

RCMW-FSP

JULY 2015



Cover Painting by Cal Smith
From Air Trails November 1952

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For the Model Builder and Flyer - July 2015 Issue



Full
Size
Plans



July already !! Time sure flies when you're having fun. (That's not my own, someone told me that) Too much rain to go flying as everything is soggy and the skeeters are starting to fly in formation.

More good stuff for you in this issue, starting with the 1/2A STARDUSTER, a winning free flight design by the late Sal Taibi. This model appeared in the September 1958 issue of American Modeler (Air Trails). The article is on pages 4 and 5 and the plan is on page 6.

The next installment of TALKING SMALL by Pat Tritle appears on pages 7 through 9. A couple of helpful hints and several photos from readers.

Also from the pages of the September 1958 issue of American Modeler is the U-Control semi-scale ME-109 STUNT by Charles Mackey. A nice looking, easy to build and great flying stunter.

And now for something a bit different, a rubber powered endurance model that, while not claiming to be a scale ship, still is reminiscent of the full scale Bellanca Cruisemaster, sometimes known as the "Cardboard Constellation" because of its triple tail configuration. The model's name is BELLANCA but only due to the similarity in appearance.

And now for something completely different. How about vacuum forming? John Jennings, who gave us the notching tool a couple of issues back has returned with a simple approach to vacuum forming coupled with a link to a series of youtube videos.

How about a really nice plan including patterns for a 45 inch span rubber powered SPITFIRE. That's the Joe Ott kit reprinted here with the compliments of Al Lidberg who sent us the kit to share with our readers. Even if you don't build it, the plan is one of those "Suitable for Framing" items that would look good on the wall. Thanks again Al. We appreciate the opportunity to share these old kits with our readers.

Air Trails printed their plan sets on multiple sheets and sold them to readers under the name of "Hobby Helper" We've reproduced a set here containing Maxey Hester's winning scale P-63 RC Pattern ship and Aubrey Kochman's FIZZ WIZZ CO2 powered sport free flight job.

Finally, don't forget our digital magazine collections available on USB drives. You can have the complete collection of Air Trails or Model Builder or partial collections of Flying Models, Model Airplane News and RC Modeler - We're working on Aeromodeller, the long running British magazine right now.

Keep 'em Flying,
Roland Friestad, Editor

NEWS & STUFF

Over a lifetime of model designing, building and flying, Dick Sarpolus, one of our regular contributors has had several hundred articles, model designs and some books published. One series of model designs goes by the name of HAMMER. They are all RC models ranging in size from large pattern types to 1/2A sport fliers. They include such names as HAMMER - JACK HAMMER - SLEDGE HAMMER - TACK HAMMER - and more. With Dick's permission, we will be reprinting these in upcoming issues --- Watch for them.

The Joe Ott SPITFIRE kit plan and parts appearing on pages 21 and 22 of this issue are from a complete kit loaned by Al Lidberg. His loan allows another old kit to be digitally preserved for others to enjoy.

Old kits like these are rapidly disappearing as old modelers pass on and many get tossed out when survivors don't want to be bothered.

If you have old kits like this and would like to share them with our readers, please contact me. We can publish the plans and patterns for everyone to read and enjoy. Once digitized they are preserved from further deterioration.

In the upcoming August issue Bob Aberle will be presenting a scale model of the Patchen EXPLORER, the full scale version of which was designed by Dave Thurston who is also responsible for the design of the Lake Amphibian. Bob's version will be carrying an onboard video camera. The following two photos show Bob's model.



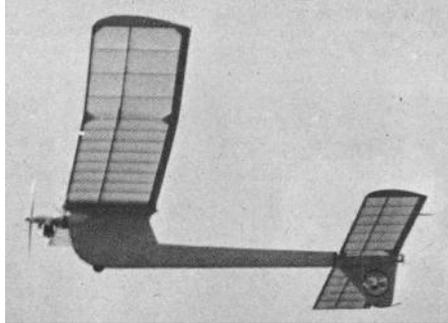
As a service to our subscribers, we are also making the complete March 1962 issue of American Modeler (Air Trails) available as a free download. This issue contains the construction articles for Maxey Hester's P-63 and Aubrey Kochman's Fizz-Wizz models whose

plans are on page 23 through 28 in this issue of RCMW. It has lots more as well. The issue is a PDF file and is quite large at 55 meg so we have placed it on a download service. Just send us an email to request the download information.

To contact us send an E-Mail to - cardinal.eng@grics.net



Sal Taibi's



STARDUSTER

Also from the September 1938 issue of Air Trails (American Modeler) is the famous STARDUSTER design by the late Sal Taibi who was nearly always in the free flight winners circle.

“Starduster” was the first design in a series of high thrust line models, all of which have been spectacular in climb and exceptionally high in endurance.

She easily makes maximum flights in cool morning air without the aid of thermals. The “Starduster” has turned in flights of 5 minutes and better many times, prior to start of contests.

While the class A, B, and C models are not exact scale of the 1/2A “Starduster” the general configuration is the same, performance and flight characteristics similar.

Power pattern is almost straight away with a very slight turn to the left, the recovery might be described as a simultaneous action in which the model yaws to the left, flattens out and is gliding in its normal glide pattern. The long dip after power shutoff has been completely eliminated with this design.

The 1/2A “Starduster” being the first of the series has the best contest record. In the first contest entered this year on February 16, at Los Angeles, Calif., the design was second. The third contest on March 23, at Taft, Calif., the “Starduster” made a clean sweep winning First, Second and Third places. Additional wins have been April 27, Taft, Calif., 1st and 2nd; May 18, Long Beach, Calif., 1st.

The “Starduster” has proven itself to be a high performance model that is very easy to adjust; most of the models flown in the contests mentioned were trimmed out in three or four flights and ready for contest flying.

If you are in need of a high performance 1/2A model, clean off the work bench and start building a “Starduster.”

Fuselage

Construction is such that it can be almost entirely assembled on the workboard with the exception of the wing rest, stabilizer support and motor mount.

First cement wood together for the Pylon and the Rudder, when dry cut out as shown on plans. Cut out two fuselage sides, the 3/32 sheet balsa fill-in for the Pylon and the 1/8 sheet balsa fill-in for the Rudder.

Pin one side of the fuselage to the board and then cement the 3/32 sheet fill-in and the 3/32 squares in place at the Pylon and 1/2 sq. and 1/2 sheet balsa fill-in at the Rudder; when set cement the Pylon and Rudder in place.

To assure a true assembly place a piece of 5/32 sq. balsa about 8 inches long under the Pylon about 1/4 of an inch from the top of the Pylon and pin in place. This will prevent Pylon warpage while drying.

Repeat the same procedure for the Rudder, use 3/16 square balsa strip about 4 inches long. Cement the 1/2 x % balsa strips in place, then the 3/32 sheet fill-in and 3/32 squares on the top side of the Pylon and the Ye. sheet fill-in and 1/8 square on the top side of the Rudder. Allow to dry awhile and then cement the other side of the fuselage in place. Allow to set overnight if possible. After removing from the board sand all over.

Cut out the motor mount from 1/2 Birch plywood, drill engine mounting holes and fasten the nuts or nut plate to the rear of the plywood. Cement motor mount in place and check frequently to be certain it is drying correctly with no side-thrusts.

Cut out and rough to size the 1/2” sheet balsa motor mount blocks and cement in place. When dry trim flush to motor mount and sand.

Cement the wing rest, stabilizer support, all hooks and VTO peg in place. Cut section out of any rubber wheel on hand and cement in place as shown on plans—this is for shock absorption only on dethermalizing—cement well.

Cover the fuselage with Jap tissue and give the fuselage about 3 or 4 coats of dope and 2 coats of fuelproofers.

Stabilizer

Built in the conventional manner. Note the two heavy center ribs for the hold-down hooks. If preferred these ribs can be left full length instead of being cutoff as on the plans. Gusset the ribs as shown to prevent trailing edge drooping.

When cementing the tips in place tilt up to approximately 60 degrees, allow a little extra stock on top of tip so it can be sanded to conform with the airfoil shape.

Cover the stabilizer with Jap tissue, give one coat of dope and then cement the stabilizer holddown hooks and VTO pegs in place. Give the stabilizer 2 or 3 more coats of dope and then 2 coats of fuelproofers.

Wing

Build in the conventional manner. Note that the Vs sheet wing tips have balsa wedges to prevent sagging after covering. Use the same procedure as stabilizer when finishing the wing tips and also for doping and fuelproofing. Add the wing locating dowels after the first coat of dope.

Flying

For successful, consistent flying the "Starduster" should be set up as shown on the plans; do not deviate. Balance as shown and use 1/16 negative incidence under the trailing edge of the stabilizer, add about 1/32" shim under the left side of the stabilizer for turn in the glide.

When shimming never use balsa wood as it has a tendency to compress with use; it is preferable to use thin plywood shims or some other solid material.

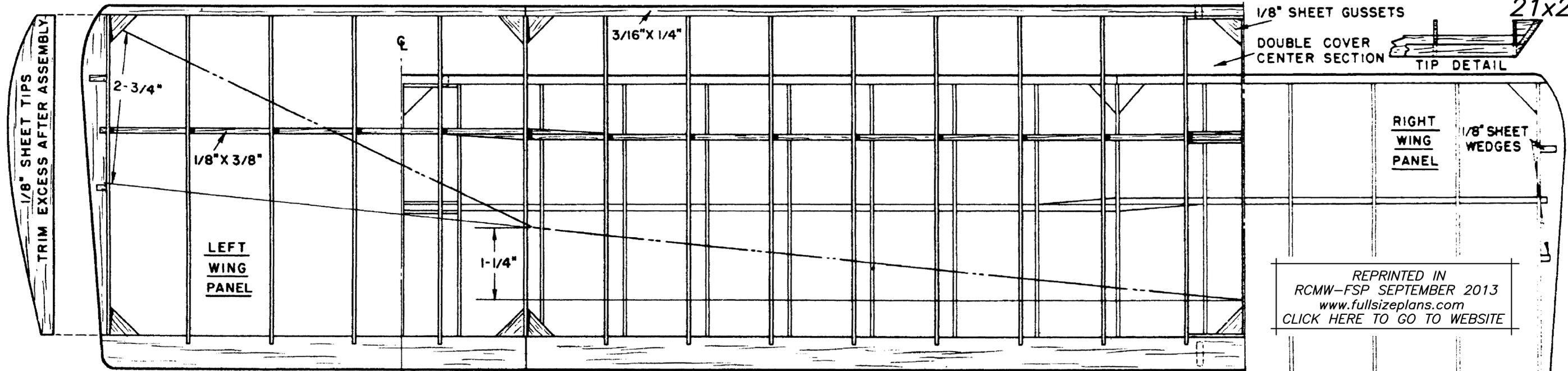
There is no sidethrust or down-thrust used. With the underslung rudder the "Starduster" can be leaned forward about 15 degrees for takeoff. Assemble the model completely and place it in VTO position, trim off the rudder VTO peg until the model falls forward then take about 1/2" off the stabilizer VTO pegs and the model should stand in VTO. position unaided.

Place the prop on the engine backwards, rev up the engine to top speed. Launch model and watch flight pattern. If there are no warps the "Starduster" will fly straight away or possibly very slightly to the left.

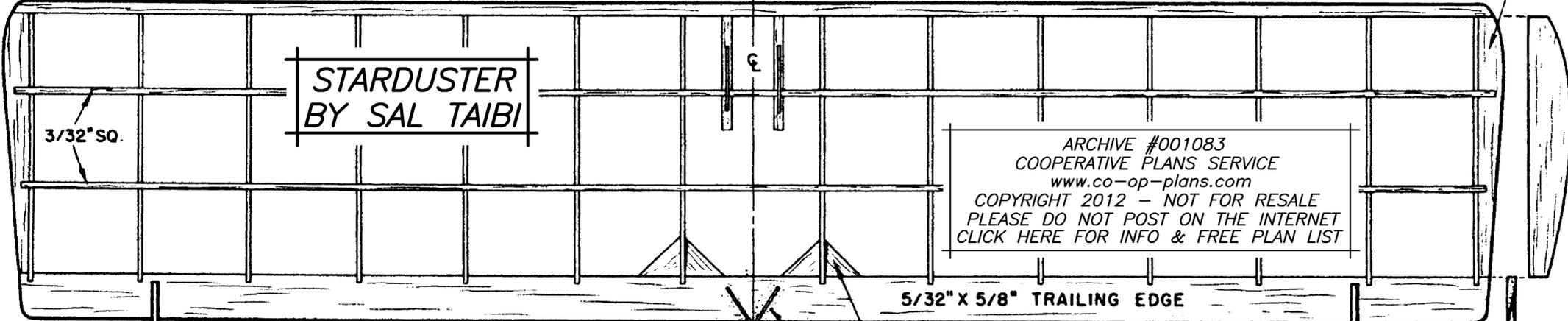
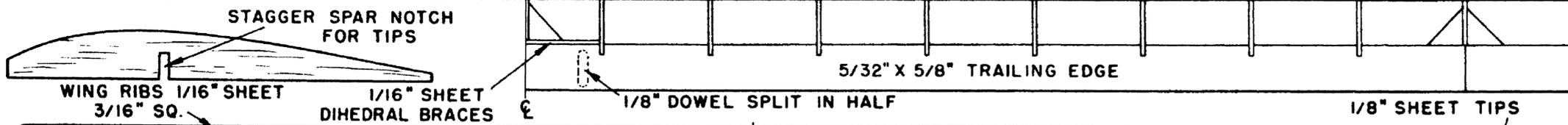
If this is the flight condition place prop on the correct way and fly with approximately 90 per cent power, if flight pattern looks safe fly again with full power.

If during the full power tests the model has a tendency to climb at a low angle of attack add about 1/32" negative incidence under trailing edge of stabilizer. If there are no bad warps built into the "Starduster" it should trim out easily as described here. Good Luck.

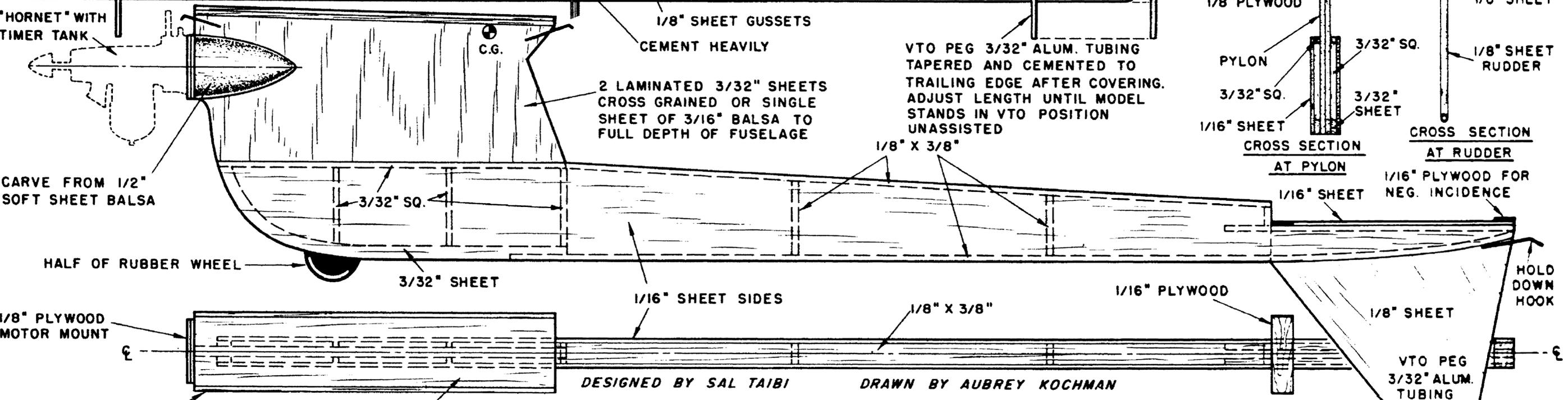
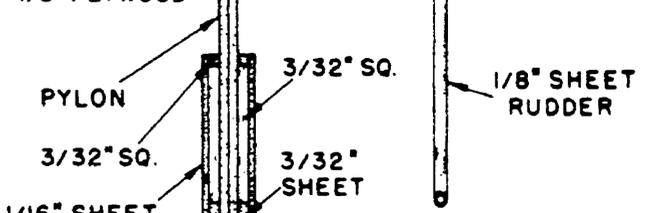
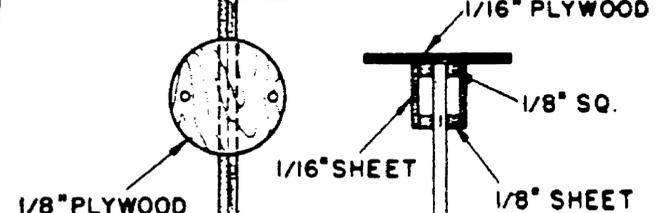
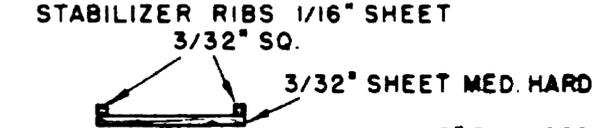
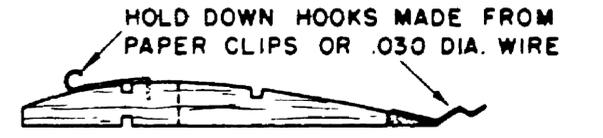




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DESIGNED BY SAL TAIBI DRAWN BY AUBREY KOCHMAN
FROM AMERICAN MODELER (AIR TRAILS) SEPTEMBER 1958

Talking Small

by
Pat Tritle

Just as we had suspected, summer arrived overnight here in the high desert. The parkas are safely tucked away, and the spring jackets have been replaced with sun screen. The good news is that the windy season is finally behind us, so we're doing a good bit more flying than we have been in the last couple of months.

