





**T**his design is obviously a 4-60 with the wing on the bottom. Well not exactly, but close enough that we simply called the early prototypes low wing 4-60. However, we felt to avoid confusion with its mid-winged and biplane ancestors a new name was really needed.

Many, many years ago our high school "fight" song used the expression Bingo! and the expression has been in our expletive collection ever since. My

**A simple low wing sport plane  
for a .40-.65 2-stroke and  
.45-.90 4-stroke**

**By Dr. D.B. Mathews**

Saito 65 4-strokes and the Fox 40, Fox 45, K & B 45 Sportster, K & B 61, and Super Tigre 60 2-strokes.

With proper option choices, prop selection, and intelligent use of the throttle, each and every one has been a total delight to fly. Not only do they fly very well, they all look great in the air and on the ground.

Historically, it might be of interest that our all-time favorite U/C stunt models were Jim Saftig's immortal Zilch series from the late 1940's. As a teenager we built Zilches in bunches simply because they were easy to construct, flew well, and looked nice. Somehow, totally unintentionally, Bingo! looks a bit like a contemporary R/C version of a Zilch. And that didn't dawn on us until another older modeler called our attention to it.

We've written all this in an effort to interest you, the reader, in building a Bingo! Frankly, that decision was probably made by you as you looked at the photos and drawings and this is all superfluous. If your decision is to build and fly a Bingo!, we assure you there is some special magic about this project and you are bound to fall under its spell.

# BINGO!

assistants have chuckled for years over my use of Bingo! to express satisfaction when I see the X-ray film of a well done root canal, or when a particularly difficult extraction clears the socket or when a tricky bridge seats perfectly. I get that same sort of feeling and have been known to mutter Bingo! when a new design turns out particularly well. It is then only natural we decided on that name for this model.

Indeed, Bingo! is a winner in all of its various size/power configurations. It is Bingo! indeed!

Not that Bingo! differs greatly from its well accepted and regarded ancestors, it just looks sexier! The low winged version retains the superb stability, delightful nimbleness, broad and well controlled speed range, easy construction, and the unusual ability to make mediocre pilots look good.

In addition to the Bingo's obvious good looks, the model has been developed to accept and fly well on an amazingly broad range of power plants. By choosing between the long or short noses and the standard or clipped wing, a model can be built that flies well indeed with everything from

a 48 to 90 4-stroke or 40 to 60 2-stroke.

We recognize such claims have often been made before by overly enthused ad men or speculating designers. This design has been flown with these engine sizes --- and flown successfully. We have spent 30 months gestating this design, built and flown five prototypes; other modelers have built four more. Power plants used have been the Saito 50, O.S. 60, O.S. 90,

## CONSTRUCTION

### General Notes

Bingo! may look a bit flimsy at first glance, but one must realize that spruce is ten times stronger than balsa, lite ply weighs close to the same as 3/16" balsa but has the strength of 3/8". Lite ply can be cut smoothly with a knife or saw and adheres nicely with any adhesive common to our hobby. **Under no circumstance substitute**





## BINGO!

Designed By:  
Dr. D.B. Mathews  
**TYPE AIRCRAFT**  
Sport

**WINGSPAN**  
62 Or 70 Inches  
**WING CHORD**  
12 Inches

**TOTAL WING AREA**  
744-840 Sq. In.

**WING LOCATION**  
Low Wing

**AIRFOIL**  
Semi-Symmetrical  
**WING PLANFORM**  
Constant Chord

**DIHEDRAL EACH TIP**  
1/2-3/4 Inches

**OVERALL FUSELAGE LENGTH**  
54 Inches

**RADIO COMPARTMENT SIZE**  
(L) 11 1/2" x (W) 3" x (H) 3"

**STABILIZER SPAN**  
22 Inches

**STABILIZER CHORD (incl. elev.)**  
7 1/2 Inches (Avg.)

**STABILIZER AREA**  
165 Sq. In.

**STAB AIRFOIL SECTION**  
Flat

**STABILIZER LOCATION**  
Top Of Fuselage

**VERTICAL FIN HEIGHT**  
9 1/2 Inches

**VERTICAL FIN WIDTH (incl. rud.)**  
9 Inches (Avg.)

**REC. ENGINE SIZE**

40-65 2-stroke/45-90 4-stroke

**FUEL TANK SIZE**

10-12 Oz.

**LANDING GEAR**

Conventional

**REC. NO. OF CHANNELS**

4

**CONTROL FUNCTIONS**

Rud., Elev., Throt., Ail.

### BASIC MATERIALS USED IN CONSTRUCTION

Fuselage .....	Balsa, Spruce & Ply
Wing .....	Balsa, Spruce & Ply
Empennage .....	Balsa & Ply
Wt. Ready To Fly .....	96-112 Oz.
	(6-7 lbs. Dry)
Wing Loading .....	16.4 To 21.7 Oz./Sq. Ft.

**balsa for the hardwood used in the Bingo! regardless of its density or size!**

Hardware items are standard and should be available at any well-stocked hobby shop. Personal preferences can most certainly be substituted. Many of the items such as the landing gear and canopy are available from Ace R/C, Box 511, Higginsville, Missouri 64307.

Read the text and study the plans and drawings carefully to avoid any potential confusion. Cut out a "kit" of parts by transferring the shapes from the drawings to the appropriate wood with the aid of carbon paper. Use of a good straightedge is mandatory. All holes and cut-outs should be made at the time of fabrication.

A simple jigsaw (such as a Dremel, etc.) is helpful in building this or any other scratch project, but a good knife will work. Cut-outs can be made easily by drilling 1/4" holes in the ply, threading the saw blade into the hole and reattaching it to the saw. Tabs and slots can easily be cut with a sharp modeling knife.

This model is very easy to construct and to keep in good alignment. Use a smooth flat building surface and follow sound principles of construction. A straight model will result in straight flying. The prototypes were constructed almost entirely with medium and thin viscosity cyanoacrylate adhesives.

### Options:

Wing length choice is mostly a matter of power choice. We do not recommend the shorter wing for 60 2-strokes or 80-90 4-strokes. Clipping the tips reduces area by almost 100 sq. in. which, when coupled with relatively thin airfoil, would make a very fast flier with the larger engines. If the builder insists on this option, please be aware that Bingo! will do vertical rolls with a 45 2-stroke or 60 4-stroke in the short wing version. For goodness sake, at least fly it in 1/2 throttle if you use the high powered engines.

Nose choice is a matter of engine weight and length. Most of the 4-stroke engines are at least an inch longer than the 2-strokes of comparable power. The shorter nose keeps the prop at the same length while still having plenty of room for a 10 oz. Sullivan tank.

Even with the long nose, the ultra light Fox engines are going to need some ballast up front to place the C.G. properly. Conversely, the large 2-stroke and 4-stroke engines will make a nose heavy model when used with the long nose. Note: The higher powered versions should also incorporate a triangular brace on the top joint between the fin and stab.

The radio compartment is large enough for the larger "standard" servos. The aileron well is not quite deep enough to completely flush those servos, however; they must be rigged to project above the wing surface a bit.

It is not recommended to cover this model with any of the low heat shrink material. Use of MonoKote, Oracover, Black Baron, fabric, or silk is highly advisable.

### Wing:

Since the wing will be needed early in the fuselage construction, we prefer to build it first.

