

Super Hots .60



Kit #157

**The
Fun to Fly
R/C Model**

Success Series

This kit features a complete and fully illustrated step-by-step instruction booklet - AND - full-size plans that ASSURE SUCCESS!

About This Instruction Booklet

This booklet divides the construction into sub-assemblies; i.e., Wing, Fuselage, etc. Read each section carefully and identify all of the parts before starting on a particular sub-assembly. There is a complete description of all of the kit parts under "Kit Contents" (Pages #2 & #3). Please check to be sure that your kit is complete; i.e., not missing any parts. If you do find that parts are missing, or you are having trouble identifying parts, see "Customer Service" (below). The instructions give the sizes of all the parts. Refer back to the "Kit Contents" when selecting parts, to be sure you are using the correct sizes.

The illustrations in this manual clarify and detail many of the assemblies shown on the plan, and the two should be used together during construction.

The plan shows cutaway views of the Fuselage. On the top view, the balsa upper side sheeting and the caps are not shown. On the fuselage side view, the left side is not shown. This has been done for clarity.

The wing is initially built upside-down. Note that the plan shows the bottom view of the wing.

Customer Service

Should you experience a problem with this kit, we recommend you see your dealer first. If you are unable to solve the problem, feel free to call or write:

Customer Service Department
Midwest Products Co., Inc.
P.O. Box 564
Hobart, IN 46342
(219) 942-1134

MIDWEST
PRODUCTS CO., INC.

400 S. Indiana St., P.O. Box 564, Hobart, IN 46342

This product is sold with exclusion of all warranty expressed or implied, statutory or otherwise. Buyer assumes all risk of use.



Kit Contents

Note: All Wood Parts Listed are Balsa Unless Otherwise Noted

Wing

4	3/32" x 2" x 26-3/4"	PRE-CUT Trailing Edge Sheeting
4	3/32" x 2-15/16" x 26-3/4"	PRE-CUT Leading Edge Sheeting
2	3/32" x 2" x 24"	Center Section Sheeting
1	3/32" x 3" x 24"	Center Section Sheeting
4	3/32" x 3" x 2-1/4"	PRE-CUT Shear Webs
2	3/32" x 1-1/2" x 2-1/4"	PRE-CUT Shear Webs
5	3/32" x 1/2" x 36"	Cap Strips
2	1/8" x 1/8" x 4"	PRE-CUT Torque Rod Filler Pieces
1	1/4" x 3/8" x 4"	PRE-CUT Torque Rod Bearing Block
1	1/4" x 3" x 24"	Wing Tips
1	1/4" Triangle x 5-7/8"	Wing Hold-Down Block Brace
2	1/4" x 1/4" x 3-1/4"	PRE-CUT Spruce Aileron Servo Mounts
2	1/4" x 1" Dowel	PRE-CUT Birch Wing Dowels
2	1/4" x 3/4" x 1-7/8"	PRE-CUT Maple Wing Hold-Down Block
4	1/4" x 1/4" x 26-3/4"	PRE-CUT Spruce Wing Spars
1	1/4" x 1/4" x 36"	Spruce Spar Doublers (Save surplus for Fuselage Stringer)
2	3/8" x 1/2" x 26-3/4"	PRE-CUT Wing Trailing Edge
2	3/8" x 1-1/2" x 25"	PRE-CUT Ailerons
1	1/2" x 1" x 36"	PRE-CUT Wing Jig
2	17/32" x 1-5/16" x 26-3/4"	PRE-CUT Wing Leading Edge
1	1/16" x 1" x 3-1/4"	PRE-CUT Plywood Leading Edge Doubler
1	3" x 18"	Fiberglass Cloth
2		Aileron Torque Rods
2		Brass Aileron Bearings
2		Aileron Adjustment Fittings
2		Threaded Aileron Pushrods
2		Aileron Pushrod Clevis'
2		1/4-20 x 3/4" Nylon Bolts

Fuselage

1	3/32" x 3-1/2" x 11-7/8"	Forward Fuselage Sheeting
2	3/32" x 3" x 30"	Cockpit Upper Sheet & Upper Turtle Deck Sheet
1	3/32" x 3" x 3"	Stab Plate
1	3/32" x 1/2" x 36"	Turtle Deck Cap
2	3/32" x 1/4" x 18"	Fuselage Stringers
1	1/8" x 3" x 30"	Rear Fuselage Bottom Sheeting
1	1/8" x 1/2" x 1-1/4"	PRE-CUT Tailpost
1	1/8" x 5/8" x 1-1/4"	PRE-CUT Plywood Tail Wheel Mounting Plate
1	1/8" x 3-7/8" x 5-13/16"	PRE-CUT Plywood Front Fuselage Bottom
1	3mm x 3-7/8" x 12-3/16"	PRE-CUT Micro-Lite® Plywood Fuselage Bottom
1	3mm x 3" x 3-1/2"	PRE-CUT Micro-Lite® Plywood F3
2	1/4" x 5/8" x 1-1/2"	PRE-CUT, Pre-Drilled, Maple Wing Bolt Bearing Blocks
2	1/4" x 1/4" x 3-9/16"	PRE-CUT Spruce Fuselage Servo Rails
1	1/4" x 1/2" x 3-9/16"	PRE-CUT Spruce Fuselage Servo Rail
1	1/4" x 1/4" x 36"	Spruce Fuselage Top Stringer
1	1/4" x 2" x 3-7/8"	PRE-CUT Maple Main Landing Gear Block
1	1/4" x 3" x 36"	Cowl Material
3	1/4" Triangle x 36"	Fuselage Bracing
1	1/4" x 3-1/2" x 3-7/8"	PRE-CUT Plywood F1
2	5/16" x 1" TTE x 5/8"	PRE-CUT Wing Bolt Block Filler
1	1/2" Triangle x 5"	Cowl Filler
1		Main Landing Gear
2		5/32" Axles
4		1/4-20 x 3/4" Nylon Bolts
4		6-32 Blind Nuts
2		1/16" x 36" Pushrods
2		1/8" x 20" Pushrod Tubing
1		Tail Wheel Bracket
1		Pre-Bent 3/32" Tail Wheel Wire
2		#2 x 3/8" SMS Tail Wheel Bracket Attach
2		9/16" x 2-3/8" Cardboard Wing Bolt Tubes

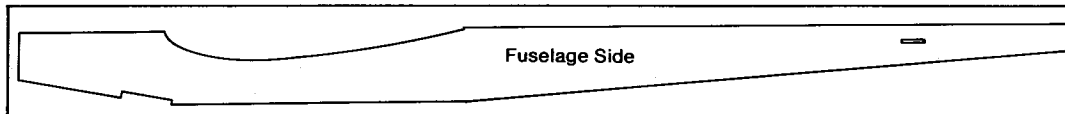
Stabilizer

1	1/4" x 2-7/8" x 17-1/2"	PRE-CUT Stabilizer Leading Edge
1	1/4" x 2-7/8" x 17-1/2"	PRE-CUT Stabilizer Trailing Edge
2	1/4" x 2-15/16" x 8-3/4"	PRE-CUT Elevators
1	1/4" x 1/4" x 8-7/8"	Spruce Stab Tips
1		Elevator Connector Wire
1		Control Horn
2		1-72 x 1/2" Control Horn Screws

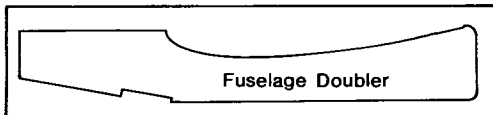
Fin & Rudder

1	1/4" x 2-7/8" x 4-5/8"	PRE-CUT Fin Leading Edge
1	1/4" x 2-7/8" x 5-9/16"	PRE-CUT Fin Trailing Edge
1	1/4" x 2-15/16" x 7-1/8"	PRE-CUT Rudder
1	1/4" x 1" x 4-1/2"	PRE-CUT Rudder Cap
1		Control Horn
2		1-72 x 1/2" Control Horn Screws

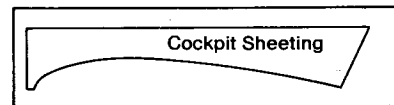
Die-Cut Parts



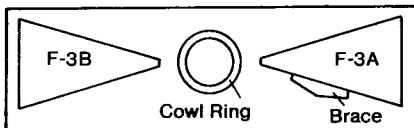
2 - Die #1 - 3mm x 3-1/2" x 43" - Micro-Lite® Plywood



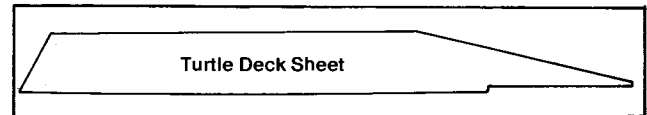
2 - Die #2 - 1/16" x 3-11/16" x 19-1/4" - Plywood



2 - Die #3 - 3/32" x 3" x 14-7/8"



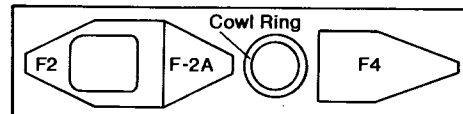
1 - Die #4 - 3mm x 4" x 16" - Micro-Lite® Plywood



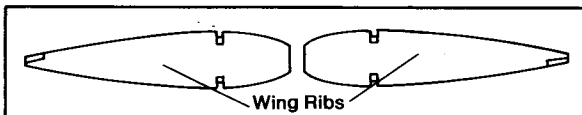
2 - Die #5 - 3/32" x 3" x 25"



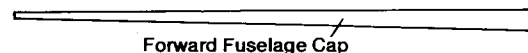
1 - Die #6 - 1/16" x 4" x 11-7/8" - Plywood



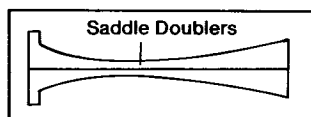
1 - Die #7 - 3mm x 4" x 17-7/8" - Micro-Lite® Plywood



10 - Die #8 - 1/8" x 3" x 22-1/4"



1 - Die #9 - 3/32" x 7/8" x 20-3/4"



1 - Die #10 - 1/16" x 3-7/8" x 11-7/8" - Plywood

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Before You Begin

The "Super Hots" was designed by Dan Santich, and first appeared as a construction article in the February, 1986 issue of *Model Airplane News* as a one piece, quickly built, high performance Fun-Fly model.

Midwest Products has re-engineered the design to include a removable wing, which makes this version of the "Super Hots" easier to build and transport. Also, the airframe has been strengthened to provide you with a model that will give many more hours of enjoyment. The structure has been designed so you can build most of this model using cyanoacrylate (super-glue type) adhesives.

Modifications

If you should decide to install a Schnuerle Ported 60, or a larger engine, we recommend using a metal Motor Mount; as these mounts will reduce vibration from the more powerful engines.

If you install an engine larger than a .60 - it may be necessary to re-bend, or replace, the Landing Gear to provide adequate ground clearance for the Prop. Check this before starting assembly. A larger Landing Gear, with a broader mounting base, can be installed simply by adding 1/4" plywood to the inside of the Fuselage, ahead of the Landing Gear Block. This will provide a longer mounting base for the gear bolts.

Materials You Will Need

You will need these items to build this kit. Most of them are available from your Hobby Shop:

- ☐ **Fast-drying Cyanoacrylate Adhesive -**
Used to bond wood to wood. (Use where an instruction tells you to glue, or bond parts with "CA".)



- ☐ **Slow-drying Cyanoacrylate Adhesive -**
Used to bond wood to wood where access or size prevent the use of CA. (Use where an instruction tells you to glue, or bond, parts with "Slow CA".)

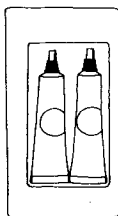


- ☐ **Accelerator -**
Used to speed up the drying time of CA and Slow CA adhesives.

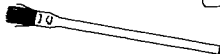


- ☐ **5 Minute Epoxy -**
Used to bond some hardwood joints.

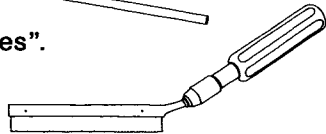
- ☐ **Slow-drying Epoxy -**
Used to bond fiberglass cloth to the wing center-section.



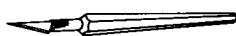
- ☐ **Disposable Brushes -**
Used to apply epoxy.
Also called "Solder Brushes".



- ☐ **Fine Tooth Razor Saw -**
Used to cut Hardwood parts. (Note: Razor Saws will stick, or bind, when cutting small parts if the tooth size is too large, or if you press down on the saw while cutting. If you let the saw slide across the part without pressing down, it will cut cleanly and smoothly.)



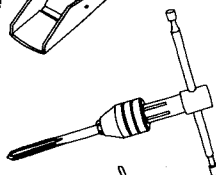
- ☐ **X-Acto® Knife and Extra #11 Blades -**
This is a hobby knife with a metal handle. The #11 blades are a general purpose size, and can be used to cut and trim all of the Balsa Wood and Micro-Lite® Plywood parts in this kit.



- ☐ **Small Plane -**
Used to shape wood. (Stanley Tools makes an excellent One Inch Plane that will give years of service.)



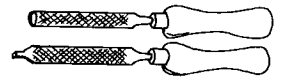
- ☐ **1/4 - 20 Tap and Tap Handle -**
Used to thread bolt holes in the Maple Blocks for the Wing and Landing Gear bolts.



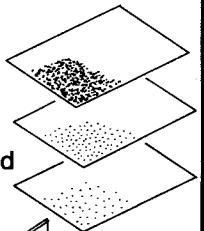
- ☐ **T-Pins -**
Used to secure parts to the building board during construction.



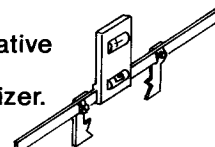
- ☐ **A small Round and a small Flat File-** Used to shape parts.



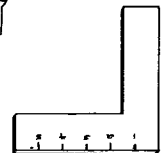
- ☐ **80 and 120 Grit Aluminum Oxide Sandpaper and Sanding Block -**
Used to shape and smooth wood parts. For the most part, the 80 grit paper can be used with the sanding block to shape parts and contour assemblies. The 120 grit paper is used to finish sand the model.