That being the case, there's not as much building going on as in those cold winter and windy spring months, but that doesn't mean we don't need to spend a bit of shop time now and then.

When the models are being flown more, they'll require more maintenance to keep them in good flying condition. Personally, I'm of the mind-set, "if it ain't broke, don't fix it", but I do like to keep an eye on things to prevent the "need for fixing".

In that realm, there are a couple of areas that bear a bit of watching. One is hinges; On the lightweight park flyer types I use narrow strips of Cya hinge stock glued in with Canopy Glue. Generally speaking, it works great, but now and again, especially in our dry climate one will work a little loose and need a dab of touch up.

For that I use Canopy Glue thinned with water and wicked into the hinge cavity. I don't use thin Cya, because when it's applied it will form a fillet between the edge of the control surface and

the hinge stock, and when it fractures upon the first control deflection will form a knife edge that will chafe the hinge, eventually causing it to fail. Since I've quit using Cya on the hinges there has not been a single failure.

Another area to keep an eye on is the control linkages. Things like EZ-Connectors, clevises, and control horns that are always in motion can wear out or work loose.

Again, I quit using many of these things years ago for a couple of reasons. First, because with each mechanical item that's used you have another potential point of failure, and secondly, because when you're striving for a light model to fly slow allowing larger models to be flown in smaller venues, weight savings is the key to success.

Let's face it, if you put it on the model, the model will have to pick it up when committed to flight. And since a Z-bend is pretty well fool-proof and adds virtually no weight, there's really no need for a brass coupler, threaded clevis, an EZ-Connector, and nylon control horn to secure a pushrod when a couple of weightless Z-bends and a plywood horn will do the trick.

However, when no provision for adjustment is provided, greater care must be taken in the initial set-up so that those very minor changes can be made in the radio program.

There is a trick I use when things like aileron and flap set-ups don't come out quite right when using one servo for each control surface. For those linkages I use .032-inch diameter steel wire with a Z-bend at each end.

If for whatever reason the controls don't end up quite centered, I'll center the one that comes out closest to neutral using the radio sub-trim first. Then cut the pushrod in two on the other side and couple the ends together with a 1/16-inch O. D. aluminum tube. Center the control surface and secure the tube to the pushrod with a drop of thin Cya at each end. Been doing it that way for years and never had a failure.

Meanwhile, volumes could be written on this kind of thing, but since space is a bit limited we'll save that for another time. However, there's been a fair amount of modeling going on, so let's dive into what the readers have been up to.

We have a nice variety of modeling subjects this month for sure, so we'll start small and work out way up.

Fourteen year old Jaden Shumate has been working on a couple of new free flight models. Jaden and his dad Rodney work together on several projects where Jaden builds the model which is often covered by Rodney. As it turns out, Jaden loves tissue, but not the iron-on stuff. Rodney, on the other hand is just the opposite. So between them, they've been exercising their strong points to work up some really nice models.

First up, shown on the next page, is the 16-inch span J-3 Cub from reduced Hacker plans. To keep the weight under control several of the wing ribs were eliminated and the model covered with Microlite. The finished model tips the scales at about 15 grams, and early flight testing is proving very positive.



Jerry Smith also checked in this month with the BMJR Models half size Miss America. The finished model is covered with SoLite with Solarfilm trim. The Miss America logo was done by Callie Graphics.

Set up for 3 channel R/C the model tips the scales at 11.8 oz., which is a little over an ounce lighter than the advertised 13 oz. Power is provided by a Cobra 1570KV Outrunner motor, a 10A ESC, a GWS 8-4 prop, and runs on a 2S 1,000 mah Lipoly battery. The model turned out to be a terrific flyer requiring only a click or two of trim, which is a testament not only to the builder, but also to the design.



Also from Jaden is the Ford Trimotor built from a Dumas kit. The Trimotor was built straight from the box without modification and covered with Microlite as well.

Flight testing is underway now, but is proving a bit tricky as the model flies well under power, but when the rubber runs down the model will turn over on its back as the power runs down. It'll be curious to hear how it all shakes out as the trimming process progresses.



For the scale aficionado, David Payne just finished this beautiful Stinson Reliant in American Airlines Route Survey colors. The model, built from a PCM Short Kit was covered with Ultracoat Parklite with graphics from Callie Graphics, and hand painted cowl and wheel pants.

Power is from a 480 Outrunner and 40A ESC, with an 11 - 5-10 variable prop set on 5 pitch and a 2100 3S battery. Several mods were made to the original design including a scale tail wheel, and fiberglass boot cowl panels. A large hatch was also made for access to the battery and internal components.

Guidance is provided by 6, 9 gram servos and an FRSky 8x receiver. Flying weight came in at 42 ounces. In the air the Stinson is a real jewel, and the flaps are reported to be very effective, inducing very little pitch change even at full deflection.



Gary Schubert has dropped in with a scratch built 56-inch span Monocoupe built from Sig free flight kit plans enlarged 233%. Power for the 4 channel model is provided by 2217 Outrunner with a 18A ESC with a 10-5.5 prop and a 2S 2200 mah Lipoly battery. The model is covered with red and white Microlite, trimmed with custom graphics from Callie Graphics, and plastic parts from Park Flyer Plastics. With a flying weight of around 24 oz. the model can't help but fly great, and looks great in the air as well.



The Songbird is a terrific flyer, and actually flies so well that it would be a great choice for a first twin engine model. Keep an eye out at www.brodak.com for further details when the kit is released.

Well guys, it looks like we've run out of space already, so best get this one wrapped up. I would like to take this opportunity to thank all of you who participated this month with some beautiful models.

It would also be a good time to invite the rest to send over pics of your latest projects or building tips that have served you well over the years to share with the rest of us. In the meantime, do keep the good stuff coming, and keep good maintenance on those everyday flyers to avoid the need to build a new everyday flyer.

Editor's Note - Watch for Pat Tritle's column again in our September issue

And finally, for all you Sky King Fans, Dare/Brodak is planning to release their new Songbird kit around early July this year.

The 48-inch span model is a brand new design, powered by a pair of 400 – 450 class Outrunners with (2) 18A ESC's and APC 9-6SF props on a single 2200 mah 2S Lipoly battery. Guidance is 4 channel R/C with 4, 8 – 9 gram sub-micro servos.

The model is covered with Coverite Micro-lite with a flying weight of around 32 ounces. The battery is easily accessed through the removable vac-formed plastic nose cone, and the wing is removable for easy transport.

The kit will also include laser cut parts, and plastic cowls with the false radial engines.



Mackey's Me. 109



An easy-to-build semi-scale U-Control stunter designed by Charles Mackey. It originally appeared in the September, 1958 issue of Air Trails

The Messerschmitt 109 was chosen as a semi-scale stunt ship for several reasons. Position of the landing gear was conducive to simple fast construction with scale appearance. Wing was also a big factor. The tapered leading edge offered flying advantages and the square tip simplified building.

These features kept construction time to a minimum without sacrifice to appearance or performance. I have been designing stunt ships for over 10 years and I believe the 109 has more to offer for the least amount of effort than anything I have ever witnessed.

It's difficult to tell anyone how a stunt ship flies. Here in Indianapolis we just say "Try it for yourself." The 109 doesn't pull off your arm but it does stay snug on the lines through all the maneuvers.

It is especially recommended for new stunt fliers because it gives you a feeling of assurance.' It has excellent recovery qualities and it seems to round out loops as if it had been trained.

As with most stunt ships this 109 has its own story. It began when we learned we would be able to attend the 1957 Nationals. This being my first time to compete in the Nats, I felt I would need a good semi-scale subject.

I found what I was looking for in the 1954/1955 issue of Air Progress. There was a cutaway drawing of the 109 with color combinations and cockpit detail, in fact, it had more detail than I had hoped for.

A plastic model was assembled to obtain the general outline. Construction was fast, so we had time for a few test hops before the long drive to the Nats.

We arrived at the Nationals late and had to get a motel twenty miles from the flying circle. Bill Netzeband, a new but good friend, was on hand to help us test fly the evening before the big day. Bill thought the best time to compete would

be in the morning, so the next day I was up with the chickens.

The best flight I have ever made was the practice flight. Bill was on hand to launch my official flight. The motor was set a bit too lean, but everything was going as we hoped it would—then came the outside squares and I splattered it!

Good ole Bill—just the one to cheer things up. We were looking over the remains when I said, "Drove all the way from Indianapolis just to tear up my stunt ship. It makes me feel stupid."

Bill promptly answered, "Yeah, it makes you look stupid, too!" This brought on a few seconds of silence, then laughter, and all was right again with the world.

I had passed the crack-up off to late reflexes or jittery nerves, but when going over the wreckage, I found the trouble. I had used a 3/32 push rod from the bell crank to the elevator horn, but the flaps were connected to the main rod with 1/16 wire and it had bent due to the air pressure on the flaps.

The new 109's use two pushrods out of the bell crank. I believe this to be the best control hook up. The most popular hook up, which consists of one push rod from the bell crank to the flap horn and another from the flap horn is good, but any loose hinges on the flaps or wear in the controls is carried back to the tail. Your controls are the most important part of any stunt ship. Give them the attention they deserve.

Before test flying, check balance points, pull test lines and check the controls. Both 109's have been flown without any need of adjustments. Make as many test flights as necessary to build up your confidence before you wring it out.

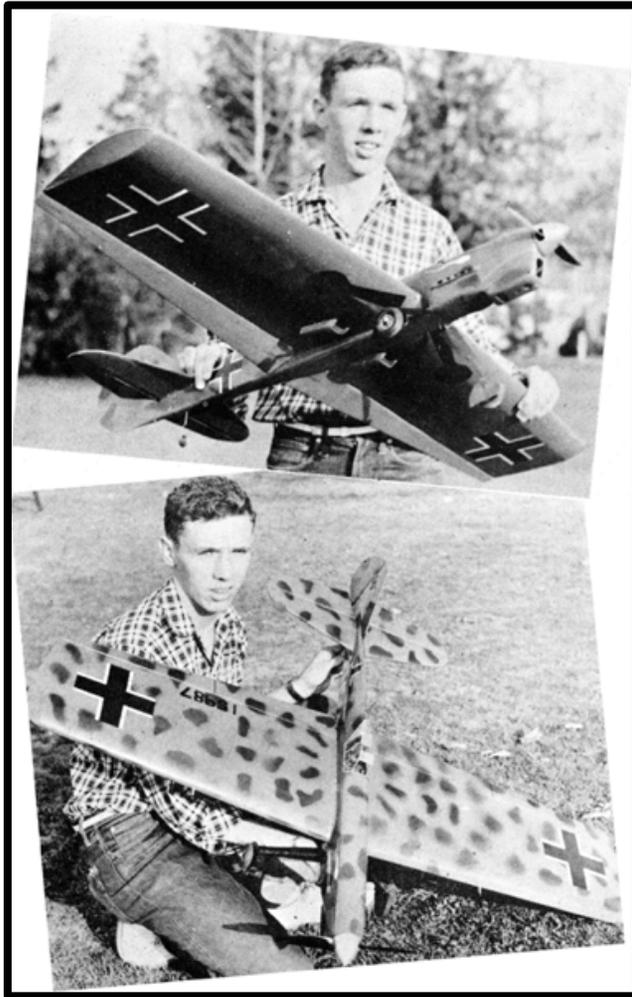
I have been accused of being somewhat irresponsible in testing my stunt ships because I usually run through the pattern on the first flight. Actually, I don't feel this is being haphazard because I have never lost a ship this way.

I believe some people can tell what a plane will do in a few laps. Others take many flights. Just don't push yourself. Take as much time as you need. We found that by just making simple trim adjustments such as the size of the handle, length of lines, balance point, engine thrust, flap

and elevator relationship, we can bring about any type of flying characteristics we desire. The photographs of the 109 were Ronnie Peterson's model.

Bill of Material for Me. 109
(Balsa unless otherwise noted)

Twelve 1/16" x 3" x 36"; (4) 3/16" x 3/16" x 36"; (2) 1/4" x 1/4" x 36"; (2) 1/8" x 36"; (2) 1/8" x 3" x 36"; (2) 1/4" x 3" x 36"; (1) 1/2" x 3" x 36"; (1) 3/32" x 3" x 36"; (1) 6" x 1" x 2-1/2"; (1) 3/4" x 2-1/2" x 14"; 1/16" plywood; 1/8" plywood; 1/16" wire; 3/32" wire; 1/8" wire; 2 large control horns; (1) 3" bellcrank; Covering material; dope; glue; 3/4" tail wheel; (2) 2-1/4" wheels; (1) bicycle spoke; (3) J-bolts; cloth hinges; (2) 3/8" x 1/2" x 8-1/2" hardwood for motor mounts.