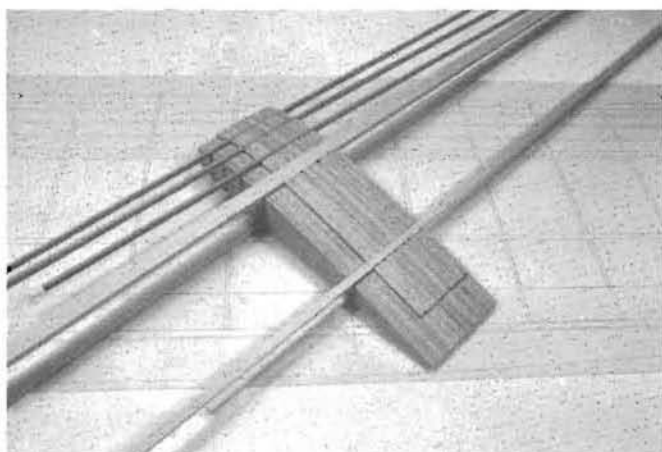
Stack cut the ribs using a master plywood or metal template as a guide. Notice that two rib patterns are needed. Carefully cut the spar notches, as the spars must fit snugly for thick CA to work properly. The wing panels are mirror images of one another, and are built flat from the front spar to the trailing edge.

The 3M Sprayment® construction method works exceptionally well on these wings and we recommend it. If, however, the builder prefers the old fashioned pins and weight method it will work well also.

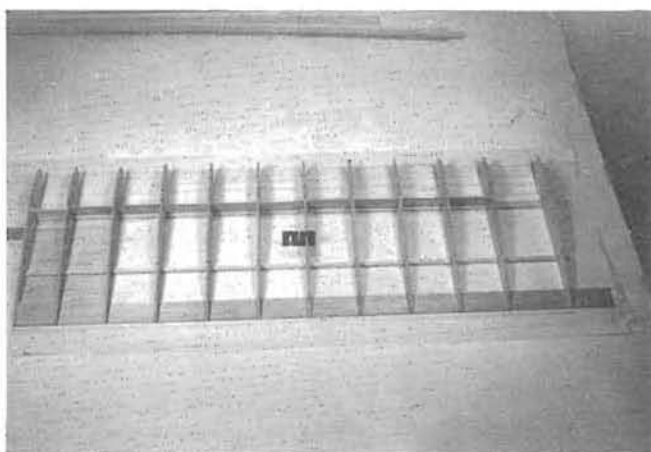
Construction is from the bottom up. Pin the sheet trailing edge and rear center section sheeting flat on the work surface. Position the bottom spars and then the ribs (using the shear webs for squareness). Be sure the hardwood tapered T.E. insert is in place. Add the top trailing edge and spars, followed by the spruce spars and leading edge. Leave the forward part of the center section unsheeted for now. Sand the leading edge to a blunt nose contour.

Remove the panel from the plans and add the trailing edge cap strip. Build the opposite panel in exactly the same manner making sure the center rib is properly angled using the dihedral jig.

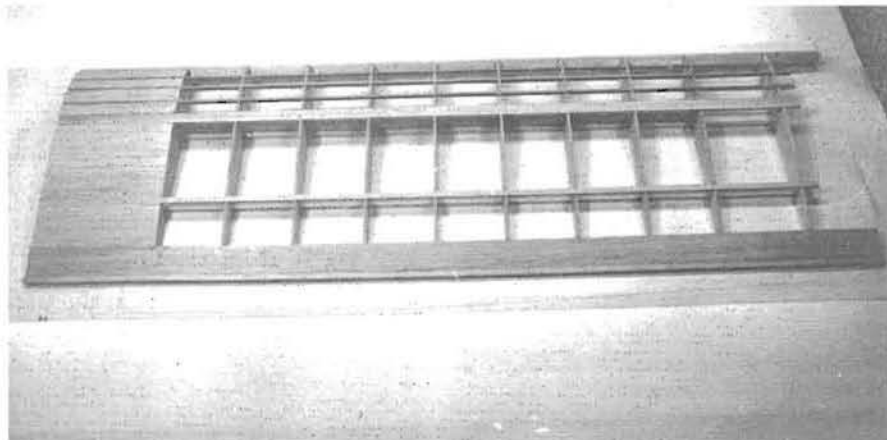
Block up the tips of each panel 3/4" (1/2" for clipped wing) and sand in the bevel using a flat work table edge as a guide. Test the fit, and make sure the total dihedral is 1 1/2" (or 1" for clipped wing).



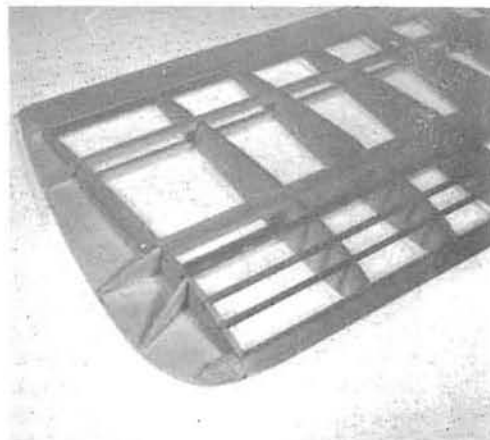
*Wing ribs all cut and sanded to shape. Be sure to get a snug fit on all spars/ribs.*



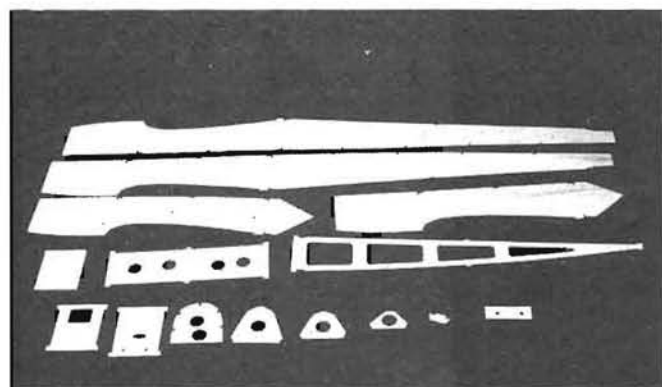
*Wing is built directly over plans. Shear webs are used full span and help keep structure square during assembly.*



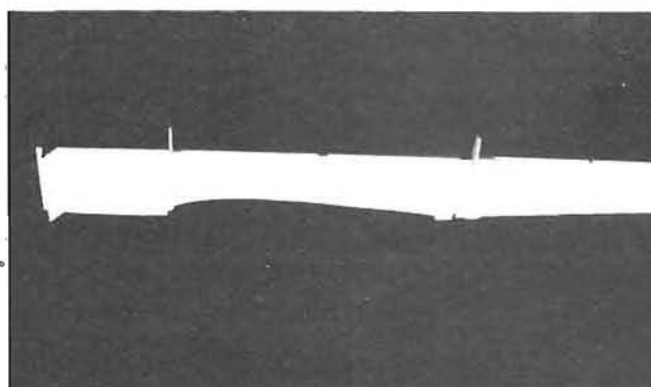
*Leading edge, spruce turbulator spars, main spars, and sheeting all in place.*



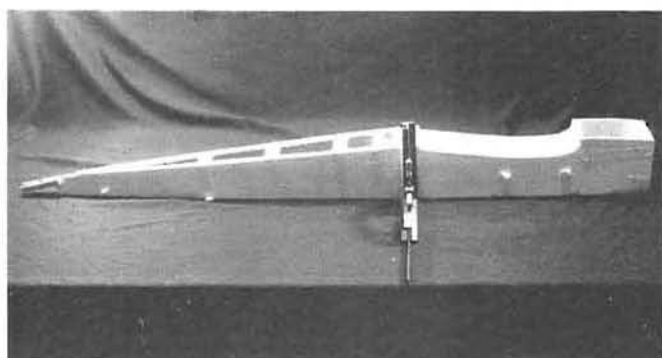
*Wing tips are built-up using lite ply/balsa.*



