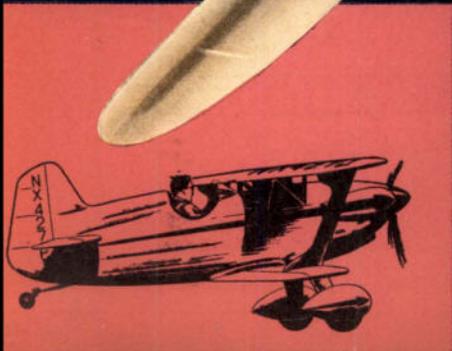


RCMW-FSP

March 2018



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Roland Friestad
1640 N Kellogg Street
Galesburg, IL 61401
USA

For the Model Builder and Flyer - March 2018 Issue



Full
Size
Plans



We have several good articles and plans for this issue, as always. First up is a plan for a little known DeBolt design, the SONIC CRUISER. We received a NOS (New Old Stock) plan and instruction manual on loan from Bill Kuhlman and decided it should be offered to our subscribers. Take a look.

Bob Aberle is back for what he says is probably his last design for us, a hybrid version of the well known Midwest SNIFFER. Hybrid because it uses the shell of an Atwood Wasp engine as a simulated power plant but is actually electric motor powered. And of course RC instead of FF. We are planning one or more articles on making these electric power units disguised as glow or ignition engines. Watch for them.

There appears to be an increased interest in some of the older glider designs so we've included a full size plan for the Jasco FLOATER, a very attractive model with the distinctive appearance of a typical Frank Zaic design.

Stuart Warner's HEATH MIDWING RC scale design was published in Model Builder but he loaned us the original inked Mylar drawings so that we could make a really nice full size plan for our subscribers.

The GEE BEE UC scale model is the product of Paul Del Gatto and appeared originally in Model Airplane News 1961 annual issue. Nice looking model but takes a bit of power to get it moving as Del Gatto tells us.

A real winner for UC Stunt was the ARES from the May 1960 issue of Air Trails magazine. Pretty too. A reader sent in a couple of photos of the ARES that he had converted to RC. He says it make a good RC shop too.

The Model magazine download for this month is the very first issue of AIR TRAILS from February 1937. You don't see these oldies around much any more. The publisher was in the process of switching over from a pulp magazine with flying adventure stories to a model magazine and this was one of the early efforts at the switch.

Our book download for this month is another Frank Zaic book, MODEL GLIDER DESIGN. It came out in 1944 as a nearly 200 page book on how to keep flying despite the shortage of materials and unavailability of engines during WWII. Lots of good technical stuff and many of the usual Zaic drawings.

The SHOP RATE POSTER on page 19 can be printed out and hung in your model building area so that you can just point to it rather than going into a long explanation of what you charge for different model building services. Or come and visit us at the Toledo Expo and pick up your free poster.

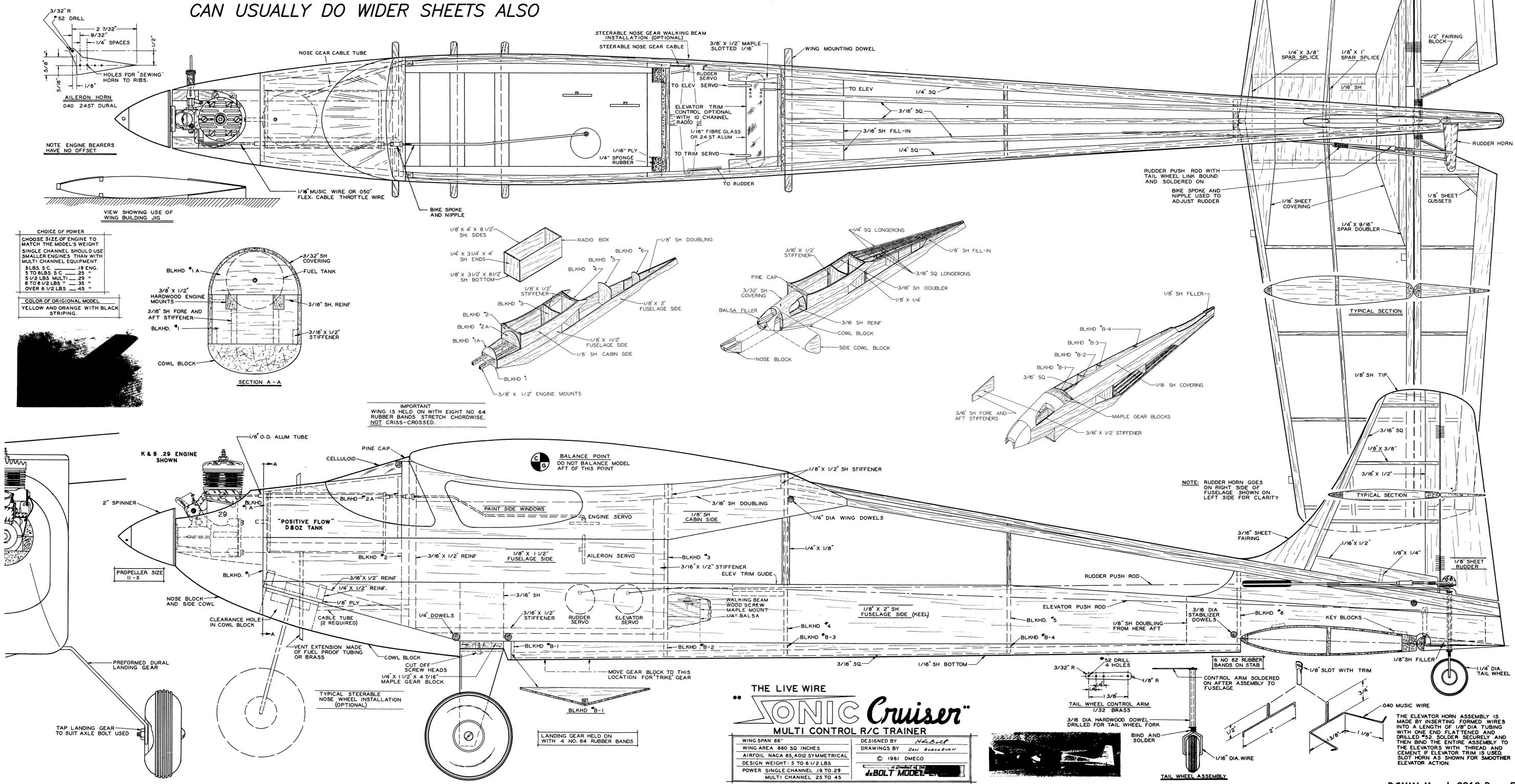
Until Next Time - Keep 'em Flying - Roland Friestad, Editor

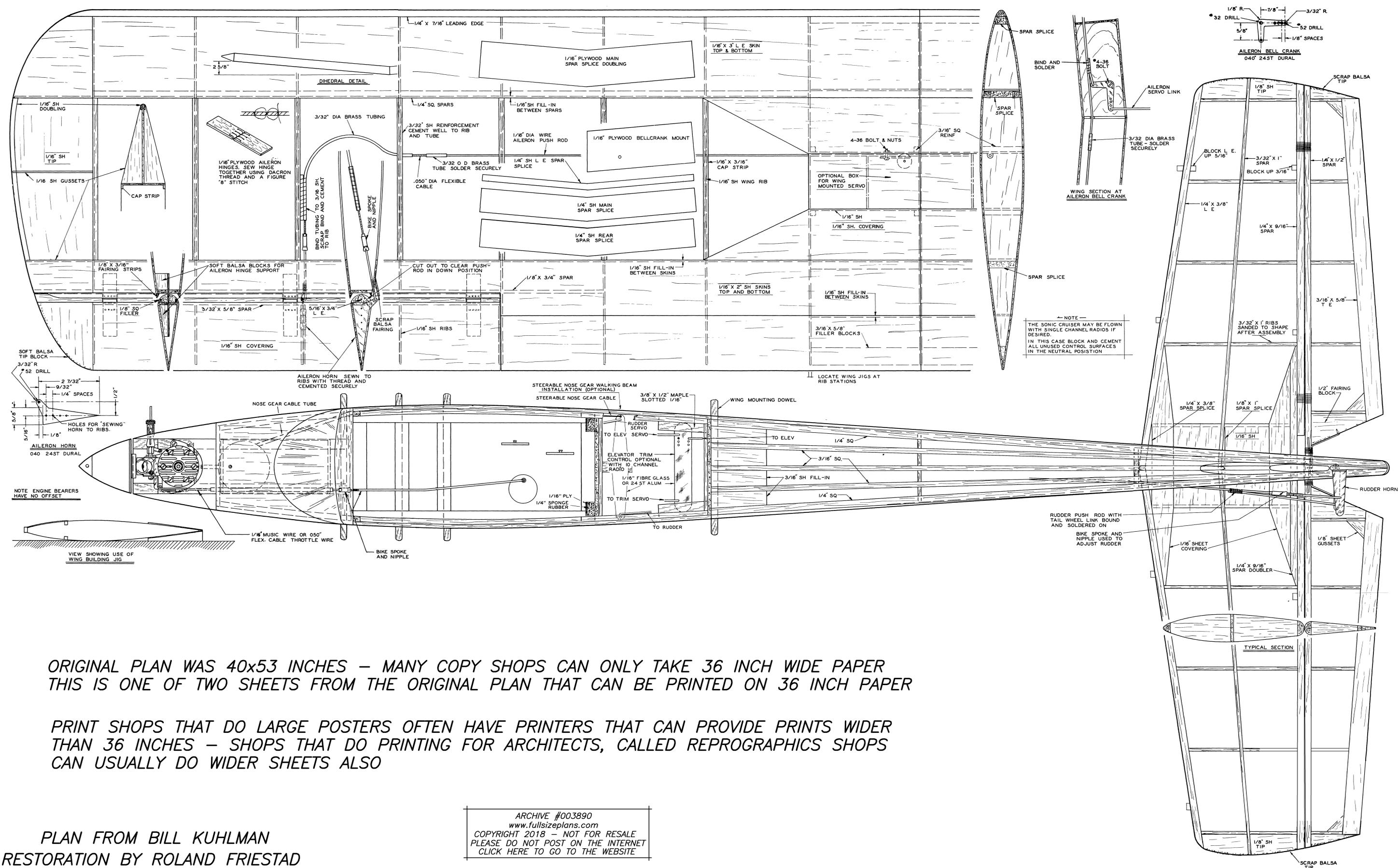
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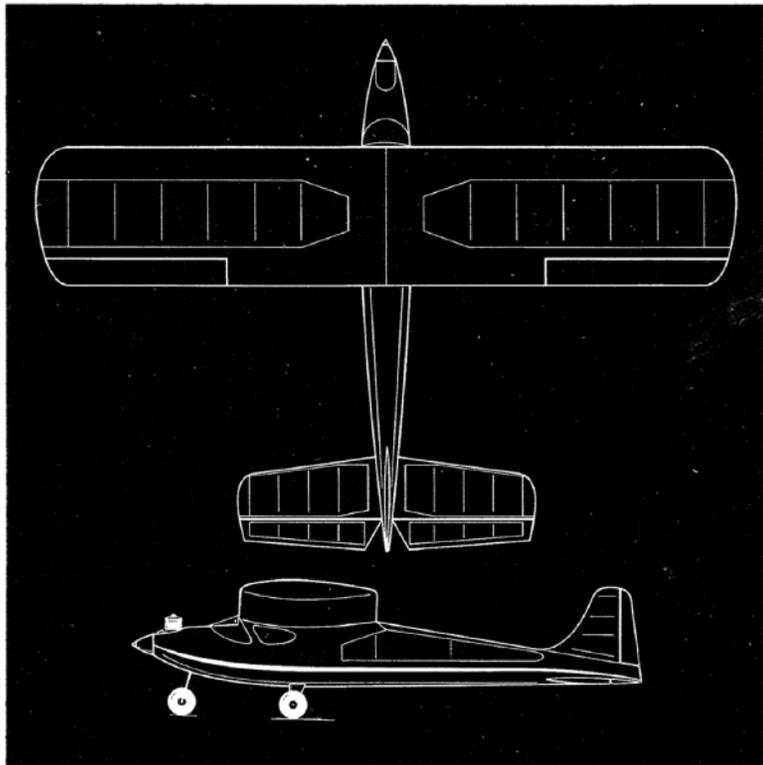
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~~LIVE WIRE~~

"SONIC Cruiser"

ASSEMBLY and OPERATING INSTRUCTIONS



deBolt Model Engineering Co.
3833 HARLEM RD., BUFFALO 15, N. Y.

DeBolt SONIC CRUISER

Assembly Manual

Compliments of Bill Kuhlman

Notes by Ye Editor

A friend and fellow modeler, Beppe Fascione e-mailed your editor looking for plans of the DeBolt SONIC CRUISER, apparently one of these "hard-to-find" and out-of-production kit plans. RCMW has well over 10,000 plans in the archives and can often provide a plan that may not be available from the regular sources. If we have it, there is generally no charge for a full size PDF file that can be printed out at a local copy shop.

In this case, we had to say, "Sorry but we don't have that one," and then a fellow modeler, Bill Kuhlman contacted us and said he had just what we were looking for. Bill sent a pristine original copy of the kit plan and we digitized it using high resolution scanning (normally 400 dpi) and cleaned it up a bit. Although it was in like new conditions, plans that have been folded will often have lines where the folds occurred. These can be cleaned up using the proper software.

The plan was digitized, cleaned up and copies sent to Bill Kuhlman and Beppe Fascione. The original is being returned to Kuhlman. And readers of RCMW now can have a like new copy of this somewhat rare plan.

With that little story in mind, as editor of RCMW I would like to make this offer to any of our subscribers -- If you have plans that you would like to have scanned, feel free to contact me. We will do it at NO CHARGE and return the originals and PDF files if you will pay the postage.

Just contact me first, we may already have a copy of your plan in our archives in which case we would be glad to send you the file, again at no charge. There are other sources of plans out there, but we take pride in being the best.

Roland Friestad, Editor - email - cardinal.eng@grics.net

[TO DOWNLOAD THE SONIC CRUISER MANUAL - CLICK HERE](#)

Notes on Printing Large Sheets by RCMW Editor

Printing large files can be a problem. By large files I don't necessarily mean those where the file size is large in megabytes, but those that require particularly large sheets of paper to be printed as full size plans.

The DeBolt SONIC CRUISER on these pages is a good example since when printed full size its dimensions to the OUTSIDE of the black border should measure 40 x 53 inches.

Now that large format printer/plotters have become quite common at nearly all "copy shops" and office supply stores, printing large sheets is not the problem that it formerly was. Most of the printers at those sources can print on paper up to 36 inches wide by up to about 8 feet long in black and white and charge about 80 cents to 1 dollar per square foot. Color prints are a lot more expensive.

If you happen to have one such store near you another saving occurs since there is no postage needed to mail the resulting print. That postage runs between \$6.00 and \$7.00 to mail a plan, or several plans anywhere in the USA, using the US Postal Service Priority Mail tubes which are available FREE at your local post office.

The post office will even deliver and pick up the mailing tubes to your address upon request, although I usually pick them up at the post office when I go there.

Virtually all of the office supply stores can accept PDF files either personally delivered or via an attachment to an email message. Contact the store of your choice and ask if they will accept PDF files as email attachments. It would also be good to ask what they charge for mailing the plan(s) back to you. If they quote a "Shipping and Handling" charge that is a lot higher than the \$6.00 to \$7.00 actual Priority Mail charge, you might want to look elsewhere because there are a lot of suppliers out there.

Plan files in each issue of RCMW are always full size PDF files. One way to send the plans to be printed is to forward the entire issue as an attachment along with a message telling that they should print whatever page number(s) desired at 100%. As mentioned earlier, measuring the OUTSIDE dimensions of the black border will give you a quick check on whether your print is full size or not. The numbers in the upper right corner of all RCMW full size plans are the dimensions of a 100% print. Please note that the typical tolerance on commercial printer/plotters is about +/-1%.

In the event that you have a plan wider than 35 inches there are other choices. The shops that print plans for architects and engineers, usually called "reprographics" in the phone book "if you still have a phone book", will usually have printer/plotters that can handle paper wider than 36 inches. And companies that print banners and advertising for billboards and semi-trailer trucks can go even much wider. But be prepared to pay a lot more for the banner printer outfits.

Another approach would be to print it yourself. If you are using the FREE Adobe Acrobat Reader, it can do what is called "Tile" printing. This will print out large sheets on "Letter" (8.5 x 11 inches) or "Tabloid" (11 x 17 inches) sheets with alignment marks that allow you to tape the sheets accurately together. If you do this, be sure your supply of tape is adequate.

Some model builders who are running "cottage industries" selling kits and plans can also supply prints. RCMW is working on a list of these sources and will publish them in an upcoming issue.

These notes are included in this issue because the DeBolt SONIC CRUISER is too large for the commonly used 36 inch wide paper. For your convenience we have provided the plan in two formats, one at the original 40 x 53 inch size and the other two sheets, each 35 x 53 inches.

Use whichever size works best for you. We attempt to have all plans 35 inches wide or less but many of the DeBolt plans were drawn and printed in such a way that this was inconvenient.

Final note -- There may still be a few shops out there that still make what is called "blue-line" prints ("Ozalid" was one tradename). Before large "Xerox" type copy machines became common, these were the best method available. If you can find one of these shops be aware that they normally will not handle PDF files and can typically only copy from full size paper or Mylar originals.

The Hybrid SNIFFER

by Bob Aberle



You probably heard some of this background information before, but let me recap a little to bring you up to date for this new construction article.

What you are reading is my 76th article to be published in RC MICRO WORLD (RCMW). I started in the hobby in 1951 at age 13. My first model was Joe Wagner's DAKOTA biplane. It was a glow engine powered free flight model. Unfortunately it was lost early on, thanks to a strong thermal. My second plane that summer of

1951 was the Midwest SNIFFER free flight model. It was powered with the then new Atwood Wasp .049 glow engine. I got the rest of that summer with that plane before I also lost it, also out of sight.