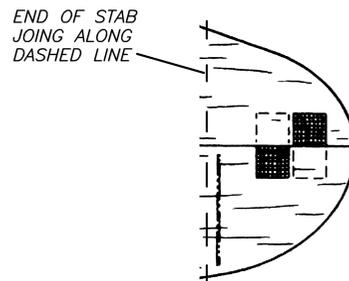
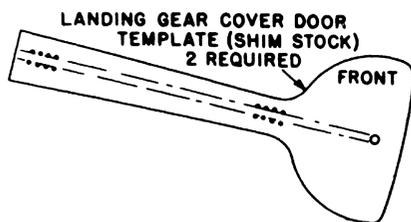


Ronnie Peterson displays his own gorgeous "109" built from Mackey's plans. Mighty nice work, Ron

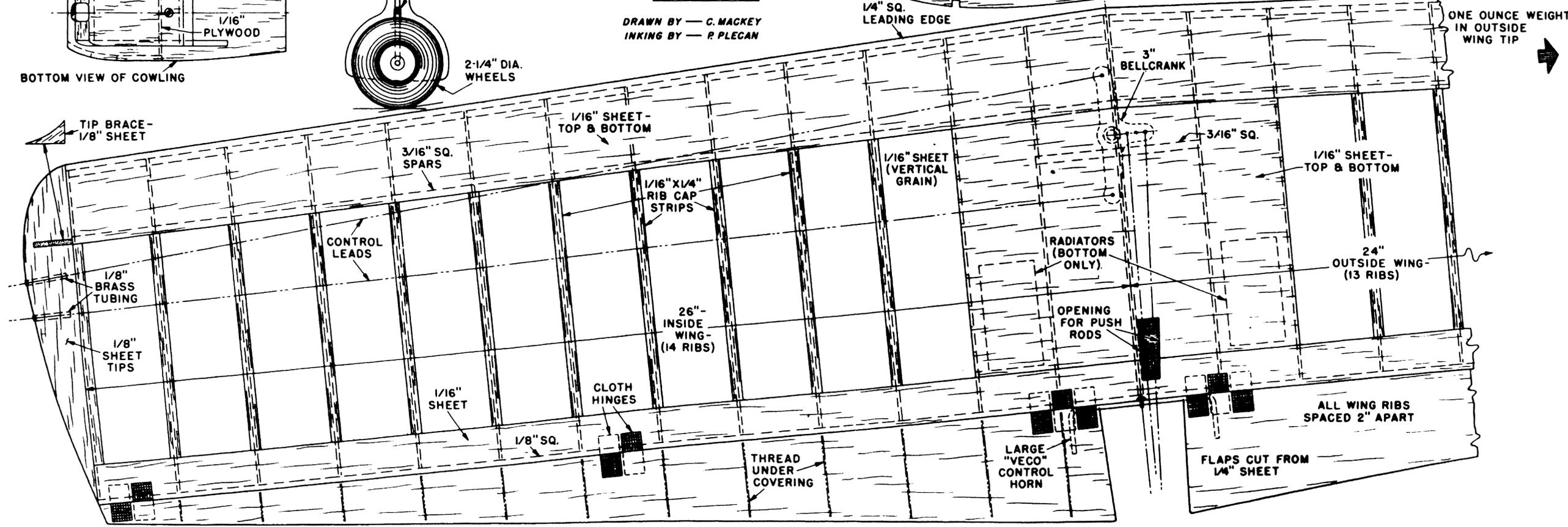
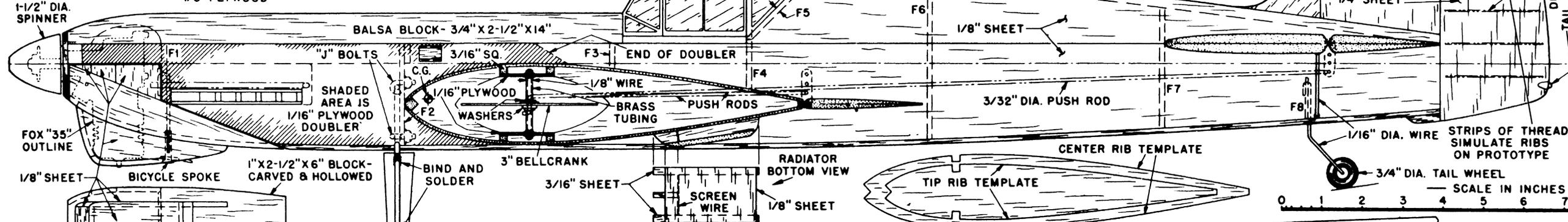
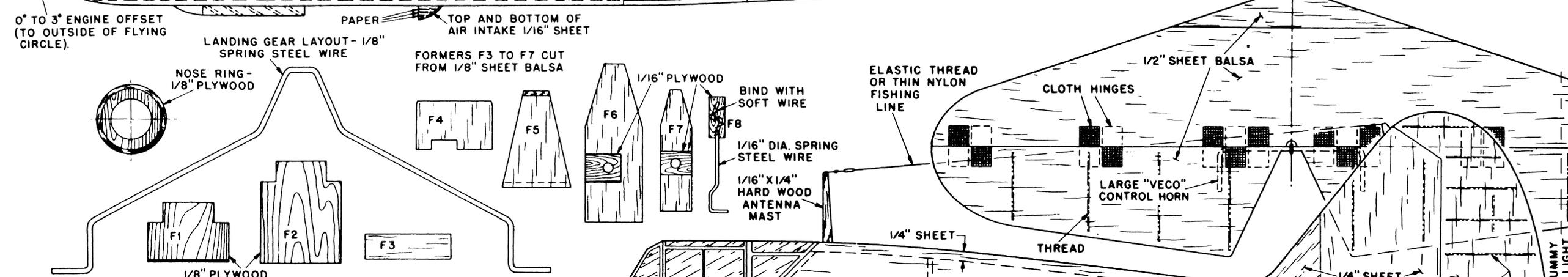
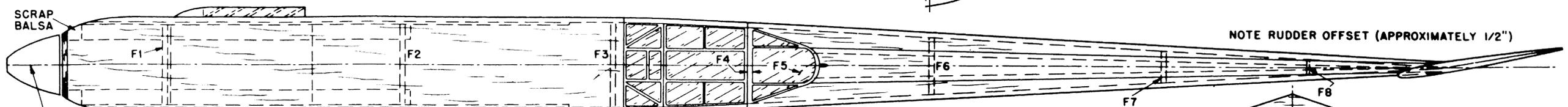


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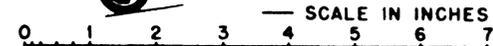
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ORIGINALLY PUBLISHED IN
AIR TRAILS, SEPTEMBER 1958

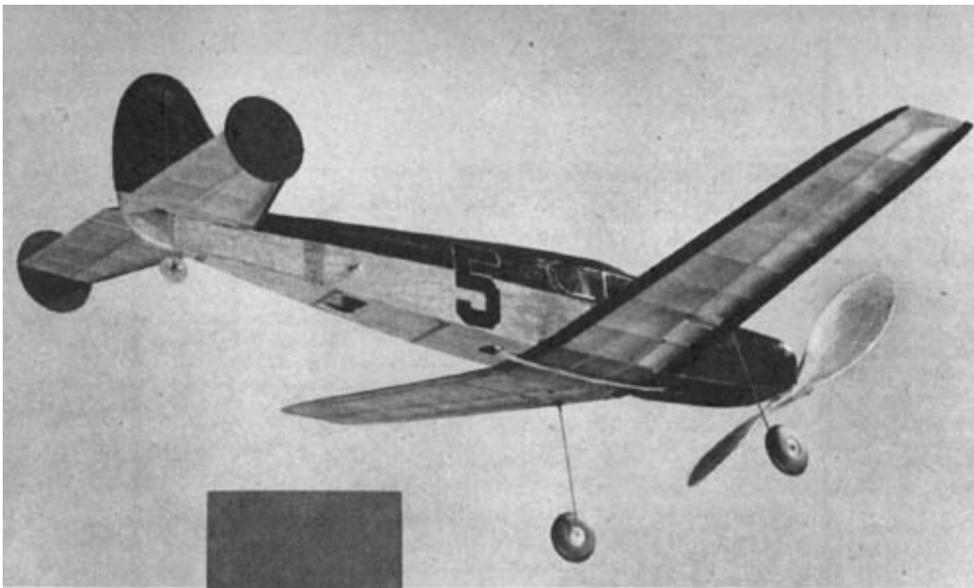


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DRAWN BY - C. MACKEY
INKING BY - R. PLECAN





This semi-scale rubber model appeared in the January 1951 issue of Air Trails and was designed by Cristo Russo.

Free flying scale jobs are fairly hard to make and seldom in the same league with contest models as far as performance is concerned. Contest rubber jobs do not resemble real planes.

But there is one way to have your cake and eat it too. How about a big sport design, meant primarily for performance but laid out along the lines of some popular real aircraft? This "Bellanca," for instance.

It has good proportions for flying, slimmed out as it is, with big prop and stilt-like landing gear. While there is nothing scale about it, every line—the wing tips, the stabilizer tip rudders, the cabin—shouts Bellanca. In the air it looks a lot like the real ship.

Semi-Scale BELLANCA

She looks like the real thing, yet has contest type performance

Since the fuselage sides are parallel back to the trailing edge of the wing, the forward bulkheads are cemented in first. The sides are then drawn together at the rear and the remaining formers put in place.

The stringers are fairly hard and eliminate all bowing of the contours due to paper pull. The nose is extra strong with cross pieces on all four sides. The heavy leading edge of the stab prevents easy breakage and gives a nicely rounded edge. Ribs are fairly soft.

To assemble, lay down the edges, then the bottom spar of hard 1/8" square. Put the ribs in place, being careful not to make force fits (which may cause warps), and finish with the top anti-warp spar.

Cut all wing ribs identical to the center section rib, then trim to fit the taper as shown in the detail. The wing tip can be cut ready to go from 1" wide triangle stock, otherwise shaped from 1/4 x 1" wood.

First lay down the edges, next the bottom spar of 1/8" square hard balsa. Trim the ribs to fit and slide into place without forcing. Add the top spar. Be sure to note that the two panels are made separately, then joined in the middle when dihedral is incorporated. In other words, the center section is added last.

The center section consists of filling in the connecting leading and trailing edge pieces, a full depth piece of 1/8" sheet (at the spar positions as shown), and a further 1/8" square about two-thirds chord point. This also is shown in detail. On the bottom surface, almost directly beneath this last piece, is a short piece of 1/8" square that does not extend beyond the root rib on either side.

The landing gear is really part of the wing, bent as shown. A piece of hard 1/8" x 1/4" is inserted in the wing against the inner side of the appropriate wing rib (see top view wing).

Another short spar of 1/8" sheet (see front view wing) extends from the root rib out to this landing gear attachment rib. On the top view it may be seen between the top and bottom wing spars. The 1/16" x 1/4" balsa pieces are placed to either side of the landing gear attachment rib as show on the top view.

The prop is a standard contest type. A freewheeler is used and five turns of a Jasco spring (or a light spring from your hardware dealer) is inserted between hub and nose block with a washer at either end. A 3/4" wood screw is the stop.

Divide the motor into three portions and braid. First, loop the end of the motor over a large nail. Draw out to three times its length each of the three portions and wind in about 20 winder turns.

Slide a clothespin—the snap type won't slip—through the outer end of each stretched-out and partially wound portion. Proceed to braid and have a helper slide the braids along smoothly toward the opposite end of the motor, but not forcing them tight.

It is suggested that, before balancing the prop, the freewheeler or other metal parts be added first to the light blade. Usually, minor balancing remains after that.

Cut the blades fairly heavy for strength. Use two coats of wood filler or sanding sealer followed by three coats of clear dope. Be sure wood holes are drilled oversize to permit easy freewheeling.

Covering is left to the builder. Some prefer rubber model tissue but good results and a durable machine result only from the use of Sky Sail.

Wet cover if possible. First dope the structure to prevent warping of edges, and lay the wet tissue briefly between the folds of a towel to sop up excess moisture. Wet covering is faster, easier, and neater.

Give the finished covering two coats of dope thinned half and half, then follow up with a third coat of the same mixture to which three drops of castor oil per ounce have been added. Run grain chordwise to avoid hooking down trailing edges.

While the Bellanca is not difficult to adjust it is imperative that it be lined up accurately and be without a warp. If you have a slight wash-in in the left wing tip, let it stand, but remove any other warp by softening the tissue with thinner, or by steaming, and then holding the surface at the proper angle until the tissue pulls tight again. If the warp is bad, twist the surface in the opposite direction in the hope the two will cancel out.

While the "Bellanca" will turn in spectacular flights it must be flown as described. The fact that low wings often behave badly is the result of trying to make them do what is impossible for them. In general, low wings should not be flown to the right. Trimmed one way, this one would not fly regardless of the method of adjustment. But trimmed another it flies quite reliably.

The big error in adjusting the low-wing semi-scale is to correct for tail heaviness by increasing the stabilizer angle, decreasing the wing angle, or by any means reducing the decalage, which is the difference in angle between the two surfaces.

It is necessary to purposely trim the ship tail heavy by the rigging of these surfaces, then to bring the C.G. into the proper position with lead ballast in the nose.

This method of adjusting insures that at high speeds the low wing will not dig under. In the beginning this ship would dive spirally to the left once the ship had stalled.

If it didn't stall it would also go to the left but at a very shallow angle at high speed. When properly trimmed, the airplane climbs steadily and, if stalled, will recover from the left turn that results.

Be certain that there is at least 3/32" negative in the stabilizer. Use rubber-tired wheels to help bring the C.G. forward and down. No right thrust was used but we had purposely softened the tissue of the left wing tip with thinner and worked in slight wash-in, always good practice for the wing on the inside of the turn.

Make your usual hand glides. Don't worry about the gear, it is exceedingly whippy. The wing will come askew if you hit it. When satisfied that you have enough weight in the nose for a smooth glide, try about 50 power turns, over grass if possible. Add ten turns at a time.

The ship should develop a slight stall tendency under power, so begin to add the remaining downthrust. Good flights should result. If the turn tends to tighten, add a trifle right thrust but not enough to make the ship go straight or to the right.

VACUUM FORMING 101

by
John Jennings

The ability to vacuum form canopies, cowlings and other airplane details opens up a whole new world of model building possibilities.

I tried some others, but the system discussed here is better for our purposes and can be made at a very modest investment of time and money using all hand tools most model builders already own. While simple to make and use, this system produces first class results.

It is really hard to do something one has only read about, but never actually seen done. Google Chris Boehm's 10 minute YouTube videos on model airplane vacuum forming. He demonstrates the technique beautifully.

The following video is one of several and after you watch the first, the subsequent videos will automatically load and run.

<https://www.youtube.com/watch?v=oJVFxK5pseA&app=desktop>

Making the model (plug)

The plug (shape over which the plastic will be formed) can be carved from Balsa or Basswood. Canopy frame details can be added to the

plain plug using tape strips. Sand the plug smooth then dust it with talcum powder to make it easy to separate the formed part from the plug.

While there is no need for a shiny finish, the better the plug, the better the finished item. Leave a little extra plastic on the item so it can be trimmed to an exact fit on the model. Try to eliminate, but do not panic over "undercuts". The formed piece is usually pretty flexible and can usually be removed some way.

Raise the plug off the surface of the vacuum former about an eighth of an inch or so to eliminate webbing. If a piece of plastic fails to form and it has no holes, it can be re heated and used again.

Plastic for forming

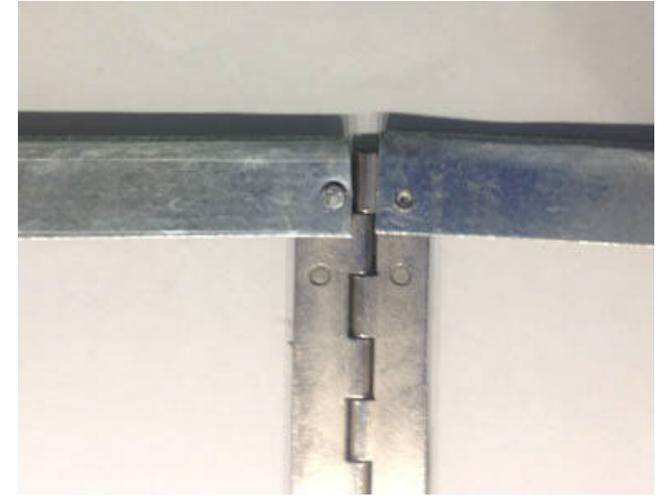
The easiest, least expensive, most readily available source of plastic for model airplane vacuum forming is Solo or similar brand thin plastic, disposable dinner plates. I like the 10" ones. Party stores usually have the clear plates. Grocery stores have the colored ones. The plates produce light but strong plastic parts about .003" thick.

Plastic Holding Frame

Since the frame will be exposed to some heat I made mine out of sheet metal. I got some 18" X 1 1/2" pieces of 20 gauge sheet metal cut for me by an air conditioning shop.

The shop even folded the pieces to a 90 degree angle lengthways for me. The size of the frame is up to you. Make it to get the most out of your 10 inch plastic plate. I made mine 6" X 8", overall.

Cut a 6" piece of piano hinge using a hacksaw, to form the folding center of the frame. Cut the 4 - 8" sides and other 2 - 6" ends to length, out of the folded sheet metal, using tin snips.



After cutting pieces to length, fold all the sheet metal parts flat with a vice, though a hammer would probably work. You now have a double layer of sheet metal.

Assemble the parts, then drill 1/8" holes through the assembly and insert the pop rivets. You might not need a pop rivet tool, since you will be pounding the rivet flat with a hammer.



After assembling the frame, line both the inside of the frame with 3/8" weather strip. The weather strip keeps the plastic from slipping while it is being formed.

