At least we will be able to use the Dome again for some or maybe all of this year. Most other flyers from countries in Europe have no high ceiling sites at all and some of their competitive flight times are therefore remarkable.

To be brutal, the golden years have gone and we are all flying on borrowed time. Top-level indoor duration flying worldwide is wasting away. Several factors point towards this and the most important and significant is the lack of young flyers attracted to our sport. The indoor duration community is an ageing community and without new blood, we are surely doomed to oblivion. There are some young, enthusiastic flyers, active in several countries but most of us who now build and fly, grew up in the austere years after the Second World War, when of necessity, children made things instead of buying

them and were encouraged to do so by practically minded parents. Hand skills and technical ingenuity were encouraged and nurtured and not seen as an irrelevance.

Today, teenagers are hot-wired into accepting and driving the rapid pace of global technological change. For many teenagers, particularly in the USA, the UK and other 'developed' countries, everything is a fashion, transient and disposable and everything can be bought with cash or credit instead of being worked for. The acquisition of qualities such as patience, manual dexterity and dedication are often seen as outdated and irrelevant. This change in youth perception means that most find the concept of our sport anachronistic and boring – I can't buy the DVD/ download the game/play the music. Why should these flyers take time to bother to make something like a slow flying indoor aeroplane, when any number of 'sexy' RTF models can be bought off the shelf, cheaply, in the local model shop.

Conversely, I cite the excellent performance of the USA Junior team at the last World Championships. I believe that all three fliers were the product of the 'Science Olympiad' programme and although some who snipe from the sidelines writes this off, it seems to be a great platform for developing indoor talent. Whether that talent or the SCI/OLY will remain in later years is unclear. At present, the programme is helped by willing mentors and donations of materials and expert advice that could probably only be mustered on this scale by the richest economy in the World.

A second factor in this decline is the continuing loss of world class, high ceiling sites - a perverse fact in an age when cavernous architectural monstrosities are sprouting like mushrooms all over the globe. The tragedy of 9/11 has probably had an effect, making access to some new and traditional venues difficult if not impossible.

When it comes to the materials that we use for our models, we see a variable situation. There are now more people cutting quality indoor wood than ever. Not all are fully commercial, but I know of at least 7 Worldwide, not counting the superb wood from the late Charlie Leeson. Cottage industries and materials suppliers are more accessible than ever, thanks to the Internet.

Tan 2 has gone, the last few batches were sporadically excellent, although may '99 and march '02 are both notoriously inconsistent. Those with good rubber will hoard it in fridges/freezers/bunkers and padlocked rooms. Those who have none will wail, moan and gnash their teeth, while standing outside. So far, nothing that has appeared since has shown anything like the same energy levels.

Recently, another nail in the indoor 'coffin' has appeared – the loss of Y2K/2. Ridiculed by many, only a few years ago, this material has now not only been accepted, but has been praised by the vast majority who use it. It has undoubtedly made the construction of 'microfilm' models far easier and has also attracted some new flyers to have a go at F1D. I thank Gene Joshu for providing me with several years of wonderful static cling.

It is now easier than ever to travel abroad with indoor models. Despite heightened security, the recent reduction in f1D wingspan has taken much of the stress out of international competition and low cost air fares also improve the situation. Contestants are far les likely to arrive at a site with a model box full of matchsticks.

Our sport is seen as bizarre and media-unfriendly and therefore we have little chance of attracting meaningful financial sponsorship. We have to fend for ourselves and if the USIC FF/RC debacle is

anything to go by, at least one of our national organizations is uncaring, unsympathetic and downright obstructive.

There are further factors to be added to the mix. From my entirely personal perspective, the inexorable encroachment of indoor electric FF/RC models is a new development that chips away at the purity of our discipline. Others will say that this is merely a natural and positive movement, pointing the way towards indoor progress in the future. In the UK and elsewhere, electric/RC indoor flying is growing rapidly and there is a healthy low ceiling scene, much of which is at club level, during the winter. As I am updating this text in February, I read the feverish discussion that swamps the chat group, arguing the pros and cons of allowing
electric /RC models at USIC. For once, this seems to have galvanised some American members of the group into action at the computer keyboard!

I am constantly amazed that the chat group, providing instant communication between members from all over the World is so one sided. Here is the perfect forum to debate, argue and wrestle with problems and issues that we all face. Yet, more often than not, the topics are worthy yet relatively trivial. Why is there so little input from non-Americans? English may not be the first language for many, but that doesn't stop us from communicating face to face at international competitions. Why are most of the comments that appear from outside the USA greeted with such a deafening silence? Presumably, because we are seen as either alien or irrelevant. Many UK members now regard the chat group as a joke and if they haven't already unsubscribed, only continue to dip in occasionally in case something of genuine personal interest miraculously appears.

I present a picture that misses out much, yet which concentrates on some important factors in our situation. I also admit that I am mainly concerned and interested in F1D and the other true, rubber driven, duration classes. However, we should all remember that many of the issues raised here are also relevant to more general indoor flyers who build other classes. Structural, aerodynamic and technical innovations at the highest level quickly filter across to others.

Most competitive rubber duration flyers in the UK including myself, believe that if current trends persist, top-level indoor duration will end within a decade; both nationally and internationally – Like dinosaurs, we will become extinct. Do we agree? Do we care? Will we be content to fade away? Or will we act both individually and collectively to make things happen? Ultimately, our future is up to us all!

The current 'battle' being waged over proposed RC encroachment at USIC, along with some dawning American realization that US indoor duration is threatened, may have repercussions for us all. Ultimately, the tragedy and Worldwide repercussions of 9/11 should make us all aware that we are a Global community and that indoor duration, in its own small way and in EVERY country, is fragile and vulnerable.

A final thought. Maybe, in ten or fifteen years time, when all our hoarded rubber is only good for bootlaces, F1D will have undergone slight changes…

At the 2014 F1D Indoor Duration World Championships; sponsored by MABUCHI, NASA and Dupont, I read from Carl Bakay and Tim Goldstein of INAV that, ' after the protests resulting from the recent controversial rule changes, allowing the use of electric propulsion and GPS guidance systems for steering; the contest finally took place at the newly refurbished 150,0000 seater

CargoLifter' stadium in Germany. In total, 24 full senior teams took part and junior participation was also significantly improved, with full teams from Israel, North Korea and Palestine. These countries were competing at junior level for the first time.