Last year I decided to revisit the SNIFFER design, but in that case I reduced the original size (135 square inches of wing area), down to only 65 square inches. This plane was intended for the new E-20 electric powered free-flight event, for planes under two ounces total flying weight.

Early on I realized that this size model, with a very light weight electric motor, was surely going to end up being tail heavy. As it turned out I had to add at least 2 inches more nose length. Doing that I achieved the proper balance, but in all honesty the plane looked ridiculous with the exaggerated nose. I finished the plane and submitted it for publication. When Editor, Roland Friestad, received this article he quickly rejected it because it really didn't look like a SNIFFER design. Believe me he was right!

However, Roland gave me an idea. He indicated that what I needed was a motor that was considerably heavier than the tiny electric motor I had used. He went on to suggest that maybe I could adapt a glow engine so that an electric motor could be hidden behind the firewall.

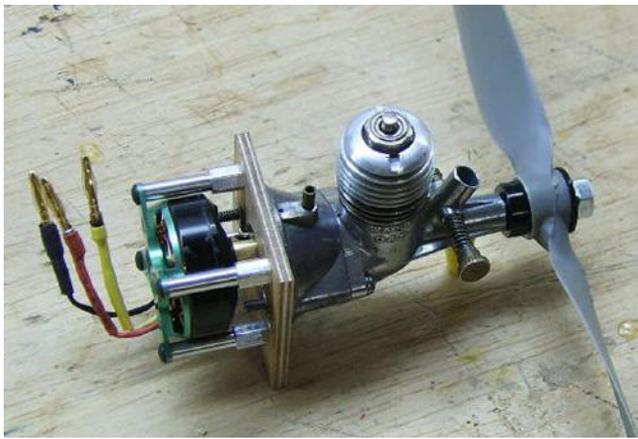
With this idea in mind I realized that I had in my motor collection a new-in-the-box Atwood Wasp .049 glow engine. That was the same as I used in my 1951 full size version of the SNIFFER.

For those interested I purchased this glow engine years ago from a member of the Model Engine Collectors Association (MECA). You can find engines like this in their newsletter.

Website -- www.modelenginecollectors.org

But I didn't have the resources to produce a "hybrid" motor system consisting of the Wasp glow engine along with a suitable small brushless electric motor. Coming to my rescue was noted modeler, Ralph Bradley from Independence, KY. Ralph said he would help, so I collected the necessary components and mailed them to him. In less than two weeks time Ralph produced the "hybrid" engine as you will now read about in this article.





The finished "hybrid" motor system. The Wasp engine is in front of the firewall, with the electric motor to the rear of the firewall. Only the Wasp engine can be seen from the outside of the aircraft)

ABOUT THIS MODERN DAY VERSION OF THE SNIFFER DESIGN

Well I have to tell you that Roland was pleased with the fact that I could maintain the original nose length. He also made it clear that he didn't want to see the battery pack hanging externally underneath the fuselage.

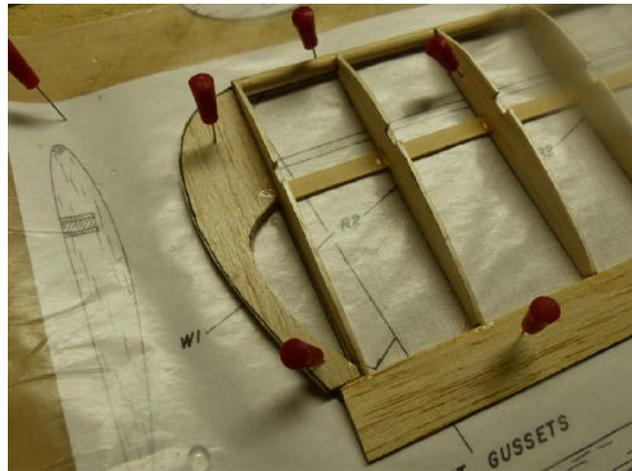
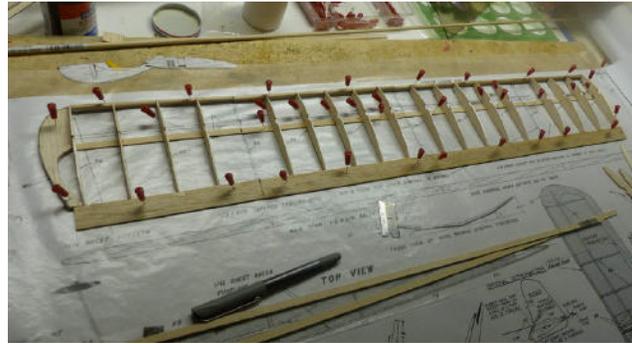
The solution for this was to stand the battery up vertically where it could be accessed after removing the wing. The vertical position also provided for more forward weight. But more on this later.

Although the original outline was the same I made several construction changes which made the plane stronger, but at the same time kept the weight forward.

CONSTRUCTION NOTES

For ease in construction and for covering, I eliminated the under-cambered airfoil and opted for a flat bottom airfoil. The original design had a

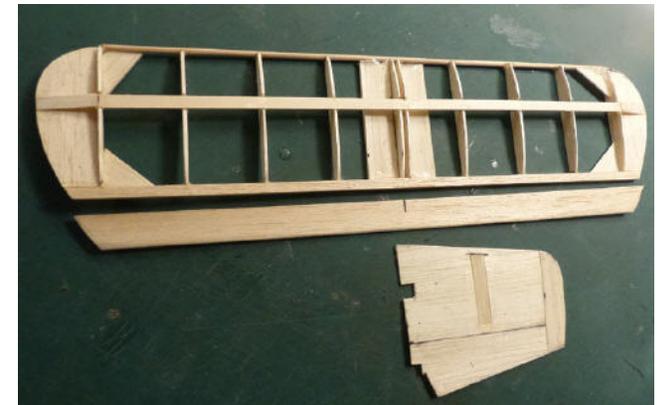
single main wing spar. I substituted two spars, made from 1/16 x 1/4 basswood. These spars are stacked one on top of the other. For the wing leading edge I'm giving you the choice of 3/16 inch square hard balsa or 3/16 inch diameter hard wood dowel. I chose the dowel and it worked well.



Next came the horizontal stab. Normally I substituted flat 1/16 balsa sheet, with no airfoil. In this case I duplicated the original ribs with an airfoil shape. With the airfoil providing more lift, I was able to move the CG location back from 30% to 50%. More on this later.

I employed a single stab spar of 1/16 X 1/4 basswood which was located on the top surface. For the leading edge I again give you a choice of 1/8 inch square hard balsa or 1/8 inch diameter hard wood dowel. I used the dowel. The fin and rudder were slightly increased in area and were made from 1/16 inch sheet balsa. The fin is inserted between two center stab ribs.

Interestingly, the uncovered weight of the wing, stab, elevator, fin and rudder came to only 1.6 ounces so I would go with the hardwood for sure.

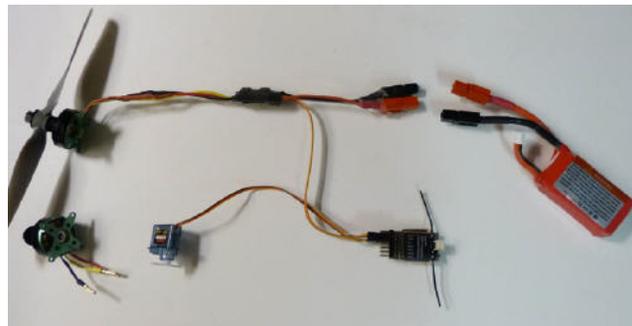
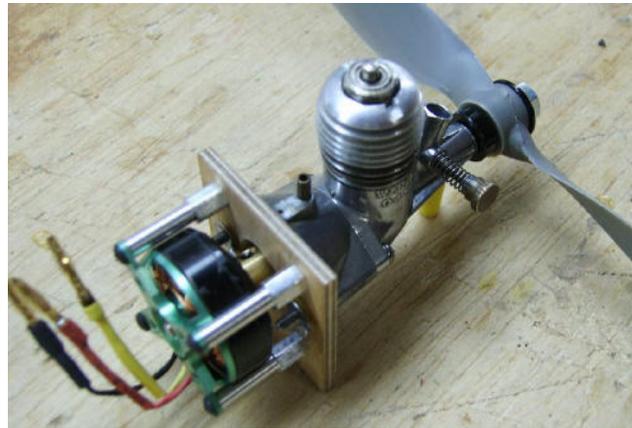
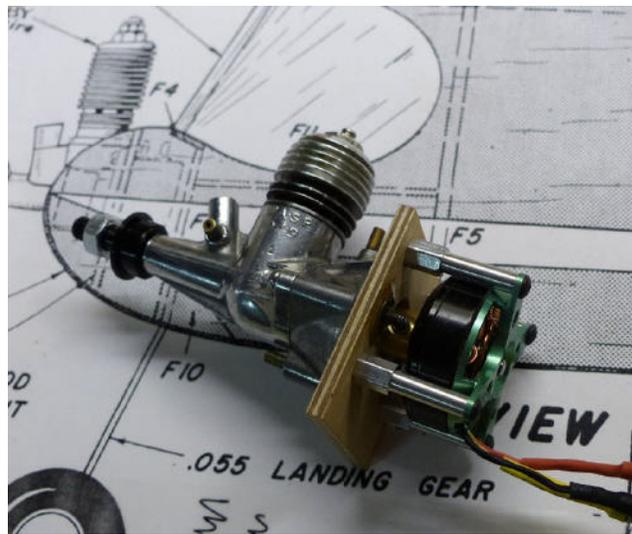


Now lets talk a little about the "hybrid" motor system. This next photo shows the two major components, namely the Wasp .049 glow engine on the left, which is mounted in front of the 1/8 ply firewall. To the right is the Innov8tive Designs Cobra C2204/40 brushless outrunner electric motor. This motor is located on the rear of the firewall, but internally connected to the Wasp.

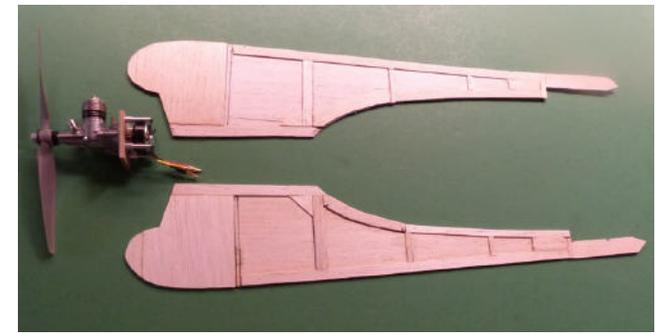


Four spacers are used to connect the electric motor to the Wasp. The Wasp original engine came with a tank mount. That tank really allows the motor to stick pretty far out. Also of interest is that the final weight of the combined Engine and motor was 2.8 ounces. The electric motor was only 0.8 ounce of that total. So you can see, you obtain a forward mounted motor that is a lot heavier than just the electric motor. Again more on this later.

Editor's Note -- Ralph Bradley, who did the hybrid motor conversion, is providing details for a separate article that shows how the motor conversion was accomplished. That article will appear in an upcoming issue of RCMW.



Here is a photo of the motor system as well as the RC components.



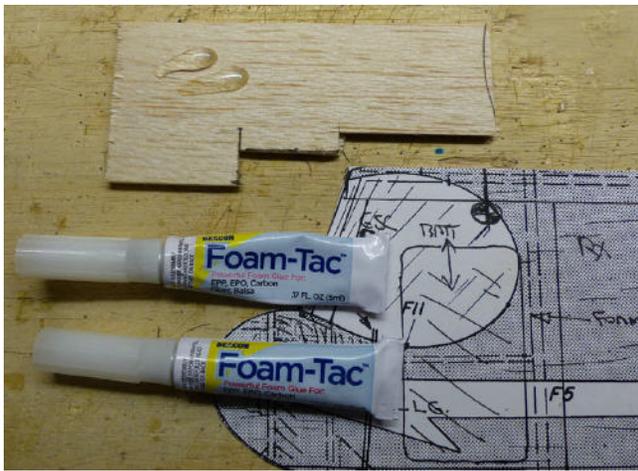
The fuselage sides are made from 1/16 inch sheet balsa. To the sides you must add 1/16 balsa stiffeners and doublers. In fact the entire front is one big doubler. Make sure you make one left and one right side.

Ralph supplied me with the completed engine and motor assembly. Since we live a thousand miles from one another our correspondence was limited to photographs and e-mails.

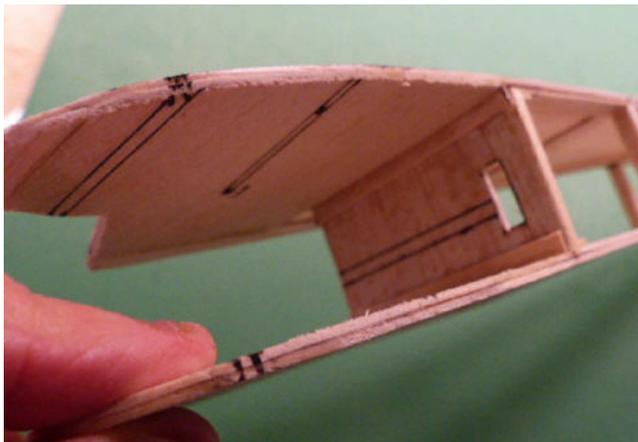
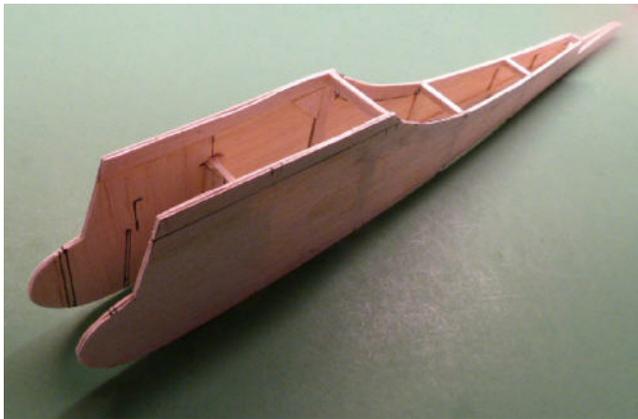
As it turned out Ralph mounted the engine and motor to a single 1/8 ply firewall. We talked later about using two firewalls, one for the two motor items and one to be permanently mounted inside the fuselage. This way I could remove the motor assembly for maintenance when needed.

I was in a hurry to complete this project and elected to cement the single firewall inside the fuselage, using epoxy. But now I could never remove the motor system "module".

With all the screws in place, I realized if something came loose I was finished. So I looked and found a product that worked well to secure the screws. It is called "Foam-Tac" and it comes in a tube. I'm sure if Ralph and I do this again we will plan for a removable firewall assembly.



Here are two photos of the fuselage assembly process and the uncovered SNIFFER

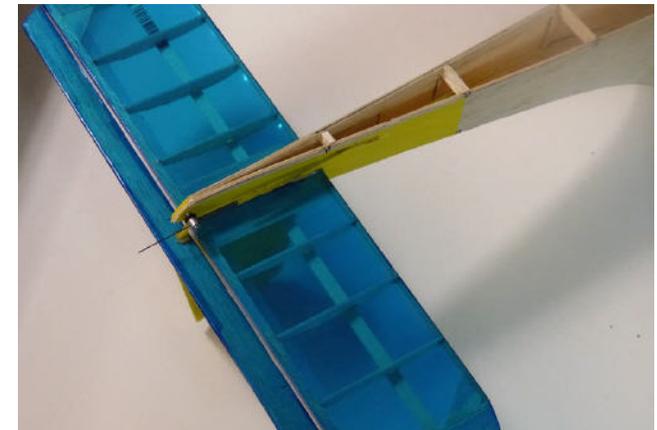


You can see the dowel pegs that hold down the wing with rubber bands)

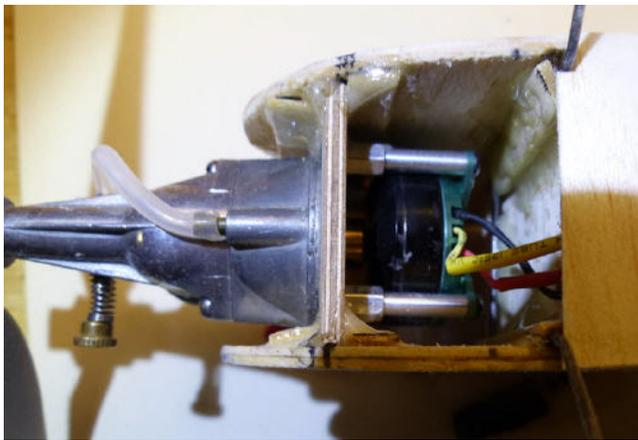
The landing gear is made from .047 inch diameter wire. The wheels are DuBro 1 1/4 inch diameter micro variety with 1/16 inch dia. wheel collars.



With the motor assembly in place you should cover the aft section of the fuselage. This way the application of heat can't melt the control rod Teflon sleeving.

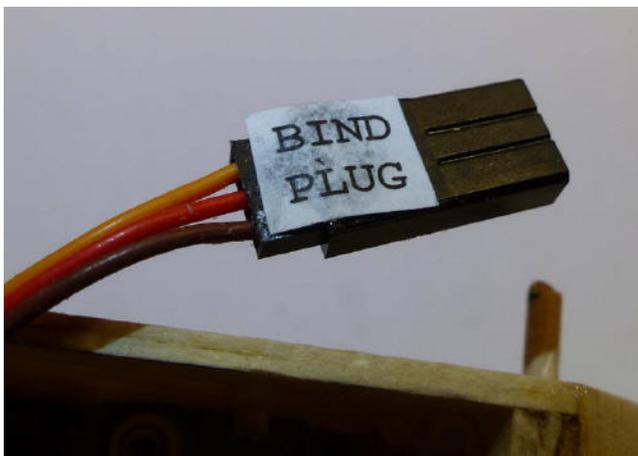


The stab and vertical fin is now covered and those surfaces are cemented to the fuselage using 5 minute epoxy. Make sure you align these surfaces with respect to the wing. You can also at this point install the elevator and rudder hinges using the DuBro electric flyer tape.