- ☐ **Incidence Meter -**
Used to establish the relative angles between the Firewall, Wing and Stabilizer.



- ☐ **Small Square -**
Used to align parts at 90° angles during construction.



- ☐ **Plastic Wrap -**
Used to cover the plan so that parts are not accidentally bonded to it during construction.

- ☐ **Building Board -**
This can be any flat, stiff material that will accept T-pins; such as soft wood, cork bulletin board, etc. Note: You will need a building board that is at least 16" x 48". Because the Wing will be built on this board using a simple jig, the board must be "flat", with no warps or twists. Otherwise, the Wings will not be straight, and the finished model will not fly properly.

- ☐ **1/4" Electric Drill and a variety of drill bits to include a 3-1/2" long 3/16" drill bitt (This is a standard length) -**
These tools will be necessary to drill various mounting and bolt holes.

- ☐ **Rubbing Alcohol -**

Used as a solvent for epoxy.

- ☐ **12" and 36" Steel or Aluminum Straight Edges -**
Used to measure parts, and as a guide for cutting straight lines.

- ☐ **Soldering Gun & Solder**

- ☐ **Light Weight Oil -**

- ☐ **Assorted Screwdrivers**

Such as 3-in-1 oil.

- ☐ **Pliers**

- ☐ **Masking Tape**

- ☐ **Pencil**

Additional Items you will need to build an operable R/C Model

Due to each modeler's preference, and the variety of accessory items available, the following items are left for the builder to select:

- ☐ **12 oz. Fuel Tank and Fuel Lines**
- ☐ **Motor Mounts & Bolts**
- ☐ **Solder Links**
- ☐ **3/32" & 5/32" Wheel Collars**
- ☐ **Threaded Connectors**
- ☐ **Hinges**

- ☐ **2-1/2" Spinner**
- ☐ **2 - 1/2" Wheels**
- ☐ **3/4" Tailwheel**
- ☐ **Quik Links**
- ☐ **Throttle Cable**
- ☐ **Radio**

- ☐ **Engine**
- ☐ **Finishing Materials - (We recommend "Monokote"; two 6 foot rolls will cover the model, not including trim colors.)**

All of these items are available from your local Hobby Shop.

Construction Tips

Cutting

When cutting parts with your knife, make your first cut at light pressure, being careful that the point of the knife goes exactly where you want it. Subsequent cuts should be made at moderate pressure until the part is cut out. Use a steel straight edge to guide the blade when cutting straight lines.

Using Adhesives

When using CA, join the parts and then apply the CA. It will run into the joint and bond the parts. Be certain there are no gaps. When using Slow CA, apply adhesive to one of the parts and then join the assembly. On hardwood joints, apply accelerator as per the manufacturer's directions on the bottle, before bonding the parts together.

When using epoxies, mix the two parts as per the manufacturer's directions. Alcohol can be used to remove excess epoxy from parts and fingers before it cures.

Assembly Instructions

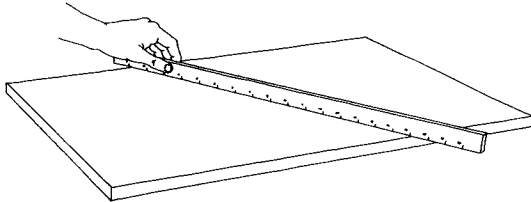
Wing Construction

In order to build the Fuselage, it will be necessary to have the Wing already built. So, we will start construction with the Wings.

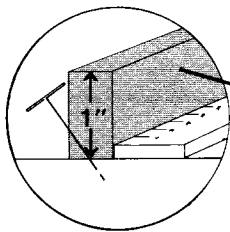
The Wings for the Super Hots are built as two separate panels on a simple 1/2" x 1" x 36" balsa jig; then joined with Spar Doublers and the Center Sheeting. It will be necessary to turn the panels over on the jig during construction. The construction sequence must be followed in order to properly join the Wings. This method will allow you to build the Wings quickly and correct any mis-alignment before completion. Initially, each panel is built upside-down. Note that the plan shows the bottom view of the Wing.

Check-off boxes (☐) appear next to each instruction throughout the text to help you keep track of your progress. Instructions #1 - #35 have dual boxes because these instructions will be repeated.

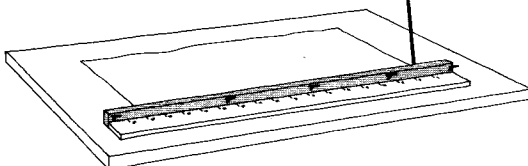
Wing Panels



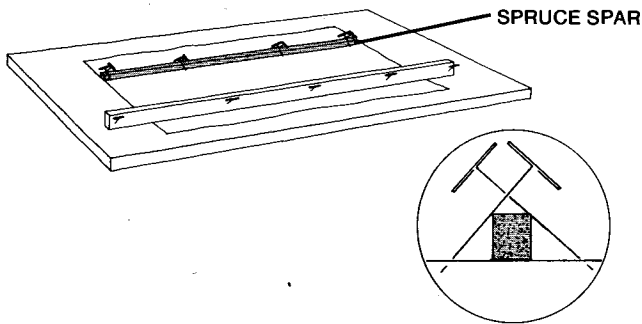
- ☐ ☐ 1. Stand the 36" straight edge on edge, against the building board. Move it around the board and note any high or low spots. Correct these so that the board is "flat".



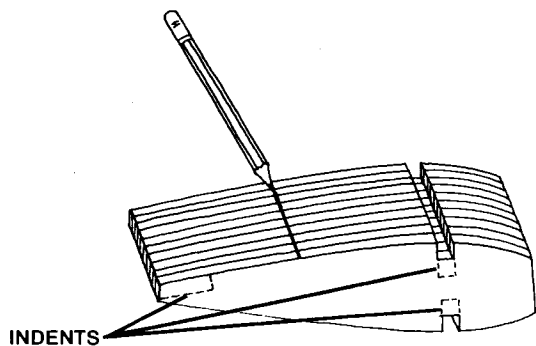
1/2" x 1" x 36" JIG



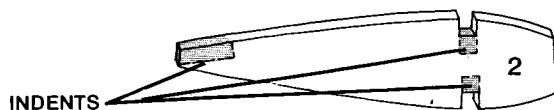
- ☐ ☐ 2. The plan is easier to work with if the Wing drawing is cut from the plan and then cut again, along the centerline of the Wing, to provide separate right and left Wing plans. Lay the Left Wing plan on the board and cover it with plastic wrap.
- ☐ ☐ 3. Pin the ends of the 1/2" x 1" x 36" balsa jig at the positions indicated on the plan. Be sure to lay the jig on the plan so that it stands 1" high, as shown.
- ☐ ☐ 4. Lay the 36" straight edge against the jig to be certain that the jig is straight, then pin the center part of the jig to the plan. Be certain that the T-pins are below the top of the jig, as shown. Cover the jig with a narrow piece of plastic wrap.



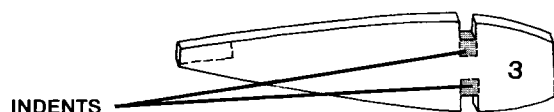
- □ 5. Spray accelerator on all four sides of a pre-cut $1/4" \times 1/4" \times 26-3/4"$ Spruce Spar and pin it in position on the plan, as shown. Do not push pins through the Spar, as this could cause it to crack



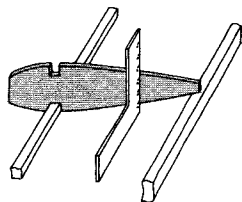
- □ 6. Remove ten Wing Ribs from the die-cut sheets. Note that there are indented marks on the side of each Rib. Stack the Ribs so that all of the indents at the Trailing Edge are all facing the same way. Mark a dark pencil line across the stacked Ribs on the same side as the indented Trailing Edge, as shown. This mark will indicate the bottom of the Ribs, and will help you to insure that the Ribs are all facing the same way when they are installed during construction. (Remember that the Wings are initially built upside-down.)



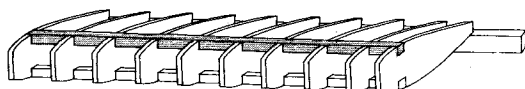
- □ 7. Cut the Spar Doubler indents and the Wing Hold-Down Block indent from one Rib. This Rib will be used as the Number Two (2) Rib, as indicated on the plan.



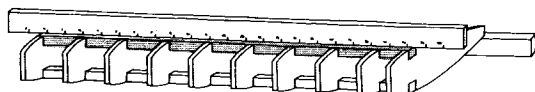
- □ 8. Cut the Spar Doubler indents from one Rib, as shown. This Rib will be used as the Number Three (3) Rib, as indicated on the plan.



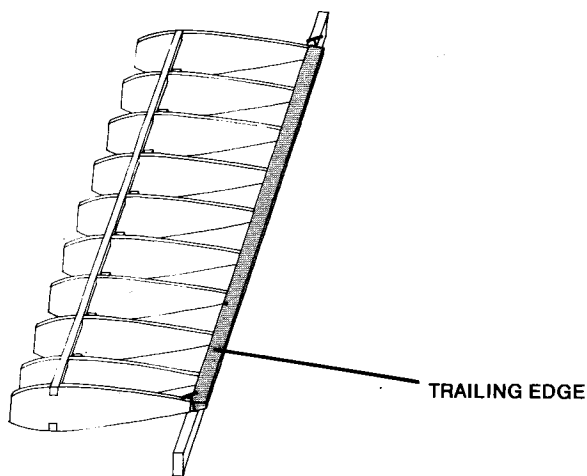
- □ 9. Position each Rib on the Spar with the pencil mark up. Rest the Trailing Edge of the Rib on the top of the jig. Holding a small square against each Rib, bond them to the Spar with CA. Be certain that the Number Two Rib and the Number Three Rib are in their correct positions, according to the plan.



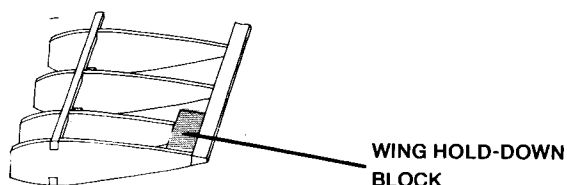
- □ 10. Spray accelerator on another pre-cut Spar. Press the Spar into the Spar notches of the Ribs so that it is flush with the edges of the Ribs.



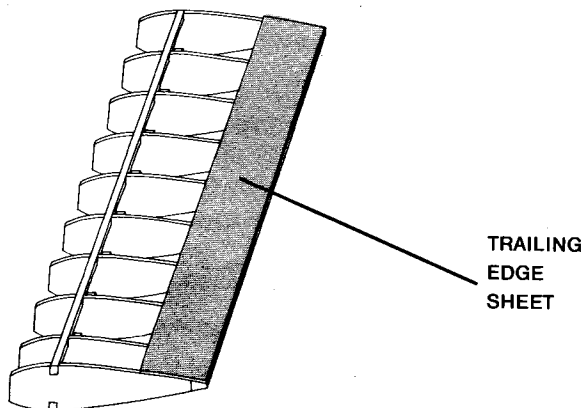
- □ 11. Stand the 36" straight edge on the Spar, as shown, and adjust the Spar so that it makes contact with the straight edge over its full length. Adjust the Ribs so they are all square to the Spars, and then bond this Spar to the Ribs with CA.



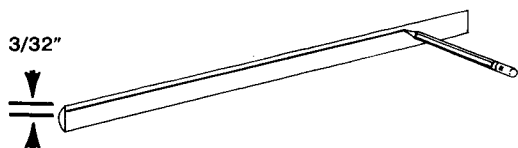
- ☐ ☐ 12. Bond the pre-cut Trailing Edge to the Root and Tip Ribs with CA.
- ☐ ☐ 13. Push a pin into the jig against each end of the Trailing Edge so as to trap the Trailing Edge and prevent it from moving sideways. Be certain that the end Ribs are in line with the plan.
- ☐ ☐ 14. Bond the Trailing Edge to the remaining Ribs with CA.



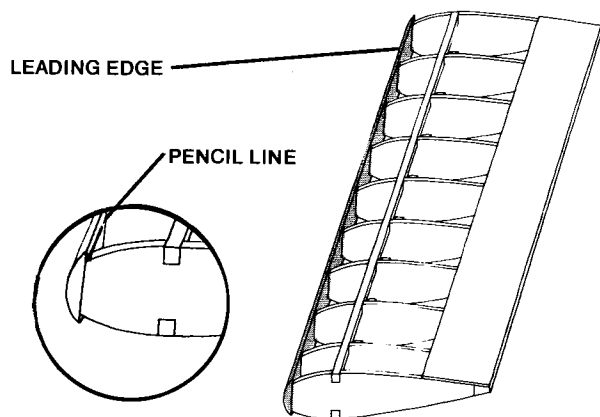
- ☐ ☐ 15. Insert a pre-cut and beveled maple Wing Hold-Down Block into the cut-out in the Number Two (2) Rib. Adjust its fit so that the top edge is flush with the Rib and the Trailing Edge. When satisfied with the fit, bond it to the Trailing Edge, the Root Rib and the Number Two (2) Rib with 5 minute epoxy, as shown on the plan.
- ☐ ☐ 16. Using a sanding block, lightly sand the edges of the Ribs flush with the Spars and Trailing Edge.



- ☐ ☐ 17. Apply Slow CA to the last 1-1/2" of each Rib, the Wing Hold-Down Block and the Trailing Edge. Position the 3/32" x 2" x 26-3/4" pre-cut Trailing Edge sheet and press it into place with your fingers, starting at the center and moving towards the ends.
- ☐ ☐ 18. Push pins through the Trailing Edge, into the jig, to prevent the Trailing Edge from lifting.