Vacuum Box

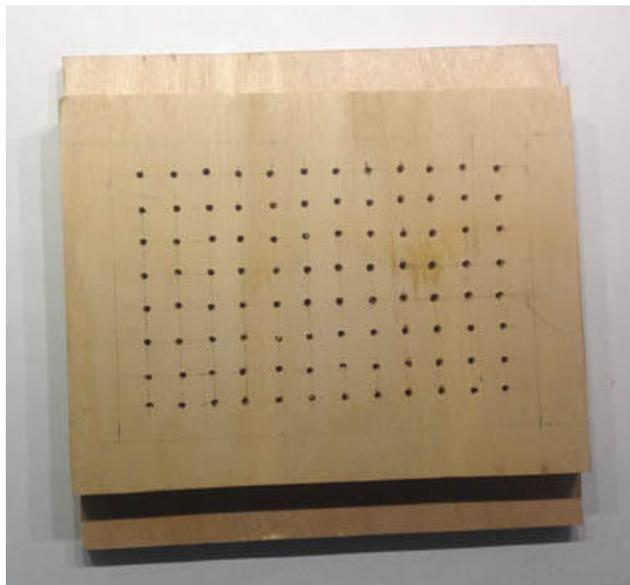
Let's keep this simple. The size of the box is determined by the size of the frame above. You do not need a big, deep box. Big boxes just have lots of air to pump out before the plastic can be pulled down and formed.

To make this box, you need a piece of 2' x 2' x 3/8" birch plywood from a home improvement store. I have not tried, but 1/4" ply would probably work. Cut the bottom piece larger than the other 2 pieces so there is a place on each side of the box for C clamps.



Drill a hole near one end of the big piece to fit the household vacuum cleaner hose which should be a good, snug fit. Do not use a Shop Vac!

The the vac hose end should come through the piece of plywood with the end of the hose flush with what will be the inside of the box. You do not want the hose end to pass up into what will be the box and cut off the air flow. You want the hole centered about 2" from one end of the big piece of 3/8" plywood. See the drawing.



Cut the next 2 pieces of plywood identical, about the same size as the outside of the sheet metal frame you made. Clamp the two pieces together and drill holes all the way through the top piece into, but not through the second piece. I used an electric hand drill with an 1/8" bit, since it was already in the drill and looked about right. A nice even pattern looks best. I, honestly, doubt the sizes or patterns of holes matter all that much. You need a total square area of all the holes about equal to the square area of the vacuum cleaner hose end.

Separate the two pieces you just drilled. Keep the "pretty" one for the top of the box. Cut all the way around just to the outside of all the holes in the second piece of 3/8" plywood leaving an unbroken 1/2" wide frame all the way around. This will become the vacuum box sides. I used a coping saw. It took about 10 minutes. Carefully fill any gaps in the veneer edges of this piece. No air leaks.

Now, sand off any splinters, then glue the pretty piece to the top, the big hole piece in the middle and the big piece on the bottom. Be reasonably generous with the glue. Viola! You now have a 3 layer, well sealed, no air leak, vacuum box about 1 1/8" thick, which is plenty.



In use, one end of the vacuum box hangs over the edge of the table and is held in place on the table edge with C clamps. The vacuum hose end enters the vacuum box from the bottom.

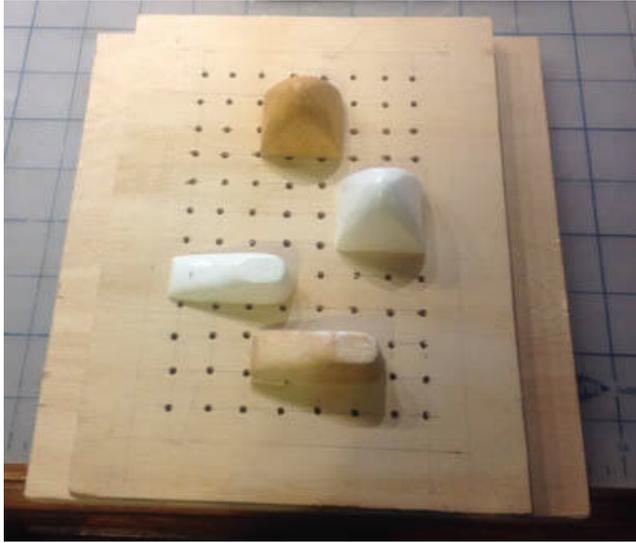


You need access to an electric eye hot plate. No, a gas one will not do and forget about using your trusty grill. The plastic goes poof and stinks, leaving a mess! I bought a hot plate from Wal Mart for less than \$20. You can use the eye on an electric range in the kitchen, wife permitting. You will not be touching the eye, unless you goof.

The Process

Round up the stuff, hot plate, household vacuum cleaner, box, plastic plates, scissors, pliers, frame and plug.

Turn on the hot plate. It takes a few minutes to heat up.



Put the plug in the center of the vacuum box.

^Cut the plastic plate into a square larger than your frame. Close the frame over the plastic plate square, making sure the plastic is caught by the weather strip in the frame, all the way around. No gaps!

Turn on the vacuum cleaner.

Hold the frame containing the plastic plate 2" to 3" over the hot plate with pliers holding the open end of the frame closed. The pliers also keep your hand from being burned. Keep waving the frame with plastic around until you see the plastic soften at the corners of the frame.

Quickly set the frame down over the vacuum box and plug.

Turn everything off and admire your vacuum formed piece! Trim the piece as needed.

Materials



Home improvement store: 2' X 2' X 3/8" birch plywood, pop rivets, 12" piano hinge, wood glue, sand paper, 3/8 weather strip, 1/8" twist drill, spade bit the same as vacuum cleaner hose end, electric hand drill, coping saw, tin snips.

Air conditioner sheet metal shop: 4 1-1/2" X 18"x 20 gauge metal strips.

Wal mart: hot plate, 10" Solo thin plastic plates, talcum powder.

Party store: 10" Solo clear, thin plastic plates for canopies.

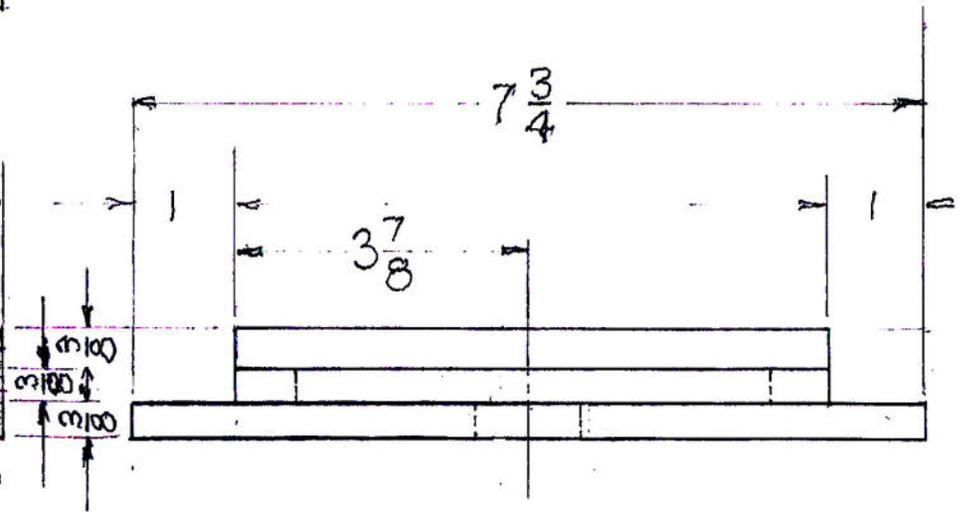
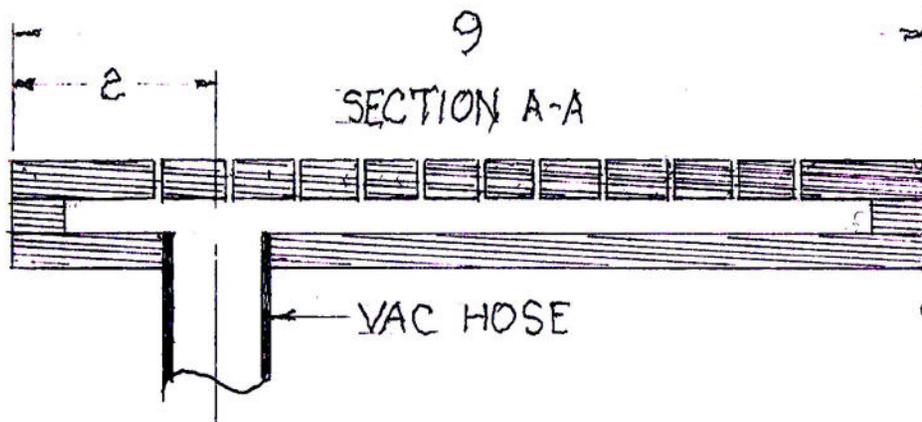
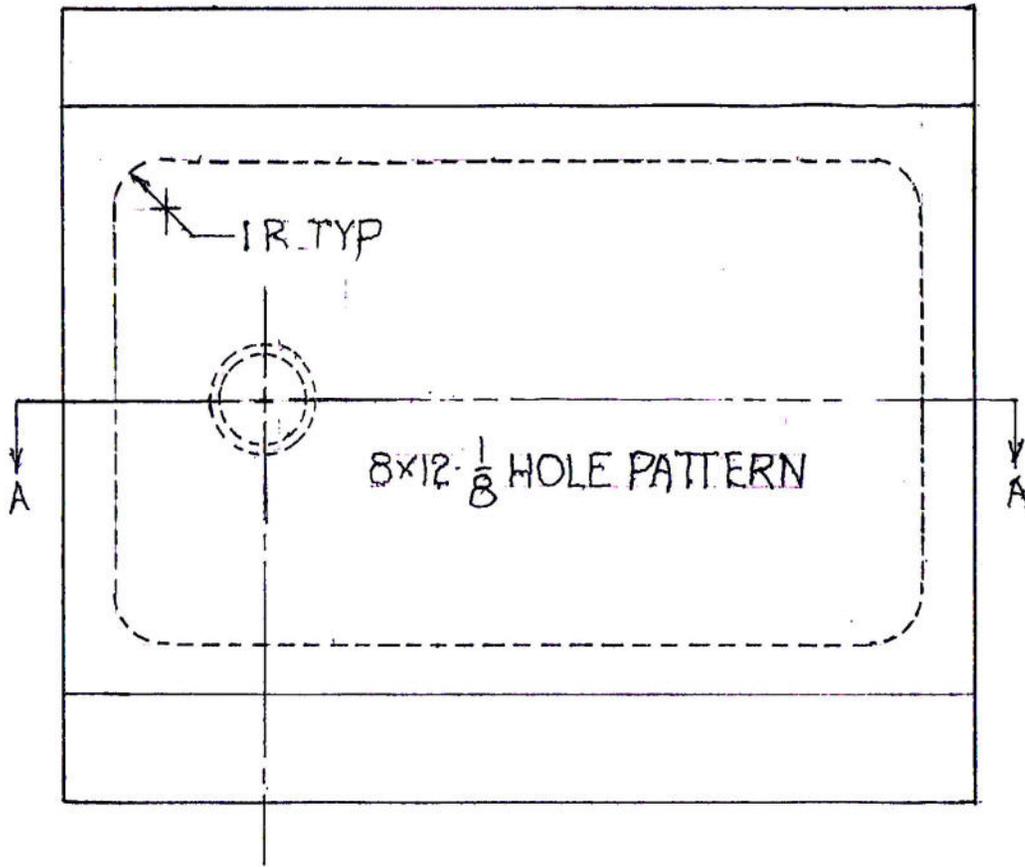
House hold vacuum cleaner, the hose should create enough vacuum so the end of the hose will stick to your palm when running. If it does not, buy a new vacuum cleaner. NO SHOP VACS!

You've got this!



JOHN JENNINGS

SCALE $\frac{1}{2}'' = 1''$



THE PLAN PAGES

Here are some plans from the past for your enjoyment along with a bit of history.

JOE OTT KITS AND PLANS - WWII

First up is a Joe Ott plan dating from the early 1940's when WWII was going in full force. Al Lidberg loaned us a complete kit including the wooden patterns which have been duplicated here.

For you younger modelers, who are used to not only plentiful supplies of balsa but many kinds of glue and covering materials the WWII kits would have been an unpleasant surprise to you.

Because balsa was in short supply because of its many military uses during the war, it was rare to find any actual balsa in wartime kits. Formers and other parts not requiring a great deal of strength were printed on a fiberboard material not unlike that used as the back of writing tablets. Parts that had to be more robust, like ribs and stringers, were made out of a basswood or similar veneer a lot heavier than balsa.

The patterns were printed on this material and, in some cases, were die cut as well. The basswood was prone to splitting and the fiberboard, while not subject to splitting, was difficult at best to cut out neatly and seemed to quickly dull the sharpest knife.

Those of you who are used to precision laser-cut parts don't know how well you have it!!

Very popular during those days were models of fighter plans of both side of the war. The Joe Ott plan is for a 45 inch span Spitfire and includes the separate patterns on a second page.

Of course you aren't required to use fiberboard and basswood !!

AIR TRAILS PLANS

Air Trails was one of the several "Old Standby" US model magazines available in the 1940's and 1950's. Others were Model Airplane News, Flying Models and Model Craftsman. There were others as well not as well known.

Depending upon when you became interested in model building, you may have known Air Trails under a different name. Over a period of time it was also known as American Modeler, Hobbies for Young Men, and even just Young Men.

There were other names over the lifetime of the magazine which started in the mid-1930's and ran until the mid 1970's. For those of us who started building models in the middle 1940's and 1950's it will always be known as Air Trails.

Now's a good time for a blatant advertisement. We have the complete run of Air Trails available as a digital collection starting with the first issue that had that name until publication ceased in the 1970's. See the last two pages of this issue for details

In the early days, most of the magazines printed reduced size versions of plans and it was necessary to enlarge them yourself to the correct size. Good exercise but sometimes pretty tedious.

Air Trails also would sell full size printed plans at very reasonable prices for those who wanted to build without having to do the enlarging manually. The usually numbered their plans using a code that described the month and year of the issue in which they appeared.

The plans were presented under the name "Hobby Helper" and often came on multiple sheets that had to be pinned or taped together to obtain the large plan.

Presented here is Hobby Helper plan 362 from the March 1962 issue, consisting of 3 sheets each printed on both sides. Two models were included, one was the Bell P-63 Kingcobra scale RC pattern plan by Maxey Hester, and the other was Fizz Wizz, a CO2 powered sport free flight design byt Aubrey Kochman. The Fizz Wizz plan included an optional replaceable power pod for use with a Cox .010 engine.

SEND IN YOUR PHOTOS

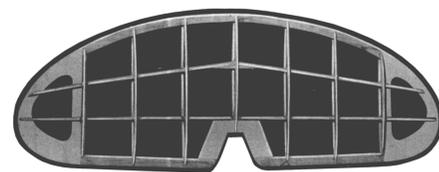
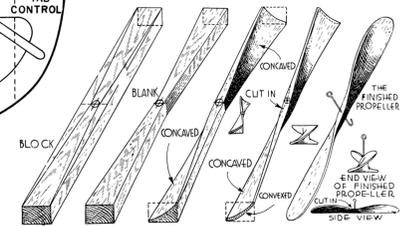
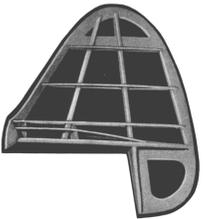
We would be glad to see photos of your construction projects, particularly if they are of any of the plans presented in our RCMW issues. But any photos are welcome.

SEND IN YOUR REQUESTS

Not only that, but if you have a favorite model you remember from your early model building days, let us know. Or if you still have the plan, send it to us so we can reprint it and share with everyone.

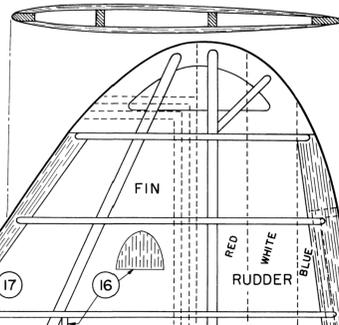


RUDDER
USE THE SIZE STRIP WOOD CALLED FOR ON PLAN AND CONSTRUCT THE RUDDER.