Chinese flyers won both the Gold individual and team medals, and all three made extensive use of carbon fibre, micro-tube technology in structural components. Typically, main wing spars were formed from tapered, bundled tubes having both great strength and flexibility. Tube wall thickness was only 0.002". The 3 student team members developed this technology as a university research programme…

Nick Aikman. 10.02.04.

TELESCOPING COVERING JIGS

by Wally Miller

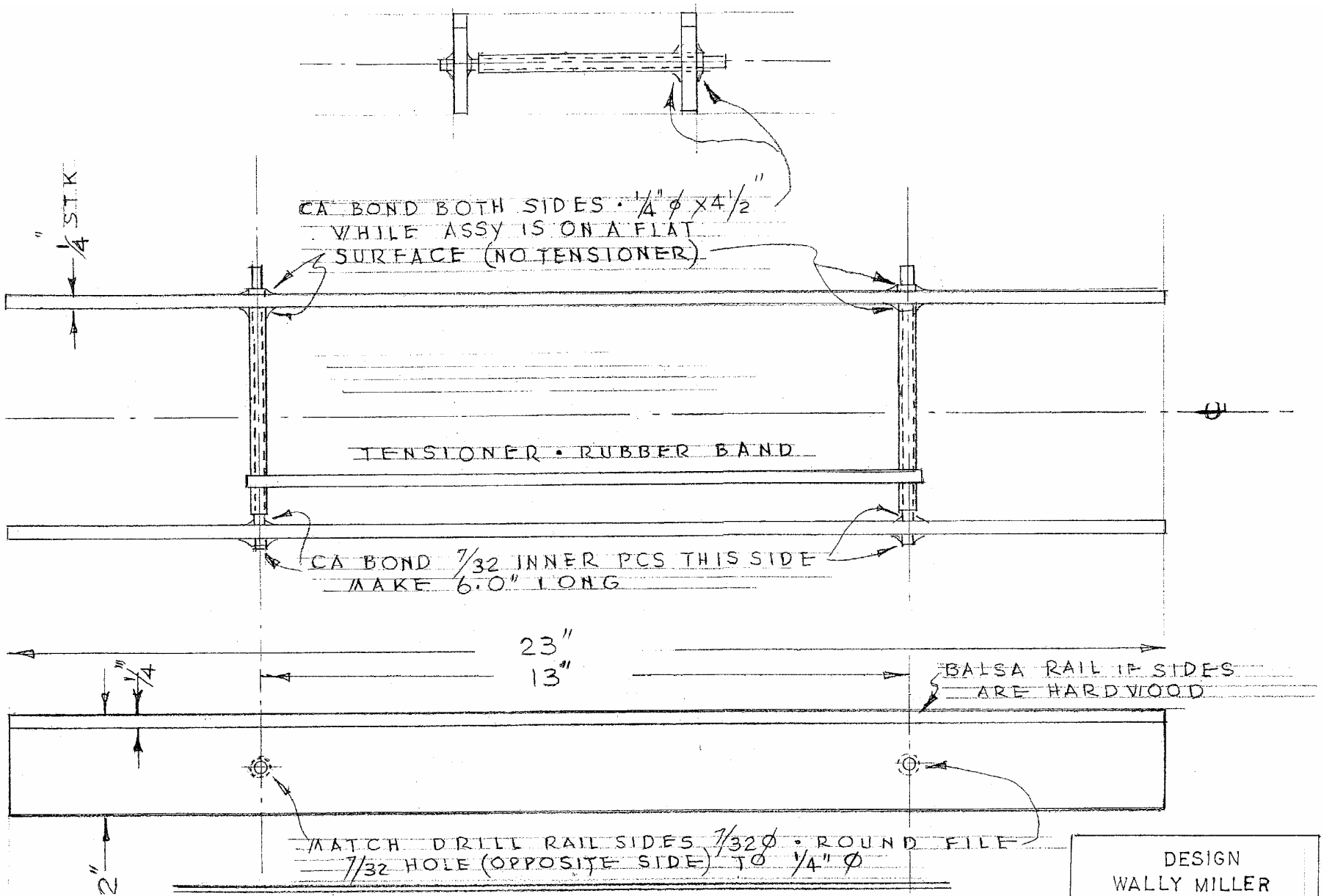
This system has been used in the Northwest for a number of years. It is simple to construct, allows for the most economic use of your film and does a great job with very little effort. A sketch for EZB, PP, etc. is shown.
For R.O.G. Stick I use a 16.0 x 2.0 x 3/16 with 2.5 & 4.5 tubes. This same jig is also used cross grain for Mini Stk; stabs, props. For Intermediate Stk. a 30.0 x 2.0 x 1/4 with tube lengths of 5.5 & 7.0 are used. F1D might need a 3rd tube due to the width required. To use this jig, prepare your film on a flat surface in the usual way, coat 2 rails with a heavy petroleum, like lip balm or stick deodorant: align the coated rails near one end, parallel to and at a slight angle to the stock, them lower them onto the film, press down, tuck in the excess with a small brush. Them with arms on the table, hold both ends, slowly lift one corner and blow while rotating the jig. Minor adjustments may now be made. Next, adjust for desired amount of sag. A little more is better than not enough. For bonding to your structure, Rubber cement or 3M-77 spray adhesive may be used. I prefer water thin rubber cement as it allows for accurate positioning and makes a nice smooth job. Once in position a small brush and thinner work fine.

Trimming is done with a lightweight soldering iron (#42 Unger) that has a coil of # 20 (.035) copper wire wrapped around the end with a 5/8 piece sticking out, this acts as a heat sink, never to hot or cold. Do not trim to close, leave about 1/32 excess as well as a few tabs to cut away last. Remove as much unwanted film as possible prior to releasing the tabs. Touch up any rough areas with thinner and a small brush.

This information should have been passed around years ago. Since it was not, we now have a "Later is better than never"

All flights are good, some just
last a little longer.