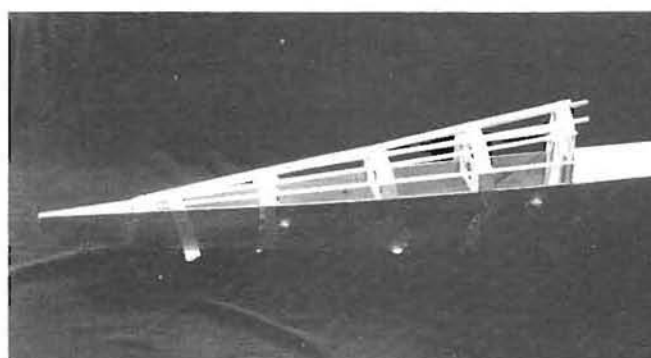
*Nearly all of the fuselage parts are cut from 1/8" (3mm) poplar, lite plywood.*



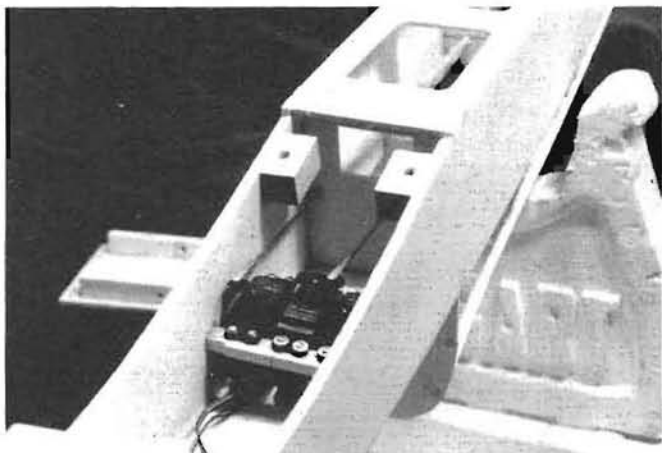
*Fuselage sides with doublers in place.*



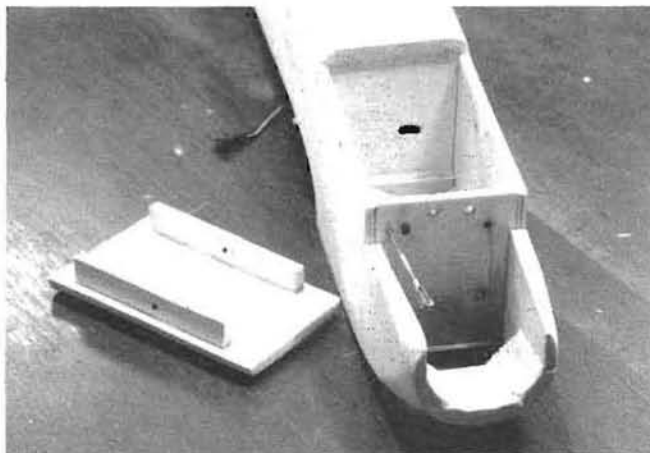
*Tape fuselage assembly together and check for square before gluing together.*



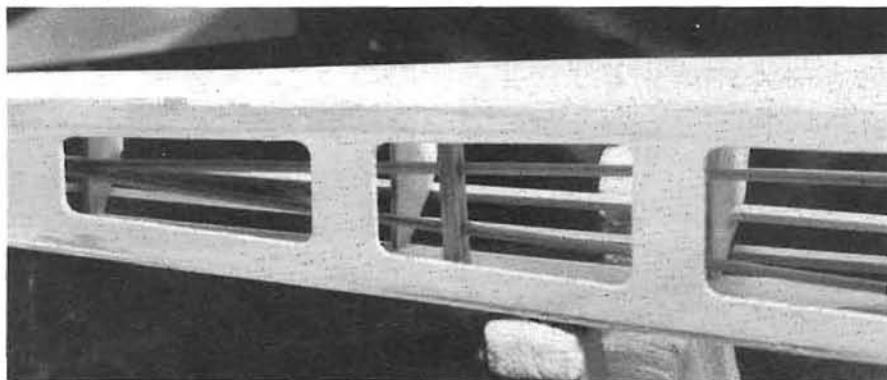
*3/16" sq. spruce stringers are used to form the turtle deck.*



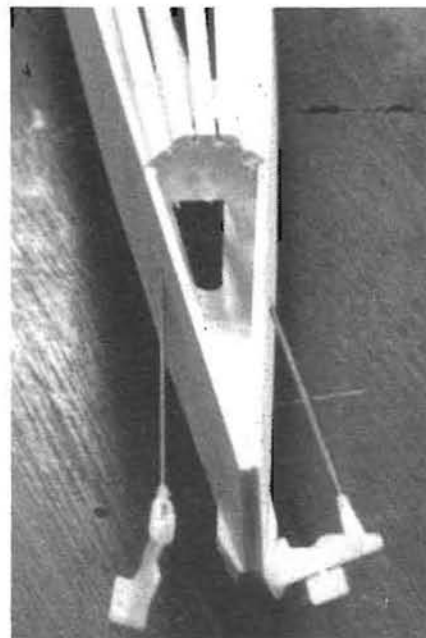
Hardwood wing hold-down blocks and servo mounting rails glued in place.



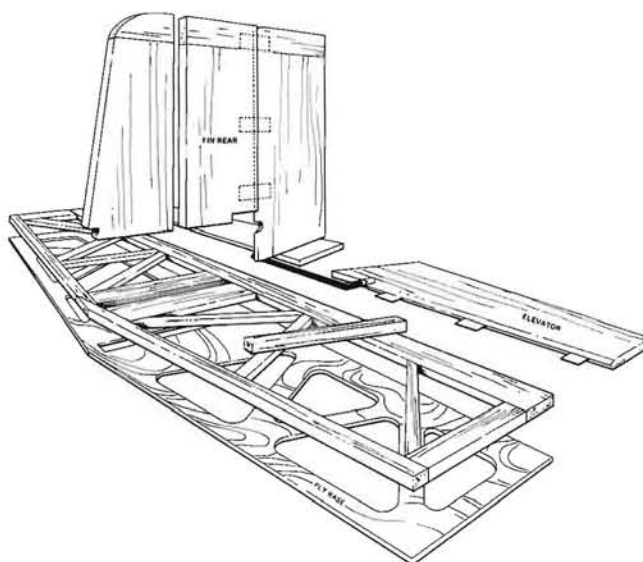
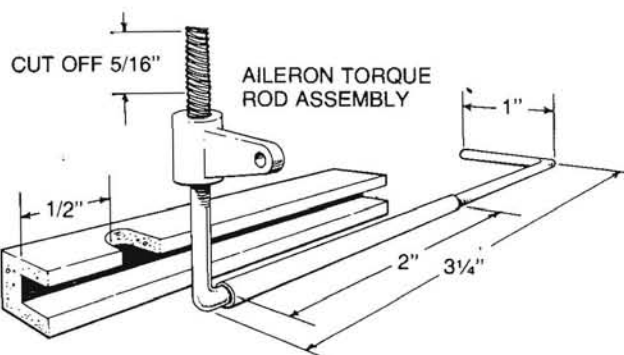
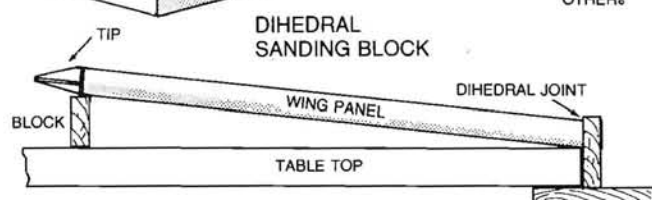
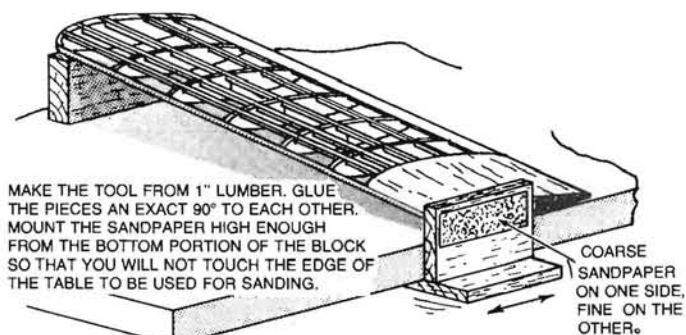
Fuel tank/nose access hatch is held in place with 6 x 32 screws and blind nuts.