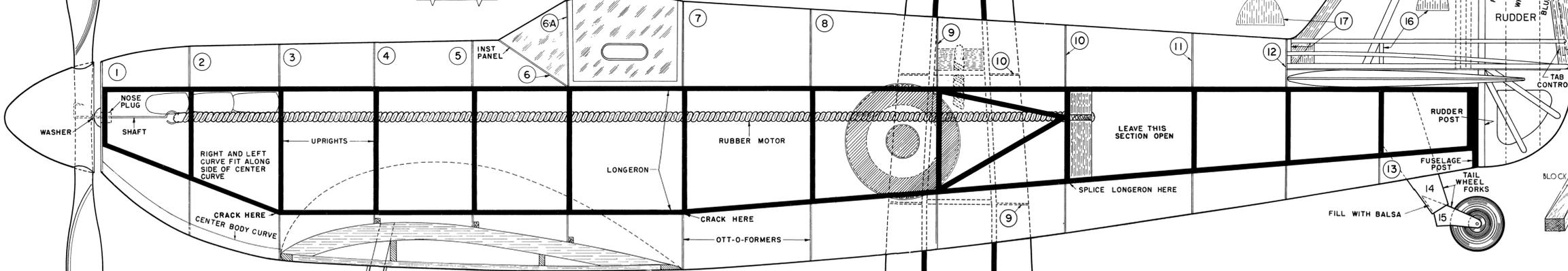
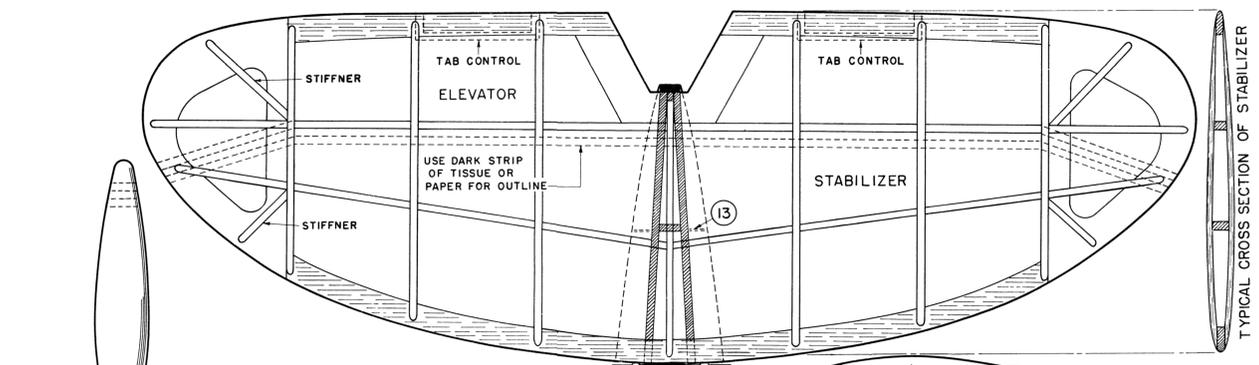


STABILIZER
USE THE SIZE STRIP WOOD CALLED FOR ON PLAN AND CONSTRUCT STABILIZER AND ELEVATORS. COVER THEM FIRST, THEN FIT INTO SLOT IN BODY.

TYPICAL CROSS SECTION OF RUDDER

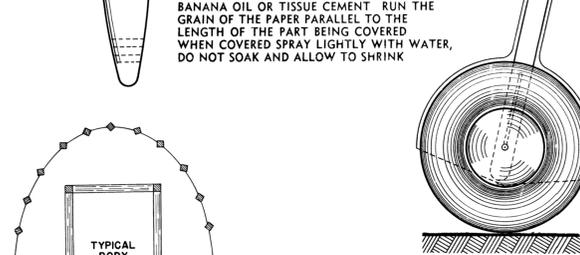


DO NOT CUT THE BODY OFF AT THIS POINT BUT CONTINUE THE ASSEMBLY FOR 4 1/2" ADDITION. SEE PART OF SKETCH ON STABILIZER.



COVERING
FIT MODEL COVERING PAPER TO LARGEST SECTION POSSIBLE WITHOUT WRINKLING. THEN PASTE DOWN USING DILUTED CEMENT, BANANA OIL OR TISSUE CEMENT. RUN THE GRAIN OF THE PAPER PARALLEL TO THE LENGTH OF THE PART BEING COVERED WHEN COVERED SPRAY LIGHTLY WITH WATER, DO NOT SOAK AND ALLOW TO SHRINK.

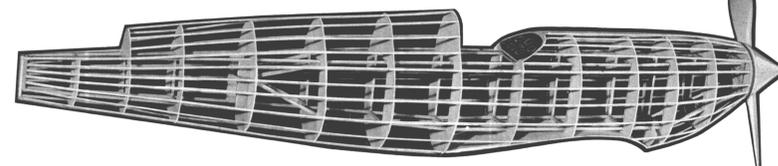
SIDE VIEW



DETAILED INSTRUCTIONS

STUDY PLANS AND PERSPECTIVE SKETCHES BEFORE STARTING ANY OF THE ACTUAL WORK. PIN PLAN TO A SOFT BOARD AND USE WAXED PAPER OVER PLAN TO PREVENT THE WOOD FROM BEING CEMENTED TO THE PLAN.

STRIPS
ALL STRIPS, CUT TO THE CORRECT SIZE, ARE SUPPLIED. SELECT THESE CAREFULLY AS CONSTRUCTION PROCEEDS.

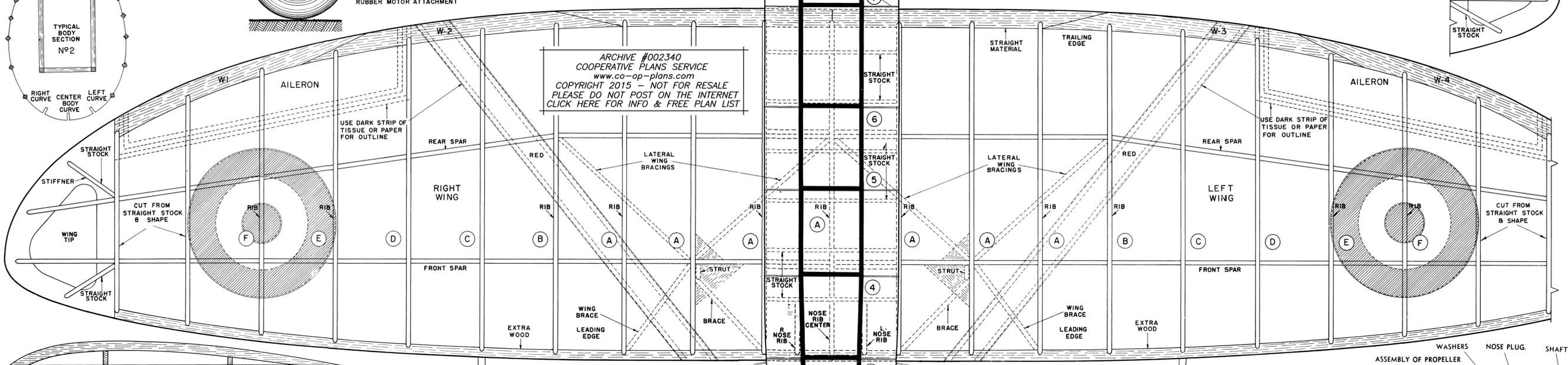


BODY 1st STEP

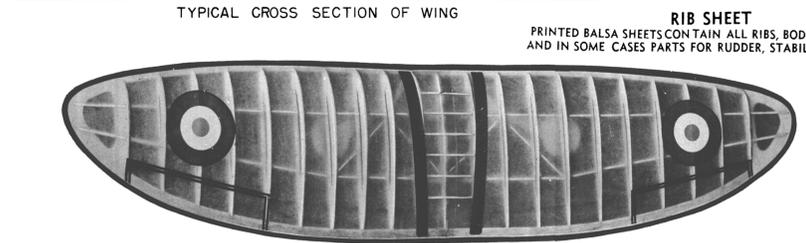
USE THE 1/8" x 1/8" STRIP WOOD SUPPLIED AND MAKE TWO SIDES, ONE FOR THE LEFT SIDE, ONE FOR THE RIGHT SIDE. CHECK ON SIDE VIEW.

BODY 2nd STEP

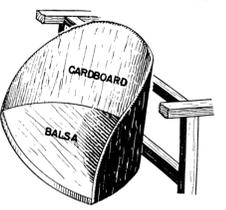
USE THE 1/8" x 1/8" STRIP WOOD SUPPLIED AND JOIN THE TWO SIDES TOGETHER TO FORM THE GENERAL SQUARE PART OF THE FUSELAGE.



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RIB SHEET
PRINTED BALSA SHEETS CONTAIN ALL RIBS, BODY FORMERS AND IN SOME CASES PARTS FOR RUDDER, STABILIZER, ETC.



PILOTS SEAT
MADE OF HEAVY PAPER AND BALSA WOOD. MATERIAL NOT FURNISHED



PILOTS
CUT THESE OUT AND PASTE IN COCKPITS.

PLAN VIEW

COWLING
USE STRIP WOOD SUPPLIED AND CURVED PIECES CUT FROM RIB SHEET TO CONSTRUCT COWLING WHEN FINISHED, COVER AND MOUNT ON BODY.

BALANCING
BEFORE ANY TEST FLIGHT IS ATTEMPTED CHECK FOR CENTER OF BALANCE BY SUSPENDING THE FINISHED MODEL AT THE WING-TIPS. MODEL SHOULD BALANCE IN FLYING POSITION. IF TAIL LOWERS ADD A SMALL LEAD OR IRON WEIGHT IN THE NOSE. IF NOSE LOWERS ADD WEIGHT IN TAIL.

FLYING
AFTER MODEL HAS BEEN BALANCED, CHECK GLIDING QUALITIES AND THEN WIND THE PROPELLER ABOUT 50 TO 75 TURNS FOR ITS FIRST TRIAL FLIGHT.

BODY 3RD STEP
USE THE FORMERS CUT FROM THE RIB SHEET SUPPLIED AND 1/4" x 1/4" STRIPS TO ROUND OFF THE FUSELAGE.

REPRINTED IN
RCMW-FSP JULY 2015
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45" SPITFIRE

BRITISH INTERCEPTOR
FULL SIZE FLYING SCALE MODEL N°4502

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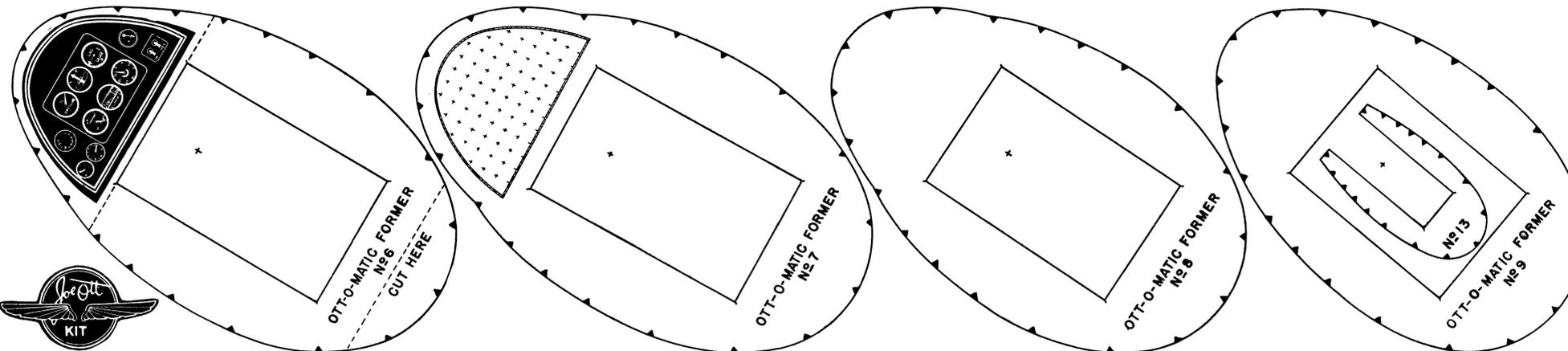
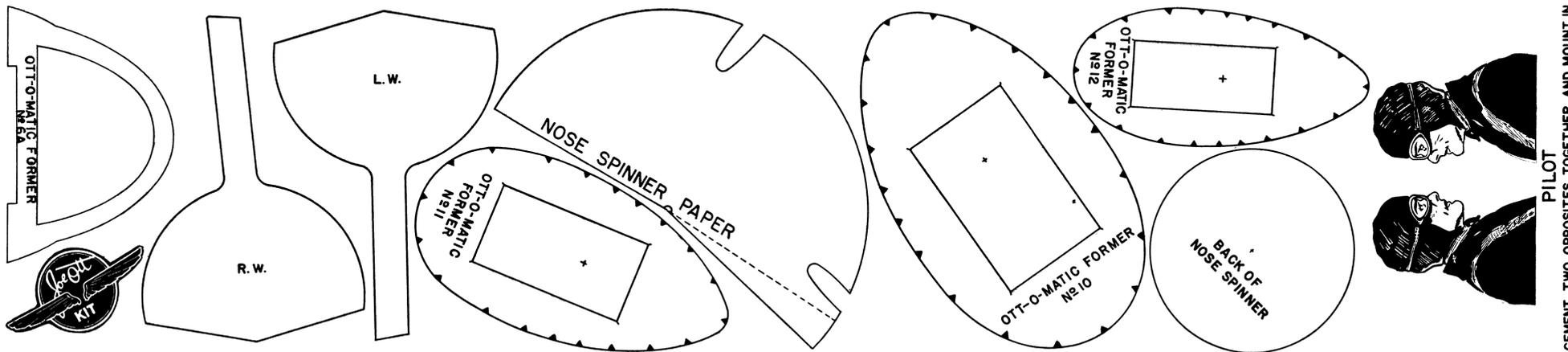
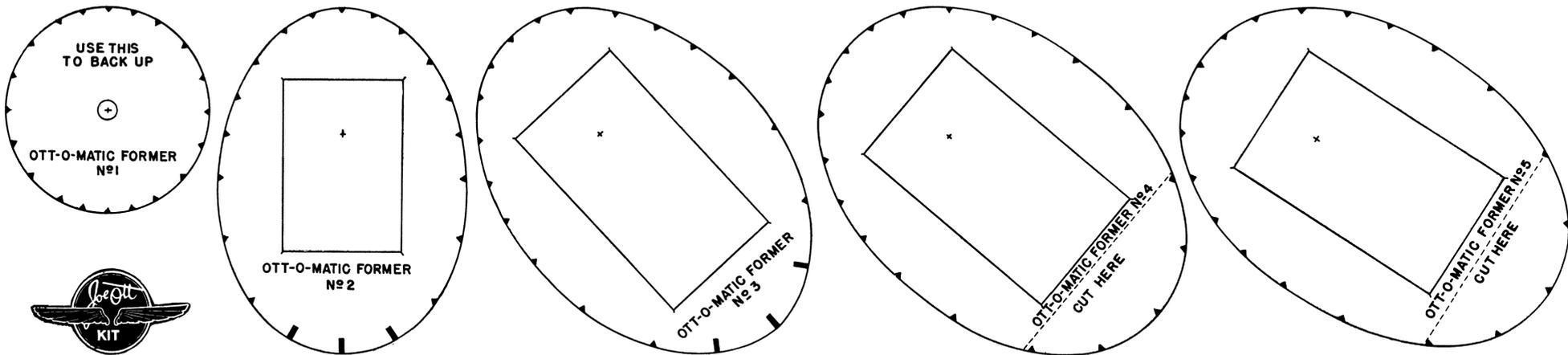
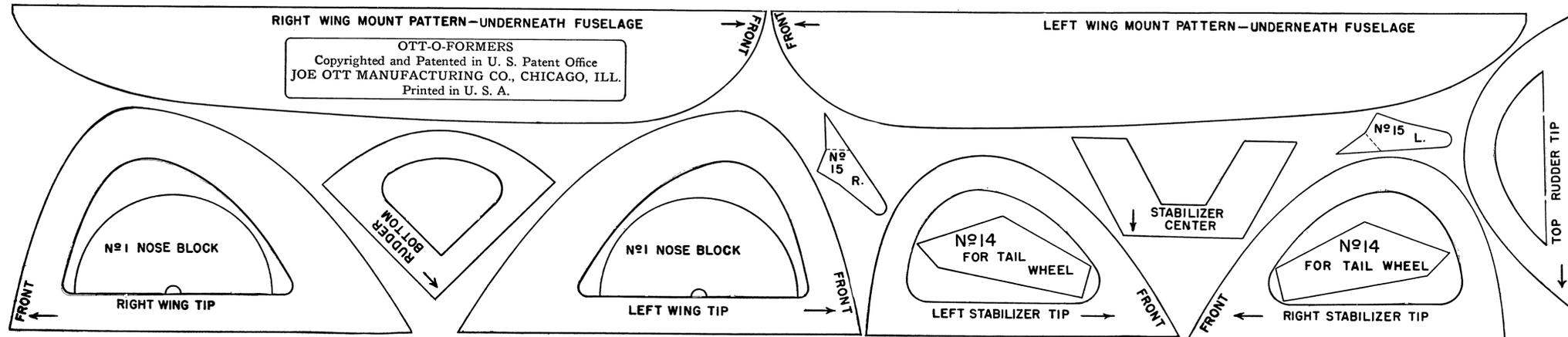
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FROM AN ORIGINAL KIT LOANED BY AL LIDBERG