Wally Miller

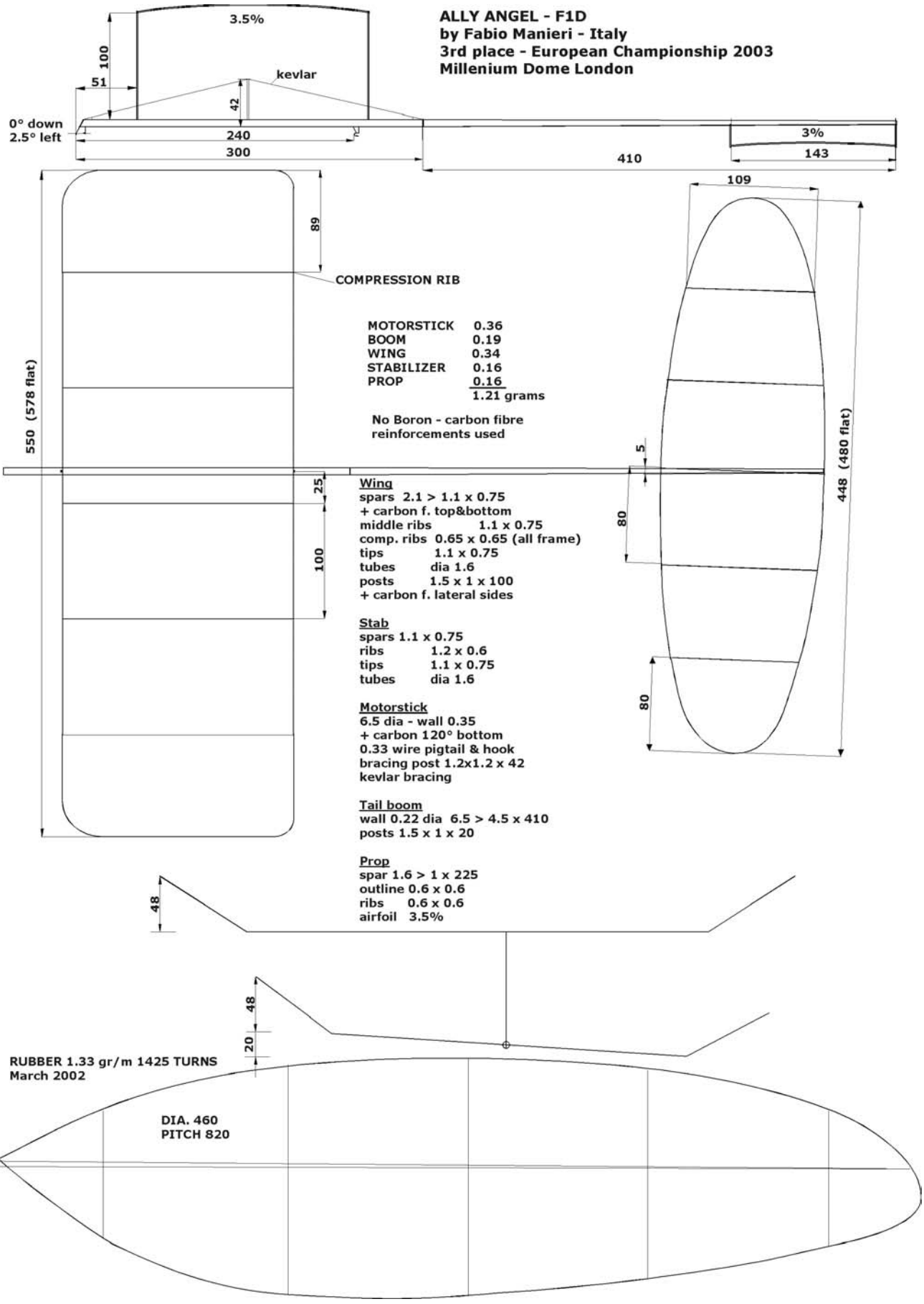


TELESCOPING COVERING JIG

EASY B / PENNY PLANE SIZE

DESIGN
WALLY MILLER
1995

DRAWN
FRED T. HOLLINGSWORTH
AUG. 2003


ALLY ANGEL - F1D
by Fabio Manieri - Italy
3rd place - European Championship 2003
Millenium Dome London
3.5%
100
51
kevlar
42
0° down
2.5° left
240
300
410
3%
143
109
89
COMPRESSION RIB
MOTORSTICK 0.36
BOOM 0.19
WING 0.34
STABILIZER 0.16
PROP 0.16
1.21 grams
No Boron - carbon fibre
reinforcements used
550 (578 flat)
5
448 (480 flat)
25
100
80
80
Wing
spars 2.1 > 1.1 x 0.75
+ carbon f. top&bottom
middle ribs 1.1 x 0.75
comp. ribs 0.65 x 0.65 (all frame)
tips 1.1 x 0.75
tubes dia 1.6
posts 1.5 x 1 x 100
+ carbon f. lateral sides
Stab
spars 1.1 x 0.75
ribs 1.2 x 0.6
tips 1.1 x 0.75
tubes dia 1.6
Motorstick
6.5 dia - wall 0.35
+ carbon 120° bottom
0.33 wire pigtail & hook
bracing post 1.2x1.2 x 42
kevlar bracing
Tail boom
wall 0.22 dia 6.5 > 4.5 x 410
posts 1.5 x 1 x 20
Prop
spar 1.6 > 1 x 225
outline 0.6 x 0.6
ribs 0.6 x 0.6
airfoil 3.5%
48
48
20
RUBBER 1.33 gr/m 1425 TURNS
March 2002
DIA. 460
PITCH 820

KISS RUBBER STRIPPER

January 2004, by Marcel Lavoie

This is my version of the Arthur Smith/Adolf Haas rubber stripper, photos of which were circulated in March, 2003 by Neil McLeod of Australia on the Free Flight Mailing List. Long ago I had heard about the KISS principle(Keep It Simple Stupid), and I apply it to many situations, and here was a chance again to go with simplicity. That model required working with metal which I might have been able to do, but it immediately occurred to me that a simpler version could be devised based on the same principles. That change would be to do away with the top cover and make the top a curved surface rather than flat , the idea being that, with this modification, the rubber would remain in contact with stripper while being pulled through. Equally important, for a homemade product, the construction could be of easily workable materials, such as wood and plastic sheet. I made two of these strippers, that is, I built the second one using some parts of the first one. The first attempts at stripping rubber were not very good, which is pretty normal for a prototype. The edges of the rubber had a wavy appearance, not just in appearance, but were wavy. I concluded that drag was possibly the cause, and to correct that, I narrowed the end of the blade to about 1/8"(3mm). That made all the difference, and now the cuts were much, much better. There still seemed to be too much drag however and I tried different solutions, finally settling on Baby Powder(talcum powder) as a lubricant. I started stripping some rubber and finally had to stop because I still needed to keep some wider strip! It worked beautifully. I don't pretend that this is in the same class as a precision stripper selling for $150 or more, but I believe it can be quite effective with some practice. I imagine the expensive strippers also require a knowledgeable operator.