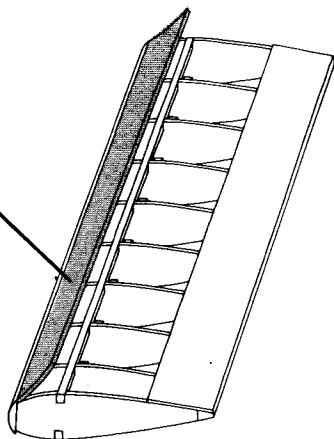


- ☐ ☐ 19. Measure 3/32" in on the flat side of the pre-cut Leading Edge and mark a pencil line along its length.



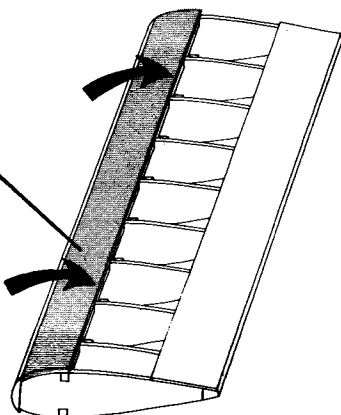
- ☐ ☐ 20. Bond the Leading Edge to the Root and Tip Ribs with CA so that the top edge of each Rib touches the pencil line, as shown.
- ☐ ☐ 21. Press the Leading Edge against the rest of the Ribs, at the pencil line, and bond it with CA.

LEADING
EDGE
SHEET



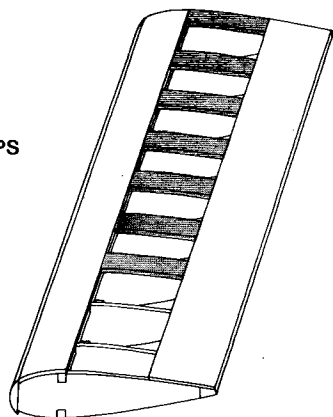
- □ 22. Fit a pre-cut $3/32" \times 3" \times 26-3/4"$ Leading Edge sheet against the Leading Edge. Bevel the edge of the sheet with a sanding block to match the angle created by the Leading Edge and Ribs to remove any gaps.
- □ 23. Apply Slow CA to the first $1/4"$ of the Ribs and to the beveled edge of the Leading Edge sheet. Position the sheet against the Leading Edge and the front portion of the Ribs. Allow this assembly to cure. (About one minute.)

LEADING
EDGE
SHEET

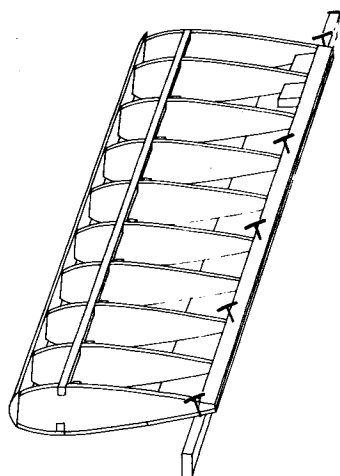


- □ 24. Insert the nozzle of the Slow CA under the Leading Edge sheet, and apply Slow CA to the Ribs and the Spar.
- □ 25. Lay your hands flat on the center portion of the Leading Edge sheet and roll it onto the Spar. Hold it in position until the Slow CA "grabs"; then roll the ends into contact with the Spar.
- □ 26. Check to be sure that the Leading Edge sheet is in contact with the Spar. If not, apply Slow CA in the gap and press it into contact, working a small section at a time.

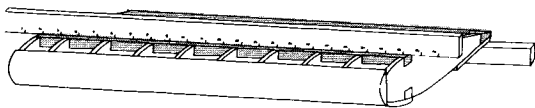
CAP STRIPS



- □ 27. Cut the Cap Strips to length from the $3/32" \times 1/2" \times 36"$ balsa strips and install them with Slow CA. DO NOT install the Center Section Sheeting at this time.

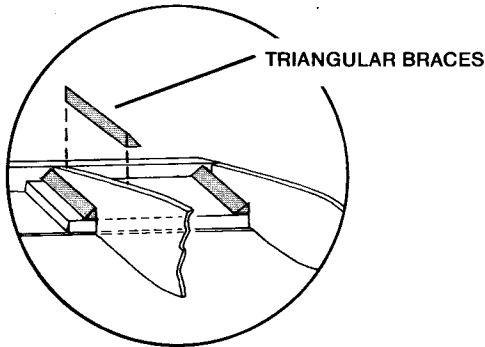


- □ 28. Remove the Wing Panel from the plan. Turn it over and pin it back into position, as shown, so that the Leading Edge Sheeting is laying flat on the plan and the rear edge of the Spar is in line with the Spar drawing on the plan. Pin the Trailing Edge Sheeting to the jig, as shown, so that it makes contact along its full length.

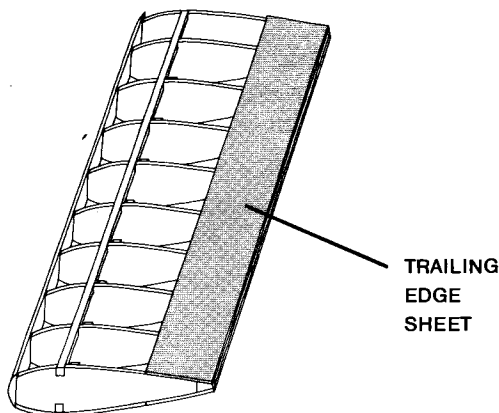


- □ 29. Stand the 36" straight edge along the Trailing Edge and then along the Spar, making certain that they are flat and there are no gaps.

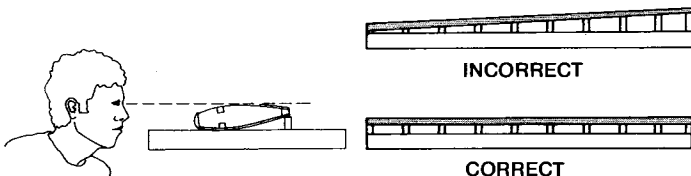
Note: This step is important. If the Spar or Trailing Edge is bowed, this shape will be locked in when the next Leading and Trailing Edge Sheets are installed. Adjust the pins, or your building board, as necessary to remove any gaps.



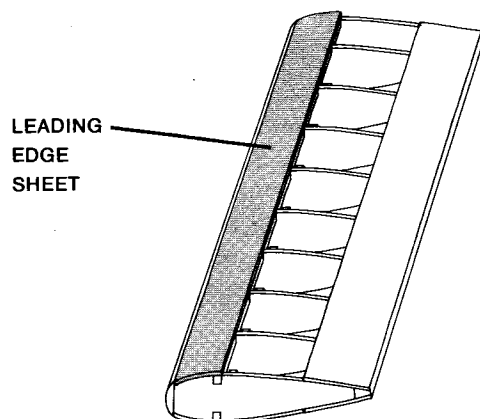
- □ 30. Cut THREE 1/4" balsa Triangular Braces to fit the Wing Hold-Down Block. Glue them in position with 5 minute epoxy as shown on the Wing plan. When the epoxy has cured, trim the Braces flush with the tops of the Ribs.



- □ 31. Apply Slow CA to the last 1-1/2" of the Ribs and the Trailing Edge. Position a pre-cut 3/32" x 2" x 26-3/4" Trailing Edge Sheet and press it against the Ribs and Trailing Edge. Start at the center and work towards the ends.

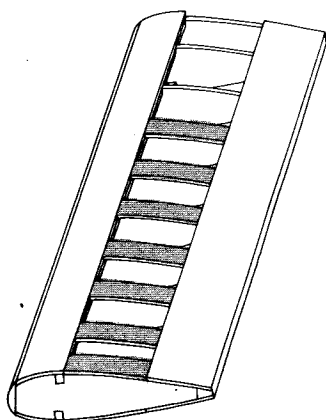


- □ 32. Sight across the Trailing Edge and the Spar, as shown, to be certain that they are parallel.



- □ 33. Bevel a pre-cut 3/32" x 2-15/16" x 26-3/4" Leading Edge Sheet, as before, and install it in the same manner as the first sheet. Again, check for gaps between the Leading Edge Sheet and the Spar.

CAP STRIPS



- □ 34. Cut and install the 3/32" x 1/2" Cap Strips. DO NOT install the Center Sheeting at this time.

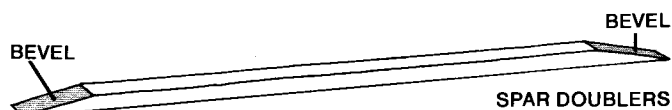


REMOVE SHADED AREAS

- □ 35. Remove the Wing Panel from the plan. Using an X-Acto® knife, remove two 1/4" x 1/4" sections from the Root Rib as shown. These cut-outs will allow the Spar Doublers to be installed.

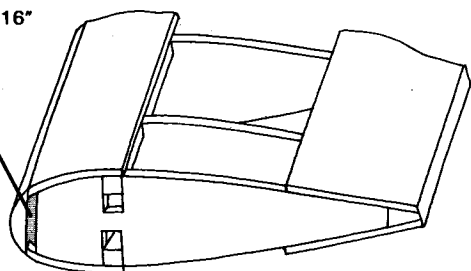
Place the Panel aside and repeat steps #1 through #35 to build the Right Wing Panel.

Joining the Wings

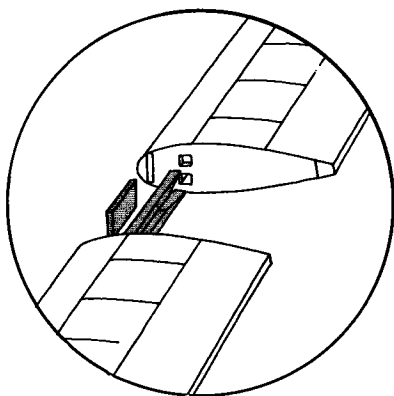


- 36. Cut TWO 12" lengths of 1/4" square spruce from a 36" length of stock. Bevel the edges as shown. These will be used as the Spar Doublers.

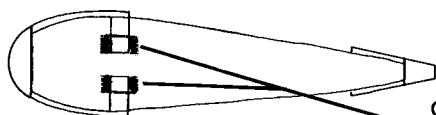
SLOT - 1/16"



- 37. Remove 1/16" from the front of the Root Ribs in both panels to make a slot at the Leading Edge for the 1/16" x 1" x 3-1/8" pre-cut Leading Edge Brace.

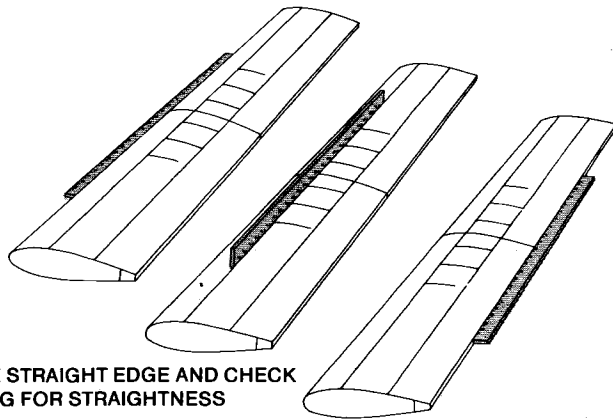


- 38. Test fit the Spar Doublers and the Leading Edge Brace in the Wing Panels. If necessary, trim the Spar slots so that the Spar Doublers slip in easily and rest flush with the Wing Spars.



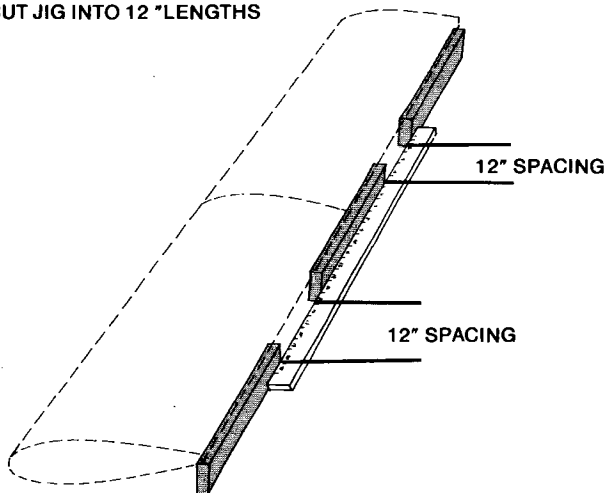
OPEN SHADED AREAS FOR BEST FIT

- 39. With the Panels, Spar Doublers and Leading Edge Brace assembled, but not glued, check that the Leading and Trailing Edges of the Panels are even. If they're not, open the sides of the Spar slots in the root rib, as shown, and check the fit again.

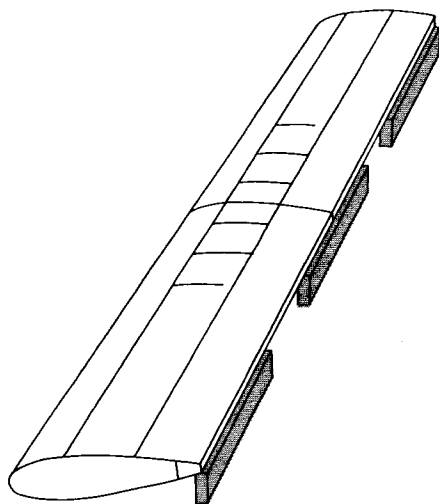


- 40. With the Panels temporarily joined, lay the Wing on the building board. Hold a 36" straight edge across the Leading Edges, the Spars, and the Trailing Edges, as shown, checking that the two Panels are straight relative to one another. If necessary, sand the Root Ribs to obtain a good fit.
- 41. Glue both Spar Doublers and the Leading Edge Brace into position in ONE Wing Panel using 5 minute epoxy. Be certain to remove any excess epoxy from the back sides of the Spar Doublers and the Spars, since the Webbing will later be glued to these parts.

CUT JIG INTO 12" LENGTHS



- 42. Cut the 1/2" x 1" x 36" jig into three 12" pieces and pin it to the building board, as shown, using a 36" straight edge as a guide. Then cover the jig and the board with plastic wrap.