This photo shows the firewall attached to the forward fuselage.

One thing that became obvious when assembling the fuselage is that the interior space was quite limited. It was a bit like building a ship in a bottle. For someone who plans on building this particular aircraft, I might suggest you opt for a slightly wider fuselage.



But one trick that can save you some time is in the binding process. The receiver sits at the bottom of the fuselage. To access it and plug in the binding plug can prove a tedious job. What I did was plug a 4 inch servo extension cable into the binding port of the receiver. I brought this

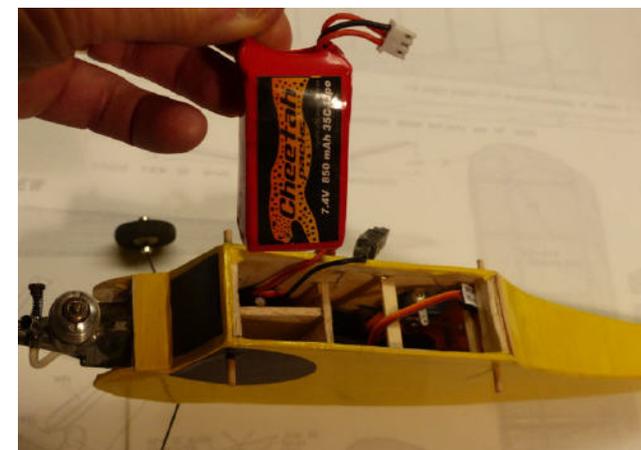
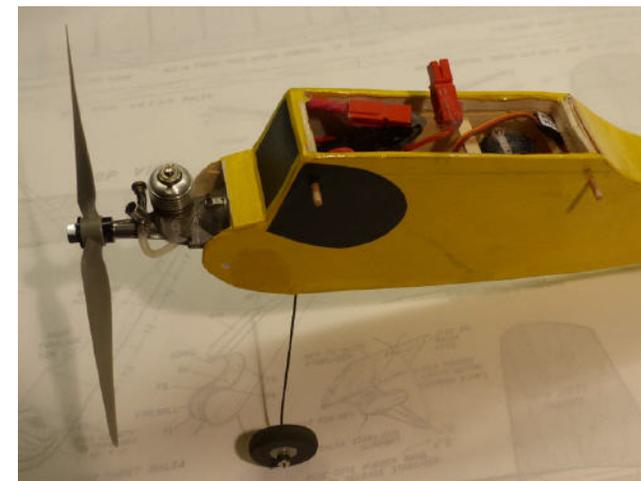
cable up through the top of the fuselage. At that location it is easy to plug the binding plug into the end of the extension cable. Doing that there is no need to access the receiver. I marked the cable for easy identification.

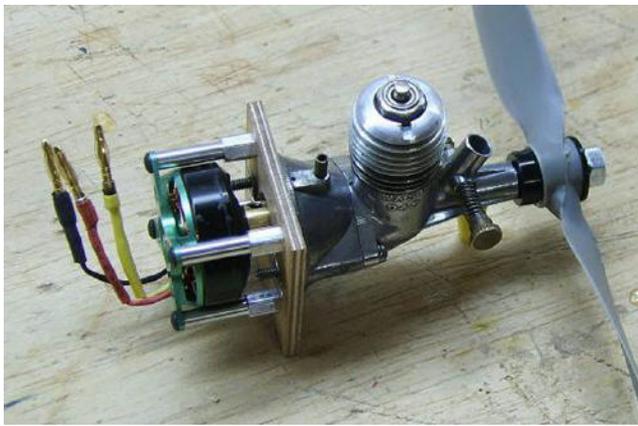


This is an overall shot of the SNIFFER-135 prior to covering the wing. The covering material used was Solite (Solarfilm) transparent blue and opaque yellow.



The next photo shows the front of the SNIFFER-135 with the hybrid motor installation. From this angle it sure looks like it is glow engine powered.





Here's one last overall photo of Ralph's conversion of the Wasp glow engine to an electric motor drive.

FINAL CG and CONTROL THROWS

As shown on the plans the CG is at the 50% point. The original factory plans did not show any CG location. Initially I had the CG set at 30% back from the wing leading edge. On the first flight it seemed to fly as if the plane was nose heavy. I moved the CG back to 50% and that proved to be the correct location. Ralph pointed out that if the plane had turned out tail heavy, you could add some lead weight inside the Wasp cylinder (since the piston and con-rod had been removed).. That's interesting but proved not to be needed.

Control throws worked out as follows: Rudder was 1/2 inch either side of the neutral position, while the elevator was 1/4 inch either side of neutral. I used the triple rate switches on my Spektrum DX-9 transmitter. I set the three positions to 100%, 75% and 50% (both rudder and elevator). The rudder and elevator throw positions were obtained using the middle switch position (75%). That gave me the opportunity of increasing the control to a full 100% or reducing it to the lowest setting at 50%.

Again this plane offers lots of control adjustments. You are going to have fun.

FLYING

Tom Hunt and I got a little break in the local weather on the Saturday morning of February 10, 2018. Temperature was 38 degrees and the wind about 10 mph.



Tom Hunt is making the first flight launch with me on the camera. The location was a local middle school outdoor athletic field. What follows is a series of four flight shots. Considering there was no sun, not bad!



The first very positive statement is that Ralph's modified glow engine and electric motor system worked flawlessly. Smooth as can be!

Tom commented that it was considerably over-powered. So you might want to think about a smaller motor. You might also want to go from a 7 inch prop down to six inches. Of course, you can always throttle back on the motor. We have been hand launching because the field still had some snow on it. But surprisingly each landing was smooth and the plane never tipped up, it just nicely rolled out.

We did notice that at full power, the plane had a tendency to slightly barrel roll. That's probably because of the polyhedral in the wing tip panels. But if you cut back on the power right way, that tendency disappears quickly.

That last photo that proves that I was with Tom at the flying field. The ski jacket and snow hat says it all.

SUMMARY

I think it safe to say that this was a wonderful winter project for me and I'm sure Ralph Bradley would say the same. This engine/motor combination can open a lot of doors in the future. To have a plane look like it was fuel powered will get many comments at the flying field.

I ran data on the electric motor by itself. Then after installing the glow engine to the front of the firewall, I was able to obtain the same data. That told me that the addition of the glow engine did not load down the electric motor at all.

Please read Ralph's upcoming article. I'm sure if you went to try this concept and had any difficulties, Ralph would be willing to consult with you. Keep in mind that sophisticated machining equipment is not necessary for this project.

If you do decide to build this SNIFFER with the "hybrid" motor system, Roland, Ralph and I would love to hear from you. Send some photos if you can and most of all ENJOY!

Bob Aberle
bablerle@optonline.net

SPECIFICATIONS

Model: "SNIFFER-135"

Designed Originally in 1950 and produced as a Midwest Co. kit powered by a .049 cu.in. glow engine. This modern version, with RC control, is now powered by a "hybrid motor system" as will be explained

Type: This plane was built at the original size and is suitable as a Park Flyer.

Wingspan: 30 inches

Wing Area: 135 square inches

Length: 19 inches

Weight: 9.5 ounces

Wing Loading 10.1 oz/sq.ft.

RC GEAR USED:

Horizon Spectrum DX-9 transmitter operating on 2.4 GHz, a Hyperion HP-DSMX6RX compatible 6 channel receiver and two Altitude Hobbies 4.3 gram micro servos, operating the rudder and elevator controls.

POWER SYSTEM USED:

Innov8tive Design Cobra C2204/40 brushless motor, Innov8tive Design 11 amp brushless ESC and a BP Hobbies Cheetah 2 cell 850 mAh 35C Li-Po battery pack.

POWER SYSTEM PARAMETERS:

Prop: APC 7 X 4 SF prop

Motor current: 7.57 amps

Voltage: 7.40 volts

Power Input: 49 watts

Battery Loading: 7.5C

Power Loading: 83 watts/lbs

Flight Time: 8 minutes at full throttle

SOURCE REFERENCES

Aircraft World - Hyperion HP-DSMX6RX Compatible 6 channel receiver.

<https://www.aircraft-japan.com/en/p2729585-hp-dsmx6rx>

Altitude Hobbies - Two 4.3 gram micro servos
<http://www.altitudehobbies.com/suppo-sp-90-9g-micro-analog-servo>

Amazon - Self adhesive contact shelf paper used to make simulated windshield and side windows.
<https://www.amazon.com/Magic-Cover-Self-Adhesive-18-Inch-24-Foot/dp/B000VYGMLG>

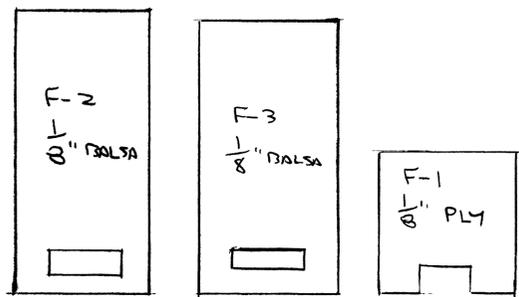
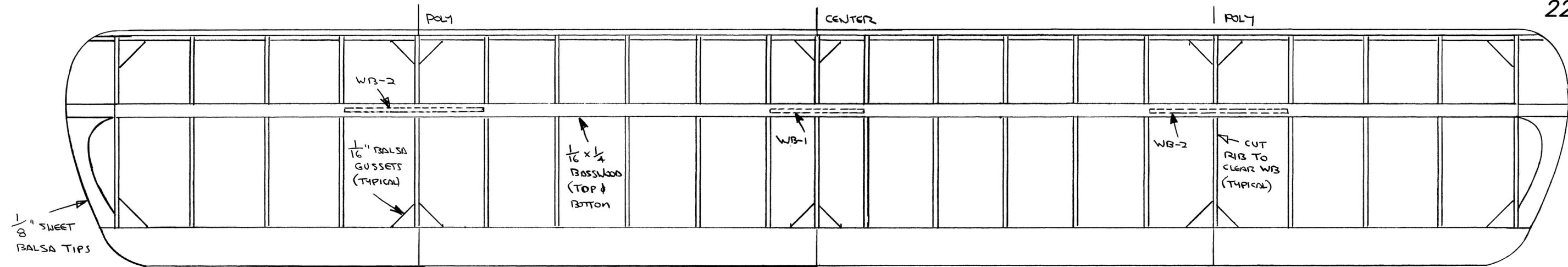
BP Hobbies - CA cement, CA accelerator, Solite covering material, 5 minute epoxy cement, APC 7 X 4 SF prop and a Cheetah 2 cell 850 mAh 35C Li-Po battery pack.
www.bphobbies.com

Callie Graphics - AMA license number decals.
admin@callie-graphics.com

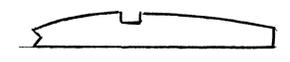
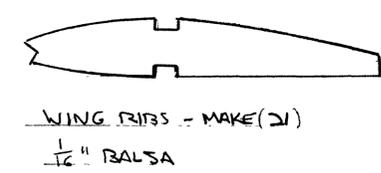
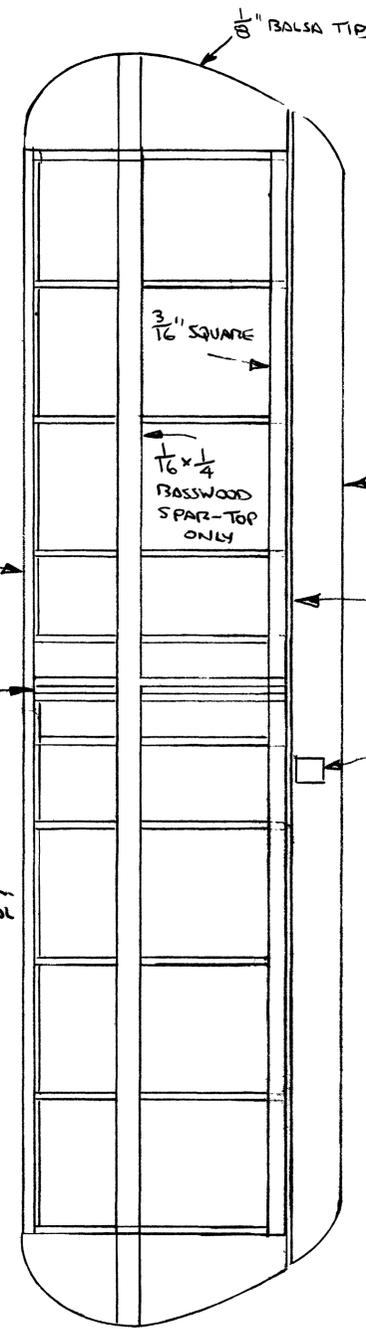
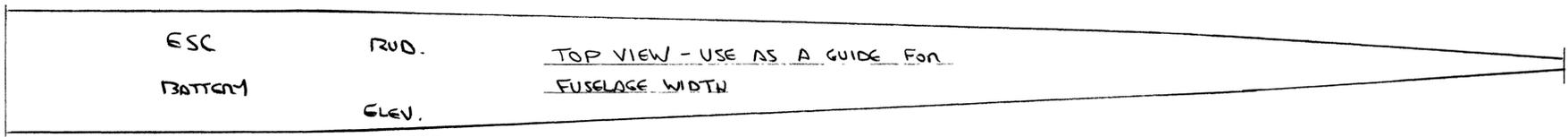
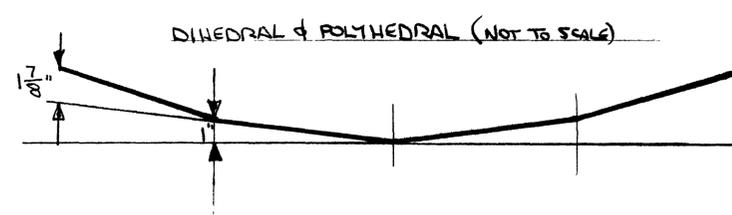
DuBro - 1.25 inch diameter Mini-Lite Wheels (#125MW), micro control horns, mini EZ connectors, electric flyer hinge tape and 1/16 inch diameter wheel collars.
www.dubro.com

Horizon Hobby - Spectrum DX-9 transmitter.
<http://www.horizonhobby.com/>

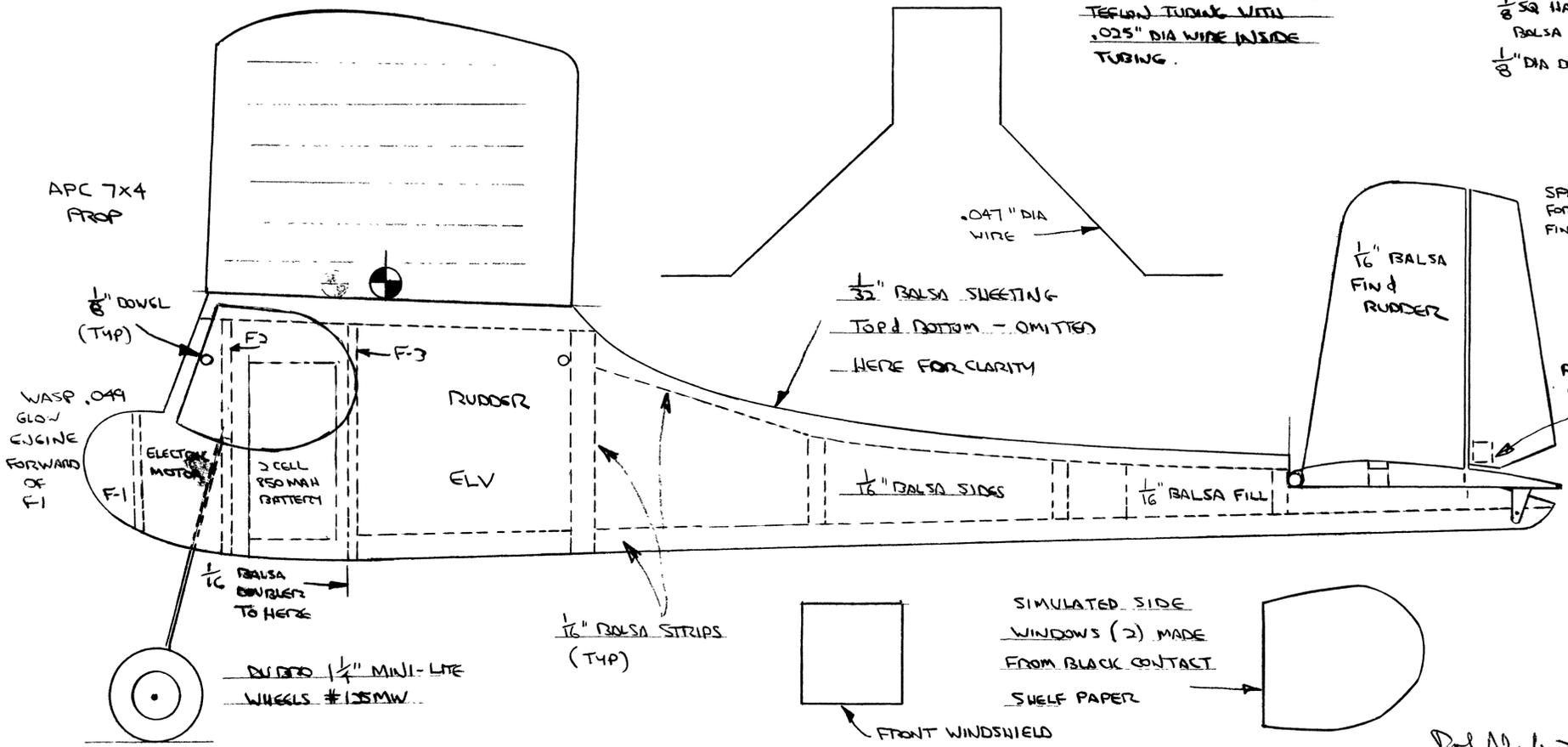
Stevens Aero Models - .073 inch OD Yellow Teflon tubing for the elevator and rudder control rods.
<http://stevensaero.com/shop/product.php?productid=16639>



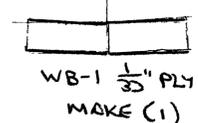
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RUDDER & ELEVATOR CONTROL RODS .073" I.D. TEFLEX TUBING WITH .025" DIA WIRE INSIDE TUBING.