Construction: This is not a complicated project and needs only a minimal amount of tools to make. The body in my case is made of two pieces of 5/8"x5/8"x 3 ¼" hardwood. The reason for using a hard enough wood is that the woodscrews holding the two body parts together must not strip the "thread" in the side opposite from the head of the screws. Alternately, and maybe simpler, would be to use two machine screws, and 2 nuts for each screw, although one may be enough. The two pieces should be joined with the bolts/screws before cutting the curve in the top surface. This can be done on a band saw, or even with a knife if you haven't chosen teak or ironwood! Round off the edges and the corners a bit so that the tool is comfortable to hold in the hand. The plastic guides are about 3/64" x1/2" x 3 1/4". This thickness allows enough depth keep the rubber in place and at the same time it is not too great that it prevents holding the rubber down with a thumb as it is being pulled through. At some point later on it may be advisable to mount the stripper in a vise as a third hand, and the curved top surface will prove to be particularly useful here. Elongated slots at each end of the guides are of course necessary to allow for adjustments. Drill a hole the diameter of the screw and use a small round file. The base on which the rubber will ride on is important enough, although with proper lubrication, one might get away with a less than ideal slippery plastic. If Teflon sheet is available, that would be ideal. I don't have that. The slit or space for the blade is very important. It is probably preferable at make the base running surface in two pieces with very square edges(you don't want a tilted blade!). These running surfaces have to be fixed to the body so that their edges are perfectly even with the inside edges of the body, there should be no space between the two pieces so that they, in fact, hold the blade tightly between them. There should not be much of a problem in tapping the holes on the top to receive the screws for the guides. Drill an undersize hole and use the screw itself to form the tread. The inside of the hole should be hardened($ store CA) and re-tapped. I used a one piece running surface and cut a narrow slit. To do this I assembled all the parts, and, leaving just enough room to slip in a thin blade, I cut the slit "in situ" so that assured proper alignment. The blades I have used are the twin razor type, about ¼" wide. I have found the Dollar Store variety to be quite adequate for this. The ones I have can be cut easily with ordinary scissors, but they should be sharp, dull scissors will not give a clean cut.

The top end of the blade should be just below the top surface of the guides. This will be enough to cut the rubber and not the fingers! The Dollar Store scissors I have cut very well. Do not use a power tool to cut the blade, it will heat the thin metal and render it useless.

There are two tools that are of equally simple construction, the Gap Setting Tool(we're getting formal here), and the other item for measuring the width of the stripped rubber. Use the first one in conjunction with the second one to initially set the gap between the blade and the right edge of the guide. Say we want the strip to be .08" wide, insert the gap tool in the opening, slide it down to the .08 point, then put a pencil mark on the gap tool. Use this to set distance between the blade and the right guide. Cut a test strip and check the width. A few attempts will be needed to get close to the width required.

The photos should help to understand these notes. I leave it up to the each individual to modify as he wishes, but there are a few basic things to keep in mind….. the curved top surface, the narrow part of the blade, slippery base and lubricant, and finally, don't expect miracles.

Marcel Lavoie
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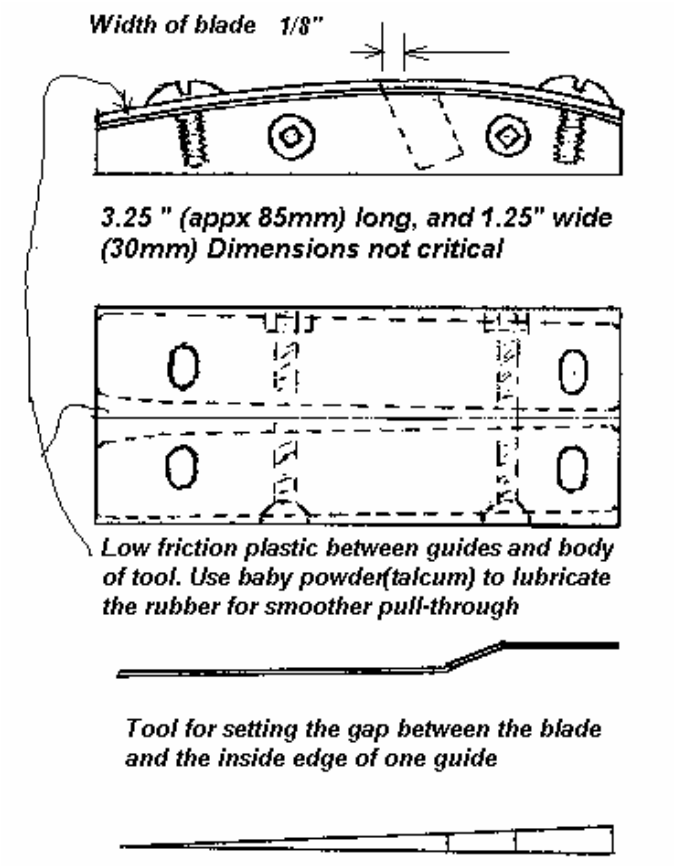


BAD NEWS FOR AIR DOCK

Indoor Friends, Bill Hulbert has asked me to be the bearer of sad tidings. Lockheed/Martin has received a $40 million contract to build a high altitude geo-stationary Airship. They are cleaning out the south end of the hangar. They will no longer allow us to fly in the Air Dock. The planned airship will be 500ft long and 150ft in diameter. The cubic footage will be in the range of 5 million if I remember correctly. Solar cells are going to be on the top and fuel cells on the bottom. The ship will cruise at an altitude of 65000ft (in the tropopause), and a GPS will be used to maintain position. Sorry about the news. We have lost another site

Hack

MILLENNIUM DOME, 2004

May 24th/25th. 35 c.m, F.1.D, F.1.M, F.1.L

June 3rd/4th. Mini Stick, F.1.L, F.1.M,

June 28th/29/ 30th. INDOOR NATIONAL CHAMPIONSHIP. F.1.D, F.1.M, F.1.L, L.P.P, Mini-Stick, 35 c.m, No Cal Scale, Provisional date for F1D Eurotrials, incorporated into the Nats F.1.D contest.