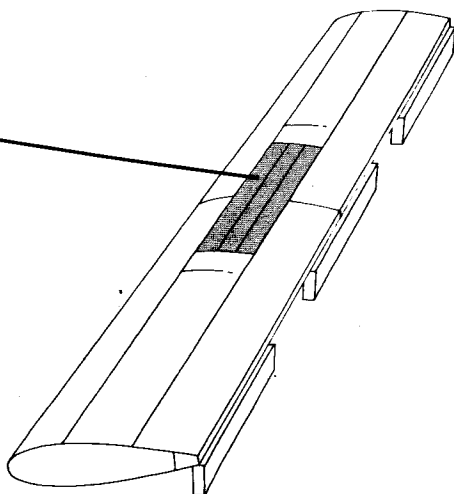


- 43. Mix about one ounce of slow curing epoxy. Spread it on the Root Ribs, Spars, Spar Doublers and the Leading Edge Brace, where these parts contact each other.
- 44. Join the Wing Panels and lay them on the building board so that the Trailing Edges of the Wing Panels rest on the jig and are parallel to it.
- 45. Pin the Spar and Trailing Edge of ONE Wing Panel to the board and the jig.
- 46. Again, lay the 36" straight edge across the Leading Edges, Spars and Trailing Edges of both Panels. When both Panels are aligned and straight, pin the other Panel to the board and the jig. Let the epoxy cure before going on to the next step.

Note: Since the Wing has a symmetrical airfoil, it will not be possible to determine which side is the top after the Center Sheeting is installed. Note which side of the Wing has the Wing Hold-Down Blocks on it and mark the Trailing Edge Sheeting to indicate this.

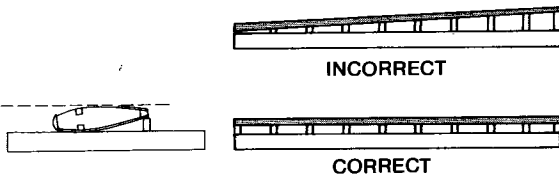
After the Center Sheeting is all in place, it will be helpful to write the word "TOP" on the center of the Center Sheets. This may sound unnecessary, but, if the Wing is installed with the Hold-Down Blocks on the wrong side, the Wing Bolts will not engage the Blocks. (See the plan, Side View.)

CENTER
SECTION
SHEETING



- 47. From one of the $3/32"$ x $2"$ x $24"$ balsa sheets, cut two 10" Center Section Sheets. From the $3/32"$ x $3"$ x $24"$ balsa sheets, cut one 10" Center Section Sheet. Glue these Center Sheets in place with Slow CA before removing the Wing from the building board.

Note: Save the remaining portion of the $3/32"$ x $3"$ x $24"$ sheet. It will be used along with the other $3/32"$ x $2"$ x $24"$ sheet to make the Center Sheeting for the other side of the Wing.



- 48. Remove the Wing from the building board, turn it over, and pin it back into position on the board and the jig. Be certain that the Trailing Edges are parallel with the jig.

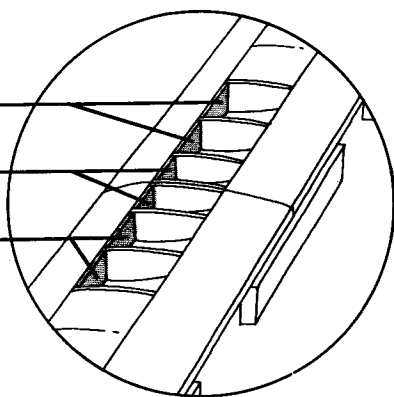
Note: This is the last chance you will have to make any alignment corrections on the Wing. Once the last Center Sheets are installed, the Wing will become rigid. Check for twists by sighting across the Spars and Trailing Edges.

SHEAR WEBS

$3/32"$ x $3"$ x $2-1/4"$

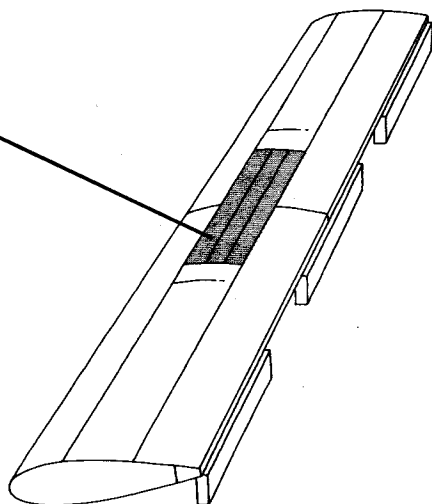
$3/32"$ x $1-1/2"$ x $2-1/4"$

$3/32"$ x $3"$ x $2-1/4"$



- 49. Install the four pre-cut $3/32"$ x $3"$ x $2-1/4"$ and the two pre-cut $3/32"$ x $1-1/2"$ x $2-1/4"$ balsa Shear Webs with 5 minute epoxy. Be certain that the grain runs vertically.

CENTER
SECTION
SHEETING

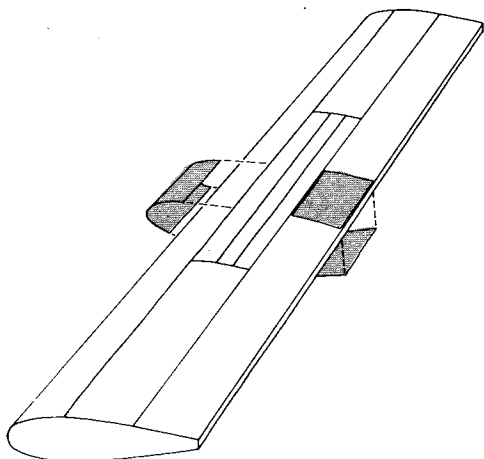


- 50. Install the remaining $3/32"$ balsa Center Sheets. Remove the Wing from the board and sand it with a sanding block to feather and smooth all the joints.
- 51. Cut the Wing Tip Template from the plan. Using it as a pattern, cut the Wing Tips from the $1/4"$ x $3"$ x $24"$ balsa sheet. Glue the Wing Tips to the end Ribs and sand them flush with the Sheeting.

Fiberglassing

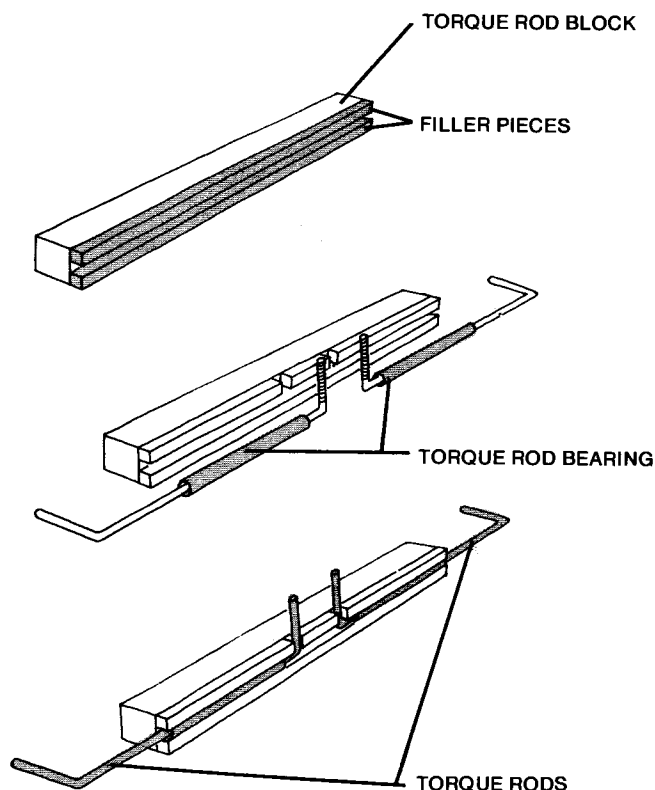
At this point, the Center Section of the Wing is tied together with the Center Sheeting and the Spar Doublers. It will only be necessary to fiberglass the Leading and Trailing Edge Sheeting, as indicated by the shaded areas on the plan.

The traditional method of fiberglassing uses slow cure epoxy to bond the glass cloth to the Wing, and this is fine. However, the fiberglassing step can be speeded up considerably if the glass cloth is applied using CA. Simply lay the cloth in position, tack the edges with CA, and then run CA onto the cloth. Immediately rub the cloth down to the wood with a quick circular motion of your finger. Either method will produce a strong joint. If you use the CA method, be sure to have adequate ventilation to avoid breathing the fumes from the CA.



- 52. Cut three pieces of the 3" fiberglass cloth to wrap around the Leading Edge and to cover both Trailing Edge Sheets. (Shaded areas on the Wing plan.) DO NOT fiberglass the rear edge of the Center Section as the Torque Rod Block will be bonded to it.
- 53. Apply the glass cloth as described above.

Torque Rods

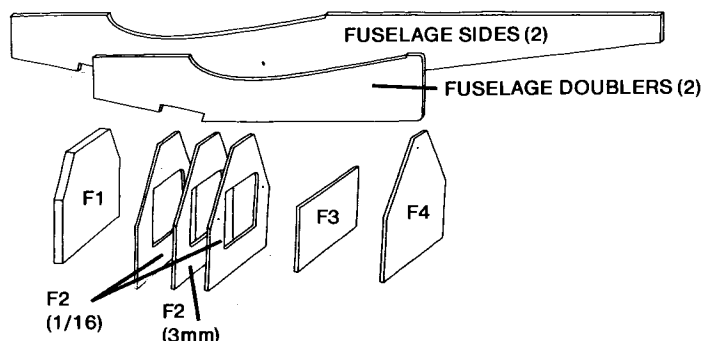


- 54. Glue the two pre-cut 1/8" x 1/8" x 4" balsa filler pieces to the edges of the pre-cut 1/4" x 3/8" x 4" balsa Torque Rod Block, as shown.
- 55. Slip the brass Torque Rod Bearings over the Torque Rods and bend the Rods to shape, using the plan as a guide. (Be sure to make a left and right Torque Rod.)
- 56. Fit the Torque Rods into the slot in the Torque Rod Block, using the Wing plan to position them. Remove the 1/8" square balsa immediately behind the threaded ends of the Torque Rods, as shown.
Note: This is important. If the Torque Rods are spaced too far apart, the Aileron Pushrods may interfere with the other Pushrods.
- 57. Locate the Torque Rod Block at the center of the Wing Trailing Edge with pencil marks.
- 58. Rub light oil on the Torque Rods to prevent epoxy from bonding to them. Be careful not to get oil on the bearings.
- 59. Glue the Torque Rod Bearings into the Torque Rod Block and glue the Block to the Trailing Edge of the Wing with 5 minute epoxy. Be sure the Threaded Rod Ends face the BOTTOM of the Wing. When the epoxy cures, taper the Torque Rod Block to the Wing contour, as shown on the Fuselage Side View.

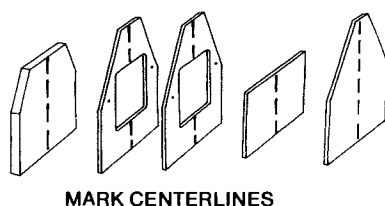
The Wing is now complete, except for the 1/4" dowels, which will be added later.

Fuselage

The Fuselage is a simple box structure and quite easy to build. However, because of the size of the Cockpit Structure which is bonded to the Wing, the Fuselage Bulkheads must be located accurately, and squarely, in order to properly mount and remove the Wing. Study the plan and text before beginning construction.

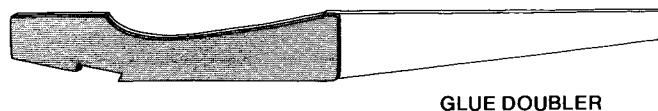


- ☐ 60. Remove the Fuselage Sides, Fuselage Doublers and the Bulkheads from the die-cut sheets; also F1 and F3, which are pre-cut parts.

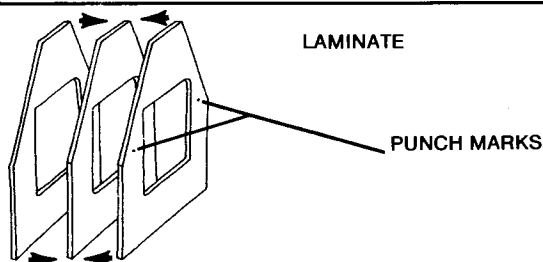


- ☐ 61. Measure and mark the centerline on both sides of each bulkhead.

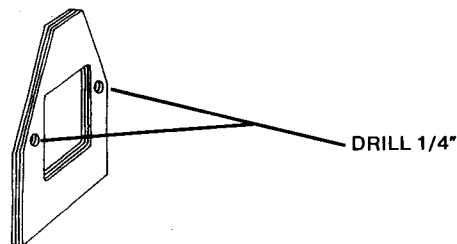
Note: Take the time to do this accurately. These centerlines will be used to align the Fuselage, and to center the Wing.



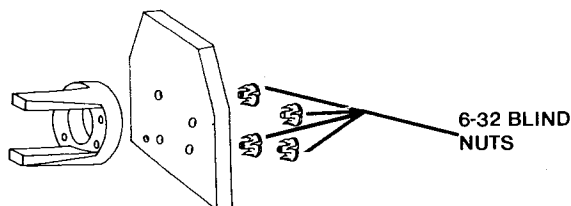
- ☐ 62. Lay the Fuselage Sides on the building board. Using Slow CA, laminate the 1/16" plywood Doublers to the Fuselage Sides. Be sure to make a right and left side.



- ☐ 63. Using Slow CA, laminate one 1/16" die-cut plywood Doubler to each side of the Micro-Lite® plywood Bulkhead F2, as shown. Be sure the punch marks for the Wing dowel holes are facing out on one of the plywood Doublers.

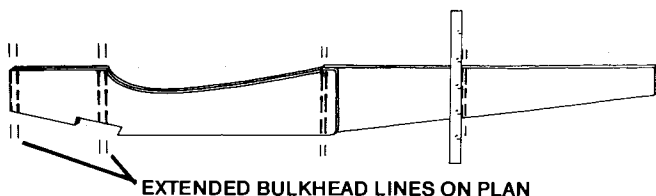


- ☐ 64. Using the punch marks as a guide, drill two 1/4" holes through F2. Check the fit of your Fuel Tank through F2 and then sand the edges of the Tank hole smooth.