DUBRO ELECTRIC FLYER HINGE TAPE (TYPICAL)



SNIFFER-135 (HYBRID)					
RE-VISITED BY BOB ARELLE 2018					
SPAN - 30 INCH - AREA 135 SQ IN					
LENGTH - 19 INCH - WEIGHT - 9.5 OUNCES					
9	1	2	3	4	5
ELECTRIC POWERED WITH A HYBRID MOTOR					

Prof Alabi 2/14/18

TROUBLE-SHOOTING FOR BETTER FLIGHTS

• The drawings on these pages illustrate the basic types of improper flight along with some of the solutions which are commonly used. But, remember, correct flight adjustments are

difficult to achieve when you have to combat structural or design defects. So, before you start trimming your model for flight, make preflight checks to see that everything has been done

according to the plan and the designer's specifications.

The power plant you use is a very important factor. If it is larger than that which has been recommended,

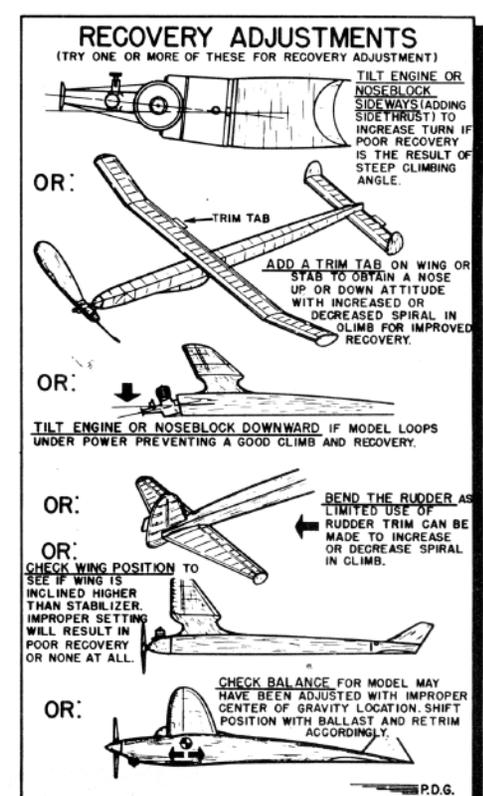
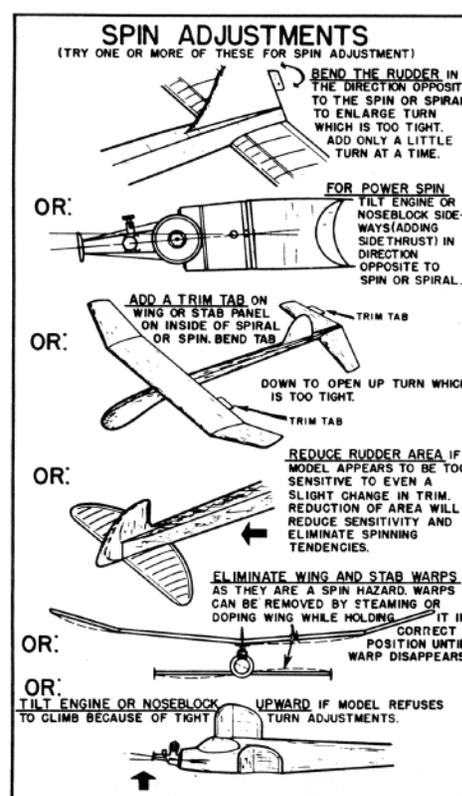
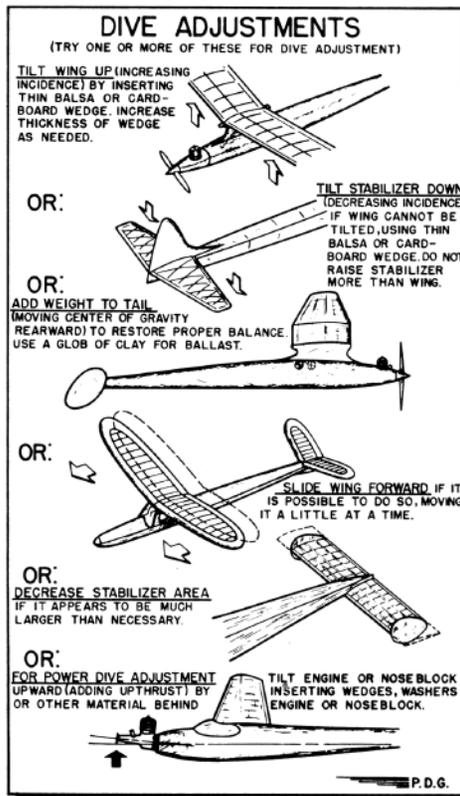
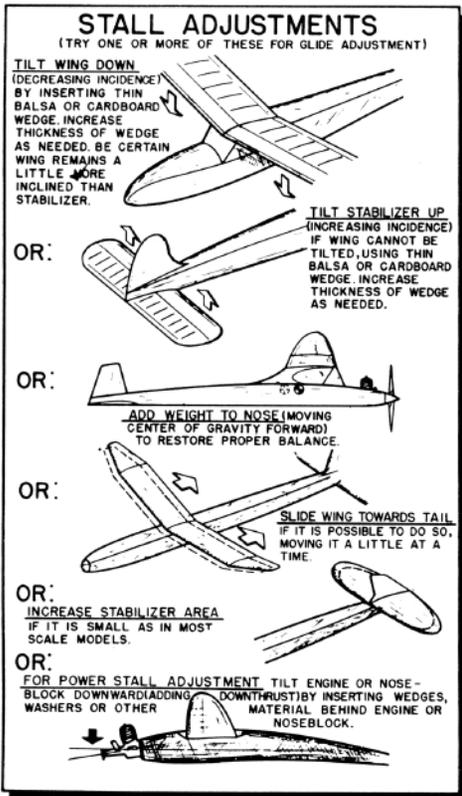
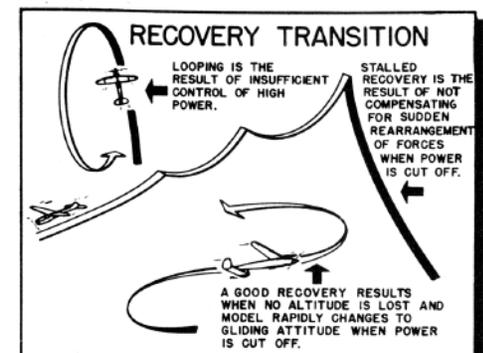
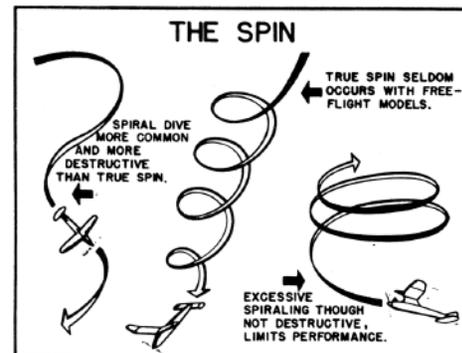
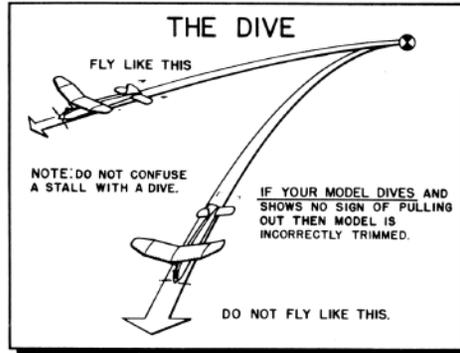
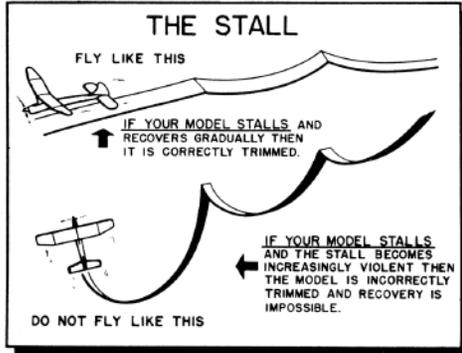
you will have to exert extra caution when adjusting. On the other hand, a smaller power plant gives you more leeway. Top-notch flights will depend on how good the adjustments are for the power that is available for the

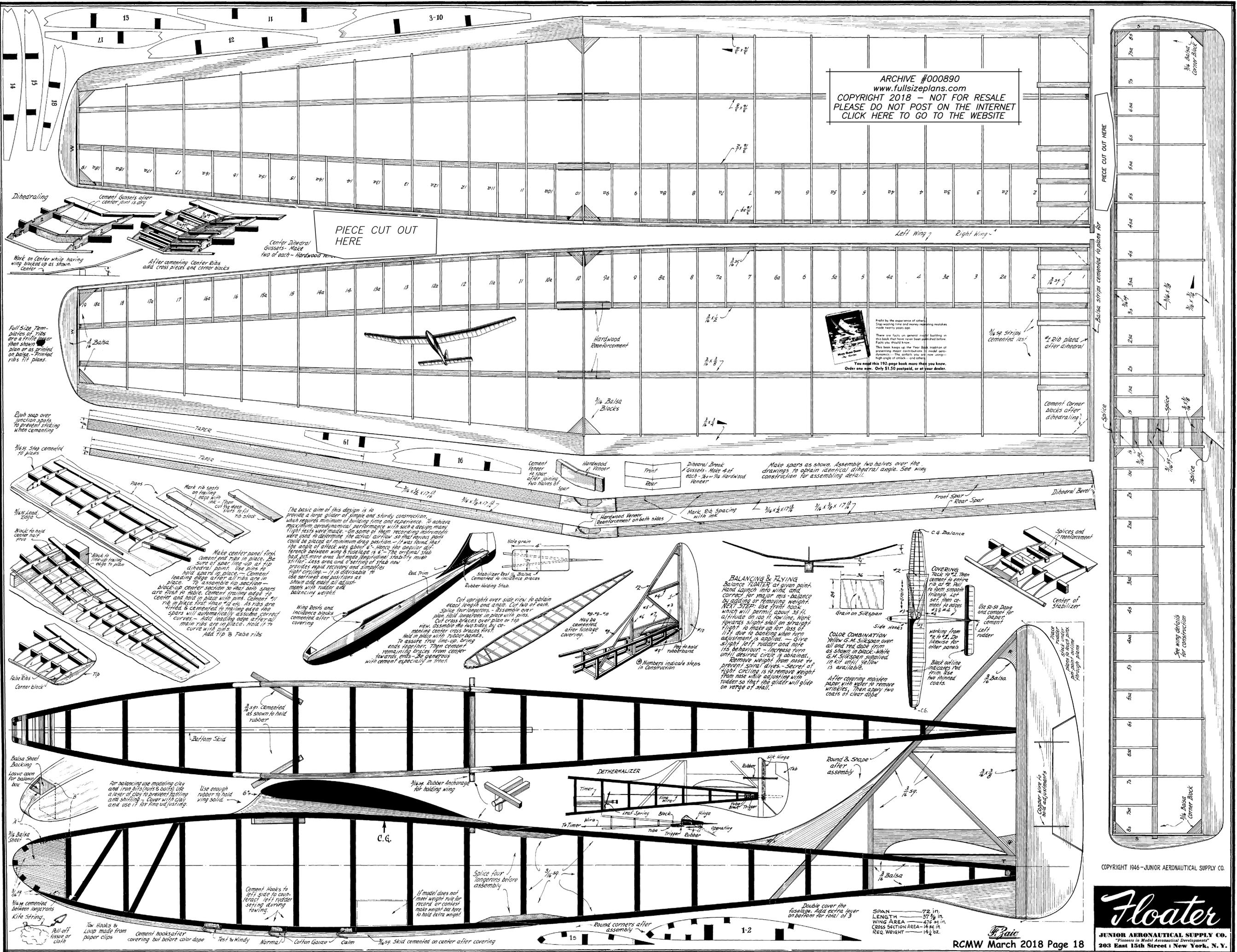
climb—and the glide trim.

Excessive warps which occur during the construction of the model should be doped or steamed out. Minor warps generally can be disregarded.

Detachable flight surfaces can be the

cause of flight variations unless they are keyed into place. Check to see that each unit is correctly aligned with the other units. If flight performance is still erratic, try the suggestions here-with:

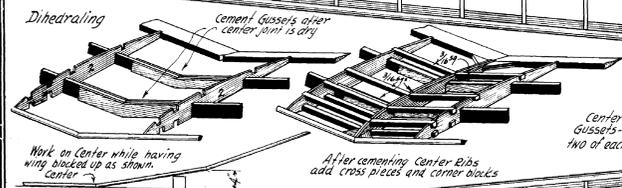




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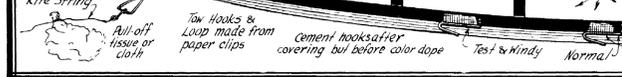
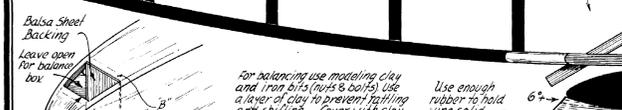
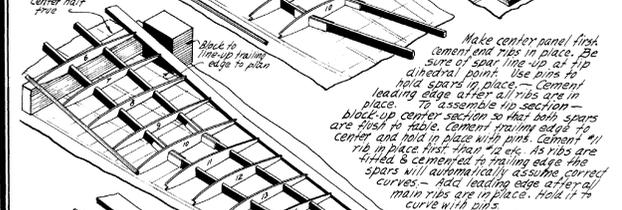
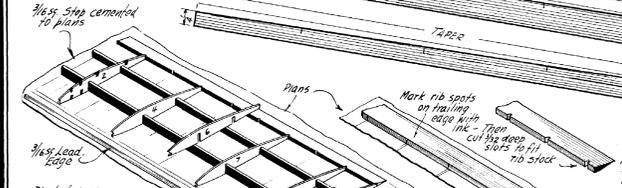
PIECE CUT OUT
 HERE

PIECE CUT OUT HERE



Full Size Templates of ribs are 1/16\"/>

Profile by the expansion of other things during the time and money making mistakes made twenty years ago.
 There are facts in general model building in this book that have never been published before. Facts you should know.
 This book keeps up the 'Year Book' tradition of presenting major contributions to model aeronautics. The details you are now using - high angle of attack - and others.
 You need this 192-page book more than you know.
 Order one now. Only \$1.50 postpaid, or at your dealer.



The basic aim of this design is to provide a large glider of simple and sturdy construction, which requires minimum of building time and expense. To achieve maximum aerodynamical performance with such a design many flight tests were made. On some of them recording instruments were used to determine the actual curvatures so that various parts could be placed at minimum drag position. It was found that the angle of attack was about 6°. Hence the camber difference between wing & fuselage is 6°. The original stab had 20% more area, but made longitudinal stability much stiffer. Less area and a setting of stab now provides rapid recovery and simplifies flight circling. It is advisable to use settings and positions as shown and make all adjustments with rudder and balancing weight.

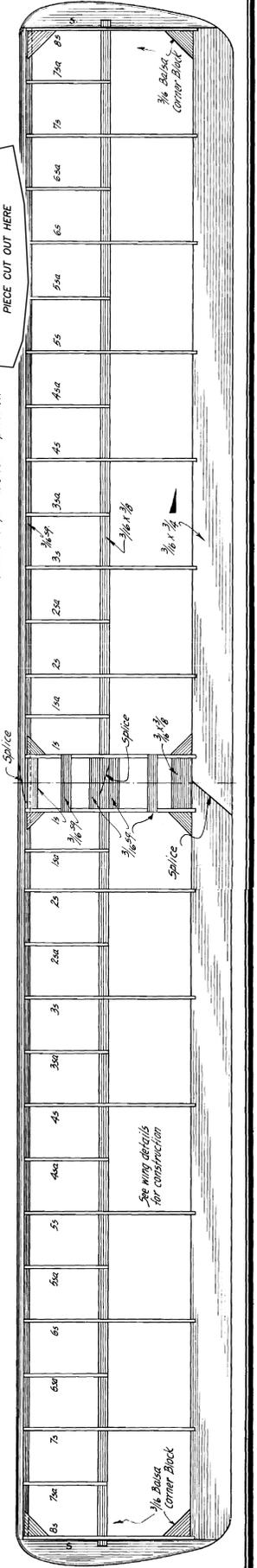
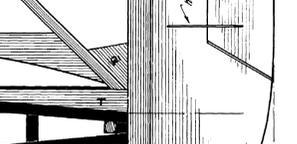
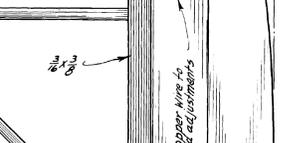
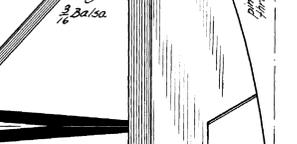
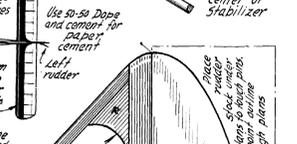
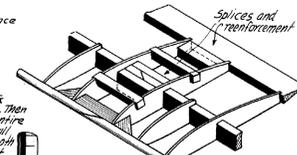
Cut uprights over side view to obtain exact length and angle. Cut ribs of each. Splice four longons - assemble over plan, hold longons in place with pins. Cut cross braces over plan or top view, assemble the two sides by cementing center cross braces first. Hold in place with rubber bands. To assure true line-up, bring ends together. Then cement remaining braces from center towards ends. Be generous with cement especially in joints.