June 28th Limited Penny Plane, No Cal (Profile Scale).
(Various H.L.G & Catapult classes may be held during these dates also. News awaited!)

June 29th. F.1.M, F.1.L, (For the Houlberg Silver Medal), Mini-Stick.

June 30th. F.1.D, (For Houlberg Gold Trophy), 35 c.m.

Also taking place on all 3 days, 2 flights each day, Trials (For the Aeromodeller Trophy) to determine team of 3 for Indoor World Champs 2006

All persons coming, must be BMFA members. If your name and number has not been notified to me before, please send details on a postcard to the address below.

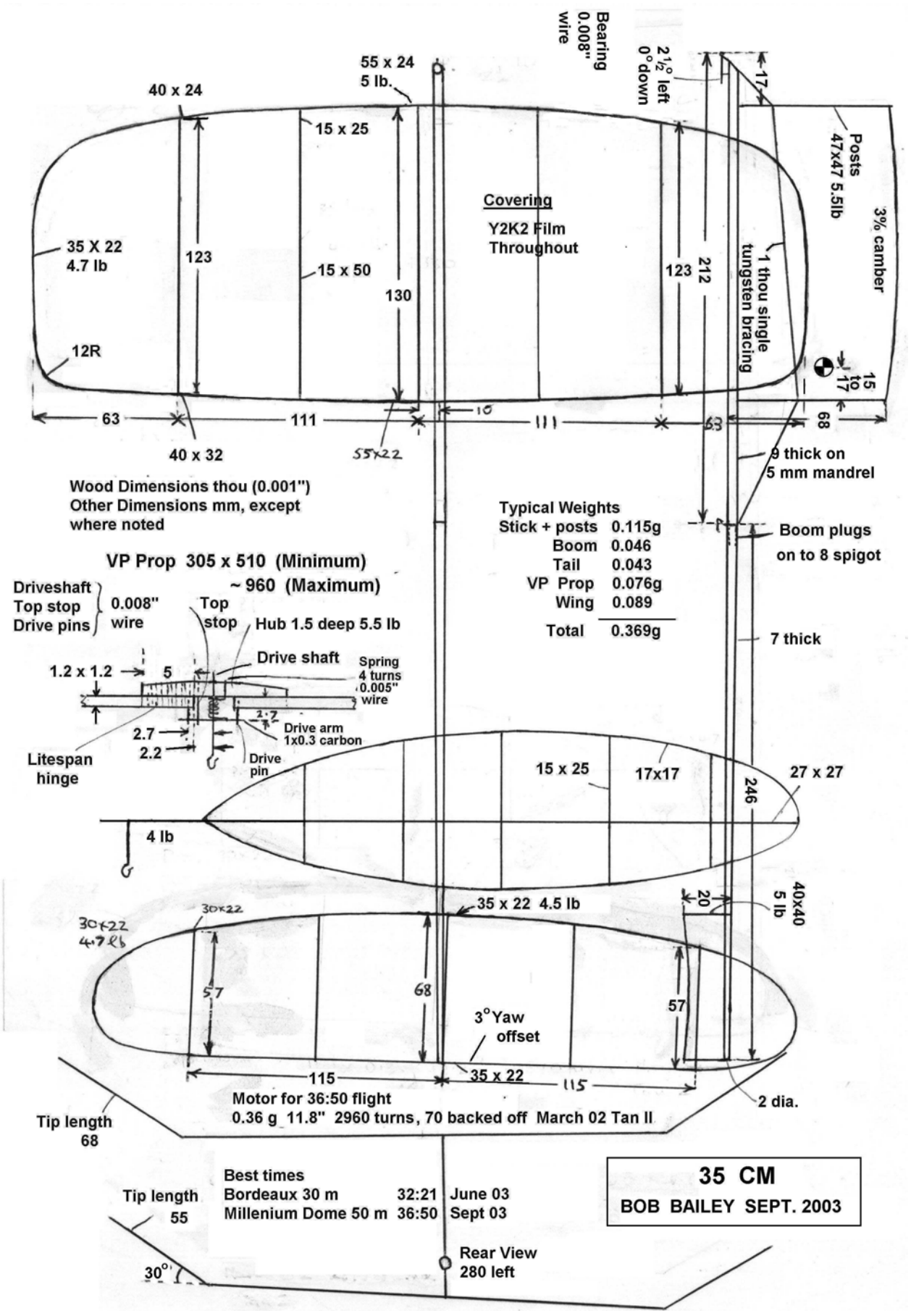
Please include your car registration number, for the security at the gate!

All these Dome dates are mid-week for cost reasons.

Scale & Fun Fly members are welcome at any of these events, subject to any interference to the flimsy's.

Definitely NO RADIO CONTROL !

Laurie Barr. Herries Cottage, Winter Hill Road,
Pinkneys Green,
Maidenhead,
Berks. SL6 6PJ. Tel 01628 487544
E-Mail lgbarr@tiscali.co.uk


Bearing 0.008" wire
2½° left 0°down
55 x 24 5 lb.
40 x 24
15 x 25
17
Posts 47x47 5.5lb
3% camber
Covering
Y2K2 Film Throughout
35 X 22 4.7 lb
123
15 x 50
130
123
212
1 thou single tungsten bracing
12R
15 to 17
63
111
10
111
63
68
40 x 32
55x22
9 thick on 5 mm mandrel
Wood Dimensions thou (0.001")
Other Dimensions mm, except where noted
Typical Weights
Stick + posts 0.115g
Boom 0.046
Tail 0.043
VP Prop 0.076g
Wing 0.089
Total 0.369g
Boom plugs on to 8 spigot
VP Prop 305 x 510 (Minimum)
~ 960 (Maximum)
Driveshaft
Top stop
Drive pins
0.008" wire
Top stop
Hub 1.5 deep 5.5 lb
Drive shaft
Spring 4 turns 0.005" wire
1.2 x 1.2
5
1.7
2.7
2.2
Drive arm 1x0.3 carbon
Drive pin
Litespan hinge
7 thick
15 x 25
17x17
246
27 x 27
4 lb
35 x 22 4.5 lb
20
40x40 5 lb
30x22
30x22 4.7lb
57
68
57
3° Yaw offset
115
35 x 22
115
2 dia.
Motor for 36:50 flight
0.36 g 11.8" 2960 turns, 70 backed off March 02 Tan II
Tip length 68
Best times
Bordeaux 30 m 32:21 June 03
Millenium Dome 50 m 36:50 Sept 03
35 CM
BOB BAILEY SEPT. 2003
Tip length 55
Rear View 280 left
30°

WINDING STOOGE
By Larry Coslick

Material

1/2X1/2X24 Hollow aluminum or steel square tubing (Small Parts) Aluminum, PART # &-LSAT-063/08 24" $2.45

The base is made from .062 aluminum sheet 5" LONG, 3" high in front, 2.2" high in back and the foot is 1.5" wide (Small Parts) B-SMA-063 6"X12" $4.65

The band that holds the winder is .062 aluminum .7" wide and 1.75" long aluminum sheet

(Small Parts) B-SMA-063 6"X12" $4.65 4 EA4-40 Machine Screws and Nuts

1 EA Adhesive Measuring tape (Small Part) RUA-4 1/2X4' $ 6.50 (optional) one can be made up on your computer. Take it to Kinko's and have them transfer it to a clear sticky back sheet.