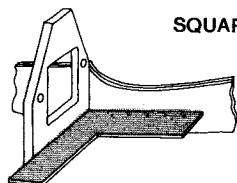


- ☐ 65. If possible, use your Motor Mount as a drill guide. Drill 6/32" (No. 28 drill bitt) clearance holes in F1 for the mounting bolts and install the four 6-32 blind nuts. Also, drill a hole for your Throttle Cable and two 1/4" holes for the Fuel Lines.

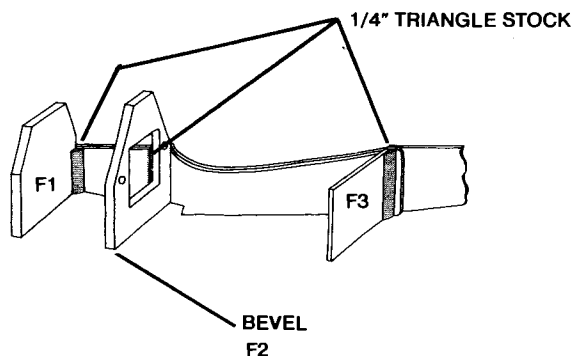
Note: Although the Engine can be installed in any position, we recommend that it be side-mounted. This mounting position will allow the exhaust residue to blow under, and away from, the Fuselage and Wing.



- ☐ 66. Lay the right Fuselage Side over the side view on the plan and carefully align it with the drawing of the Fuselage Side. Using the extended Bulkhead Lines as a guide, lay a straight edge across the Fuselage and mark the Bulkhead locations for F1, F2, F3 and F4. Double check the accuracy of your lines.

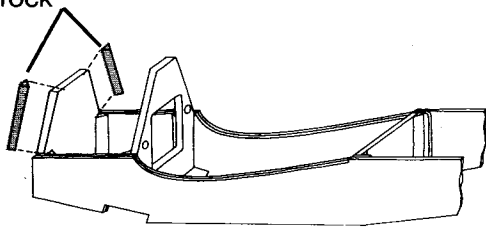


Note: Use a small square to position all of the Bulkheads.

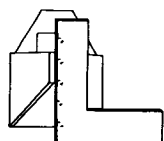


- ☐ 67. Using Slow CA, install F1. Be certain that the lower FRONT edge of F1 is at the edge of the Fuselage Bottom, as shown on the plan.
- ☐ 68. Cut and install a piece of 1/4" triangle stock against F1 and the Fuselage Side, using Slow CA.
- ☐ 69. Bevel the bottom edge of F2 to match the angle of the Landing Gear Block. Install F2 with Slow CA.
- ☐ 70. Cut and install a piece of 1/4" triangle stock against the FRONT side of F2 and the Fuselage Side, using Slow CA.
- ☐ 71. Install F3 with Slow CA. Be sure the wood grain runs across the Fuselage.
- ☐ 72. Cut and install a piece of 1/4" triangle stock against the BACK side of F3 and the Fuselage Side, using Slow CA.

1/4" TRIANGLE STOCK



- ☐ 73. Carefully align and bond the left Fuselage Side to the Bulkheads with Slow CA. Be sure the Bulkheads are all square to the sides and that the top edges of the sides are parallel to each other.
- ☐ 74. Cut and install the 1/4" triangle stock against the Bulkheads and left Fuselage Side. Also, install 2 pieces of 1/4" triangle stock on the upper sides of F1 as shown.

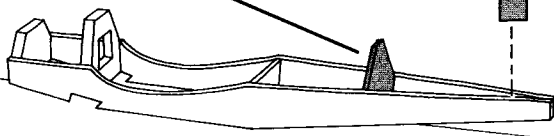


TAPER TAIL POST

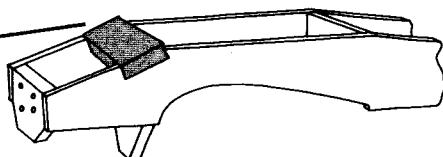


- ☐ 75. Position the Fuselage over the top view on the plan. Pin it in position so that the Bulkhead Centerlines are over the centerline shown on the plan.
- ☐ 76. Pull the back edges of the Fuselage Sides together and, using a small square as shown, align them over the centerline and bond them together with CA.
- ☐ 77. Install F4 with Slow CA, using the plan and pencil lines as a guide to position this Bulkhead.
- ☐ 78. Taper the pre-cut 1/8" x 1/2" x 1-1/4" Tail Post to fit and install it with Slow CA. Remove the Fuselage from the plan.

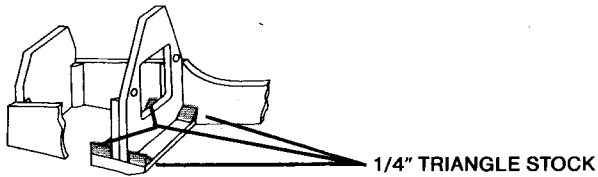
C/L



LANDING GEAR BLOCK

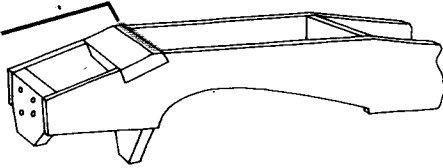


- ☐ 79. Install the 1/4" x 2" x 3-7/8" maple Landing Gear Block with Slow CA.



- 80. Cut and install the 1/4" triangle stock against the Landing Gear Block and the Fuselage Sides with Slow CA. Note that there is triangle stock on both sides of F2.

BEVEL
LANDING GEAR
BLOCK

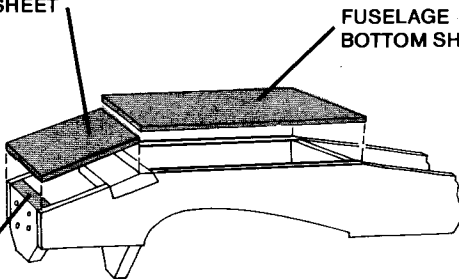


- 81. Using a plane or sanding block, bevel the Landing Gear Block flush with the bottom of the Fuselage, as shown in the side view of the plan.

FRONT FUSELAGE
BOTTOM SHEET

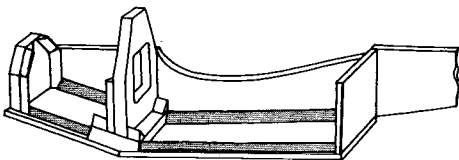
FUSELAGE
BOTTOM SHEET

FILL
WITH
SCRAP

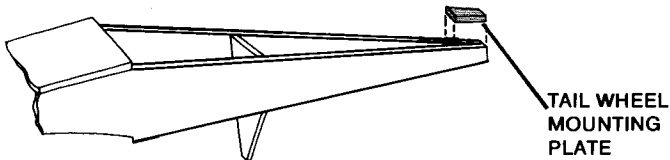


- 82. Glue a strip of scrap balsa across the bottom of F1 and sand it flush with the edges of the Fuselage.
- 83. Install the 1/8" x 3-7/8" x 5-13/16" pre-cut plywood Front Fuselage Bottom Sheet with Slow CA. Be sure it is in contact with the Landing Gear Block.
- 84. Install the 1/8" x 3-7/8" x 12-3/16" pre-cut Micro-Lite® plywood Fuselage Bottom Sheet with Slow CA. Be sure it butts against the front plywood sheet and makes contact with the Landing Gear Block.

1/4" TRIANGLE STOCK

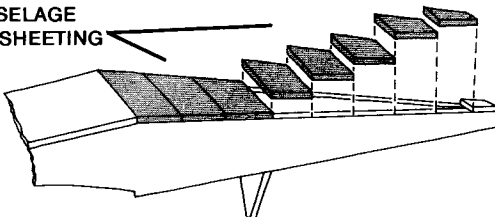


- 85. Cut and install 1/4" triangle stock on the inside of the Fuselage against the front and bottom sheets and the sides, using Slow CA.

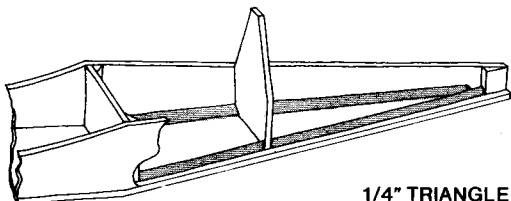


- 86. Install the 1/8" x 5/8" x 1-1/4" plywood Tail Wheel Mounting Plate with 5 minute epoxy. Cut and sand it flush with the sides after the epoxy cures.

REAR FUSELAGE
BOTTOM SHEETING

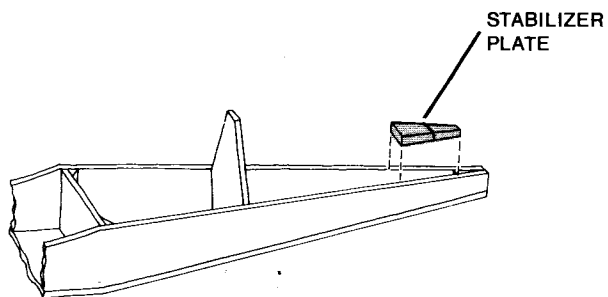


- 87. Cut and fit the Rear Fuselage Bottom Sheeting from the 1/8" x 3" x 30" balsa sheets. Be sure to run the grain across the Fuselage. Install these pieces with CA.

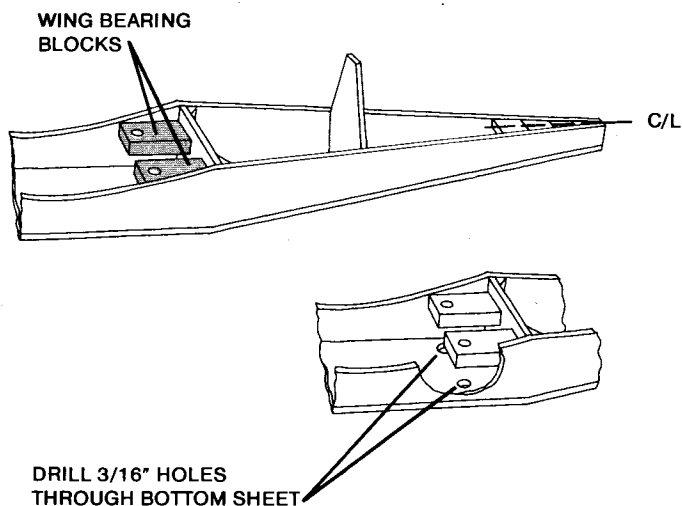


1/4" TRIANGLE STOCK

- 88. Cut and install 1/4" triangle stock on the inside of the Fuselage, against the sides and bottom 1/8" balsa sheets, using Slow CA. Taper the rear pieces to butt against the Tail Post, as shown on the top view of the plan.



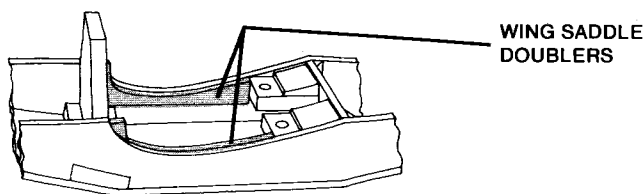
- 89. Cut and fit the Stabilizer Plate parts from the 3/32" x 3" x 3" balsa sheets. Be sure the grain runs across the Fuselage. Bond these parts together with CA.
- 90. Insert the Stabilizer Plate into the Fuselage so that it sticks up slightly above the edges of the sides. Invert the Fuselage and press the plate against the building board to seat it flush with the top edges of the Fuselage. Bond the Plate to the Fuselage with CA.



- 91. Butt a 36" straight edge against F4's centerline. Center the straight edge over the Tail Post and mark the centerline on the top of the Stabilizer Plate.
- 92. Install the two pre-drilled Wing Bearing Blocks with 5 minute epoxy, as shown on the plan. Be sure they are in contact with F3 and the Fuselage Sides, and that the front edges of the Blocks are flush with the edges of the Wing Saddle, as shown on the side view of the plan.
- 93. Insert a 3/16" drill bitt into the holes in the Wing Bearing Blocks, from the top. Drill through the bottom Micro-Lite® plywood sheet. DO NOT enlarge these holes at this time. They will be used later to act as a drill guide when you drill the tap holes in the Wing.



- 94. Glue the pre-cut and tapered balsa filler blocks to the tops of the Bearing Blocks with Slow CA. Sand them flush with the Wing Saddle.



- 95. Fit the die-cut 1/16" plywood Wing Saddle Doublers to the inside of the Fuselage Sides, as shown on the plan. Glue them in position with Slow CA and then trim the front edges flush with the Wing Saddle.

Radio and Pushrod Installation

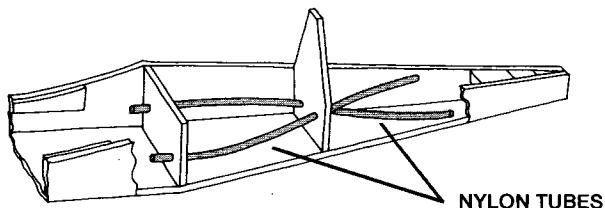
While the Fuselage is open on the top side, it would be a good idea to install the three pre-cut Servo Rails and the Pushrods for the Elevator, Rudder and Throttle.

When positioning your Servos, bear in mind that the Pushrods for the Ailerons and a portion of the Aileron Servo will sit between the Servos that are mounted on each side of the Fuselage. Temporarily fit the Cardboard Guide Tubes under the Wing Bearing Blocks to be sure that the Rudder and Elevator Pushrods will clear them.

If your Throttle Servo is too high to fit in the position shown on the plan, it can be located immediately behind F2 and against the side of the Fuselage, where there is more height.