Stabilizer Best in Balsa - Cemented to incidence braces Rubber Holding Strap. Note grain. May be cemented after fuselage covering. Peg to hold tubband.

Working from 1/2\"/>

BALANCING & FLYING
 Balance FLOATER at given point. Hold against wind and correct for moment balance by adding or removing weight. NEXT STEP: Use front hook which will permit about 35° adjustment on load. Work towards slight stall on straight flight to make up for loss of lift due to banking when turn adjustment is applied. Give slight left rudder and note its behaviour - increase turn until desired circle is obtained. Remove weight from nose to prevent spiral dives. Secret of right circling is to remove weight from nose with adjusting with rudder so that the glider will glide on verge of stall.

COLOR COMBINATION
 Yellow G.M. Siligoss over all and red dope from as shown in black. White and Siligoss supplied in kit until yellow is available. After covering matten paper with spray to remove wrinkles. Then apply two coats of clear dope!



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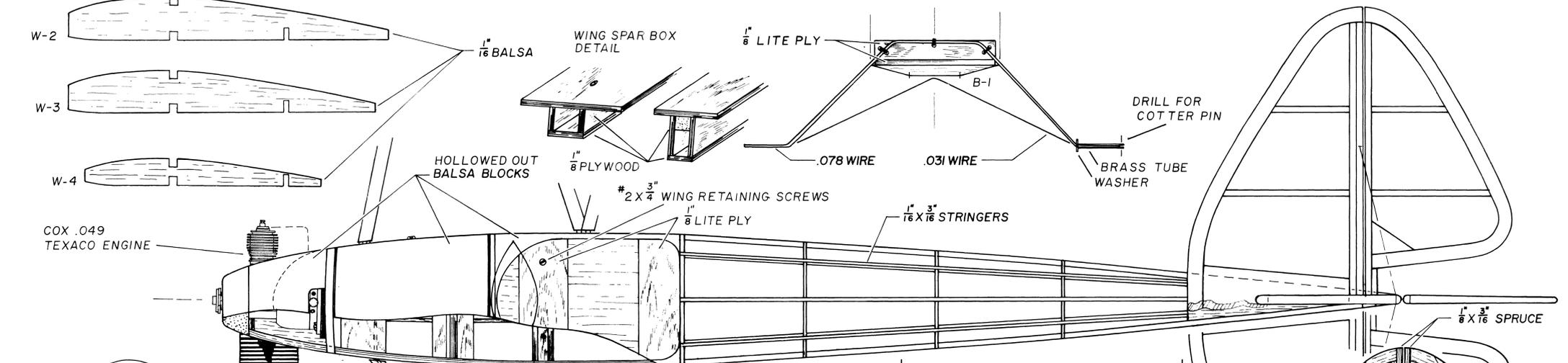
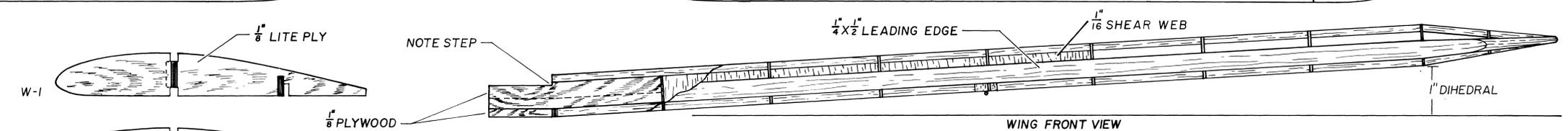
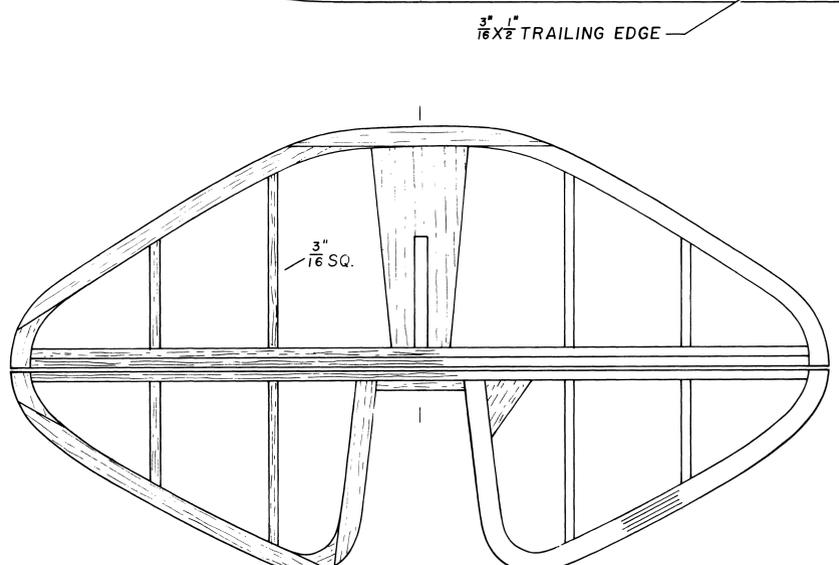
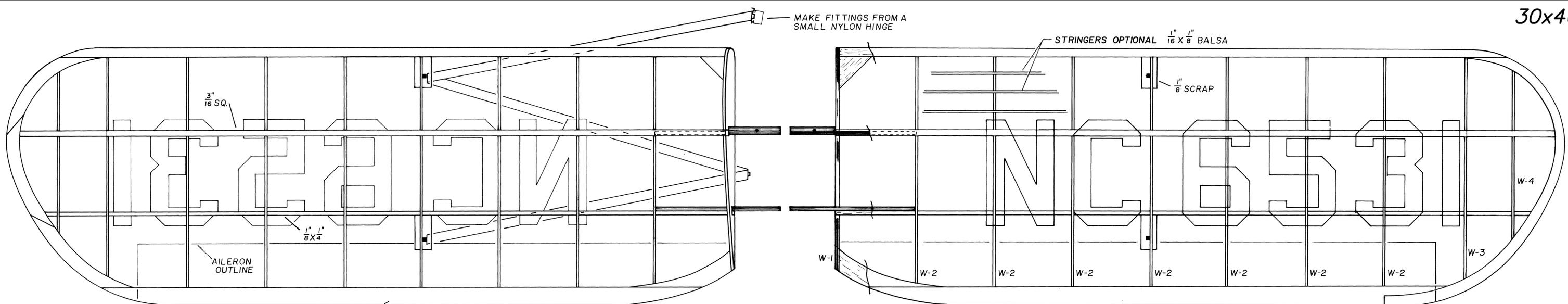
GUESSES - 10 CENTS

ANSWERS - 25 CENTS

ANSWERS REQUIRING THOUGHT 50 CENTS

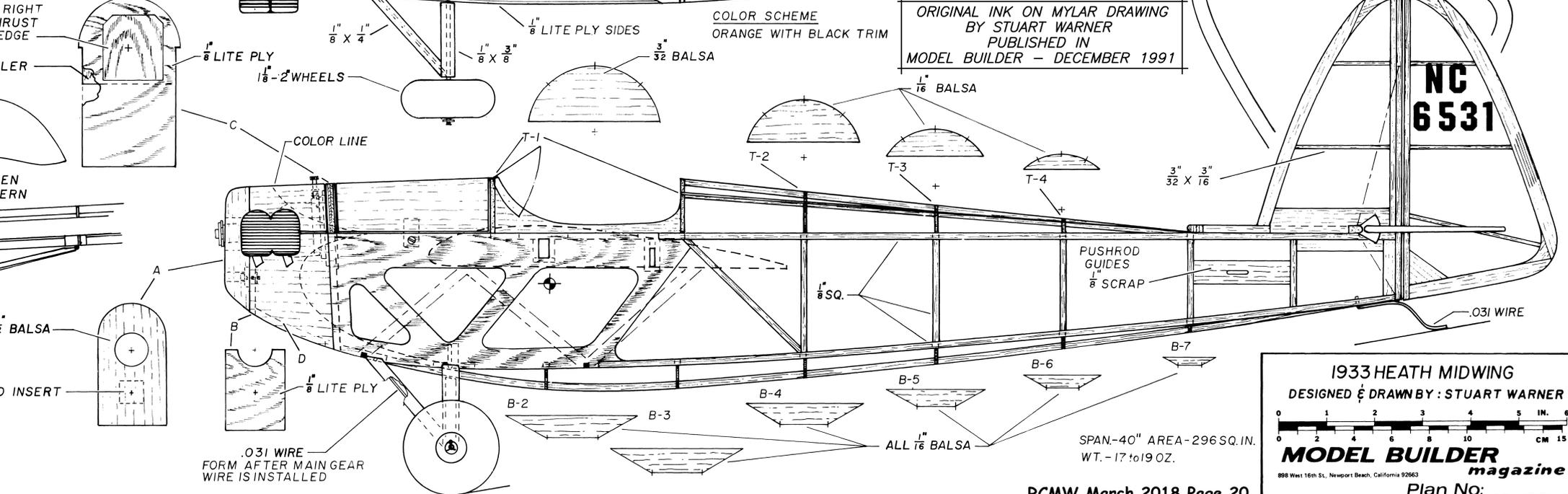
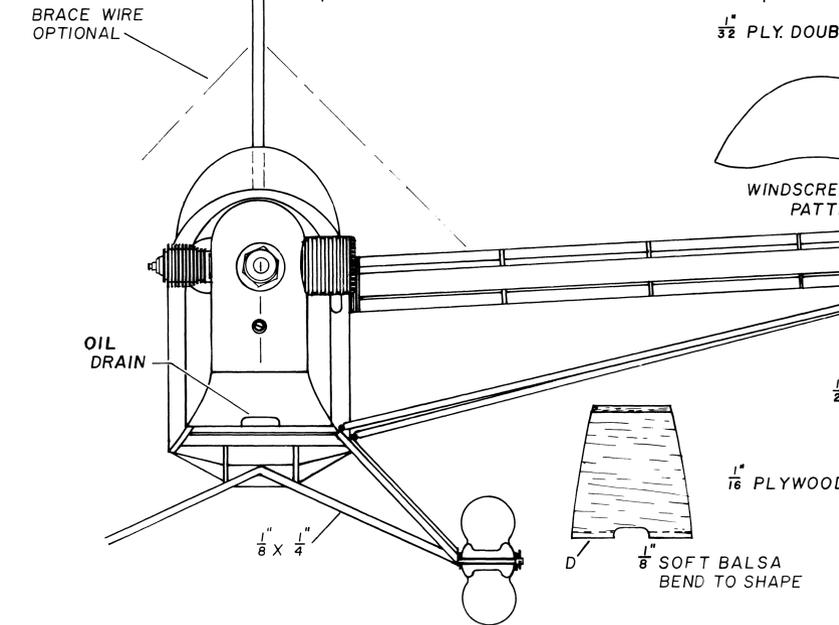
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1933 HEATH MIDWING
 DESIGNED & DRAWN BY: STUART WARNER

0 1 2 3 4 5 IN. 6
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MODEL BUILDER magazine

988 West 16th St., Newport Beach, California 92663

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Back Issue
MAGAZINE ARCHIVES
from the Digitek Books Collection

Here's the next in our series of monthly back issues of model airplane magazines available for download to subscribers.

This month's choice is the February 1937 issue of AIR TRAILS. This issue is special because it is the very first issue to appear under the banner of AIR TRAILS.

Prior to this the magazine was published under the name BILL BARNES AIR TRAILS and before that was known as BILL BARNES AIR ADVENTURER.

Along with several model designs, this issue includes an index of all model plans and the issues that contained them. Many of these are pretty hard to find but the list may help if you are searching for them.

To download the February 1937 issue of AIR TRAILS click on the link below ---

[-- CLICK ON THIS LINK PLEASE --](#)

This download link will expire on May 1, 2018, so if you'd like this issue for your own collection, better do it now. As a note of interest, these issues are stored in the "cloud" that you see mentioned as one of the latest of the buzzwords used by the computer folks (nerds).

We use a service called Mediafire which can easily handle very large files that would otherwise cause problems with downloading.



Gee Bee-R-1

by Paul E. Del Gatto

This scale U-Control model by Del Gatto was featured in the 1961 issue of the Model Airplane News Annual. The color photo is from the cover of the magazine.



The hottest racer of its day, the Gee Bee designed by the Granville Brothers held the speed record four consecutive years. Amazing as records were being broken almost daily in the thirties. Here we have the Super Sportster converted into a successful scale control-liner.

In the early thirties there emerged from the drawing board of the homebuilt aircraft designer, an airplane which was entirely new and was to set the pace at the National Air Races.

Appearing first in 1931, in the Thompson Trophy event in Cleveland, Lowell Bayles flew a "Gee-Bee" Racing #4 to victory at a closed course speed of 236 m.p.h.

In 1932, the Thompson Trophy event brought out what were to be the two most famous "Gee-Bee" designs; the "R-2" Racing #7, and the "R-1" Racing # 11, powered by Wasp Jr. and Wasp Sr. engines, respectively. That year with the fabulous Jimmy Doolittle at the controls of # 11, a first place speed of 252 m.p.h. was achieved in the Thompson Trophy event.

It was not until 1936 that this record was broken, and then only by an airplane design, built and tested by the combined skills of the then nationalized French aircraft industry. We are referring to the "Caudron C 460", which Michele Detroyat flew to victory in 1936.

Getting back to 1932 again, Jimmy Doolittle also set a ' new world's landplane speed record of 296 m.p.h. During the Shell Dash, which was the qualifying event for the Thompson event.

The "Gee-Bee" series have long been favorites of model builders everywhere. Its glamorous past, its brutally dynamic appearance, and flowing trim lines creates the excitement and interest that many of us desire from replicas of real aircraft.

Performance-wise, a scale model of the "Gee-Bee" challenges the building and flying skill of any model builder. Though not as tricky to fly as the full scale version, you still have to have plenty on the ball; and plenty of power besides.

Though the model only spans 28", anything less than a .25 engine is not advised, unless you manage to build yourself a super lightweight version. We were very weight conscious with our version, but only within practical limitations.

In order to achieve the ruggedness we needed without becoming unduly heavy, we decided on a planked structure for the fuselage. This type of structure. was popular many years ago, but since, has given way to blocks and slab-sided construction. However, because of the enormous bulk of the "Gee-Bee" use of the present day types of structures were ruled out.

CONSTRUCTION:

Unlike most models that we have built, it was advisable to start construction of the "Gee-Bee" with the wing. Begin by cutting out all the required ribs. Then cut the wing leading and trailing edges to size and shape, if not otherwise available. Notch the wing leading and trailing edges for the ribs as shown.

The wing is assembled in two halves, and then joined together at the proper dihedral angle. The hardwood landing gear bracing is then cemented into the notches on the centersection ribs.

At this point, the two piece main landing gear strut assembly is bent to shape and bound with strong thread to the hardwood spar bracing.

When completed, plank the centersection of the wing with 1/16" sheet, thus completing the basic wing frame structure.

The fuselage construction is begun by starting the assembly around the wing frame. Begin by cementing formers F-3 and F -4 in position. Then cement the top and bottom fuselage keels in place. Formers F-2, F-5, and F -6 are then cemented in place. Key in the 1/8" x 1/4" former alignment strips together with formers F-7 and F-8. Inset the wing and bottom stab bracing into the respective notches at this time.

It would be advisable at this time to install the sheet balsa tail surfaces. Cut the surfaces to shape from 1/8" hard sheet balsa. Cement the elevators to the dowel connector, and then hinge the elevators to the stabilizer using cloth tape hinges. Cement the stabilizer portion in position on the 1/8" square bracing and against former F -7.

Slip former F-I into position and then cement the engine mounts in place. Cement several planking strips uniformly to the fuselage sides, top and bottom to keep the fuselage frame in proper alignment. Install the fuel tank and complete bellcrank assembly including the wire lead-outs. Firm up the pushrod on the bellcrank end, and leave sufficient amount of wire on the control horn end to insure proper alignment of the control surfaces when the pushrod is completed.

Locate the elevator control horn in the desired position as indicated on the plan. Then complete the wire pushrod, being certain that all the surfaces are properly aligned. Solder a retaining washer to secure pushrod in the elevator horn. Once the bellcrank assembly has been installed, the remainder of the fuselage can be planked. The fin and rudder assembly is

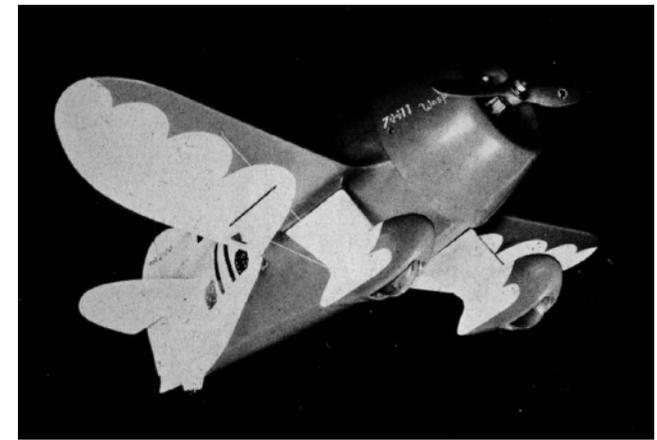
laminated from 1/2" soft sheet balsa and shaped to the desired contours, using formers F-7 and F-8 as a guide.

The wheel pants are extremely important to the scale appearance of the model, thus very few liberties were taken, except to put a 1/32" split near the top, running chordwise. In this manner we were able to minimize the side load shock, which even in a normal landing might damage the model extensively. There was very little we could do with fore and aft shock loads, except to use a soft pair of sponge rubber wheels. This we strongly advise. In fact, air wheels if obtainable to fit, would be most ideal.