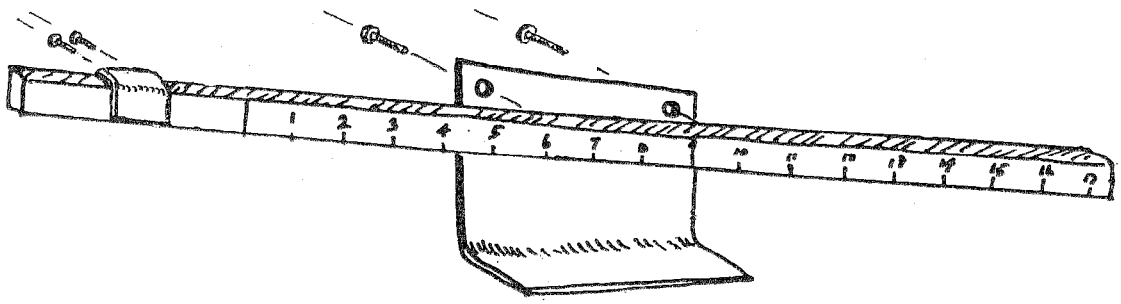
Home building supplies carry hollow steel tubing in 4' lenghts for about $5

Tap the tube with a 4-40 tap or secure the base and band to the tube with four 4 4 0 machine screws and nuts.

The stooge can be permanently mounted or attached with a C clamp. Clamp the torque meter to the stooge with a small C clamp.

The distance from the winder and torque meter hooks is the same as between the prop hook and the models rear hook.

SMALL PARTS
13980 NW 58^{m} ST.
MIAMI LAKES, FLORIDA 33014-0650
THEY TAKE ORDERS OVER THE PHONE
ALLOW THREE BUSINESS DAYS FOR DELIVERY 1 800 220 4240



BRAKE FOR 15:1 YELLOW WINDER

By Larry Coslick

Tools and Materials

1/8" brass tubing for support arm, 9/32" brass tubing for bushing, .039" music wire, .250' fuel line, thick CA, 2 EA of 4-40 machine screws, 4 EA of washers and lock washers. (from hobby shop)

.7 TO .8" car wheel. (Wal-Mart, Kid Connection brand, Power Racer Series, $1.97)

.062X.45X2 " Aluminum sheet stock for mounting shoe. Make Shoe 1.5", Support above nut .3" vice, long nose wire cutting pliers, round nose pliers , vice grips, Dremel Tool, #33 drill bit.

Construction

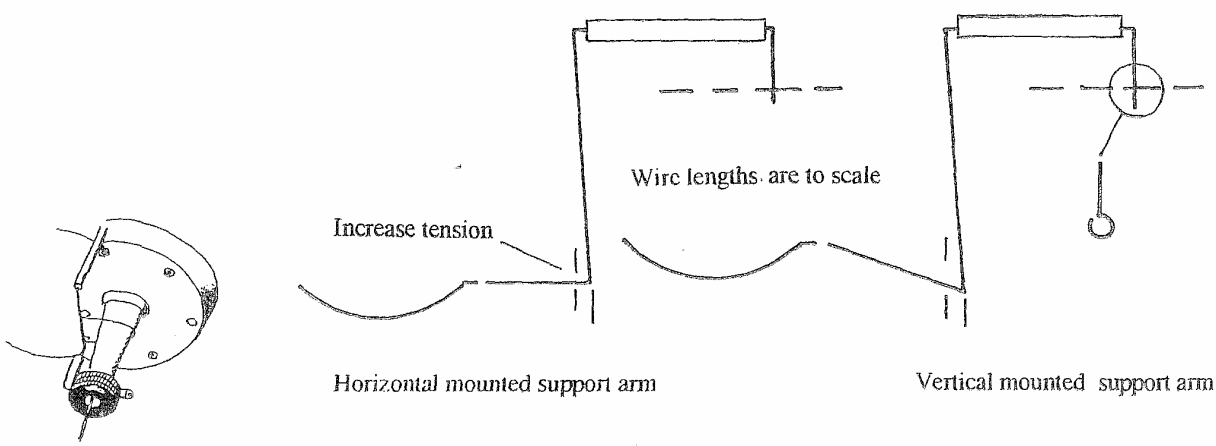
The blue output shaft needs to be bushed with a short piece of 9/32 OD tubing to mount the wheel, Cut off a piece of brass tubing .325" long, square off the end if necessary and de-burr. Mount the winder in an open vice with the jaws open just enough to support the back of the winder. Run the brass tube around the winder hook and position it over the blue output shaft. Take a pair of pliers with the jaws slightly open and place them around the winding hook wire and on top of the brass tube. Tap the pliers next to the hook with a hammer. After a few taps, rotate the winder handle to make sure the tube is running true. There will be about.062" of blue showing on the out-put shaft when you are finished. No adhesive is needed to hold the tubing on the shaft.