RIGHT WING MOUNT PATTERN-UNDERNEATH FUSELAGE

LEFT WING MOUNT PATTERN-UNDERNEATH FUSELAGE

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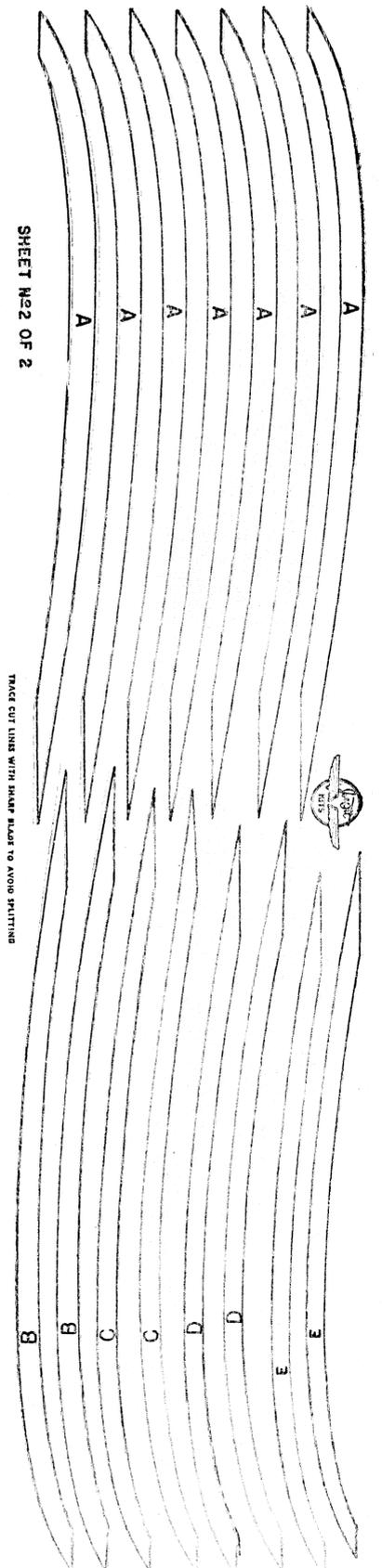
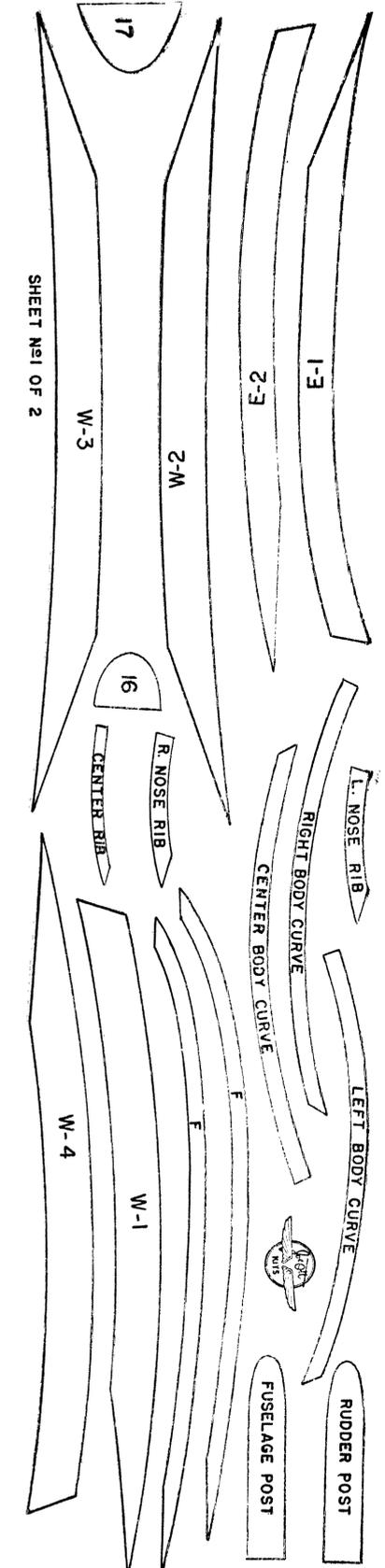


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No 4502- 2 ON 3 45" SPITFIRE No 4502- 1 ON 3 45" SPITFIRE No 4502- 3 ON 3 45" SPITFIRE No 4502- 1-SHEET 45" SPITFIRE



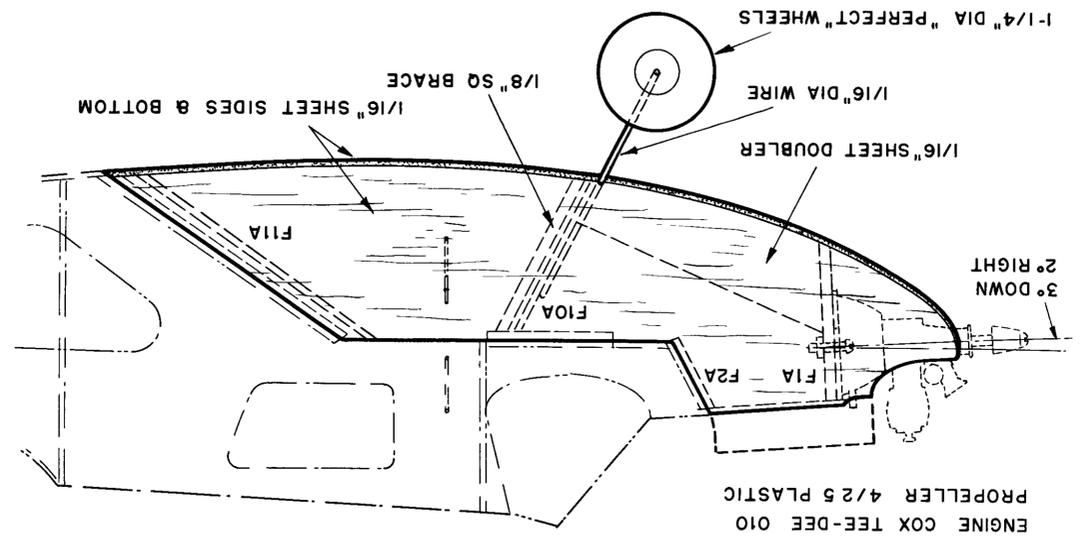
No 4502- 45" SPITFIRE
TRACE CUT LINES WITH SHARP BLADE TO AVOID SPLITTING

No 4502- 45" SPITFIRE

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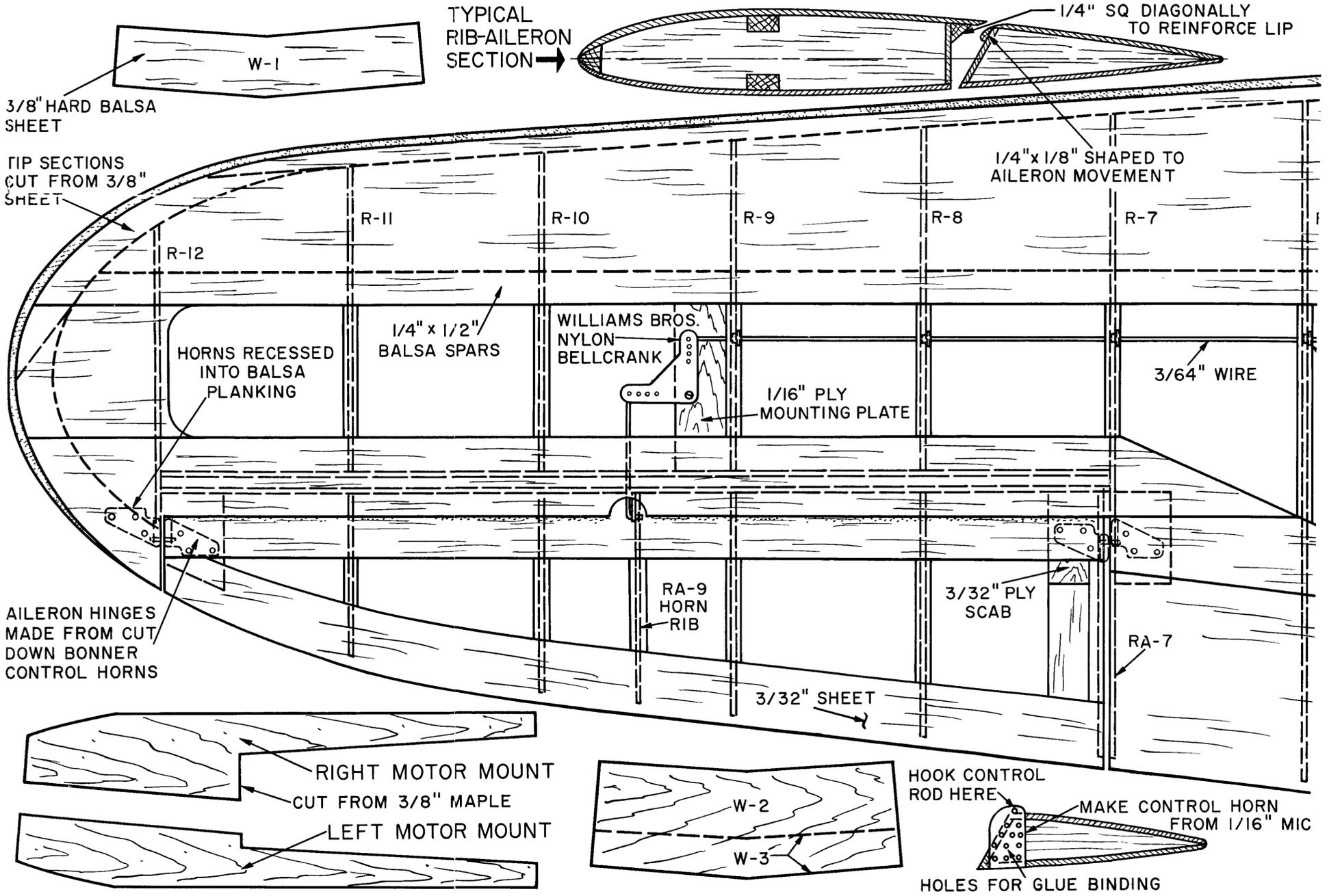
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R/C Bell Kingcoopa P-63,
"Wizzo-Won" (Wizzo-Won)
PRINTED
MATTER

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MARCH 1962 ISSUE OF AIR TRAILS



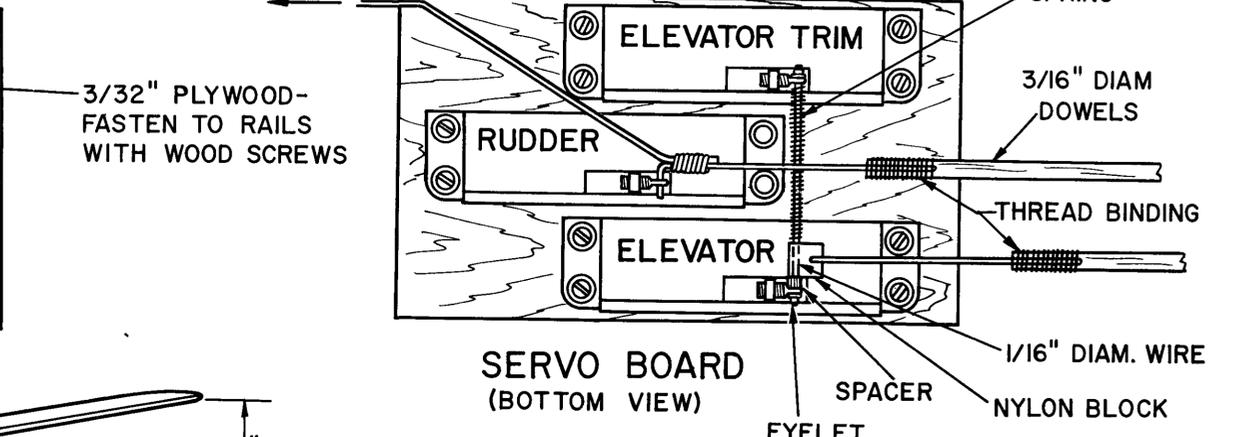
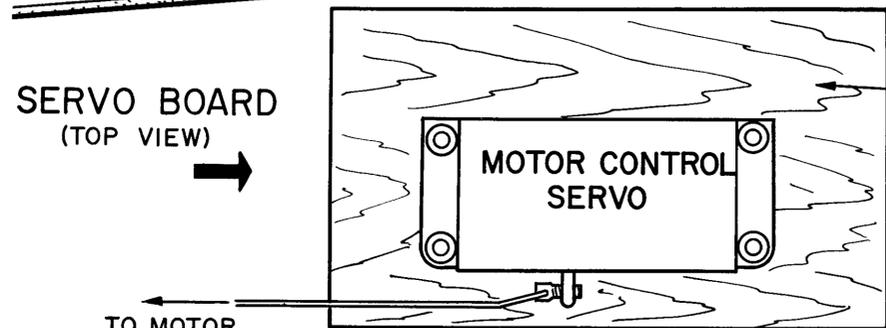
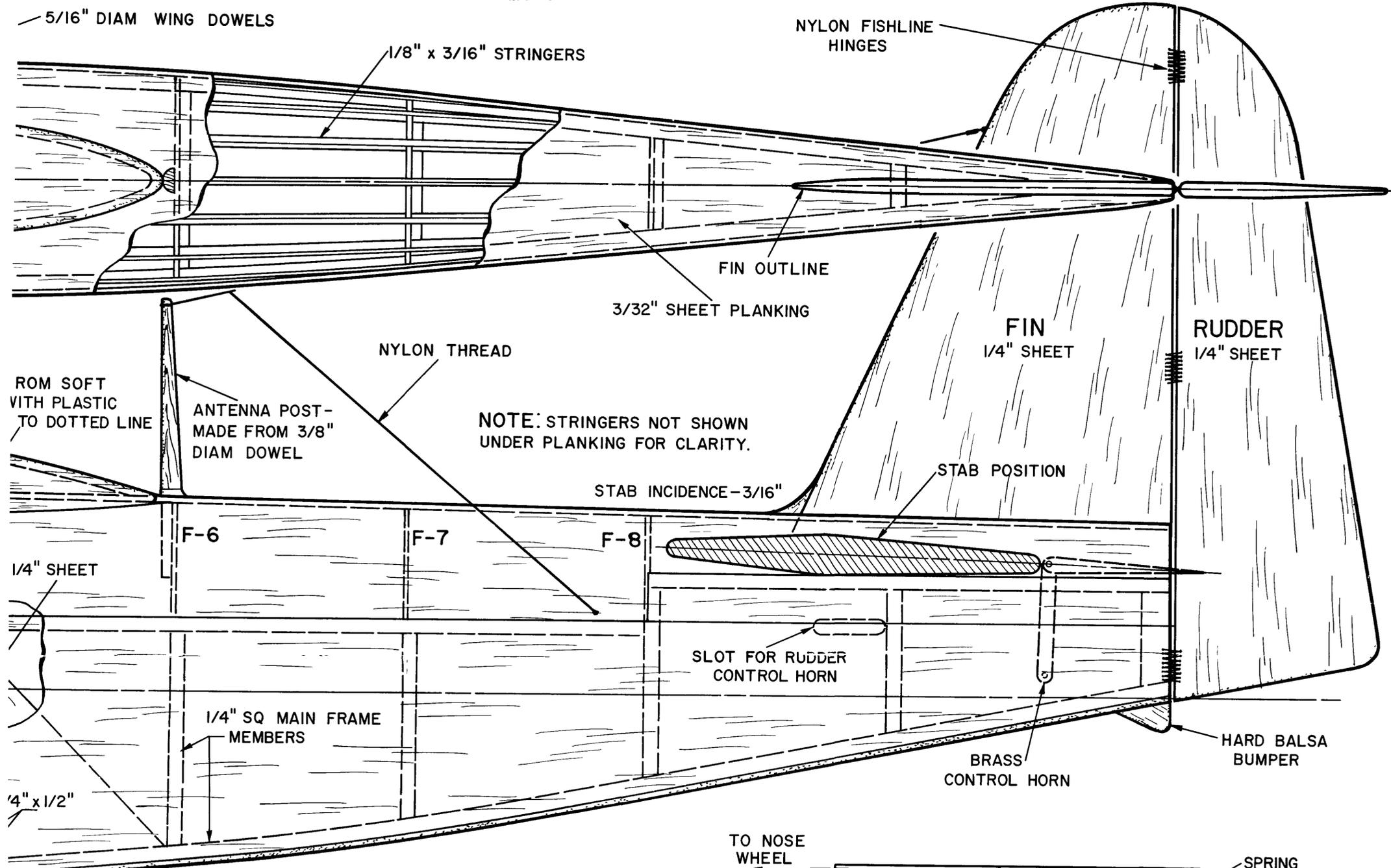
"WIZZO-WON"
GLOW PLUG
CONVERSION
for Fizz-Wizz