When positioning the Aileron Servo, be certain that the hole in the Wing Sheeting is centered so that the Aileron Servo will clear the Servos in the Fuselage. Remove the portion of the Root Ribs that extend across this hole. Glue the two pre-cut 1/4" x 1/4" x 3-1/4" Spruce Servo Rails under the Center Sheeting with Slow CA, as shown on the plan.

Nylon Tubing and 1/16" Music Wire are provided for the Rudder and Elevator Pushrods. Flight trim is not effected by temperature changes with this type of Pushrod, and, they are quite easy to install. They also help reduce play in the linkages.

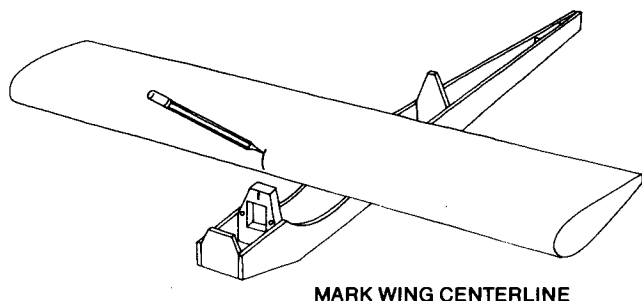


- 96. Drill 1/8" holes in the Bulkheads to run the Nylon Tubes and bond them to the Bulkheads and Fuselage Sides with 5 minute epoxy. After the epoxy cures, the tubing ends can be trimmed flush with the fuselage sides for a neat appearance.

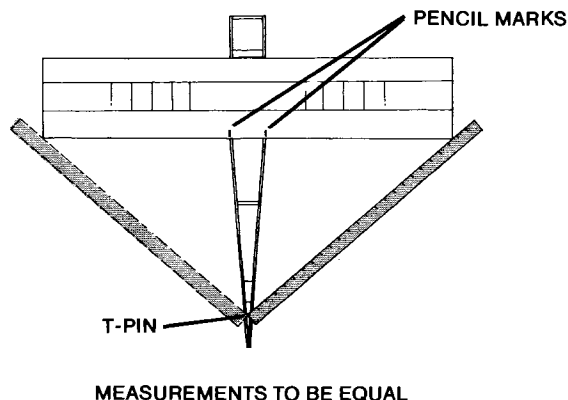
If, however, you prefer regular pushrods, simply cut holes in the F3 and F4 Bulkheads to clear them.

Mounting the Wing

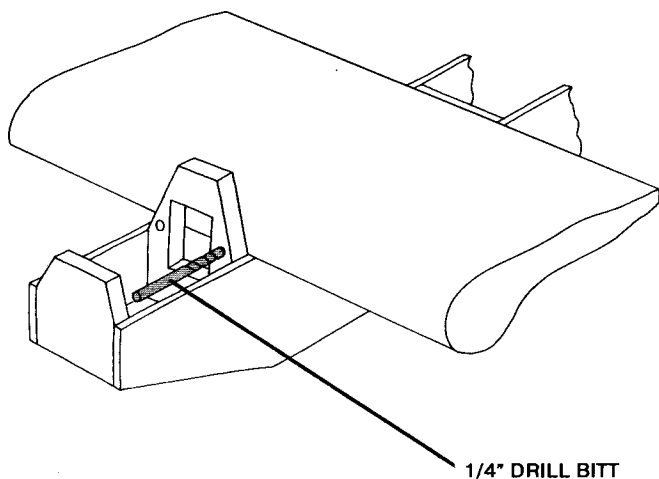
The important elements in mounting the Wing are to get it square to the Fuselage and to correctly set the incidence. To do this, all we need is a 36" straight edge and an incidence meter.



- 97. Measure the span of the Wing and make a pencil mark on the Leading Edge at one-half of the measured span.
- 98. Place the Wing on the Wing Saddle. (Be certain that the bottom of the Wing is against the Saddle and the top of the Wing is facing up.) Push the Wing Leading Edge against F2. Align the pencil mark on the Leading Edge of the Wing with the centerline marked on F2. Push a T-Pin through the Leading Edge and into the Fuselage Side to hold the Leading Edge in position.

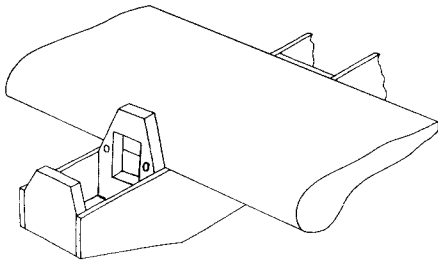


- 99. Push a T-Pin vertically into the Stabilizer Plate at any convenient point along the centerline. Rest one end of the 36" straight edge against the T-Pin and measure the distance to one Wing Tip, as shown. Then, make the same measurement to the opposite Wing Tip. Pivot the Wing as necessary to obtain the same distance between the T-Pin and both Wing Tips. When the measurements are identical, and the Leading Edge pencil mark is in line with the Fuselage centerline mark on F2, the Wing will be square to the Fuselage. Pin it in this position and make pencil marks on the Trailing Edge of the Wing to indicate where it meets the edge of the Fuselage Sides.

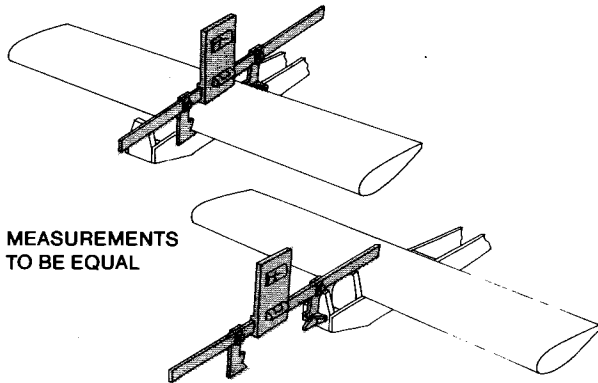


- 100. Slip a 1/4" drill bitt through the holes in F2 and turn it by hand to mark the Wing dowel locations on the Leading Edge of the Wing.
- 101. Remove the Wing from the Fuselage and drill the 1/4" Wing dowel holes through the Leading Edge and the plywood Leading Edge Doubler.
- 102. Fit the pre-cut 1/4" x 1" Wing dowels into the holes in F2 and into the Wing Leading Edge. Sand them as necessary to obtain a tight fit in the Wing and a slip fit in F2.
- 103. Install the dowels in the Leading Edge and put the Wing back on the Wing Saddle, with the dowels inserted into F2. Align the Wing with the Fuselage, using the pencil marks on the Trailing Edge. Adjust the dowels so that they stick out through the front side of F2 1/16".

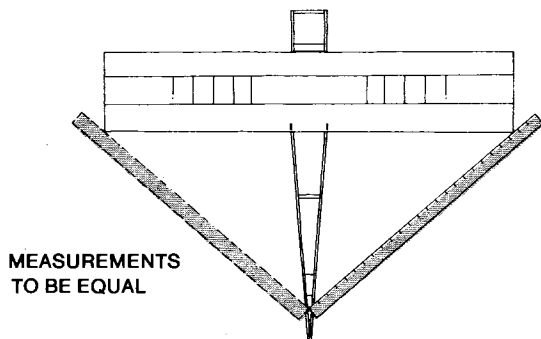
This is important: If the dowels are too long, they will prevent the Wing from coming out of the Wing Saddle when the Cockpit is installed.



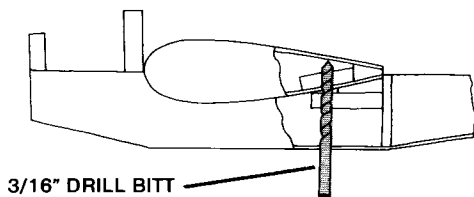
- 104. Very sparingly, apply CA to the dowels to bond them to the Wing. Be careful not to get any CA on F2. Then, carefully remove the Wing and apply an adequate amount of CA to bond the dowels into the Leading Edge. (If the dowel holes in the Leading Edge are jagged, fill the spaces with slivers of scrap wood before applying the CA.)



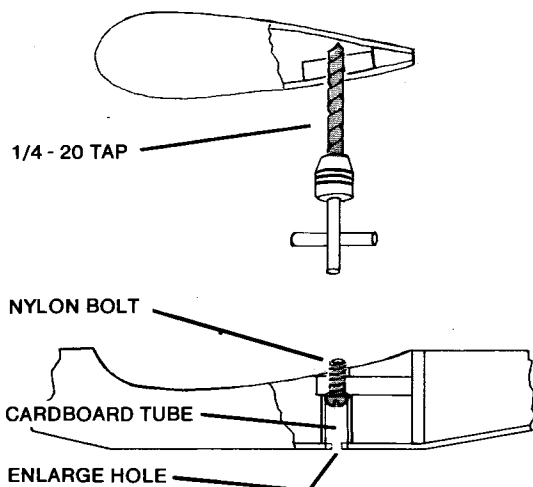
- 105. Re-install and align the Wing on the Fuselage. Check the incidence of the Wing against the Firewall with an incidence meter. Both readings should be the same. If it is necessary to lower the Trailing Edge, slip a sheet of 80 grit sandpaper between the Wing and the Saddle, grit side against the Saddle. Lightly press the Wing down and sand the Wing Saddle until the incidence is correct. If it is necessary to build up the Trailing Edge, scrap wood can be glued to the Saddle and shaped with sandpaper to match the Wing.



- 106. Once the incidence is set, align the Trailing Edge of the Wing with the pencil marks on the Trailing Edge that locate the Fuselage Sides. Check that the distance from the T-Pin in the Stabilizer Plate to the tips is still matched and then pin the Wing securely to the Fuselage.

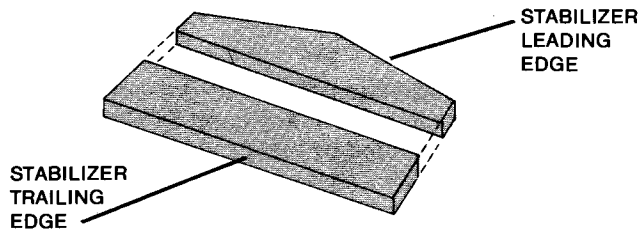


- 107. Insert a 3/16" drill bitt into one hole in the bottom of the Fuselage and through the hole in the Wing Bearing Block. Drill through the Wing Hold-Down Block in the Wing. Do the same on the opposite side.
- 108. Remove the Wing. Drill through the Wing Bearing Blocks in the Fuselage, and the bottom of the Fuselage, with a 1/4" drill bitt.

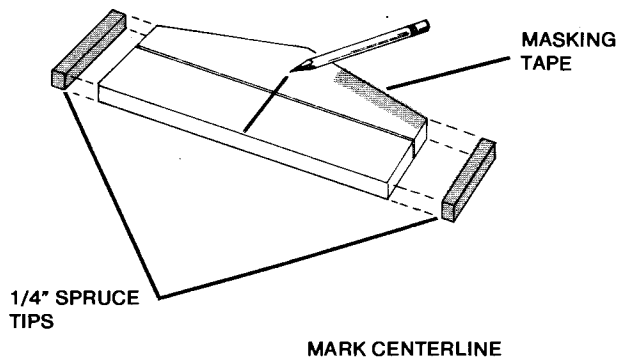


- 109. Using a 1/4"-20 tap, cut the threads in the Wing Hold-Down Block, working from the bottom side of the Wing.
- 110. Insert two 1/4-20 x 3/4" nylon bolts into the Wing Bearing Blocks, as shown on the plan.
- 111. Cut the two cardboard tubes to length and position them over the bolt heads and the holes in the bottom of the Fuselage. Apply a small amount of 5 minute epoxy to both ends of both cardboard tubes to lock them in position.
- 112. When the epoxy has cured, open the holes in the bottom of the Fuselage with a round file, flush with the inside edges of the cardboard tubes.
- 113. Position the Wing on the Fuselage and tighten the bolts. Re-check the Wing's incidence, relative to the Firewall, to be certain it is correct.

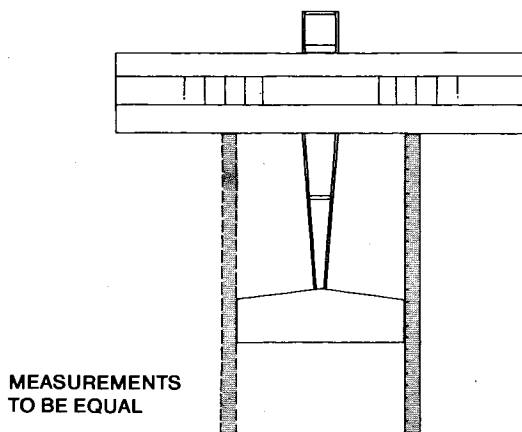
Stabilizer and Fin



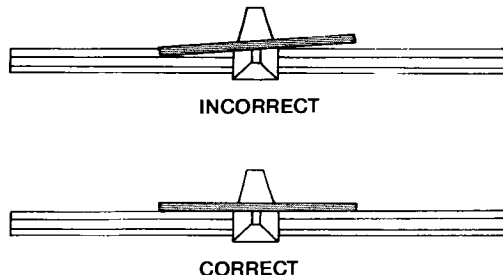
- 114. Sand the mating edges of the two pre-cut 1/4" balsa Stabilizer parts to remove any gaps. Lay these parts on the plan and bond them with Slow CA. Be sure to cover the plan with plastic wrap first.
- 115. Sand the Leading Edge of the Stabilizer to a round section, as shown on the plan.



- 116. Cut the 1/4" Spruce Tips from 1/4" x 1/4" x 8-7/8" spruce stock. Bond them to the Stabilizer with Slow CA.
- 117. Cover the balsa Leading Edges of the Stabilizer with masking tape and sand the Leading Edges of the Spruce Tips to match the balsa Leading Edges. Note: The masking tape will prevent you from sanding a scallop in the balsa Leading Edge, due to the difference in the densities of the two kinds of wood.
- 118. Mark the centerline on the Stabilizer and pin it in position on the Stabilizer Plate.