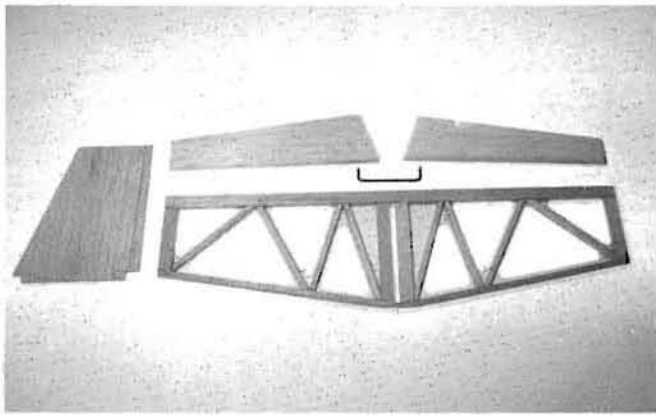
Nylon pushrods are kept from flexing by balsa support in aft fuselage.



Pushrod should have smooth exit with no bends in wire. Tail wheel mount in place.



TAIL GROUP ASSEMBLY



*Horizontal stabilizer is built-up on a lite plywood base, with 3/16" balsa on top. The fin, rudder, and elevators are sheet balsa.*

Using prenotched basswood trunion blocks, make a left and a right aileron torque rod assembly. Make sure the nylon tube is on the wire before bending it! Grinding a point on the aileron end of the wire will assist in the later steps. Thread the nylon fitting all the way down on the rod, and cut off most of the excess with a side cutter, etc. This allows internal clearance and is important. Apply some Vaseline to the rod where it runs through the tubing; this will help prevent adhesive from seeping in. Roughen the outer surface of the tube with coarse sandpaper.

Notch the slotted hardwood block to clear the torque rod; also slot the wing trailing edge a bit. Hold the assembly onto the wing with masking tape, flow thick CA onto the joint. When cured, carve away the excess basswood to blend into the trailing edge.

Pin one panel flat on the building board, then use 5-minute epoxy to join the left and right panels using a 1 1/2" block under the opposite wing tip. (The clipped wing version uses 1/2" dihedral.) Make sure both panels are flat and even. The servo well and center section tape will be added after the wing dowels have been inserted in a later step.

The ailerons are beveled at the hinge line and only slightly rounded at

the back. This configuration seems to help prevent any potential high speed flutter and was developed by Joe Bridi many years ago. There is no need for airfoil shaped ailerons on this design. The hinge gaps should be kept to a minimum, or even taped for best aileron response.

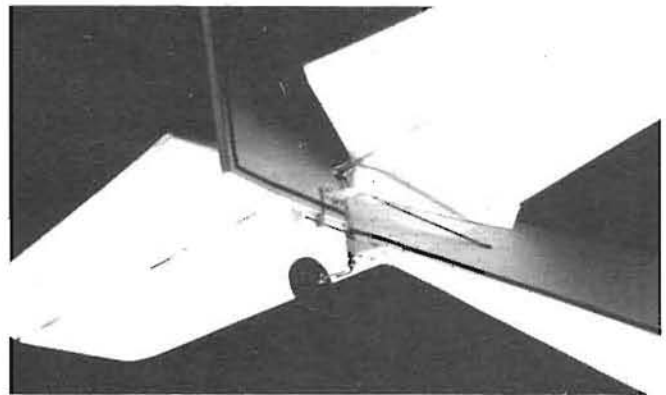
Lite ply wing tips and small gussets are simple and work well. At the expense of sounding evangelistic — no wing center section dihedral gussets are used on any of the entire series. Naturally, we have crashed several models with wings of this design and have never seen one break at the joint. The destruction is **always** outboard, in the same areas it would be had plywood dihedral gussets been used. In other words, they are a waste of time and weight when using modern epoxy adhesives.

#### **Fuselage:**

The sides can easily be cut from 48" stock; however, it is also possible to utilize 36" material by placing a splice that falls within the area of the doublers.

Make a right side by tracing over the plans with carbon paper onto lite ply. Mark the bulkhead and slot locations at this time. Cut out the side, then use it as a pattern for the other side and the doublers.

Note that the ply is called 1/8" when



*Tail wheel control is simple, very rugged, and easy to install/replace. Note 3/8 triangular stock is used to support stab and vertical fin.*

in reality it is 3mm (slightly less than a true 1/8"). The slots should be a tight fit so allow for this slight difference.

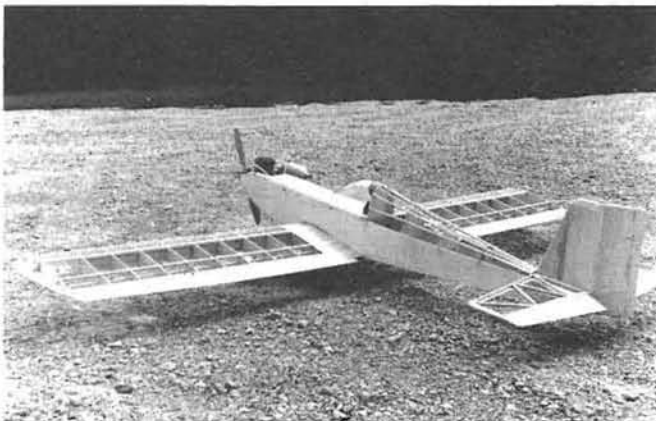
Similarly trace and develop the other parts, then trial fit everything before final assembly. Cement the doublers, firewall reinforcements, and landing gear block in place using epoxy.

Drill 1/4" holes in F-2 before assembly!

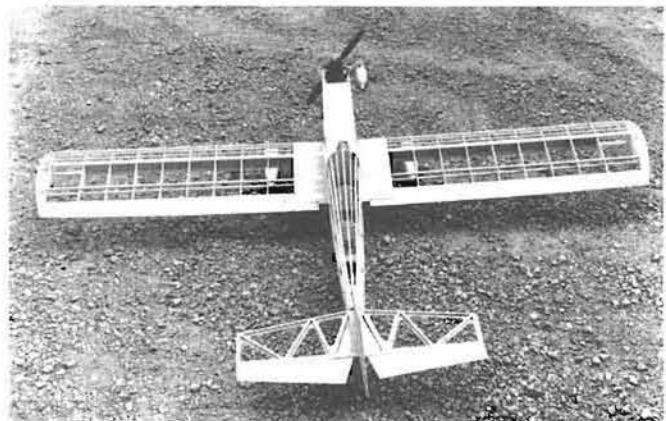
Without gluing, fit the fuselage sides F-2, F-3, the firewall, and the cockpit floor to the sides. Note the floor tabs fit into slots in the sides, and the whole unit is essentially self aligning. Check the assembly for squareness in all areas, adjusting the masking tape as needed. When satisfied, flow thin CA into the joints, then follow with medium CA to form a bead for extra strength.