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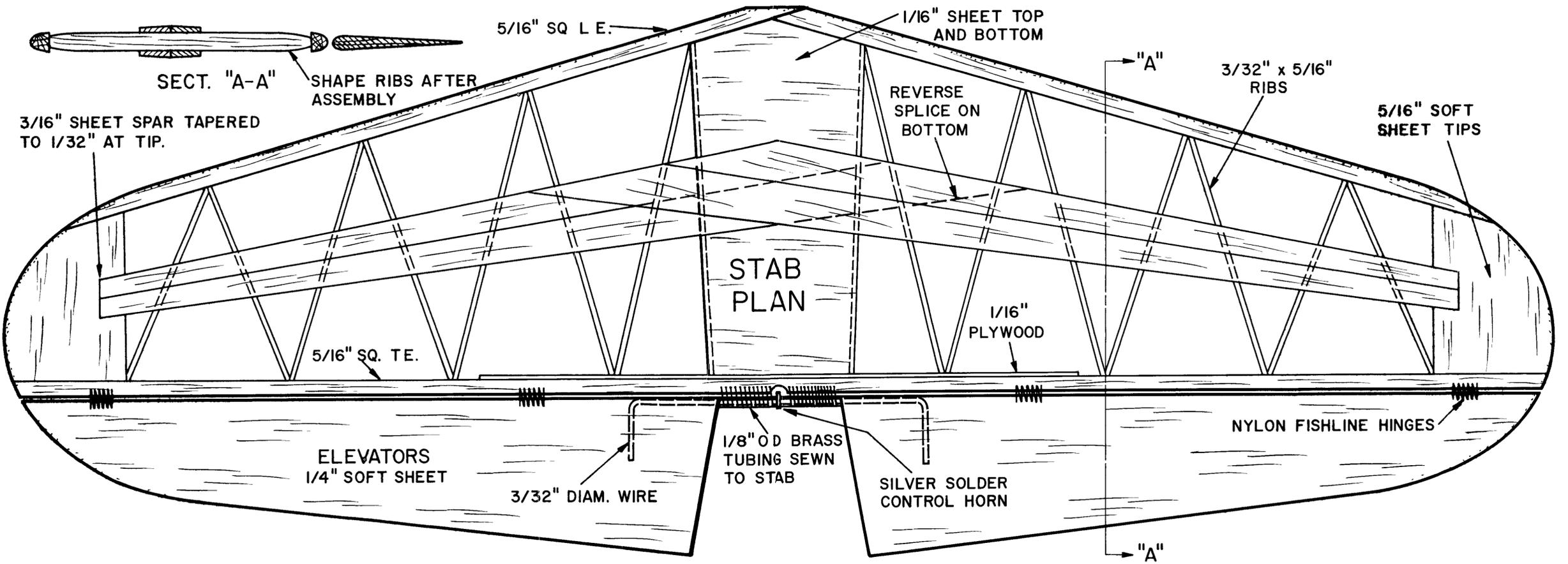
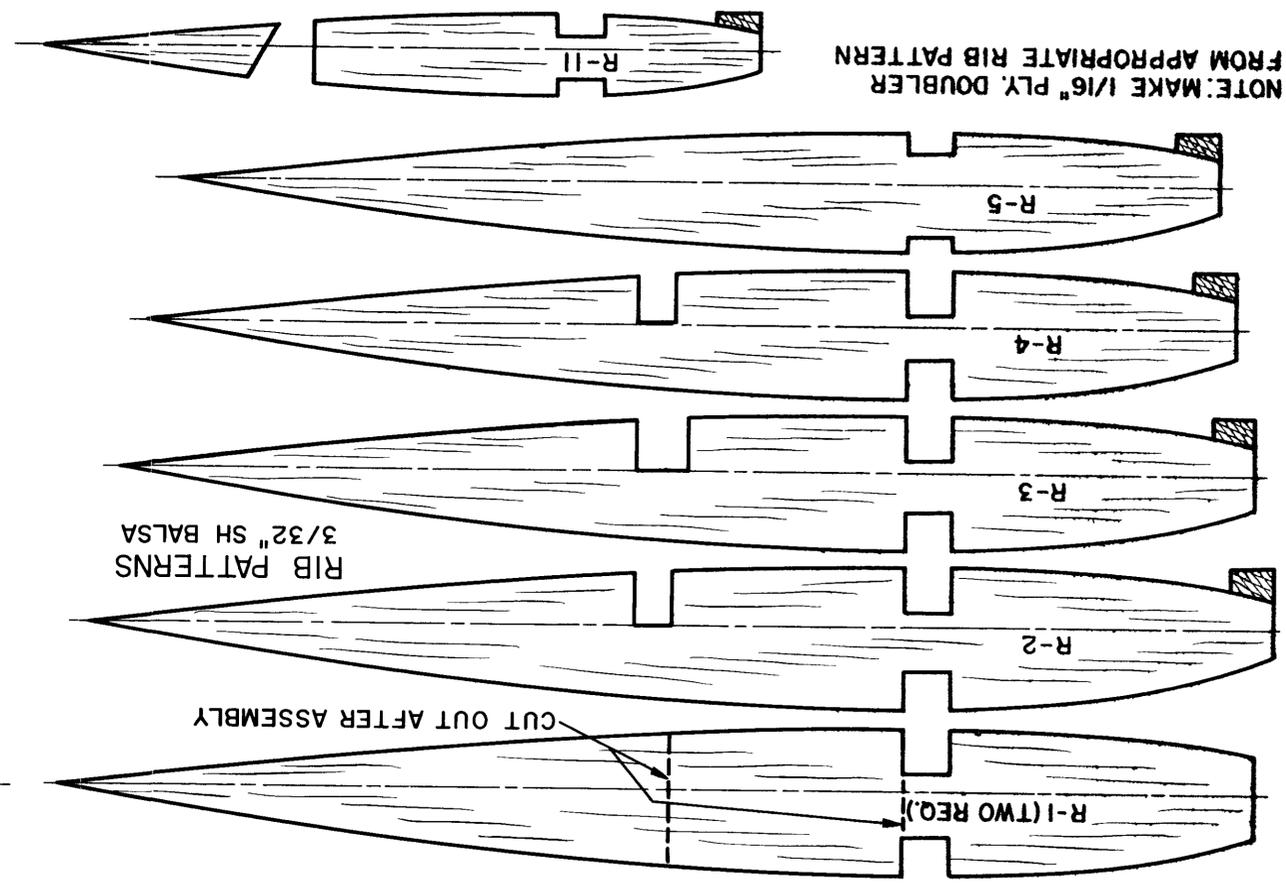
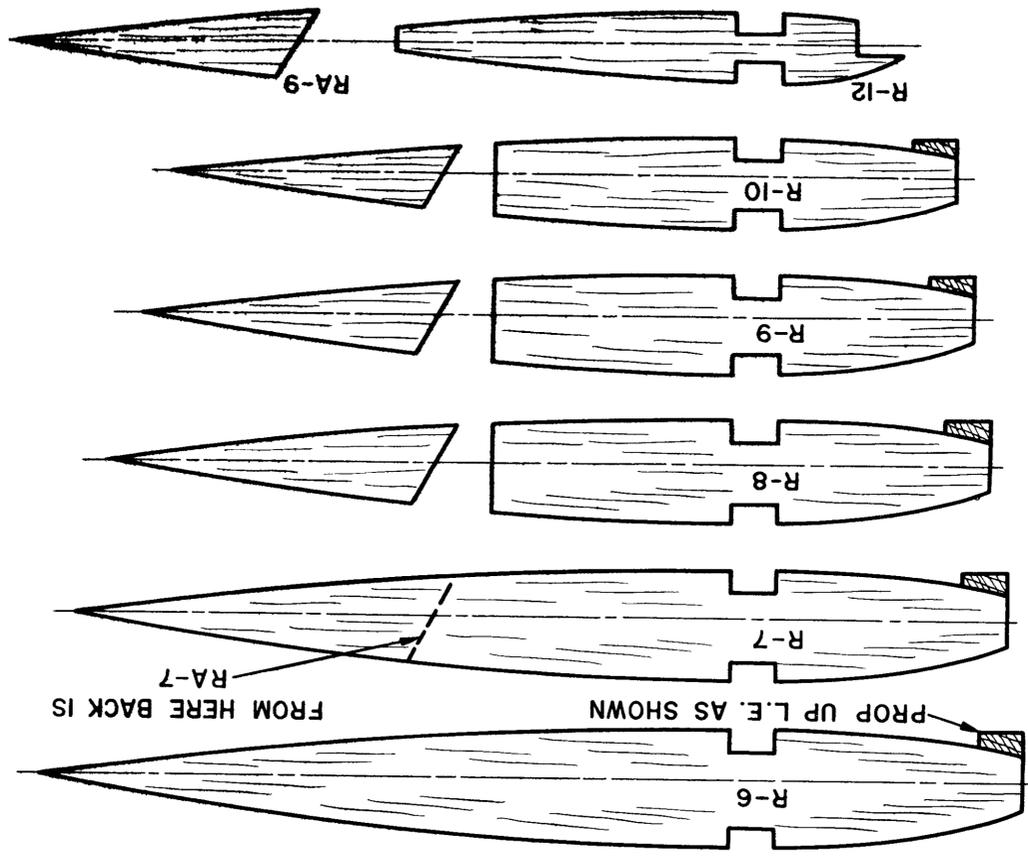
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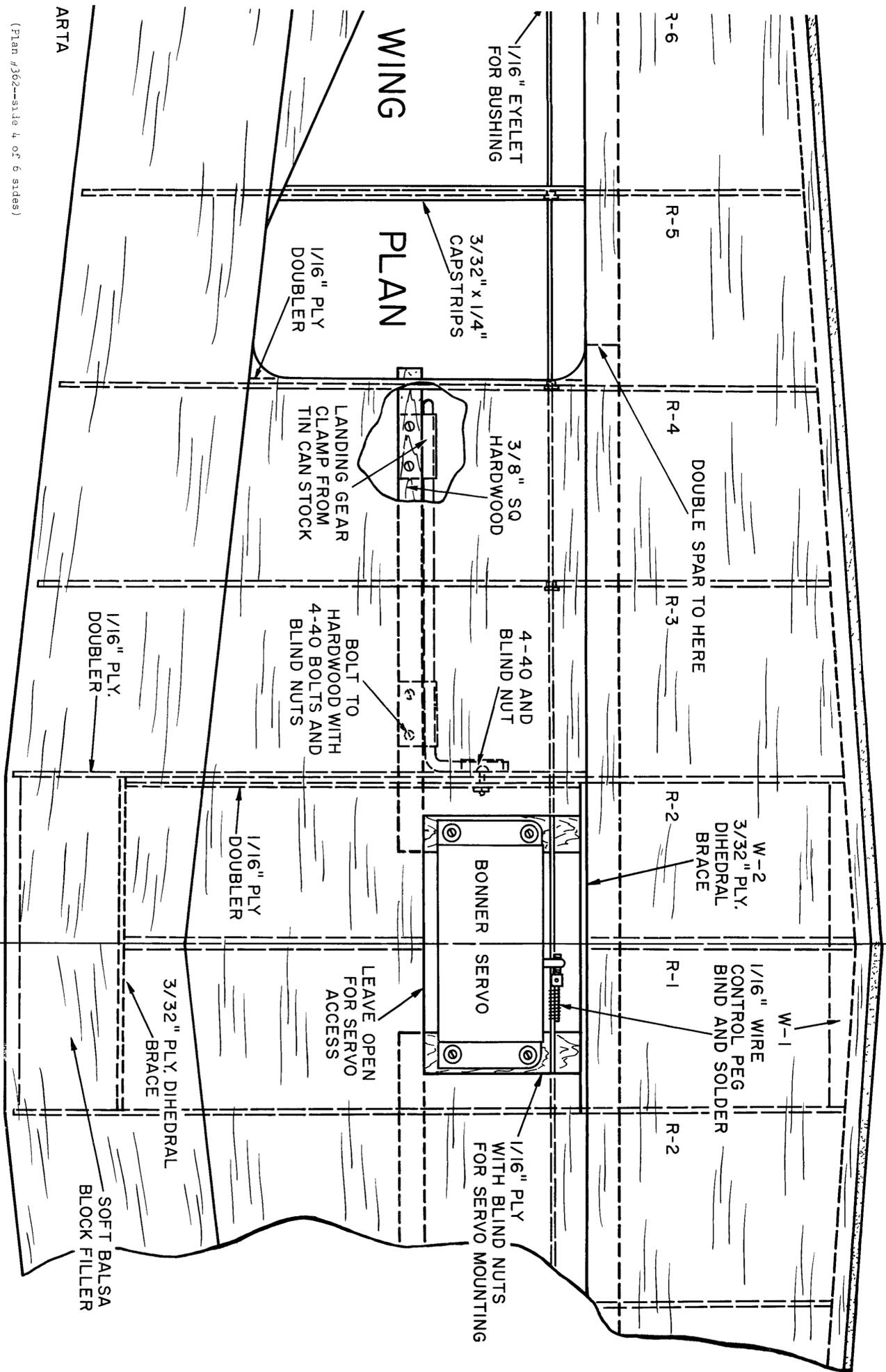
NOTE - THE NUMBERS IN THE
UPPER RIGHT CORNER REPRESENT
THE OUTSIDE DIMENSIONS
OF THE BORDER WHEN THE
PLAN IS PRINTED AT FULL SIZE



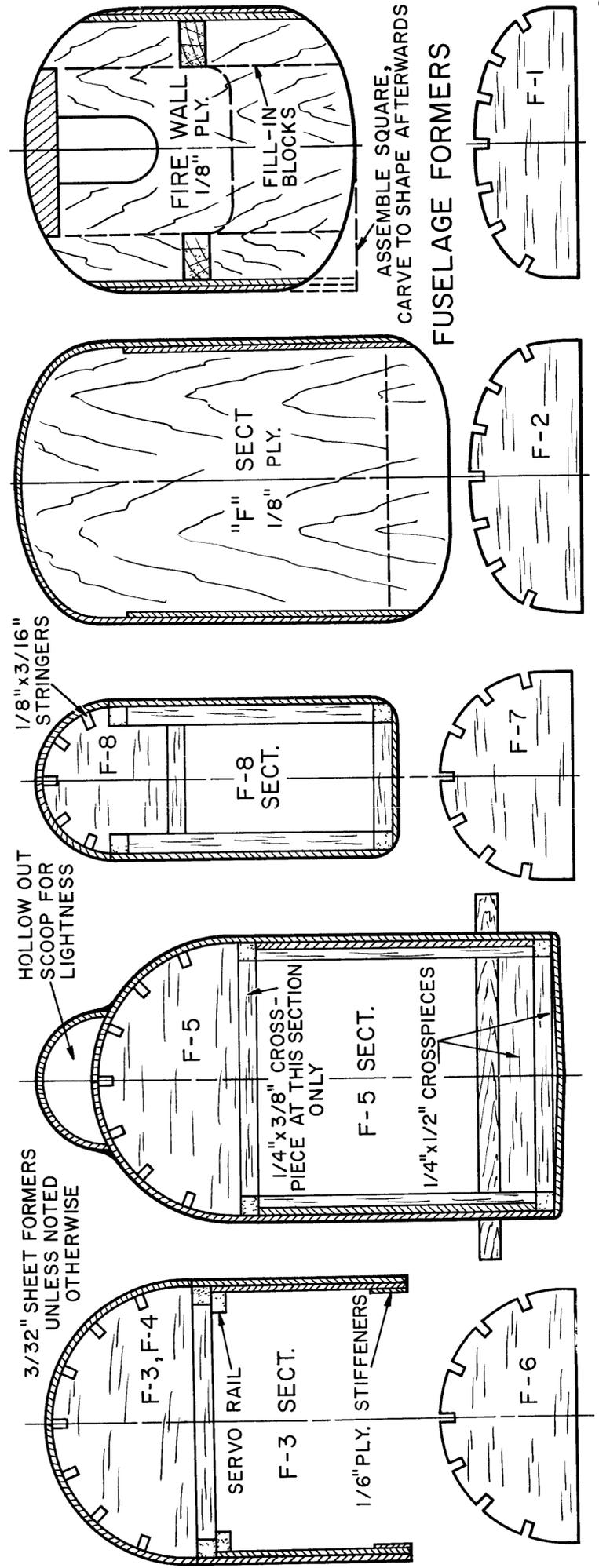
(Plan 362-51.r 2 of 6 sides)