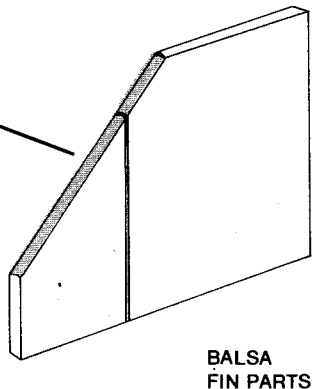


- 119. Using the 36" straight edge, measure the distance from the Stabilizer Trailing Edge to the Trailing Edge of the Wing, as shown. When both distances are the same and the Stabilizer is located on the centerline, push several T-Pins vertically through the Stabilizer into the Stabilizer Plate.

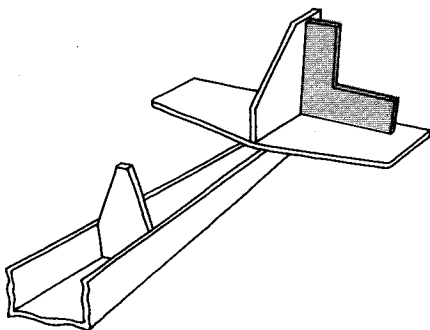


- 120. Sight across the Stabilizer and the Wing to align the Stabilizer parallel with the Wing, as shown. Make any necessary adjustments to the Stabilizer Plate with a sanding block.
- 121. With the Stabilizer pinned to the plate, check the incidence with an incidence meter. The reading should be the same as the Wing and Firewall.
- 122. When the Stabilizer rests squarely on the Stabilizer Plate and the incidence is correct, remove the Stabilizer. Push the T-Pins through the pin holes in the Stabilizer so they stick out of the bottom about 1/2". Apply Slow CA to the Stabilizer Plate and, using the T-Pins to locate the pin holes in the Plate, press the Stabilizer into position. When the Slow CA has cured, remove the T-Pins by twisting them to break them out of the CA and then pull them out.

LEADING
EDGE



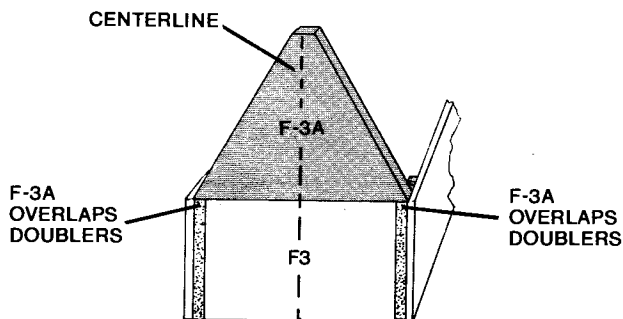
- 123. Sand the mating edges of the two pre-cut 1/4" balsa Fin parts to remove any gaps. Position them on the plan, protected by plastic wrap, and bond them with Slow CA.
- 124. Sand the Leading Edge of the Fin to a round section.



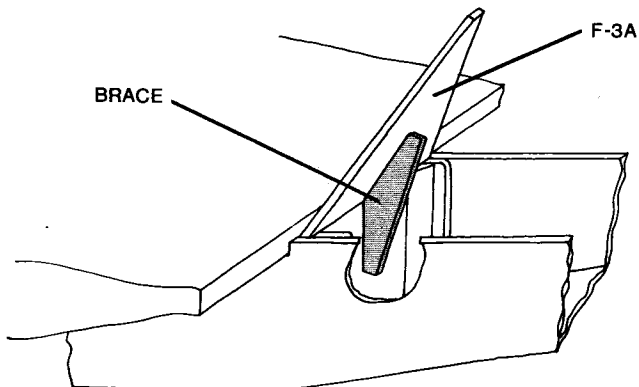
- 125. Apply Slow CA to the bottom of the Fin. Position the Fin over the centerline on the Stabilizer and, using a small square as shown, press the Fin into position. Be certain that the Leading and Trailing Edges are centered over the centerline on the Stabilizer.

Fuselage Upper Decks

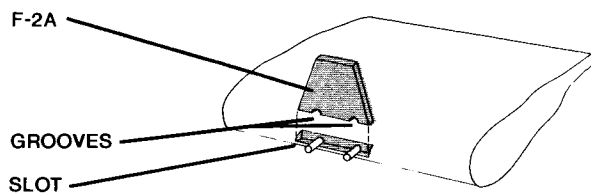
The Cockpit is a fairly large structure which is bonded to the Wing. Careful attention should be paid to fitting the Upper Bulkheads and locating the Spruce Stringers. Otherwise, you may find it difficult to install the Wing with the Cockpit attached. Study the plan and text before starting on this section to be certain you understand how these parts relate to one another.



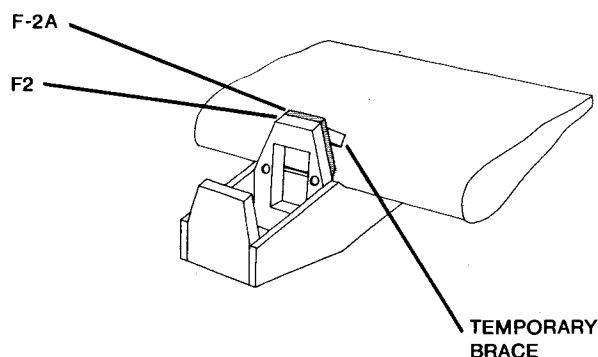
- 126. Measure and mark the centerline on F-3A. Center F-3A on F3. Note that the edges of F-3A overlap the 1/16" plywood Fuselage Doublers.
- Note: F-3A and F-3B are on the same die sheet and are similar in size and shape. F-3A is slightly longer than F-3B. Check the illustration under "Kit Contents", to be sure you select the right part.



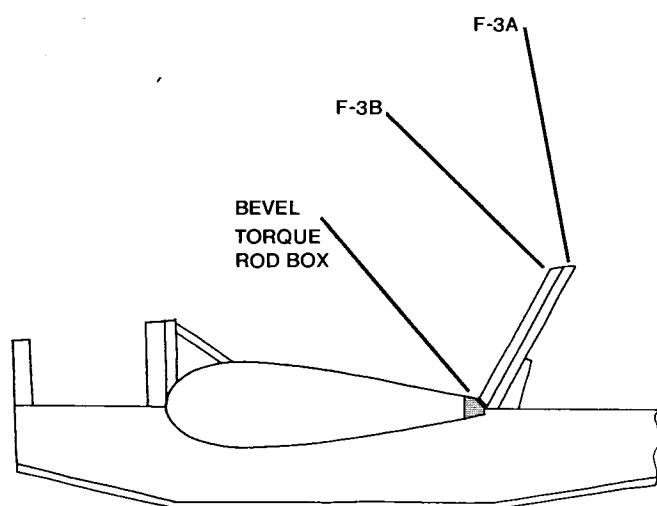
- 127. Glue F-3A and the die-cut Micro-Lite® plywood brace to F3 with Slow CA. Tack-glue the brace in position. Although it will be removed later on in construction, do not omit it at this point.



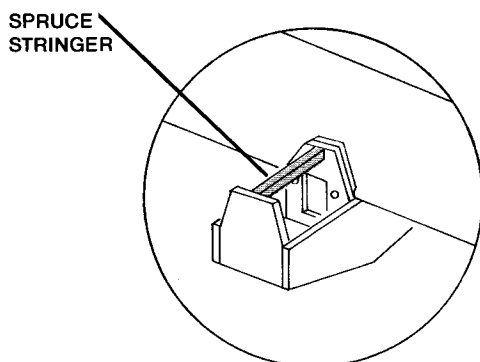
- 128. Cut a slot 1/8" deep in the center of the Wing Leading Edge to accept F-2A, as shown.
- 129. Cut two grooves in F-2A to clear the Wing dowels.



- 130. With the Wing bolted to the Fuselage, position F-2A in the slot, against F2. Adjust the slot and sand F-2A until it matches the edges of F2.
 - 131. Stack and insert four small pieces of notebook paper between F2 and F-2A. Press F-2A against these paper spacers and bond F-2A to the Wing Leading Edge slot with CA.
- Note: If F-2A is a loose fit with the Leading Edge slot, slivers of scrap wood can be inserted into the gap before gluing.
- 132. Make a Temporary Brace from scrap wood to support F-2A. Glue it to F-2A and the Wing, as shown. This Brace will be removed later, but, it is necessary at this time to hold F-2A in position.

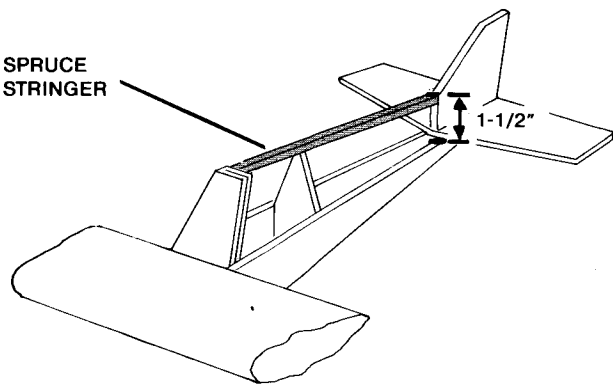


- 133. Sand a slight bevel in the top rear edge of the Torque Rod Box to provide a base for F-3B. With the Wing bolted to the Fuselage, stack and insert four pieces of notebook paper between F-3A and F-3B. Center F-3B on the bevel of the Torque Rod Box. Press F-3B against F-3A and bond it to the Torque Rod Box with CA.
- Note: Due to slight differences in construction techniques, there may be a gap between the Torque Rod Box and F3 which will not allow F-3B to rest on the edge of the Torque Rod Box. If this is the case with your model, extend the Trailing Edge of the Torque Rod Box by filling this gap with scrap balsa glued to the back of the Torque Rod Box. When the gap is correct, bolt the Wing to the Fuselage. DO NOT remove it again until told to do so.
- 134. F-3B is an oversize part to allow for slight differences in Wing position. Sand the edges of F-3B flush with the edges of F-3A.



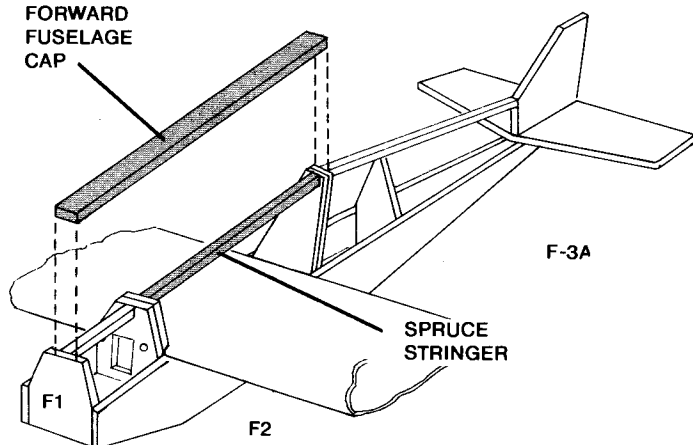
- 135. Cut a 1/4" square Spruce Stringer to fit between F1 and F2, as shown on the plan. Bond it in position on the centerlines of the Bulkheads with CA.

SPRUCE STRINGER



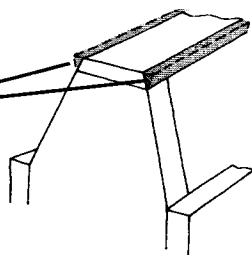
- 136. Cut a 1/4" square Spruce Stringer to fit between F-3A and the front of the Fin, as shown on the plan. Position this 1/4" Stringer so that its TOP edge rests against the front of the Fin 1-1/2" up from the Fuselage Side, as shown. Sand, or build up, the top of F4 so that the Stringer is straight when resting on the top of F4. Glue it in position with CA on the centerlines of the Bulkheads and flush with the Fin.

FORWARD FUSELAGE CAP



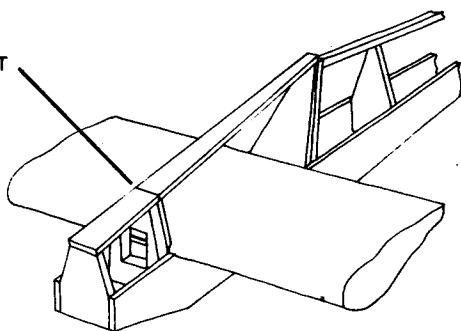
- 137. Cut a 1/4" square Spruce Stringer to fit between F-2A and F-3B. Be sure its top edges are even with the top edges of the other Stringers, as shown on the side view of the plan. Glue it in position with CA.
- 138. Sand the top edges of the Bulkheads even with the tops of the Spruce Stringers, as shown on the side view of the plan.
- 139. Glue the 3/32" die-cut balsa Forward Fuselage Cap to the Spruce Stringers, F1, F2, F-2A and F-3B.

BEVEL



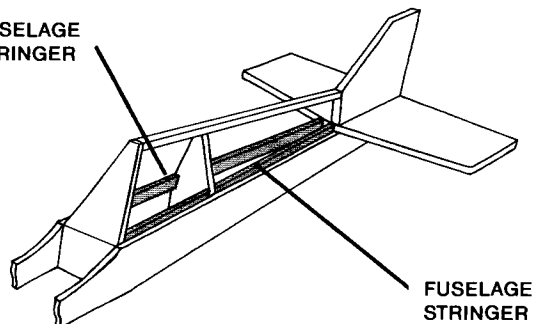
- 140. Bevel the edges of the Forward Fuselage Cap flush with the angled sides of the Bulkheads.

CUT

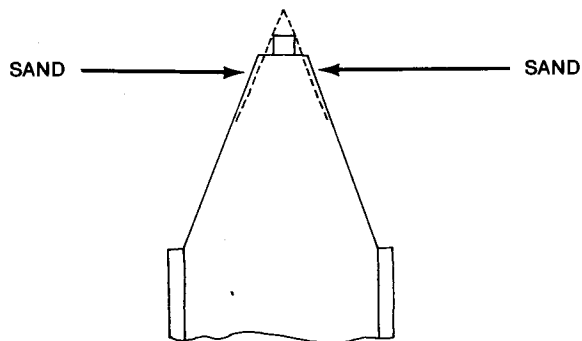


- 141. Cut through the Forward Fuselage Cap between F2 and F-2A, as shown on the side view of the plan.