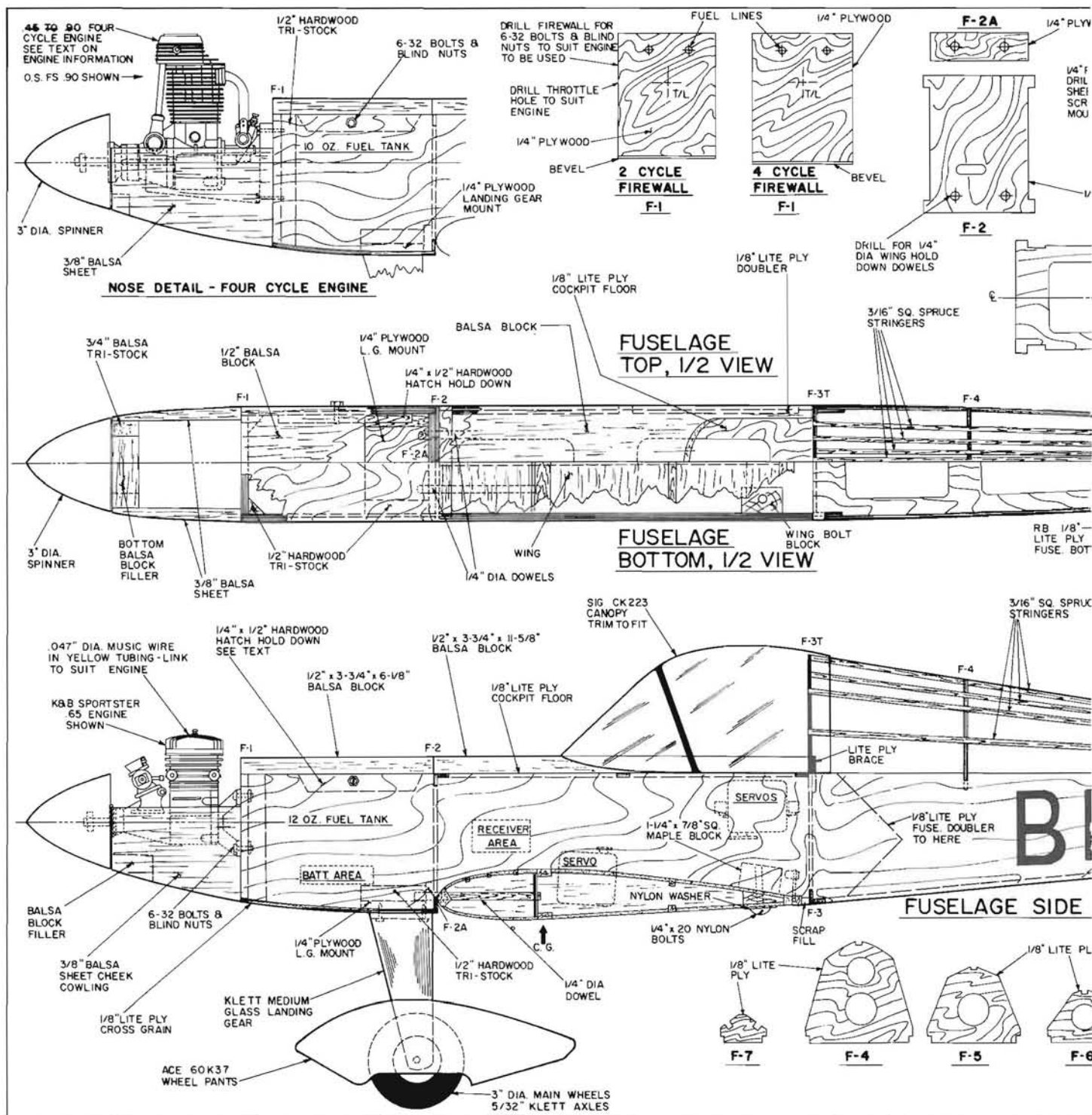
Fit the rear bottom section and adjust it as needed. Clamp the tail post together with clothespins or clamps. Keep all edges aligned and square with masking tape. Repeat the gluing sequence. Add the turtle deck formers, tail wheel mount, and spruce stringers.

The firewall should have been previously drilled to place the thrust line as drawn. Install 6/32" blind nuts and bolts and drill appropriate holes for the fuel lines and the throttle. Do



*Ready for covering. The structure is simple, lightweight, and builds very quickly.*





not install the front bottom sheet or balsa block until the wing has been mounted.

#### Wing Fuselage Marriage:

Mark a centerline on the bottom of F-2 and F-3. Measure out 1-13/16" from the center of the wing and mark both sides on the bottom. This indicates where the outer edge of the fuselage will sit. Place the wing into the fuselage saddle flush with F-2, centered on the mark. Repeat for F-3

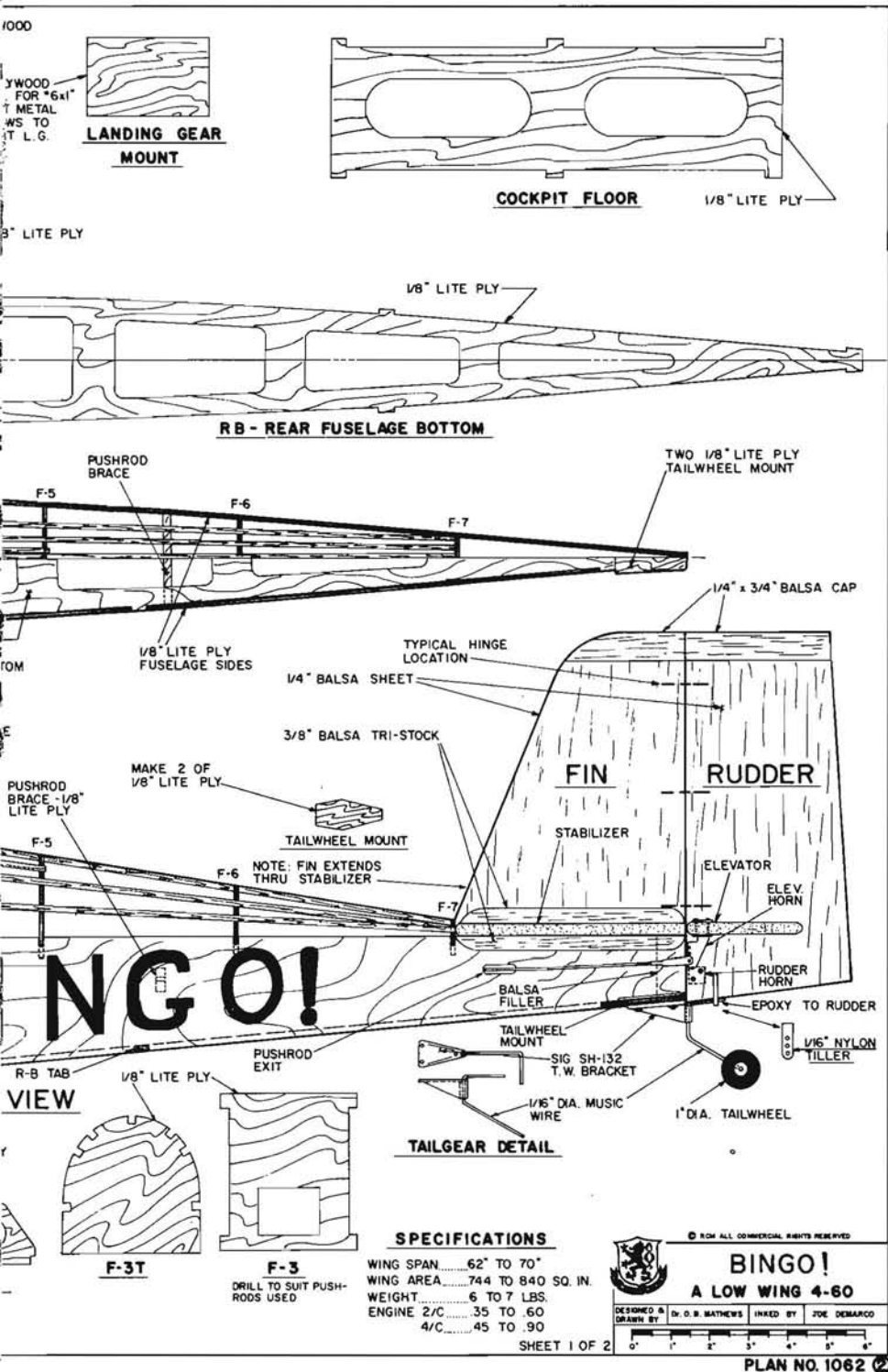
making sure the wing center corresponds with the fuselage center.