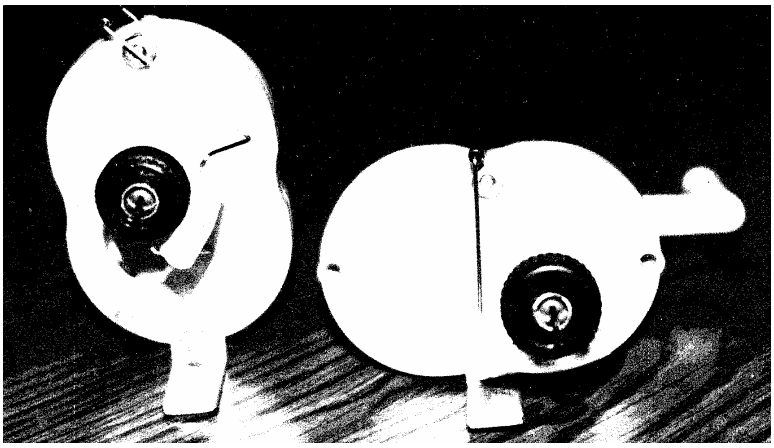
The break can be made from a soft plastic car wheel, a knurled aluminum collar with a set-screw, or three sections of telescoping tubing faced with sandpaper. The wheel that I used was .7"OD X .3"wide from the Wal-Mart car. Push the tire off of the wheel and cut the axle collar off flush with the back of the wheel .Use a pair of vice grip pliers to hold the wheel while you drill a .186" hole through it. Ream out the hole until it is large enough to use a Dremel tool to enlarge the hole to fit the 9/32" brass tube. Take care to insure that the hole is centered. Install the wheel and then the tire on the brass tube already mounted on the winder. Glue the wheel in place with thick CA. Do not get any CA on the output shaft.

To make the support arm, take a piece of .039"music wire and form the loop that holds the 4-40 screw to the winder. Bend the first ninety degree bend and place a section of ,125" brass tubing on the wire. Then finish the rest of the bends as shown. Place a section of .250" fuel line on the wheel end of the wire and attach the wire assembly to the winder. I have found out by trial and error that the tubing only has to strike the wheel on one quarter or less of its surface. Adjust the tension by increasing the angle on the bend closest to the wheel. You will be able to rotate the output shaft by hand; this is normal. When the tubing is positioned correctly and the tension is right, the break will hold to one-inch ounce of torque. Make your adjustments using a torque meter

The shoe that holds the winder to your winding stooge is made from .062" aluminum stock and the first bend is made in a vice. Make the second bend with a pair of pliers. If you use the horizontal mounted winder set up, cut off the aluminum support above the nut so that it only extends above the nut 3" The shoe support that is shown in the picture is too long on the horizontal winder and binds the gears if the nut is tightened too much.

I've made several winders with breaks and the horizontal ones are the most popular. For extra holding power place a .015" wire strap around the yellow out put housing as shown on the drawing. If you make the horizontal winder, remove the two Phillips screws and drill out the holes with a # 33 bit.





LIFE AFTER Y2K/Y2K2 FILM

By Alan Cohen

By now we have all heard the sad news that Y2K/Y2K2 film is no longer available. If you have been holding on to the hope that one day soon another miracle roll will mysteriously appear, you may finally put that thought to rest. According to the scientist at DuPont responsible for allowing us access to the last batch, there are absolutely no more rolls in existence, let alone available.

How do I know this? My involvement in this 'tragedy' came about when it was brought to my attention that Gene Joshu (the previous supplier of Y2K film), after being unable to secure more film, felt it best to pass on the information he had acquired up to that point to see if someone else might have better luck. We had several conversations earlier this year during which he told me everything he knew regarding the history of Y2K/Y2K2 film and gave me his blessing in locating additional supplies. He even offered to drive his equipment out to me and finance my first roll. Considering he is in his late 70s and lives in Illinois and I live I NJ, I thought it a very commendable gesture. Gene is truly one of the great benefactors of this hobby.

Since I had a contact at DuPont in Delaware, I thought I would pick up the ball and try and run with it. At first it was like running in molasses. I called distributors; I called end users in the capacitor manufacturing business; I called my contact at DuPont. Every phone call turned up a dead end.

I learned from my contact, who was DuPont's marketing representative for polyester Mylar film in the US, that the thinnest film currently manufactured is what is know as '3-gauge' film, or .75 microns in thickness. I also learned this product is available through normal distribution channels and is currently available to modelers as PPP film.

When I inquired about thinner film, I was told that to have a batch made for us would require what amounted to a $900,000.00 minimum order. After catching my breath, I asked what would be the best way to find some more of this thinner film. He suggested searching the end users, but I would most likely discover that most of it was for the military or confidential R & D and would probably not have much luck. He was right. To be more precise, I had no luck whatsoever.

During this process I learned that DuPont's ultra-thin Mylar film was no longer being produced at the Circleville, Ohio plant and the operation had moved to Luxembourg. Since my one and only language is English, I didn't perceive this as a good sign. The good news was, I was told that the equipment in Luxembourg is far superior to what they were using in Ohio and the film would be much higher quality. The problem of getting some however, still remained.

As I feared, a phone call to Luxembourg did not prove fruitful. I learned that the thinnest film they had was the 3-gauge and even at that we needed a $30,000 minimum order and even at that we could not buy direct.

In desperation I went back to my contact in Delaware. When I mentioned the name of the scientist who first helped us, he surprisingly told me he knew him well and gave me his direct phone number. After leaving several voice messages, I received the phone call I'd been waiting for. Since it had been over four years since the last batches of film, his memory needed some refreshing, but after almost an hour on the phone, we were getting on the same page. He confirmed my fear that there were no more rolls of Y2K/Y2K2 left at that facility. When I tried to inquire about obtaining more, we ran into a bit of a communication barrier since we think of this film in terms of microns of thickness and milligrams/100sq-in. and they think of it in terms of density and gauges. When I gave him my estimation as to the weight of Y2K/Y2K2 being 38-40mg/100sq-in., he was able to calculate that Y2K/Y2K2 was approximately .4 - .42 microns in thickness. He also mentioned that he recalled the rolls of film we got previously and confirmed our findings of the relatively high degree of inconsistency in that *'experimental'* product.

My knowledge was expanding, but I still didn't have any film yet. A breakthrough came when he told me that occasionally thinner film is made on a special order basis and that scientists have a way of 'squirreling away' a few rolls for R & D purposes. He promised to contact his scientist counterparts in Luxembourg and see what he could do.

The next few days seemed like an eternity, but the wait was worth it. He said there was indeed a roll or two that was 2-gauge film, or .5 microns and that they would waive their minimum order and allow us to purchase as little as one roll. They were doing us a big favor in allowing us access to this stuff, but I basically had to take a huge risk since there was no way to absolutely confirm the weight of this film and whether we could use it or not. Even one roll cost several thousand dollars and I didn't have the option of saving the receipt and returning it! This wasn't Wal-Mart I was dealing with! Tim Goldstein graciously offered to finance this endeavor and assumed the substantial amount of risk involved.