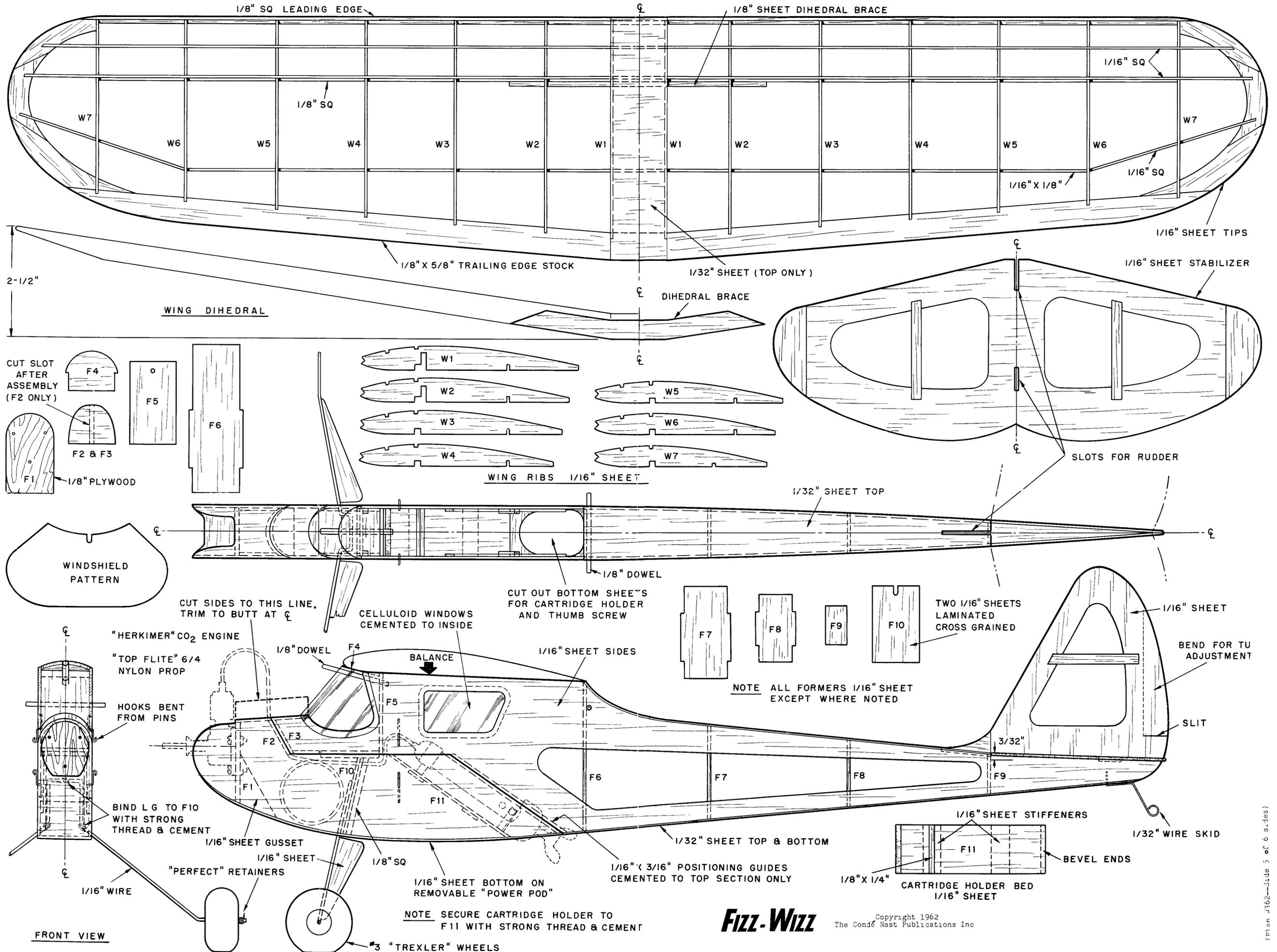
(Plan /362--side 3 of 6 sides)





ARTA
(Plan #362--size 4 of 6 sides)

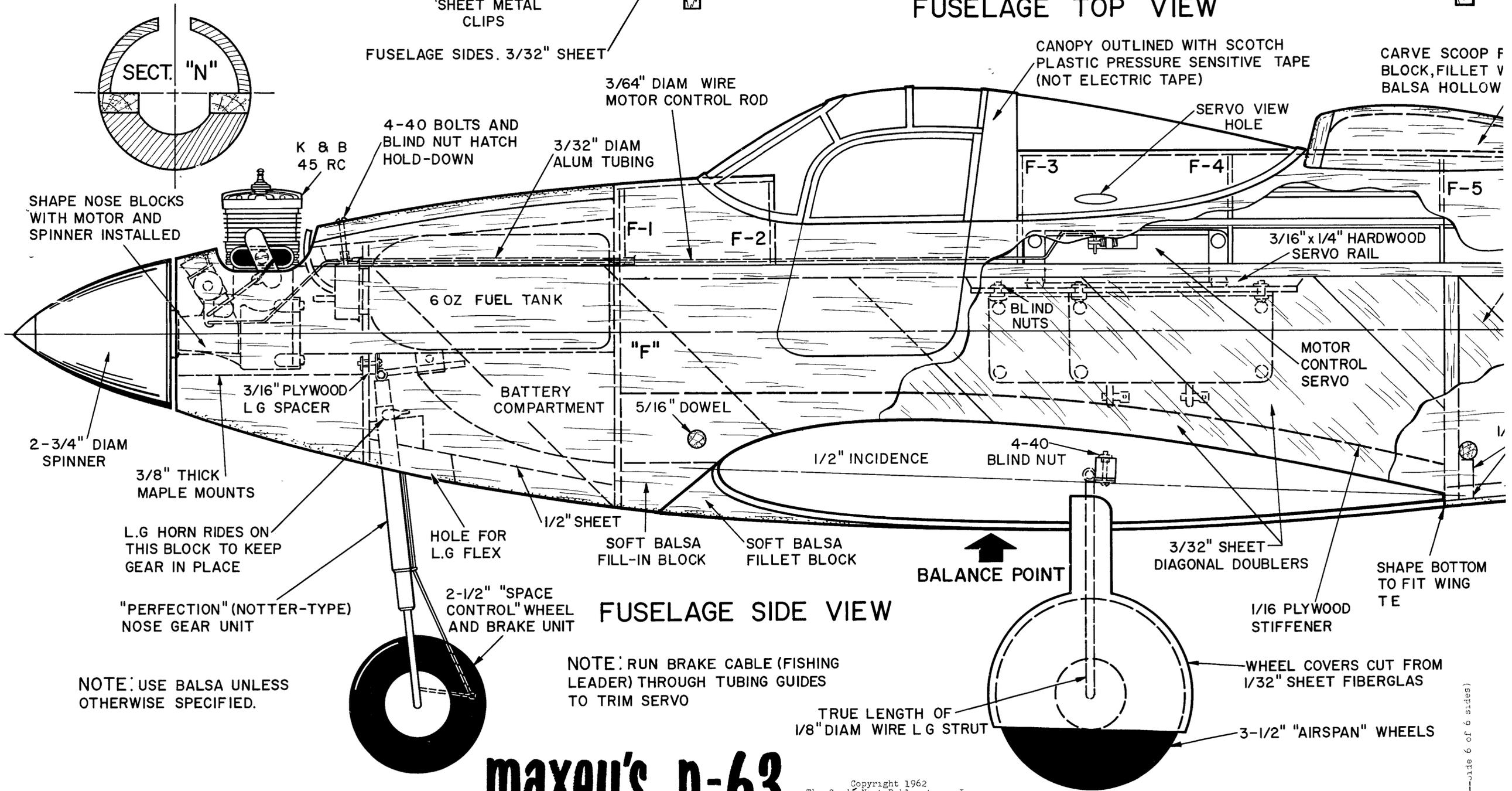
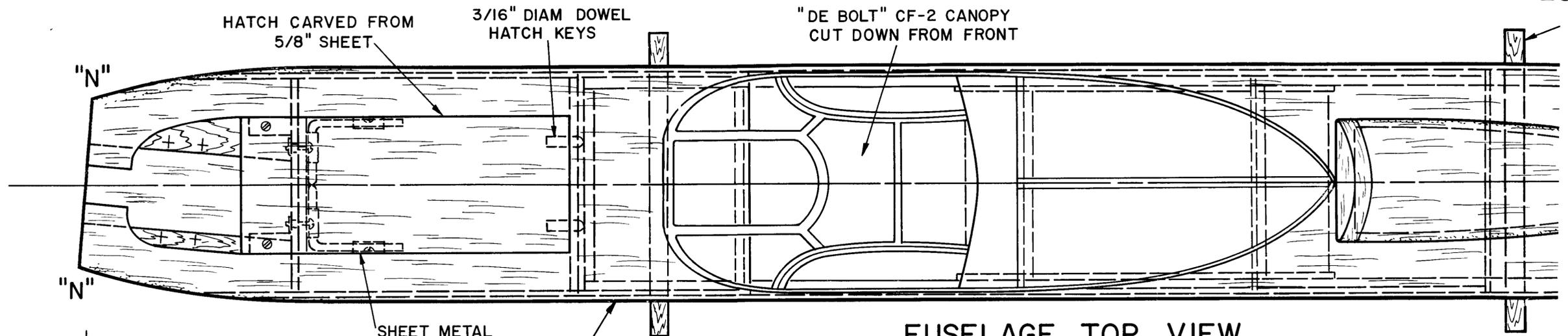




Fizz-Wizz

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The Condé Nast Publications Inc

(Plan #162—Side 5 of 6 sides)



maxey's p-63

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The Condé Nast Publications Inc.

(Plan #362--side 6 of 6 sides)

Old 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.

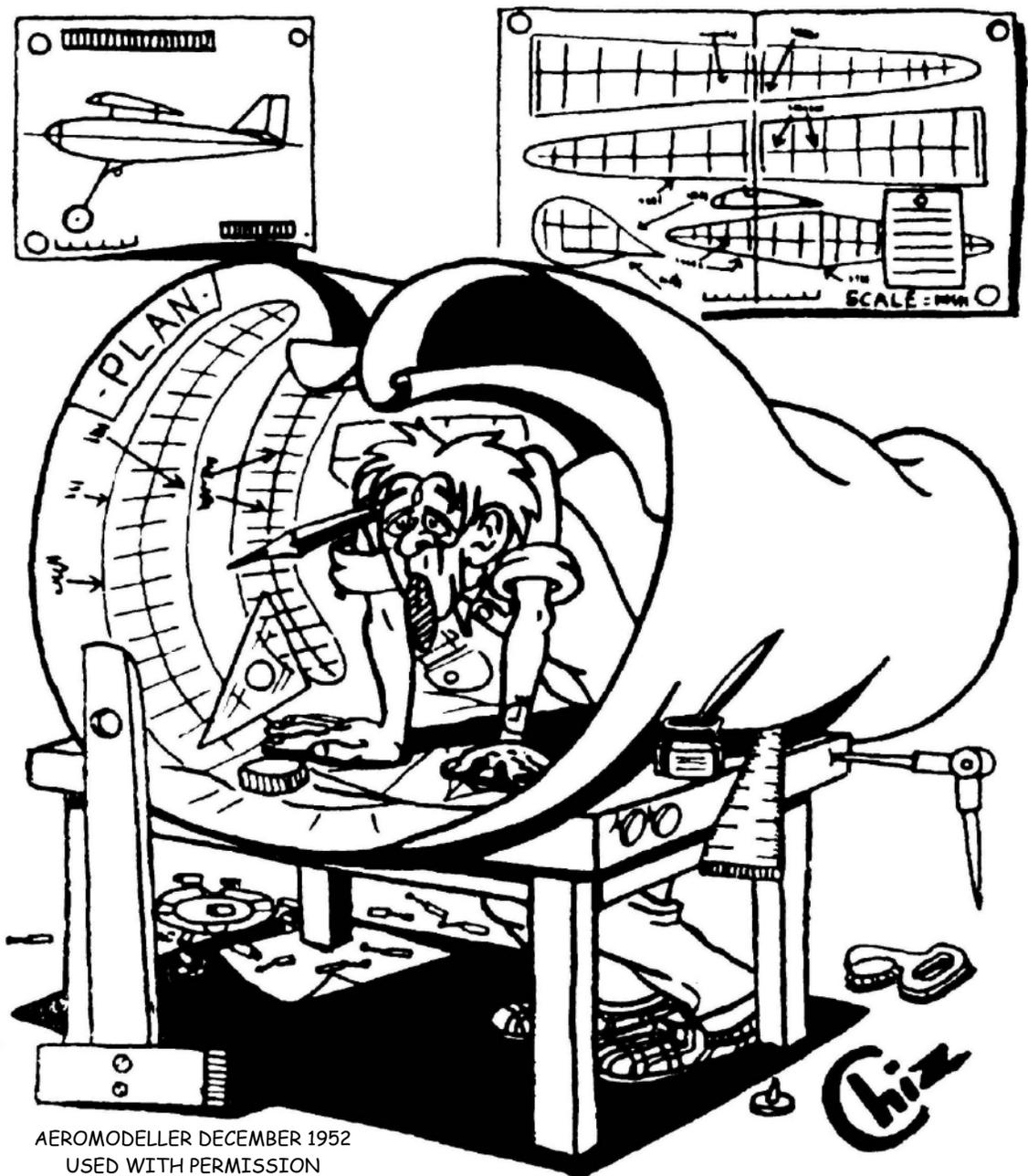
That's NOT the way it was in the past, when you had to build a model before you could fly it. If you're an old-timer, as I am, you have fond memories of *Air Trails*, *Flying Models*, *Model Airplane News*, *Aeromodeller* and many of the several other magazines available "way back when".

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

Now Available - RC Modeler
First 10 years - 1963-1972

We have switched to USB Memory Cards Much More Reliable

NEW - Now available is a digital collection of the first 10 years of RC Modeler magazine, starting with the first issue published in October of 1963 through the issue of December 1972 - 109 issues in all on a single USB drive card. -

\$50 - Postage paid world wide

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 in publication. 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 still in publication. We have the following collections 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**

Currently being digitized are complete runs of RC MODELER and AEROMODELLER. RC Modeler is coming along and is scheduled to be done by March 2015 - Aeromodeller should be completed by the end of 2015 - Prices have not been set yet -

The digitizing of several other magazines will follow including MODEL CRAFTSMAN, FLYING ACES, POPULAR AVIATION, MODEL AIRCRAFT (British) and others. This is a long term project. Many thousands of hours and dollars are represented in these collections.

All prices include postage worldwide

Send payment using Paypal to
cardinal.eng@grics.net

Or check or money order to
Roland Friestad
1640 N Kellogg Street
Galesburg, Illinois 61401
USA

**Makes a Great Gift for Modelers
Circle your interests and give this
sheet to someone who has a hard time
finding you a gift**

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November 30, 2014 - Prices & Specifications subject to change without notice