Weight the wing down to stabilize it, then place a pin in the exact center of the tail post. Use a length of string to square the wing left-right. The distance from the tip on one side must be exactly the same as the distance to the opposite identical point.

When everything is just right, use a sharpened section of dowel to mark the wing leading edge through the holes in

F-2. Remove the wing and drill through the leading edge into the ply section at the spars. A 6" drill is immensely useful here, but the ply can be reached with a conventional drill if it is chucked out just as far as possible.

Round one end of the 1/4" dowel, and sharpen the other in a pencil sharpener. Push the sharpened end into the holes in the leading edge, inserting it all the way into the ply web (leaving about 3/8" protruding).



### Back to the Wing:

Complete the wing by adding the sheeting to the open portions of the center section. This is greatly simplified if a good metal straightedge is used and the knife is drawn along it flush with the face of the spar. Usually a slight swipe or two with a sanding block will create a filler piece with good neat edges.

Sand and remove any bumps or lumps from the center section, then cut out a well for the servo. Use scrap balsa to create outside walls and inset basswood blocks for the servo mount.

Complete the wing by applying the center section tape/epoxy. We prefer to cover the center section with thinned epoxy and 3" nylon tape which has been stuck on one end with CA. By pulling against the adhered edge, the thinned 5-minute epoxy (thinned with denatured alcohol) is then squeegeed up through the weave using scraps of wood as a trowel. Cut small holes to clear the aileron torque wires and be careful not to get epoxy into the trunion blocks. In this way, a continuous strip can be run completely around the wing.

Repeat this technique with a left and right strip overlapping in the middle. The alcohol is useful also in cleaning up and smoothing the epoxy. Minimal fuzzing should occur if nylon tape such as Ace R/C's 50L311 is used. Alternately, the center section can also be done in 4" Ace Polymat cloth (50L309) using thinned epoxy or thin CA.

Final sand the entire wing to smooth out any imperfections. It is truly astonishing how a tiny spot of glue will stick out like a sore thumb once the covering is applied.

Again, this wing depends on the covering for some of its rigidity and we strongly advise against the softer low heat covering materials. We also strongly recommend precoating the areas to be covered with Sig Stix-It or similar material for vastly improved adhesion, particularly at the center section.

### Nose Block Contouring:

Glue the 1/2" balsa sheet to the floor with thick CA. **Do not adhere it to the hatch area!** Carve to a rounded contour and finish sand. Using a razor saw, cut loose the hatch portion.

A strong, simple attachment system is shown on the drawings. Cut two pieces of bass or pine stock, then hold them to the fuselage side so that they are flush with the top. Spring clamps or clothespins work well. Drill through the side and into the blocks. Install 6 x 32 bolts, washers, and blind nuts.

Remove the bolts and blocks. Place wax paper between the blocks and fuselage wall, lapping over the edge. Bolt the blocks back in place. Spread

Return the wing to the fuselage and recheck the fit. If necessary file out the hole in the leading edge for proper seating. Since the sheeting has not been added to the wing forward area it is possible to reach the dowels and secure them with medium CA. This greatly reduces any chance of adhering the wing to the fuselage during this step.

Remove the wing again and glue the hardwood wing hold-downs to the

fuselage sides with the tops flush with the wing saddle. Return the wing and mark the proper location for the holes on the wing. Check again with the tail post string and adjust if needed. Drill down through the wing into the blocks following a slight forward angle using a 3/16" bit. Remove the wing and tap the blocks with a 1/4 x 20 tap. Enlarge the wing holes to 1/4". Use nylon washers with your nylon bolts to spread the forces over a wider area.

### SPECIFICATIONS

WING SPAN.....62" TO 70"  
WING AREA.....744 TO 840 SQ. IN.  
WEIGHT.....6 TO 7 LBS.  
ENGINE 2/C.....35 TO .60  
4/C.....45 TO .90