The wheel pants are laminated from sheet balsa as specified, and are actually built-up around the wire struts. Recess the laminations as required to properly fit over the wire struts. The wheel pants side covers are cemented in place, after the wheels have been located on the wire struts.

The cowl is constructed primarily of 1/4" x 1/2" soft sheet balsa, with 1/16" plywood facing where necessary. Cut the required 1/4" sheet balsa formers to their accurate outline. The cowl sides are blanked from 1/2" sheet and cemented to the formers in pairs. Once the cowl has been completely blanked out and permitted to dry thoroughly, rough out the cowl to the desired circular cross-section with a modeler's knife. Then smooth-sand to the desired circular outline.

When completed, hard balsa filler blocks are added to each side of the engine mounts; properly angled to hold the cowl in correct alignment. A small screw on each side of the cowl is all that is required to keep it from slipping out of alignment,



The canopy is cut from two pieces of 1/32" celluloid, as indicated from the patterns on the plan. Complete the canopy, but do not cement it in place until the finish has been applied.

COVERING AND FINISH

Smooth-sand the entire model removing all the rough spots; then brush on two coats of clear dope, smooth-sanding between each coat. Light weight silk or nylon is recommended for covering the wing.

Cover the wing, one panel at a time. Cut the covering material slightly oversize and apply the adhesive to the wing leading edge, trailing edge and also the wingtip. A half and half mixture of clear dope and cement is recommended for this. When the panel has been completely covered, trim away the excess, and proceed with covering another panel.

Having completed the covering, brush on three to four coats of clear fuel-proof dope over the entire model; smooth-sanding between each coat. The basic color scheme of the model is red and white. Begin by applying the white pigment over the entire model; spraying it on in preference to applying it with a brush. Three to four medium consistency coats should be enough coverage for a good solid high gloss finish

Using masking tape, mask off the fuselage and wing for the red color trim. Here again spray the finish on in preference to brushing it on. It may also be necessary to apply an extra coat, for suitable coverage over the white pigment. For added realism paint on all lettering details, insignia and ink on all surface details. In some instances, decals may be available which may simplify completion of the phase.

Complete remaining details, such as simulated wire bracing and lead-out guides. Cement the already completed canopy in place and install the engine of your choice, thus completing the model.

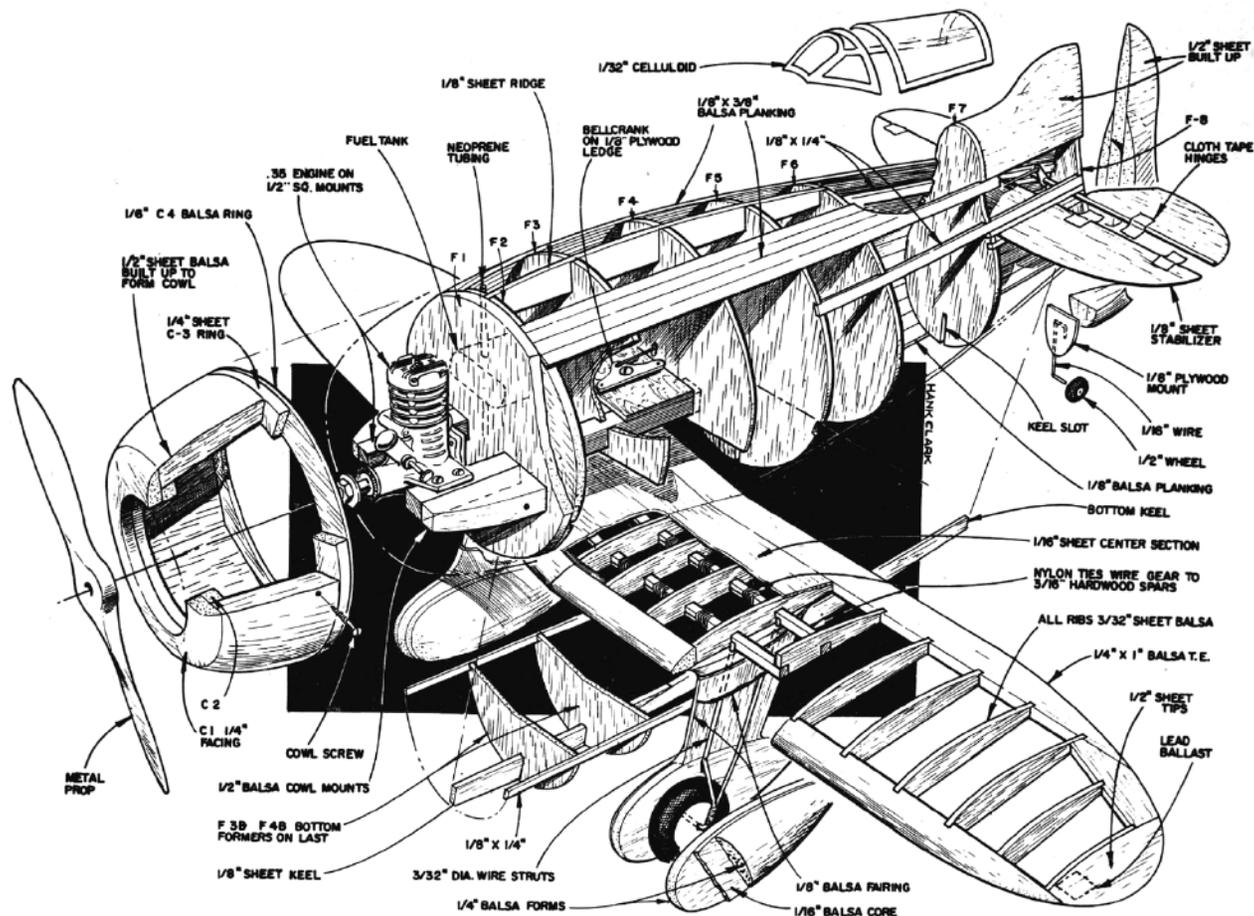
FLYING:

The original "Gee-Bee" airplanes were not noted for forgiving pilot errors, and while small liberties were taken in design and light weight construction, our "Gee-Bee" is by no means a snap to fly.

It's a hot little model, with plenty of power for its size. Everything that happens, happens fast, so you have to be on your toes.

Every flight will be thrill-packed with excitement, from the model's first hot takeoff to it's hot landing.

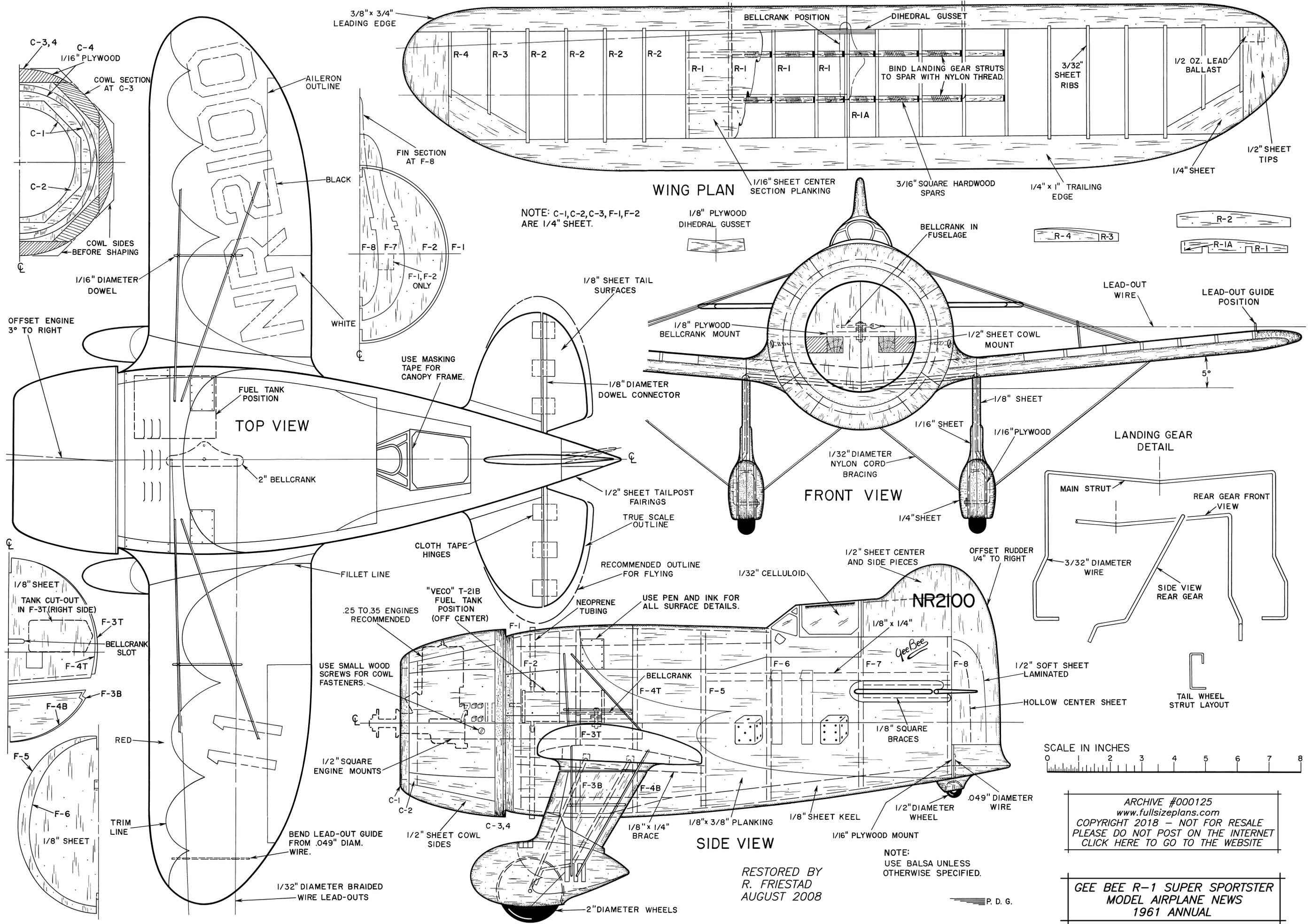
Do not attempt to cut back power for your first test flights, because the model's small size and bulk will make it that much trickier to handle in flight. Performance-wise, our version has all the speed, power, and excitement of the real one. Building and flying this model proved to be a real adventure into modeling, and one which we will remember always. Anyone who does likewise, will feel just as keenly about it as we did.



BILL OF MATERIALS

(Use balsa unless otherwise specified)

- (1) 1/16" x 3" x 36" (med)Wing centersection planking
 - (1) 1/16" x 3" x 18" (hard) Wheel pants
 - (1) 3/32" x 3" x 18" (hard) Wing ribs
 - (2) 1/8" x 3" x 36" (hard) Wheel pants, tail surfaces, fuselage formers, and keel
 - (1) 1/4" x 3" x 36" (med)Wingtip trailing edge, fuselage formers, and wheel pants
 - (1) 1/2" x 3" x 36" (soft)Cowl assembly, wingtips, fin, rudder, and fairings
 - (1) 1/8" x 1/4" x 18" (hard)Bracing and alignment
 - (18) 1/8" x 3/8" x 36" (soft)Fuselage planking
 - (1) 3/8" x 3/4" x 36" (hard)Wing leading edge
 - (1) 1/4" x 1" x 36" (med.)Wing trailing edge
 - (2) 3/16" x 3/16" x 24" (bass)Landing gear bracing
- 1/2" square hardwood engine mounts; 3/8" diameter dowel connector; 2" diameter wheels; 1/2" diameter wheel; nylon cord bracing; .049" diameter wire; 1/16" plywood; 1/8" plywood; 2" bellcrank; nuts and bolts; 1/32" diameter braided wire lead-outs; 1/32" celluloid for canopy; .25 to .35 engine; fuel-proof cement; clear and colored dope; lightweight silk; wood filler



WING PLAN

NOTE: C-1, C-2, C-3, F-1, F-2 ARE 1/4" SHEET.

FRONT VIEW

SIDE VIEW



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GEE BEE R-1 SUPER SPORTSTER
 MODEL AIRPLANE NEWS
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 AUGUST 2008

NOTE:
 USE Balsa UNLESS
 OTHERWISE SPECIFIED.

P. D. G.

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Digitek Books has an extensive collection of model aircraft and aviation books and will be making them available here for subscribers to download each month.

Frank Zaic was a well known modeler and the manufacturer of the JASCO line of kits, (Later known as JETCO). His line drawings and analysis of models appearing at contests world-wide appeared in many magazines and also in his own series of annuals.

Digitek has a complete collection of the Zaic books and digital versions will be periodically available at no charge for download by subscribers to RCMW.

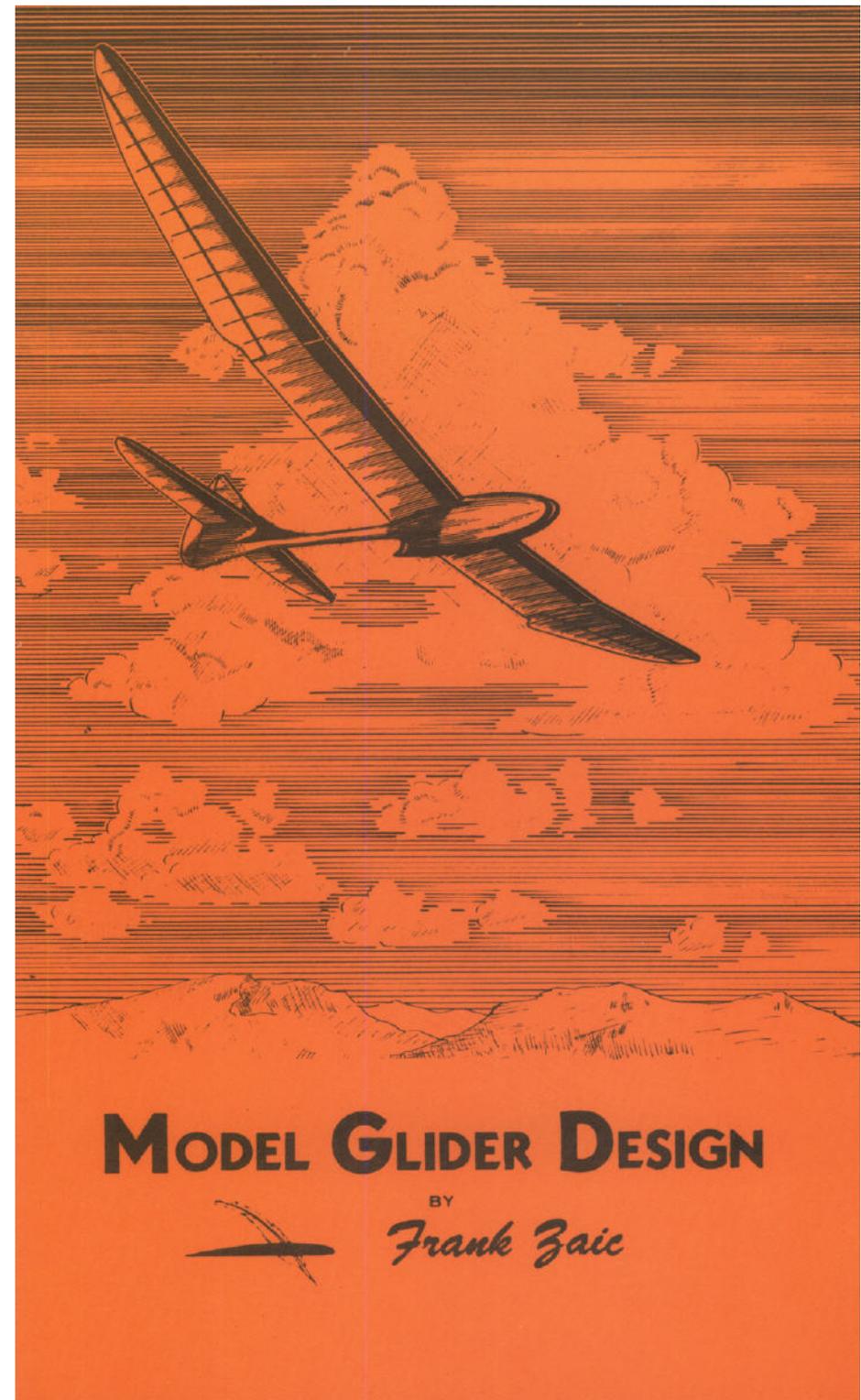
This issue has been processed using OCR (Optical Character Resolution) and is searchable.

It was originally published in 1944 and addressed the shortage of materials and engines during WWII and suggested gliders as an alternative. Drawings, technical data and aeronautics are extensively presented. Frank Zaic also was responsible for the JASCO line of model kits produced by his company, many of which are still being build by modelers worldwide.

To download this ZAIC book just click on the link below ---

[-- CLICK ON THIS LINK --](#)

This download link will expire on May 1, 2018, so if you'd like this book for your own collection, better do it now. There are more digital magazine collections and books for sale on our other website. Click on the link below to visit.



ARES

by Bill Werwage
Air Trails May, 1960

ARES is a model for the contest stunt flyer who wants good performance along with good appearance. I am sure that a look at the pictures of the model will satisfy even the most demanding modelers as far as eye-appeal is concerned.

As for the flying ability of ARES ... it has won about 45 "firsts," 20 "seconds," and 15 third places in the past four years. Oh, yes, three times it lagged behind in fourth place (that is the lowest ARES has ever placed, though).



In addition, ARES won the 1957 King Orange meet, took third in the '58 Nationals, plus first in the '59 Nationals, and the Walker trophy. 'Nuff said. Interesting so far, you say? Well, let's build one!

Use light wood in duplicating the fuselage, which is first on the agenda. Cut out 1/8" sides as per the plan, then add the 1/16" plywood doublers. Be sure both doublers don't go on the same side. That is to say - alternate sides of the side sheets, so that the doublers are inside the fuselage when it is assembled.