After going through the grueling process of being set up in DuPont's customer database system, I took the plunge and ordered a roll. The next few weeks filled me simultaneously with an intense sense of excitement and utter dread.

The box arrived late March and, after a quick analysis, I discovered that we have a very nice product here. It is not as thin as Y2K/Y2K2, but it is significantly thinner and lighter than PPP; I'm guessing at least 20% lighter. It is a very consistent iridescent green/red color and very easy to work with. It crinkles nicely and more importantly, uncrinkles even nicer. It is much tougher than Y2K/Y2K2 due to the evenness across the width and lack of variations in thickness. I don't expect there to be nearly as much waste as with Y2K/Y2K2.

Many are asking how this new film compares with Y2K/Y2K2. Unfortunately, Y2K/Y2K2 had some pretty extreme variations. I use the names interchangeably, because although we have come to know them as different items, according to DuPont they are not. They are one and the same. Some sections were very light, others much

heavier, hence the coloration fluctuations, striping etc. In speaking with Gene, he informed me he that the first rolled he picked up was called Y2K, the second seemed lighter and he called it Y2K2. On average Y2K2 was probably lighter, but there were certainly sections (rolls) of Y2K that were lighter than other sections of Y2K2.

According to DuPont, this was an admittedly experimental endeavor using rigged up equipment not originally designed for this purpose. The new facility is putting out a much better product.

Just as with Y2K/Y2K2, the new film is not being offered with any claims to weight. It is what it is, the thinnest, lightest film available. Yes, it is the same material and therefore the same density. I hesitate offering it making any claims to weight, because I cannot guarantee it. I also don't want to be in a situation where I am `grading' the film. What I can tell you for sure is it is .5 microns and it is probably 20-25% heavier than the lightest Y2K2. But it is also probably lighter then the heavier rolls of Y2K/Y2K2. It is also probably 30-35% lighter than PPP. I can also tell you it is beautifully consistent across the width and a dream to work with

The bottom line is the new film is the lightest available to us. DuPont has no intention of making thinner film. Comparing it with Y2K/Y2K2 is almost mute, because it no longer exists. Anyone who would like to try it can certainly offer their opinion and results just as we did with Y2K/Y2K2.

This new film is called **O-S Film** which stands for 'One-Sided' film, the nickname given by DuPont's scientists to any film that is thinner than their standard 3-gauge commercial product. They consider it so thin as to have only 'one side'.

It is now available in 12.4" x 25' rolls at $32 per roll or 12.4" x 50' rolls at $64 plus $3 shipping within the US and $5 shipping outside the US for either size roll. As before, a portion of the proceeds will be used to continue to support indoor duration modeling. See the website at www.osfilm.com for online ordering via PayPal and additional ordering information, or contact:

OS Film

Available World Wide Directly from:
Alan Cohen — alan@OSFilm.com
2115 State Route 31 — www.OSFilm.com
Glen Gardner, NJ 08826 — Phone/Fax 908-537-0111

Also Available from
Free Flight Supplies — mike@freeflightsupplies.co.uk
12 Marston Lane — www.freeflightsupplies.co.uk
Eaton — phone/fax UK 01603 457754
Norwich — Phone/fax overseas + 44 1603 457754
Norfolk NR4 6LZ
UK

From April 2004 Free Flight News

CIAM PLENARY MEETING 2004
The CIAM Plenary meeting was held in Lausanne from March 11 to 13th. The first day was a CIAM Bureau meeting and the second and third days the full Plenary meeting.

Unusually, this year there was no Free Flight Technical Meeting but a number of free flight people were present including Pierre Chaussebourg, Mike Colling, Martin Dilly, Daniel Iele, Wilhelm Kamp, Ian Kaynes, Andras Ree, Kurt Sager, Gerhard Wobbeking, and Anselmo Zeri. Those who were not tied up with other delegate or Bureau duties held an informal free flight meeting, mainly devoted to Championships organisation matters in general and Argentina in particular.
--snip--
The four-year rule cycle for World Champs classes means that changes for the indoor world champs class F1D could be introduced at this meeting ready for application in January 2005. There were no proposals about F1D on the agenda and so the class stays as it is for the next four years until 2009. The agenda had only a few free flight items (which is why there was no FF technical meeting this year) and these lead to just one minor change. The F1L (EZB) quote alternate inch measurements in brackets after the metric quantities and Hungary proposed to remove these. For the span 458mm is no problem but it was observed that 76mm chord is actually slightly less than 3 ins and would result in models built to exactly 3" being outside the rule by 0.2mm. Despite this it was chosen to continue with using the simple 76mm measurement and this change was passed.
--snip--

From an e-mail received from Laurie Barr
Did you know, that the FAI at the recent CIAM meeting, (At the behest of Andras Ree), decided to stop stating the 3" size, as well as the metric equivelant, and rounding DOWN the metric size to 76.m.m, and to delete any reference to 3", in F1L.rules.!.

Three inches in metric is actually 76.2 m.m, and this of course means that every model we and the Americans (And others) have made to date,is now illegal !!**??!

I cannot for the life of me, understand such a stupid and arbitrary decision. I rang Mike Colling, and he said "It is only .003" thou. Actually, .2 m.m is .0078" thou, and any 3" chord model, put inside a caliper vernier, set at 76. m.m, will make the rib bow upward, very distinctly, and would not pass at -Say- Johnson City USIC.! or say- The up coming Bordaux meeting we all are attending !

I also rang Ian Kaynes, and he said it could (And should be rescinded) but we have to put a proposal at the next Indoor tech committee meeting, to that effect, and on to the FAI/Ciam. Do you all agree with this?

Laurie

Publisher's thoughts:
As a USA based flier the FAI has always seemed to be a remote and unreachable body that hands down rules from their lofty halls and we just have to accept them. From the above news it appears that others may share a similar thought. I find the whole subject of how the FAI works to be difficult to fathom and even more difficult to become involved in. Seems that our representative to the FAI is through the AMA and we all know how well they look out for our best interests. I have no idea how we become more involved, but it would seem that once again we fliers who actually participate in the sport are having rules forced upon us without any of our input. Anyone out there feel up to putting together a little article for the INAV readership to allow them to understand how the FAI can implement rules that the majority of indoor fliers are neither aware of or in support of?

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