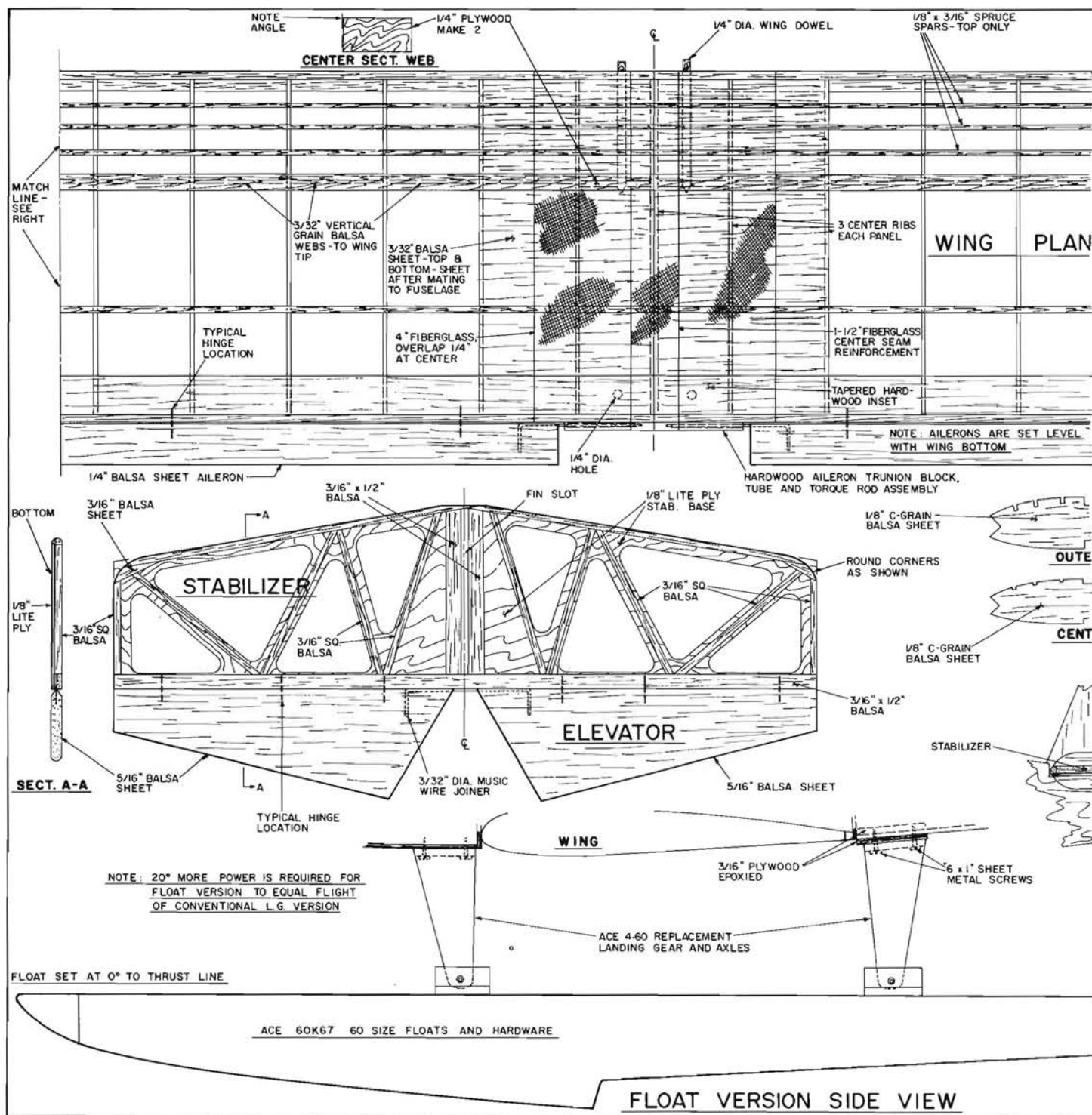
**BINGO!**

A LOW WING 4-60

DESIGNED BY D. O. B. MATTHEWS INKED BY JOE DEMARCO

SHEET 1 OF 2

PLAN NO. 1062



thick CA on the top of the blocks then push the balsa block down onto it. Remove and add a bead of CA to the joint.

Nose blocks are roughly cut to outline and a slight bevel is placed on the firewall end to angle them toward the spinner. The outside edge of the block should meet the mid-line of the spinner about evenly. Adjust the front end to clear the spinner back plate by approximately 1/8". Mark the bottom

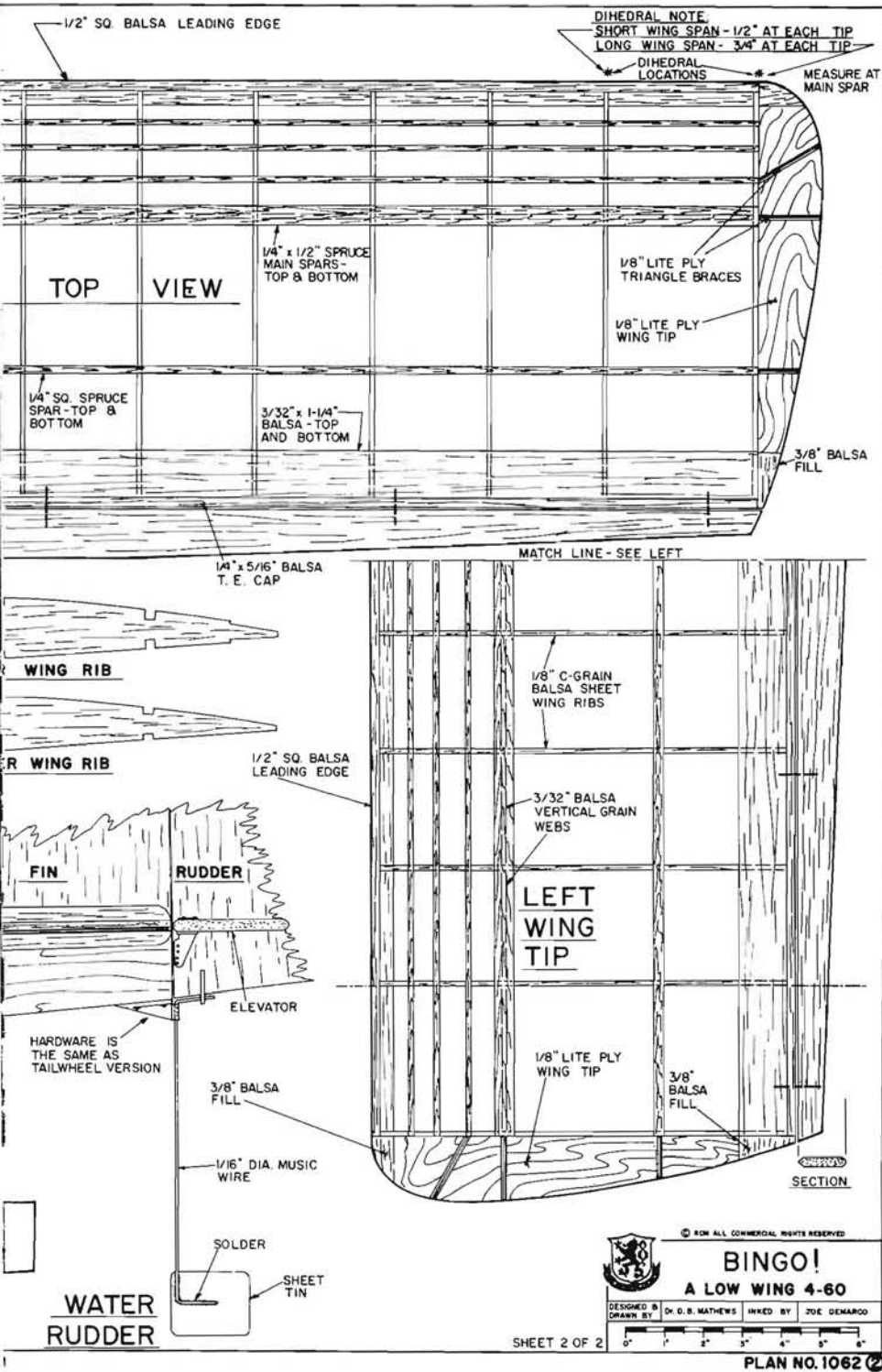
block to fit inside the side blocks by running a pencil along the juncture reaching in from the top. This block should be level with the bottom center of the spinner.

Mark the outline of the spinner, then remove the engine and sand the blocks to rough shape. Remount the engine and spinner and final sand to a pleasant contour. We don't use a ply face on ours but one could be made. Obviously, the length and shape of the

nose blocks is a result of the exact length of the engine and the type of spinner used.

Cover the bottom of the tank compartment with cross grained light ply (it bends better that way). The landing gear can be mounted with #6 x 1/2" sheet metal screws. Be sure the screws do not interfere with the wing dowels. If they do, shorten them with a cut-off wheel.

**Tail Surfaces:**



variances in performance with airfoil versus flat elevators.

The rudder-fin are totally straightforward. On all these surfaces the covering should be installed before hinging. Again, just a slight cosmetic rounding is enough.

After fumbling around for years trying all sorts of tail wheel tillers, we have finally hit on one that works beautifully while being easy to install, and retains the virtue of allowing the entire tail wheel unit to be removed or replaced. This is particularly handy when one wishes to quickly change from a wheel to a water rudder, as an example.