Then 3/8" x 1/2" hardwood mounts for the engine are next (I prefer really hard stock, like maple). Assemble fuselage with all formers (F1 to F6) in place and add top and bottom fuselage blocks. These blocks are to be tack-cemented in place temporarily. After the control system is in and checked over, you can carve the blocks and hollow them as shown. Until then, just use barely enough cement to hold the blocks in place.

Next cut openings in the fuselage sides for the leading edge, spar, and trailing edge of the wing. This needs to be done accurately, as we want the wing (both panels) at zero degrees incidence.

Make the "I-beam" spar now, using straight-grained 1/4" medium balsa. The spar consists of two pieces, reinforced by plywood, front and back. The top and bottom caps are rather soft stock, as they have to be trimmed near the tip for the rib strips to lay flat against them.

The 1/16" plywood doublers (or braces) go on next, with ample cement for good joining. Several small clamps will help a lot here to insure a close bond while the cement hardens inside. An

interior joint of this sort is best left overnight to dry, but if you have clamps on, you can work along. But don't let the various parts slip around, or your wing won't be very true.

The bellcrank, pushrod, and lead-outs are added next, making sure everything works freely. The I-beam spar is now slipped into place in the fuselage. Use ample pins to secure it and cement all joints thoroughly.

The leading edges and trailing edges are now slipped into place and cemented. Pin a tip brace on now to keep the leading edge and trailing edge supported the right distance from the spar for correct taper.

Don't forget that the larger panel is on the inboard side of the model, whichever direction you prefer to fly. For those unfamiliar with above, it merely means that the model is *usually* flown counter-clockwise (as seen from above). This makes the *left* wing panel the larger one (as seen from the rear).

The wing assembly (what there is of it) is stiff enough for the landing gear struts to be mounted now. The positions for the "J" bolts are indicated on the plan, so if you use "spade" bolts or some other method of attaching the struts, modify to suit your personal preference. Whatever you do, mount the struts *securely*.

After cutting out the required number of rib strips, you'll be amazed at how fast this, type of wing goes together. The template shown is used to make a curved cut in 1/8" sheet balsa (this will be the curve of the rib, or airfoil). Now merely slide the template down 1/4" and repeat the cut. It will help to maintain accuracy to cut the wood to

the proper chord length beforehand. In this case, it is 9" and for the false ribs, 4". Also mark off the 1/4" spaces beforehand. Then you can slice away with wild abandon.

Now the rib strips are merely cut to fit between the leading and trailing edges. Trim only the rear end, or else your spar will be too thick at the tips. To speed identification of the cut pieces, dab a stripe of colored dope along the left side of the uncut sheet.

When the strips lay in a pile, you merely look for the colored end and know that it is the leading edge end. The ribs are fitted as shown on the plans, with false ribs alternating between ribs. Once all the ribs are cemented in place, the tip braces can be removed and the 1/2" sheet tips cemented on.



Note that four rib strips are butt joined at the root of the wing, allowing sufficient area for the attachment of wing covering material. Do not bother to sand this section if you intend to use fillets later, as they will very adequately cover any minor imperfections.

The tail surfaces are just about self explanatory, so we'll skip right on down to the phase where you have them mounted and have checked the control system for smooth and easy movement. Once you are sure that controls work freely and have mounted fairleads to prevent pushrod "bends," you can finish off those top and bottom fuselage blocks. Hollow as per cross-sections and cement in place permanently.

After the fine sandpaper has been used on the exterior of the fuselage, apply a fine bead of cement along all joining pieces, using your fingertip to press the cement in with a sliding motion. Then use the fine sandpaper to dress down the seam. The cowling can be mounted any way you desire, but should detach easily for working on the engine. Wheel pants are carved and cemented in place.

Cover wing and stabilizer. I prefer Jap tissue or light grade Silkspan. but if you do more sport flying than contest work, silk all over will be most durable. Plastic Balsa (available in tubes at any hobby shop) is used for making fillets along the root of the wing and where the tail surfaces join the fuselage.

The "finish" is up to you. I use about four coats of filler, followed by eight coats of clear dope. Then six more coats of dope, this time the pigmented type. Thin the dope down to a light enough consistency so that brush marks disappear as quickly as the stuff is applied.

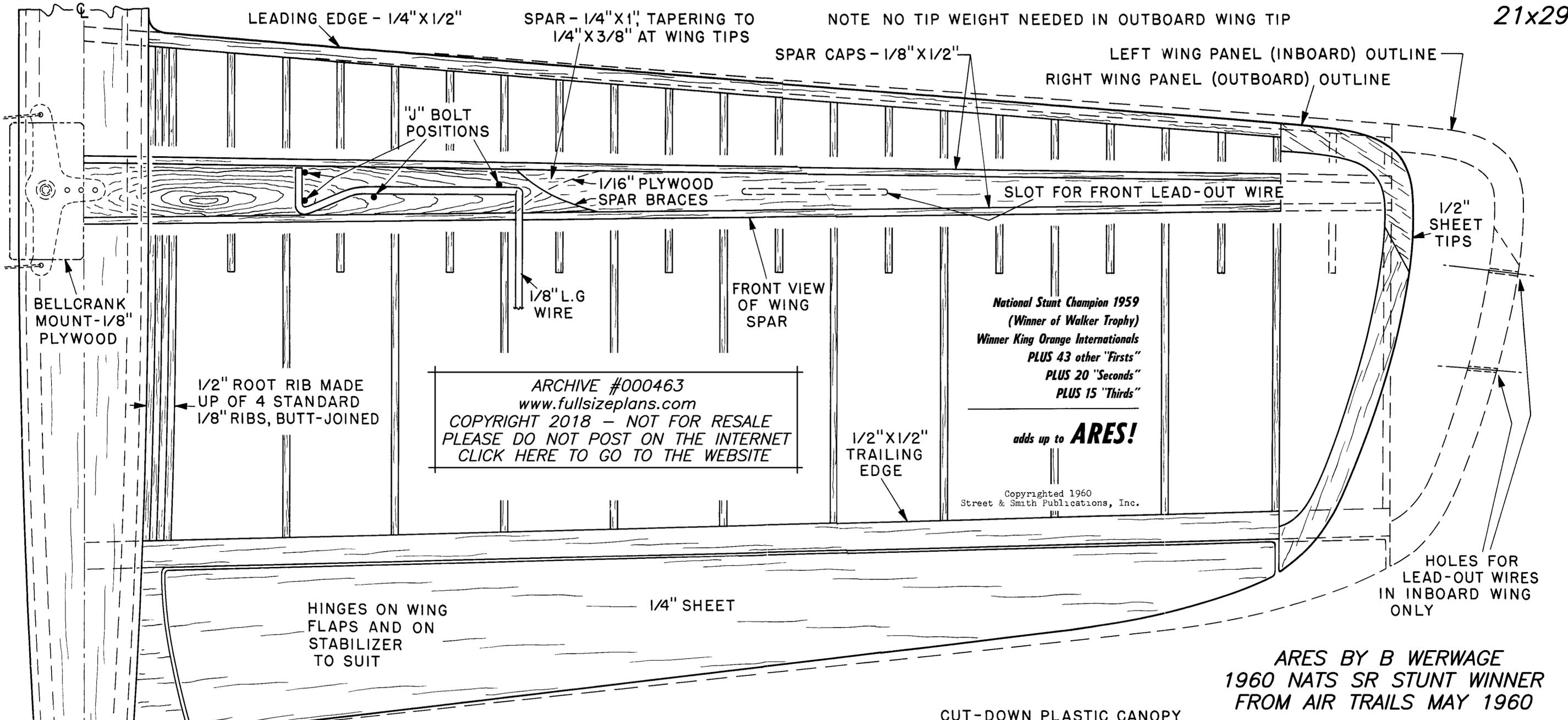
If you have access to a spray outfit, so much the better for a top-notch "finish." And two final coats of clear help to bring out that "sparkle" in the pigments. Helps cut down smearing of the colors too, if you lean towards the "hotter" blends of fuel.

Final model weight should be 38-40 ounces, but up to 50 ounces is okay for good performance. The heavier models will be better fliers in windy or gusty weather. There's a hint there for you hardware collectors - purposely make light versions for those "perfect" weather conditions, but keep a heavy job available for the windy days, when the mortality is higher and when fewer flyers are willing to risk official flights. Gotta plan ahead, you know.



These photos are from George Miller who built an ARES for RC. All he did was make both the wings the same size and increase the vertical fin area.

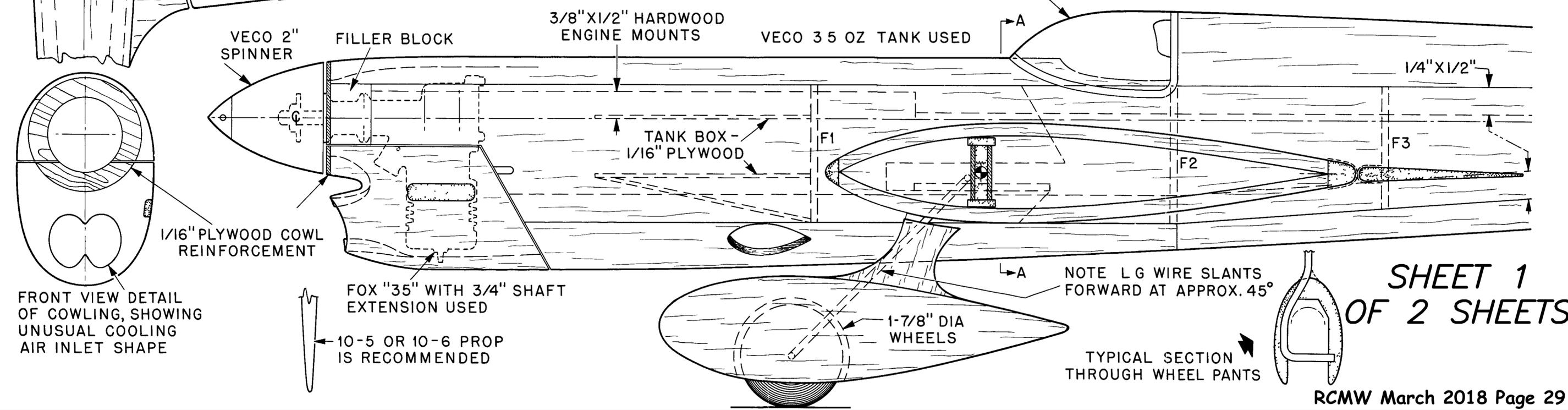




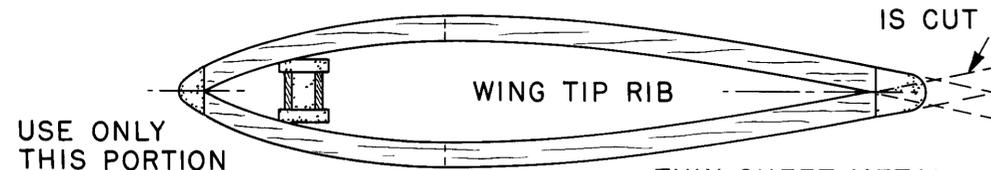
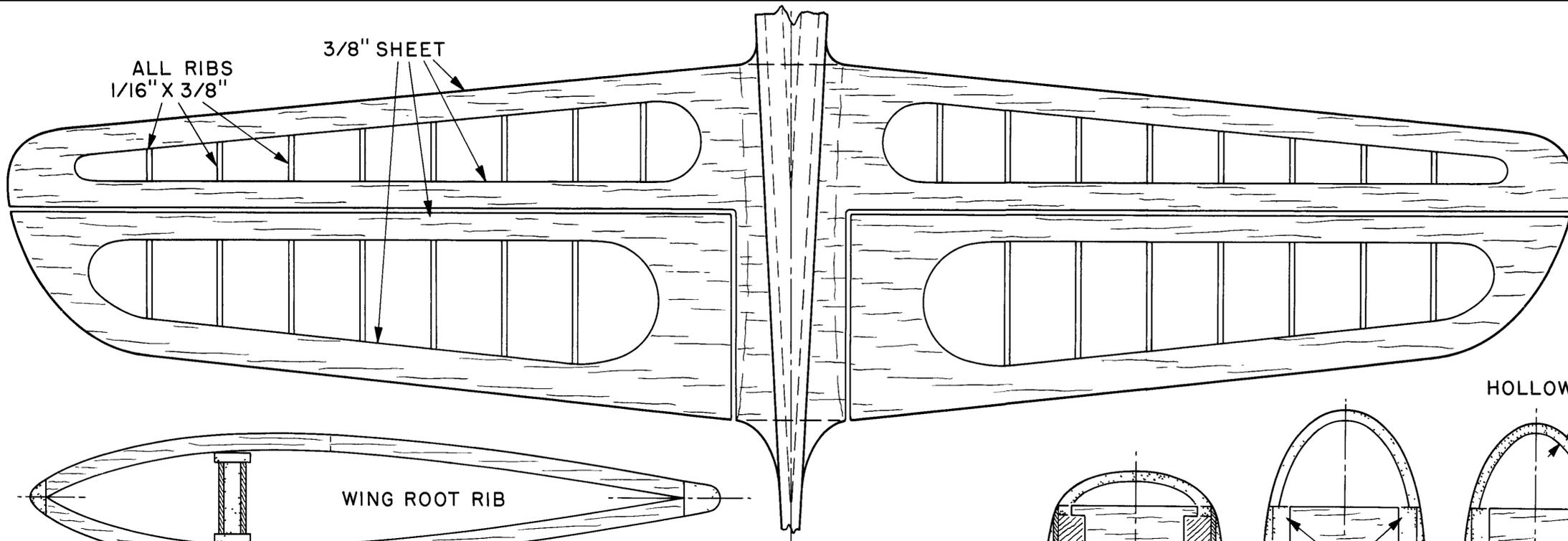
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National Stunt Champion 1959
 (Winner of Walker Trophy)
 Winner King Orange Internationals
 PLUS 43 other "Firsts"
 PLUS 20 "Seconds"
 PLUS 15 "Thirds"
 adds up to **ARES!**
 Copyrighted 1960
 Street & Smith Publications, Inc.

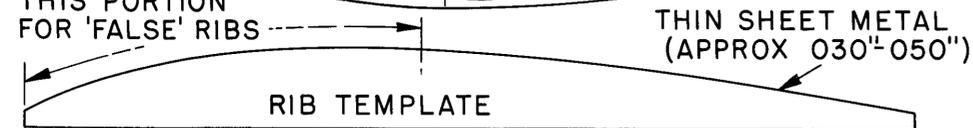
ARES BY B WERWAGE
 1960 NATS SR STUNT WINNER
 FROM AIR TRAILS MAY 1960



SHEET 1
 OF 2 SHEETS

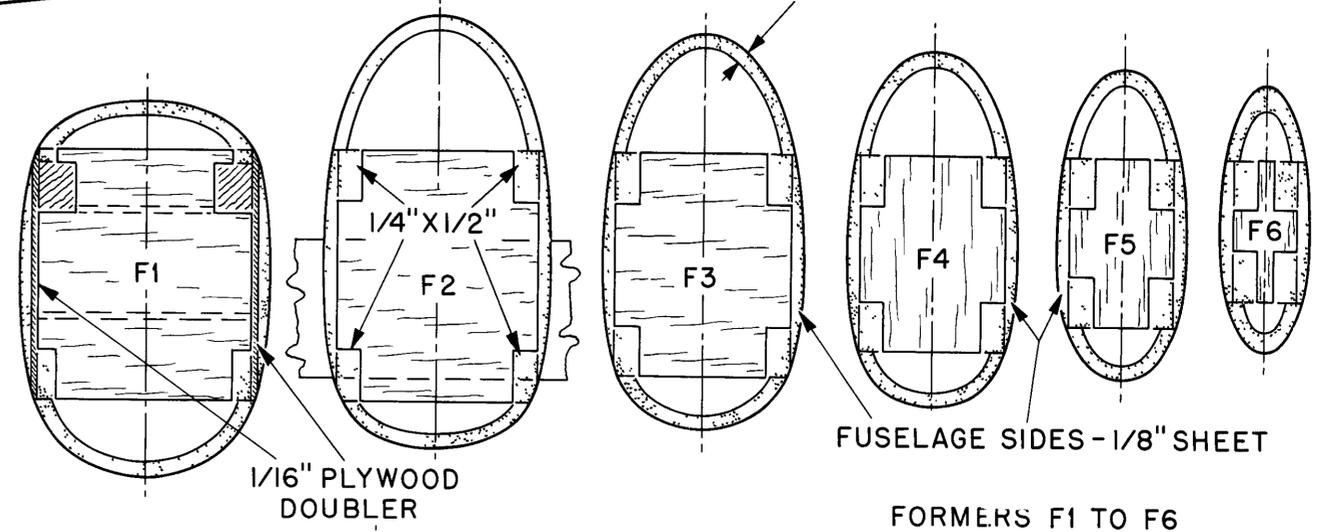
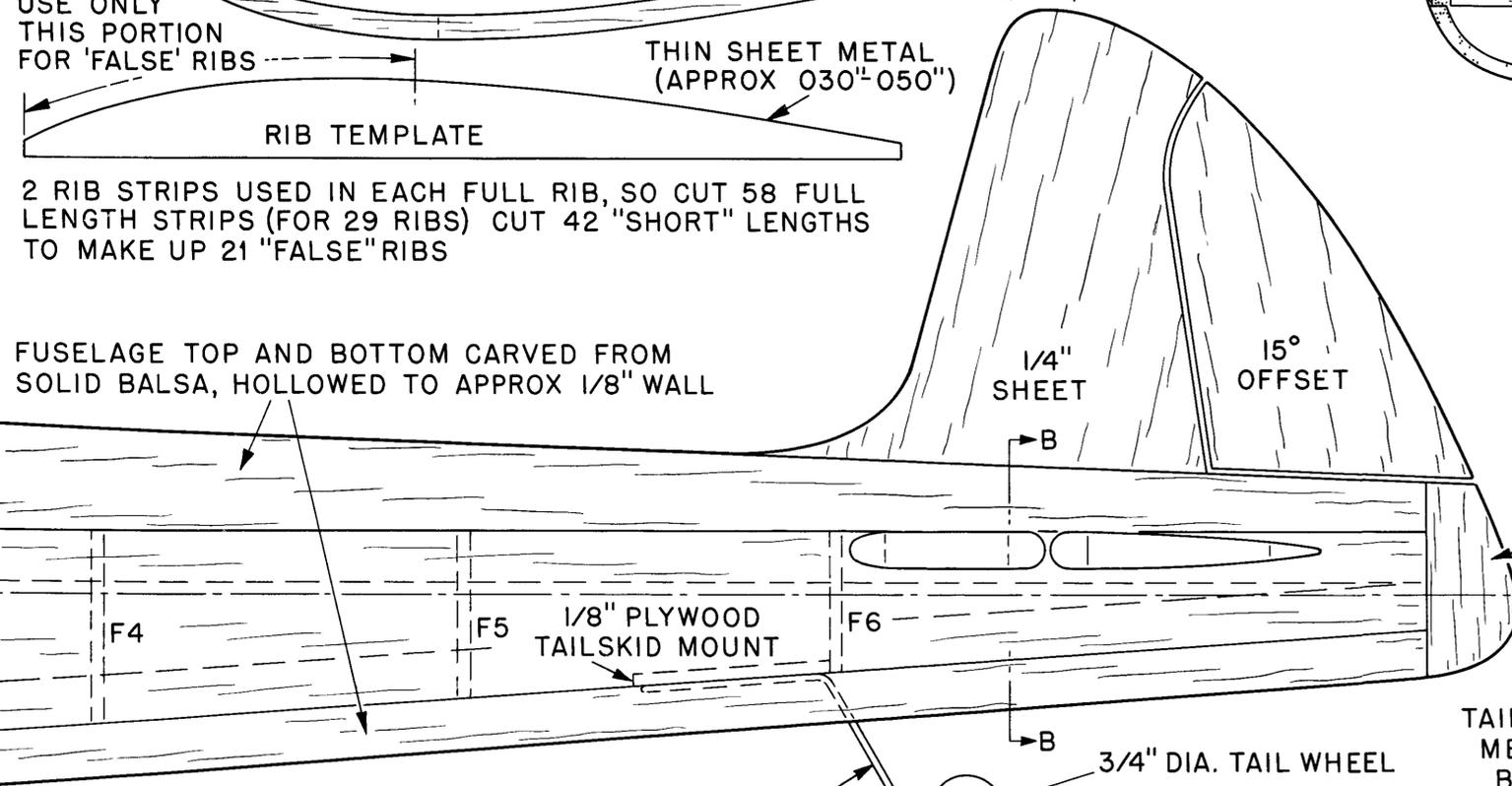


USE ONLY THIS PORTION FOR 'FALSE' RIBS



2 RIB STRIPS USED IN EACH FULL RIB, SO CUT 58 FULL LENGTH STRIPS (FOR 29 RIBS) CUT 42 "SHORT" LENGTHS TO MAKE UP 21 "FALSE" RIBS

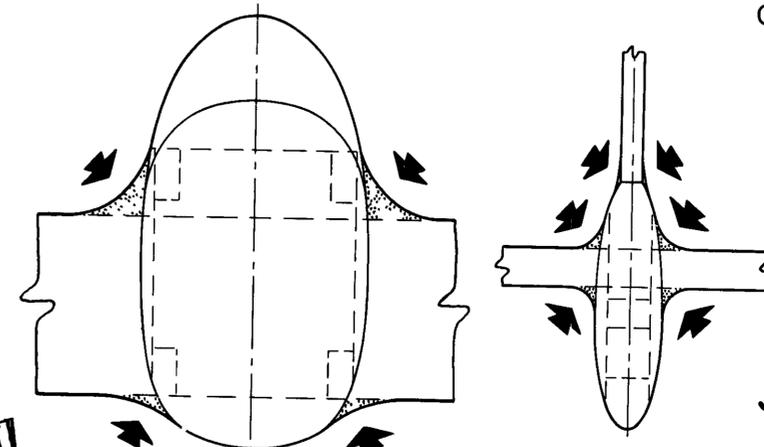
FUSELAGE TOP AND BOTTOM CARVED FROM SOLID BALSА, HOLLOWED TO APPROX 1/8" WALL



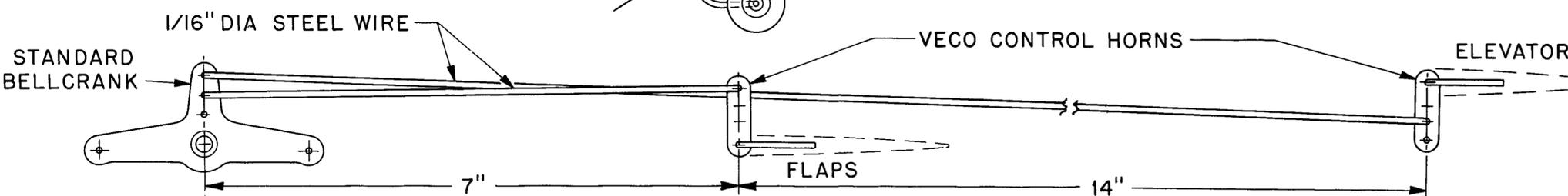
HOLLOW OUT TO APPROX. 1/8"

FUSELAGE SIDES - 1/8" SHEET

FORMERS F1 TO F6 CUT FROM 1/8" SHEET



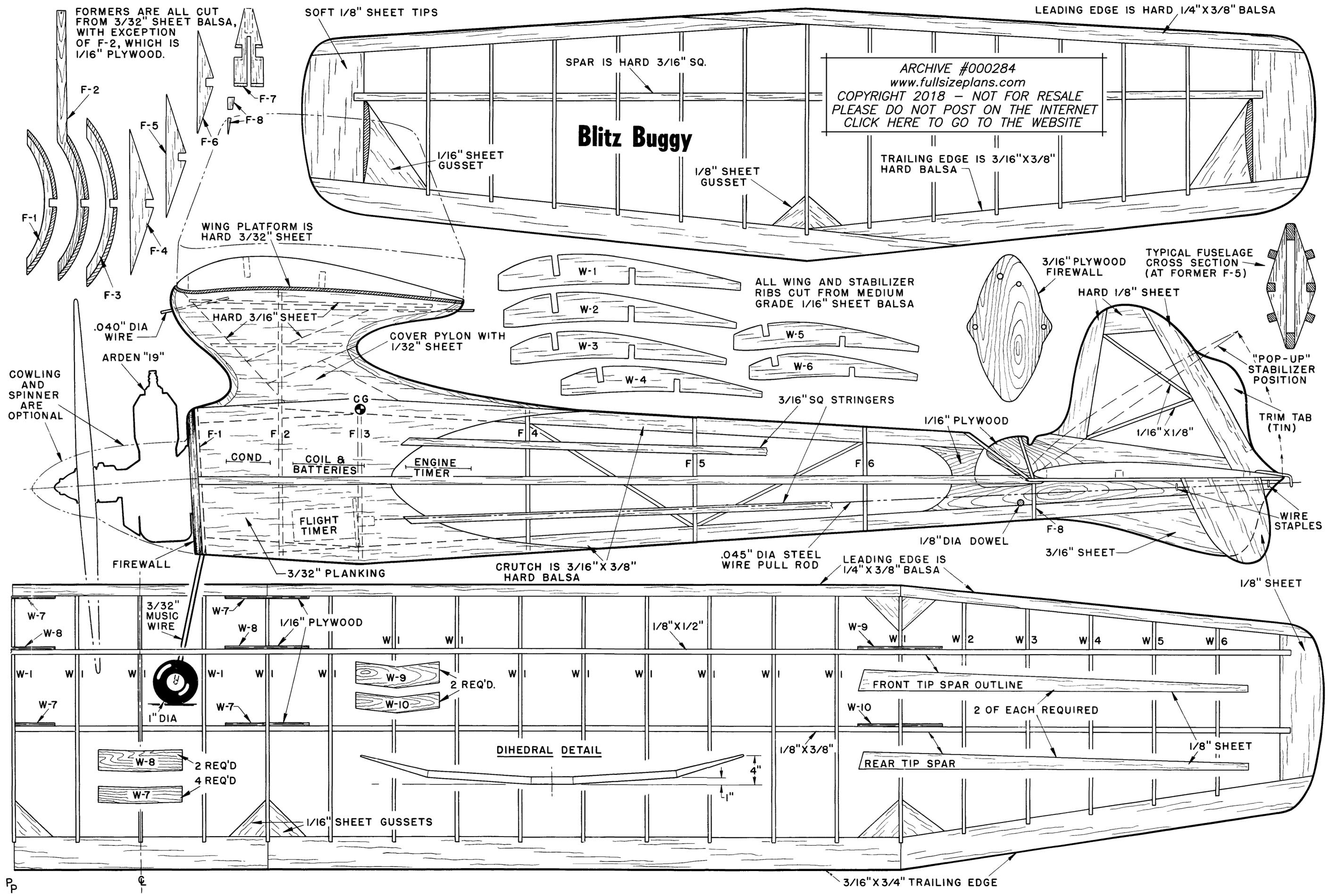
SHEET 2 OF 2



PUSH RODS SHOULD BE BRACED SO THAT NO BENDING IS EVIDENT

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ARES BY B. WERWAGE
 1960 NATS SR STUNT WINNER
 FROM AIR TRAILS MAY 1960



Back Issues of Model Airplane Magazines

If you're like me, you enjoy paging through model airplane magazines and plans, sometimes to find a project to build, to research a particular aircraft, or to just spend some pleasant time away from the daily grind.

If you like to build models, the magazines of today don't offer much since they are primarily expensive catalogs of ready-to-fly models. There's nothing wrong with RTF or ARF models but they don't offer much to interest model BUILDERS.

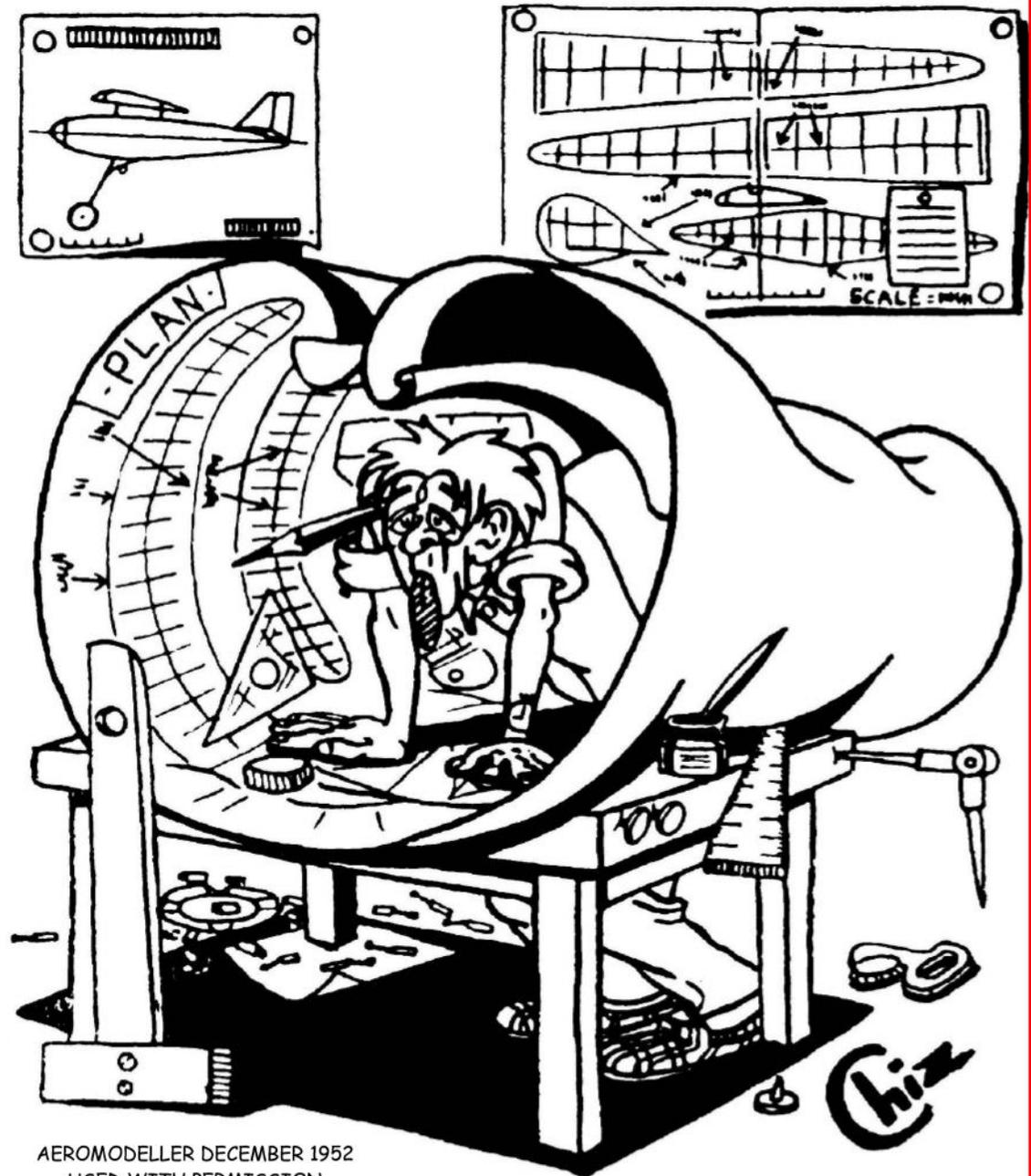
That's NOT the way it was in the past, when you had to build a model before you could fly it. If you're an old-timer, as I am, you have fond memories of Air Trails, Flying Models, Model Airplane News, Aeromodeller and many of the several other magazines available "way back when".

If you're a relative newcomer to modeling and want to learn how to build them, those old magazines can provide a wealth of useful information, plans and how-to-do-it articles.

There are several problems with those old magazines. They are sometimes hard to find, often in bad condition, and in many cases they are so fragile that they can fall apart just by turning the pages. This is because they were often printed on pulp paper, also known as newsprint. Newsprint is inexpensive, but has residual chemicals that cause it to deteriorate when exposed to the air and particularly to sunlight. Your wife or "significant other" might also ask "When are you going to get rid of all those smelly old magazines?"

I admit to being a bit of a "nut case" but have been collecting these magazine for over 50 years and now I am trying to digitize them to preserve them for other modelers. They are now available as digital PDF files. See the details on the next page.

Keep 'em Flying - Roland Friestad



AEROMODELLER DECEMBER 1952
USED WITH PERMISSION

Great Gifts for Modelers

Digital Magazines on USB Flash Drive Cards



AEROMODELLER, the premier British model airplane magazine is being digitized. **Ready now are all 240 issues from 1950 and 1960** including the full size plans that were sometimes included in each issue. On the left is a reproduction of the November 1935 cover of Vol 1, No 1. All of the earlier issues will also be available later in 2016

Catalog # D001033 - \$75 - Postage Paid

AIR TRAILS - This magazine went under several names. The final issue was published in March of 1975. There are 435 monthly issues included in the complete set and priced as follows ---

D001010 - January 1937 through December 1943 - 84 issues - \$50

D001011 - January 1944 through December 1950 - 84 issues - \$50

D001012 - January 1951 through December 1961 - 132 issues - \$50

D001013 - January 1962 through December 1971 - 96 issues - \$50

D001014 - January 1972 through March 1975 - 39 issues - \$25

AIR TRAILS ANNUALS -

D001009 - 1938 through 1969 - All 25 issues - \$30

D001015 - SPECIAL - Complete set including the annuals - \$200

MODEL AIRPLANE NEWS - The first issue of this magazine was published in July of 1929 and it is still being published. We have the following collections currently available ---

D001002 - July 1929 through December 1942 - 161 issues - \$50

D001004 - January 1943 through December 1952 - 120 issues - \$50

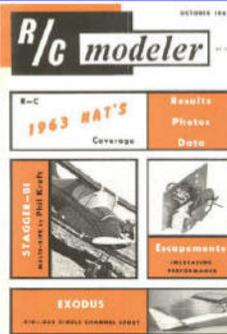
MODEL BUILDER - This magazine ran from the first issue of September~October 1971 through the final issue dated October, 1996 -

D001001 - The complete run - 295 issues - \$75

FLYING MODELS - The first issue of this magazine to use the name was published in June of 1947 and it is no longer published. We have the following collection currently available ---

D000013 - June 1947 through December 1963 - 123 issues - \$50

RC MICRO FLIGHT & RC MICRO WORLD - The complete run of RC Micro Flight, 1999 through 2004 and all issues of RC Micro World, 2005 through 2012 are available - D001016 - \$30



RC MODELER - Now available is the digital collection of the early issues of this magazine. The collection includes all issues from Vol 1, No 1 (October 1963) through December 1972. 109 issues all on a single USB Flash Drive.

D001017 - \$50 - Postage paid

All prices include postage paid worldwide

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Circle your interests and give this sheet to
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Now Available!!
The early issues of
AEROMODELLER
 Computerized in High Resolution
 On Custom USB Flash Drives



Now, after several months and hundreds of hours of work, we have available high-resolution digital copies of the British Aeromodeller magazine starting with the very first issue dated November 1935, shown above, and through the December 1942 issue. These issues are extremely rare and hard to find. These early issues are from the late Ivor F collection in Australia, with thanks to his son Tahn Stowe.

Furnished on our custom made USB Flash Drives this collection is priced at only \$60 US, postpaid world-wide. PayPal, Money Order or check drawn on a USA bank. Catalog number - D001047 - 85 issues -

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