We cut a 1/4" strip of nylon (heavy duty control horns are a good source) long enough to bury an inch or so into the bottom of the rudder and drill 1/16" holes in several places. The upper holes retain the unit in the rudder, and the lower hole is used for the tiller wire. CA will adhere this very well, and the assembly is very durable. Of course, the easiest way to do this is install it after the rudder has been covered. Try it, you'll like it!

#### Finishing Up:

Individual builders have preferences in finishing and we are not about to state "this is the way and the only way." We will, however, describe our pet technique and perhaps you will find a gem you can use.

The entire model is coated with Stix-It. The fuselage is covered, turtle deck first, and the overlaps are trimmed even with the belt line. Strips are cut off the roll to have a level edge which is then spot tacked over the turtle deck covering edges. This is then attached to the entire fuselage side and nose. We usually place a vertical joint under the canopy area to save material.

The rear bottom is covered inside the overlap from the sides. The material is heated and stretched to be wrinkle-free to the middle edges of the nose block, then trimmed. We do not use heat shrink on the nose bottom portion.

K & B Super Poxyclear is used to coat the nose area wood and to fuelproof the tank compartment. After this has cured, we use Super Poxyclear of the appropriate color to paint the inside of the cowl and the underside of the nose overlapping slightly onto the edges of the heat shrink. This seems to help prevent fuel creep and is rather durable. It is also vastly simpler than trying to cover the inside of the nose with heat shrink.

This may raise some eyebrows, but we have been spraying the landing gear and pants and trimming the heat shrink with Rustoleum paint. While it isn't totally fuelproof, only a direct contact with raw fuel will affect it. The Rustoleum sticks well to the

Admittedly, the elevator construction on this series is a bit unusual. It is very strong, warp proof, and weighs only an ounce or two more than a weaker all-sheet unit. It's important to use lightweight balsa strips, particularly when the model is to be powered with one of the lightweight engines like a Fox.

The ply will almost certainly be warped a bit after it is cut, but pinning it flat to the building surface and CA

gluing the strips onto the frame will produce a permanently warp free unit.

Hinges are the builder's choice, but, regardless of those used, they are all slotted in balsa. This system works exceptionally well with the fuzzy nylon hinges currently in vogue, just be certain thin CA is used.

Form the elevators after inserting the joiner wire. They are beveled in front and slightly rounded in back. We have not been able to detect any

# SR

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...Choosing a battery pack is one of those times!

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MonoKote with little tendency to build up runs or smear. Just use dusting coats for tack followed within 1/2 hour by subsequent coats. It dries to the touch overnight.

Again, a matter of personal preference is the use of Du-Bro 30" threaded rods with a nylon clevis on the horn end, and solder links on the servo arms. We cross over the rod/nylon tube units at the mid portion of the fuselage for a less severe bend, and use antifix scrap balsa cross-pieces in approximately the same area. Aileron and throttle connections are pretty much conventional.

If the outer Gold-N-Rod (or whatever) are roughened with coarse sandpaper, they can be adhered to the rear exit slots and the holes in F-3 with a bit of thick CA. After this is done, the exits can be cut and sanded for a flush fit to the fuselage side.

The wheel pants are an Ace R/C accessory item. They are attached to the fiberglass gear using a technique described in the instructions. While frankly something of a nuisance on a wet grass strip, they add so much to the appearance of the-Bingo! and they are certainly worth the trouble. They are also painted with spray Rustoleum.

The canopy is best attached by marking its outline on the covering then carefully cutting a narrow notch through to the underlying wood. A thin bead of R/C 56 is run along the edges but not on the turtle deck portion. After drying at least 24 hours, the glue joint can be neatly trimmed with 1/4" trim tape. The open rear of the canopy seems to help keep it in place, we presume this is because it allows heat build-up to escape rather than expand and contract the plastic.

When gluing the tail onto the fuselage, it is necessary to cut away some of the covering material at the joints. Just make sure the edges are

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well adhered. It is best to cover the triangular braces before installing them. Make sure everything is perpendicular and even with the adjoining structure.

### Prepping For Flight:

The balance point shown on the drawings (middle of main spar) is a good starting point. Recommended control deflections: rudder 1" either side; elevators 1/2" up and down; and ailerons 3/8" up and down. The ailerons should be rigged in such a way that the bottom surface is flush with the flat portion of the bottom airfoil. All measurements are taken at the widest portion of the surface.

Propeller selection must be tailored to the engine, altitude, model weight, temperatures, and individual flying styles. Some starting points we would suggest: 40 2-stroke 11 x 5, 45 2-stroke 11 x 6, 50 2-stroke 11 x 7 or 12 x 5, 60 2-stroke 13 x 6 or 14 x 5, 50 4-stroke 12 x 5 or 12 x 6, 60 4-stroke

12 x 7 or 13 x 5, 90 4-stroke on wheels 13 x 8, on floats 12 x 1. All props should be relatively wide bladed such as Graupner, K series, Master Airscrew, etc. The Bingo! is lighter than most designs with a relatively thin airfoil; it therefore seems to prefer a bit more pitch to its gear ratio.

### Flying:

Let's fly! Start up the engine, point the model's nose into the wind, add just a touch of right rudder as the Bingo! gains speed, and watch it rotate onto the mains and take off with no fancy thumb work at all. This has to be the simplest tail dragger to take off ever!

Aerobatics are clean with no nasty traits. Snap rolls, horizontal and vertical are just a matter of full everything, with instant return to level on release of the sticks. Spins, power-on or power-off; inside and outside, are just like the snaps. Axial rolls are slower than some of the hot

rod designs, but comparable with most "stik" clones.

The roll rate makes for beautiful Cuban Eights. Inside and outside loops are nearly identical which certainly makes for neat Horizontal Eights. Vertical Eights are possible with the more highly powered versions, but one must be careful on the down hill side of all maneuvers when using the stronger engine options. Consider the way full scale aerobatic pilots use the throttle, up hill the engine is wide open, down hill it is almost turned off. For some reason many inexperienced or thoughtless model pilots have the idea the throttle must be wide open from take-off to landing. Learn to use the throttle as a fourth control surface, good pilots do that.

Landings with the Bingo! require a bit more skill than the mid-wing and biplane versions. To simplify construction we chose (finally) not to place the landing gear in the wing structure. It is, therefore, a bit more ahead of the C.G. This requires slowing the model farther out in the pattern (it will fly remarkably slow without any tendency to snap) and setting it down on the wheels with less flare on touchdown. The worst that will happen if the Bingo! is flared too steeply, is a bounce off the tail wheel, followed by a few bounces on the mains.

Lovely landings can be done if the speed is bled off farther out and minimal up elevator is used on touchdown. We don't mean to imply the Bingo! is at all difficult to land, rather we are just sharing what we have learned by flying them hundreds of times. The thing is flat dab gorgeous when it is wheel landed, rolls down the runway and settles down on the tail wheel. A little practice will make the flier proud. As a matter of fact, this whole project will make you proud.

### Conclusion:

Bingo! is in reality an easily built, neat looking low winged 4-60 with superb flying characteristics. Additionally, it can be configured to fly well with a wide assortment of power options. In all ways it continues the excellent reputation of its ancestors of which many have been built and flown by modelers of all skill levels.

Bingo! is the 63rd published design to roll off our drawing board. It represents the most delightful model we have developed in 48 years of building these things. A very strong statement, but absolutely true! We would hope you, the reader, will choose to build a Bingo! and enjoy!



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