FUSELAGE STRINGER

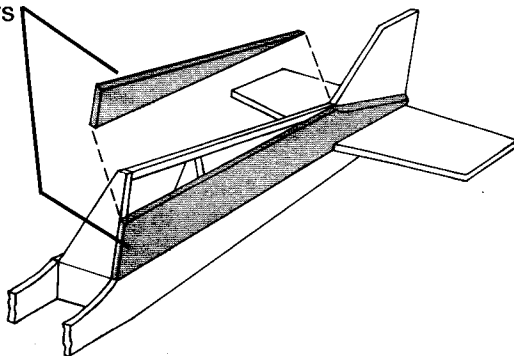


- 142. Remove the Wing and paper spacers from the Fuselage.
- 143. Cut and fit the two 3/32" x 1/4" x 18" Fuselage Stringers to the top inside edges of the Fuselage, as shown. Glue them in with Slow CA so that they are slightly above the top edge of the Fuselage Sides, as shown on the plan. These Stringers will provide a stop to help position the Turtle Deck Sheeting.



- 144. Sand the sides of F4 so that they match the top edge of the Top Stringer, as shown.

TURTLE
DECK
SHEETS



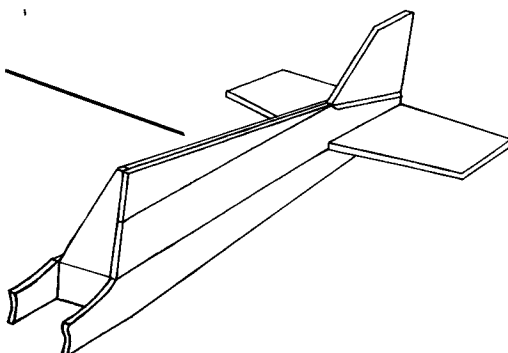
Note: Instructions #145 - #148 tell you how to install one side of the Turtle Deck Sheeting. DO NOT install the Turtle Deck Sheeting on the other side until told to do so.

- 145. Fit a die-cut 3/32" balsa Turtle Deck Sheet to one side of the Fuselage and Tail assembly. Sand a bevel in the portion of the sheet that contacts the Fin so that the sheet blends into the Fin. Temporarily pin this sheet in place.

- 146. Cut a piece of 3/32" sheet balsa to fit the space above the die-cut Turtle Deck Sheet.

Note: Both the UPPER Turtle Deck and Cockpit sheets are to be cut from TWO 3/32" x 3" x 30" balsa sheets.

SAND
FLUSH

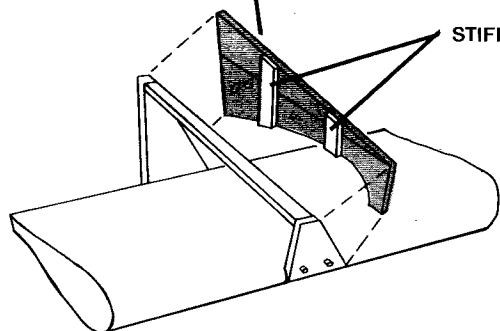


- 147. Remove the die-cut Turtle Deck Sheet from the Fuselage. Lay the two Turtle Deck Sheets on a flat surface and edge glue them together with CA.

- 148. Glue the assembled Turtle Deck Sheets in position on the Fuselage with Slow CA. Sand the edges flush with F-3A and the Top Stringer.

COCKPIT
SHEET

STIFFENERS



- 149. Fit a 3/32" die-cut balsa Cockpit Sheet to the Wing and Bulkheads. Sand as necessary to obtain a good fit with the Wing.

- 150. Cut a piece of 3/32" sheet balsa to fit the space above the die-cut Cockpit Sheet. Edge glue these parts together in the same manner as the Turtle Deck sheets, using CA.

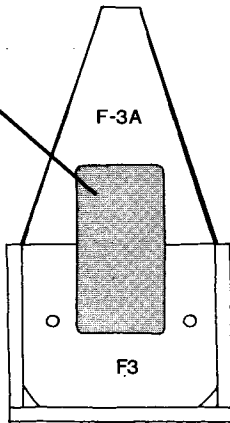
- 151. Cut the Cockpit Sheet Stiffeners from a 3/32" x 1/2" balsa strip. Cut them short enough to clear the Spruce Stringer and the Top Cap. Glue them into position on the inside of the Cockpit Sheeting with Slow CA, as shown on the side view of the plan.

- 152. Glue the assembled Cockpit Sheeting in position with Slow CA.

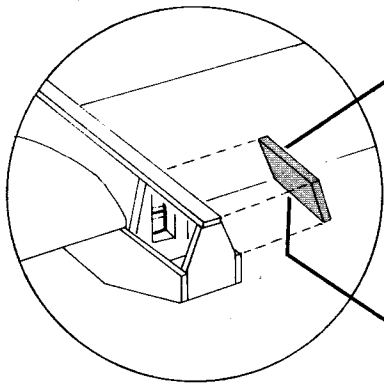
Note: After one side is installed, remove the Temporary Brace on F-2A, then install the cockpit sheeting on the other side.

- 153. Trim the Cockpit Sheeting even with the Bulkheads and the Forward Fuselage Cap.

REMOVE SHADED AREA



- 154. Install the Aileron Servo and Pushrods. With the Aileron Torque Rods set as shown on the side view of the plan, position the Wing in the Wing Saddle. Note that the Torque Rods will contact F-3A and prevent the Wing from seating. Remove the die-cut brace from behind F3 and F-3A. Cut a hole in F3 and F-3A to clear the Torque Rods, as shown. When the hole is large enough to allow the Torque Rods to clear the Bulkheads and pivot freely, install the remaining Turtle Deck Sheeting.

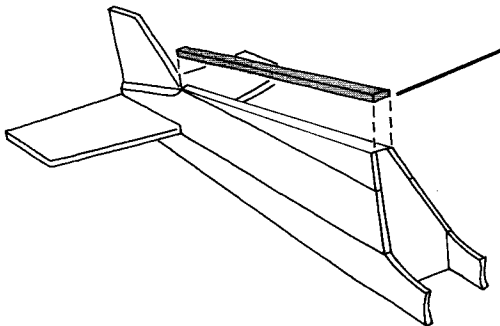


FORWARD FUSELAGE SHEET

BEVEL THIS EDGE

- 155. Cut the TWO Forward Fuselage Sheets from the 3/32" x 3-1/2" x 11-7/8" balsa sheet. Bevel the edge of each sheet that contacts the top of the Fuselage Side and glue them in position with Slow CA.

Note: After gluing one Forward Fuselage Sheet in place, it would be a good idea to seal the wood in the Fuel Tank Compartment with a coat of slow drying epoxy before closing it up with the other sheet. If you decide to do this, coat the Motor Mount Bolts with light oil and screw these bolts into the blind nuts until they are even with the backs of the nuts. This will prevent epoxy from getting on the threads. Then, coat the entire Fuel Tank Compartment and the inside of the last Forward Fuselage Sheet with slow drying epoxy. Pin the sheet in position until the epoxy cures.



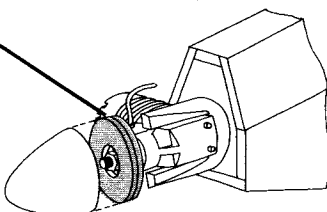
TURTLE DECK CAP

- 156. Cut a Turtle Deck Cap from a 3/32" x 1/2" balsa strip and glue it to the top of the Turtle Deck with Slow CA.
- 157. With the Wing bolted to the Fuselage, sand the Upper Deck Sheeting and Caps flush with the edges at the Cockpit Sheeting.

Cowling

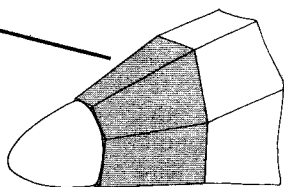
Due to the large variety of engines and engine sizes that can be used in this model, it isn't possible to provide pre-cut Cowl parts. Therefore, the following instructions are a general procedure using the 1/4" x 3" x 30" balsa sheet and the die-cut Cowl Rings. We have found this method to be quite simple and accurate.

COWL RINGS



- 158. Install your Engine and check that the Thrust Line is correct (0° - 0°), as shown on the plan. Tack-glue the two die-cut Cowl Rings to each other and to the backplate of your 2-1/2" Spinner. Bolt the Spinner to the Prop Shaft.

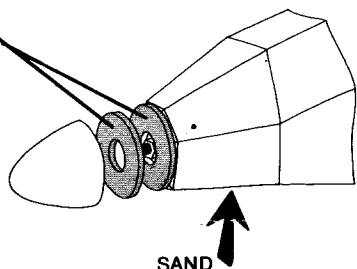
COWL SHEETS



□159. Assuming you have side-mounted your Engine, start by cutting a bottom sheet of 1/4" balsa to fit between F1 and the back of the Cowl Rings. Glue it in position with Slow CA.

□160. Continue fitting and gluing the Cowl Sheets, working up the left side and across the top.

COWL RINGS



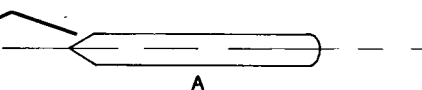
□161. After installing all of the sheets, separate the two Cowl Rings by slipping a razor knife between them and cutting them apart.

□162. Remove the Engine.

□163. Fill any corners on the inside of the Cowl Ring that the sheeting did not cover with the 1/2" x 5" triangle stock. Sand the Cowl to its finished shape.

Control Surfaces

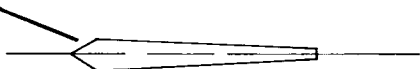
BEVEL



A

OR

BEVEL



B

LEADING EDGE

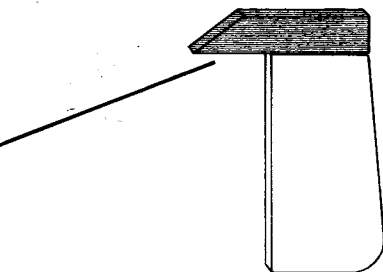
TRAILING EDGE

□164. Bevel the Leading Edges of the pre-cut Elevators and Rudder with a plane and sanding block, as shown on the plan.

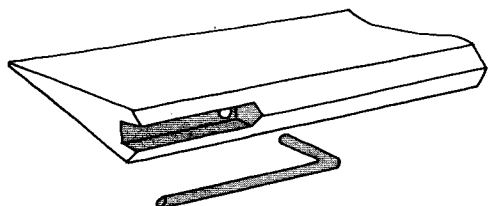
□165. Round the Trailing Edges of the Elevators and Rudder with a sanding block, as shown in (A) and on the plan. This shape will give the controls a soft feel around neutral.

Note: If you prefer, the Rudder and Elevators can be tapered, as shown in (B). This shape will give the controls more sensitivity around neutral, however, trim settings will also be more sensitive and any play (slop) in the Linkages will have to be eliminated.

RUDDER CAP

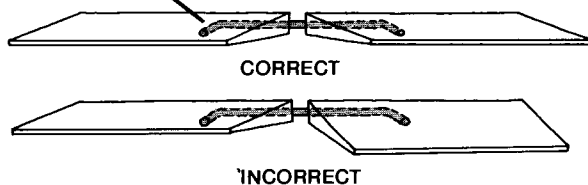


□166. Glue the pre-cut 1/4" balsa Rudder Cap to the Rudder, as shown on the plan.

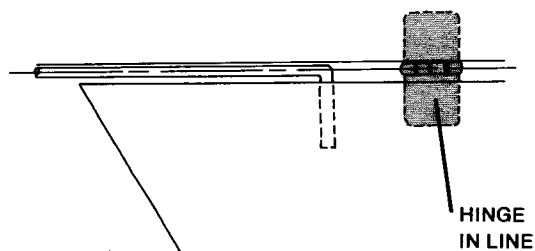


□167. Cut a slot and drill a 1/8" hole in each Aileron to accept the Torque Rods, as shown on the plan.

ELEVATOR
CONNECTOR
WIRES



- 168. Cut a slot and drill a 3/32" hole in each Elevator at the locations shown on the plan. Fit the Elevator Connector Wire to the Elevators. Make sure that the Elevators are parallel to each other, as shown, with the connector wire in place. If necessary, bend the wire to get the correct alignment.

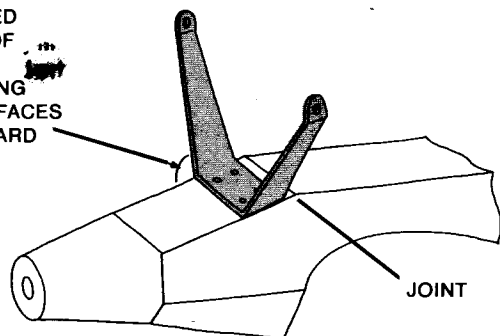


- 169. Fit your Hinges to all of the Control Surfaces. Make sure that the Hinges pivot in line with the Torque Rods and Elevator Connector Wire. Otherwise, the Control Surfaces will bind and not move freely.

Final Assembly

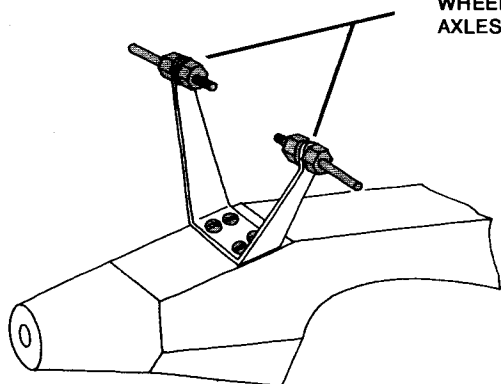
Main Landing Gear

ANGLED
SIDE OF
MAIN
LANDING
GEAR FACES
FORWARD



- 170. Center the Main Landing Gear on the plywood bottom sheet so that its back edge is 3/16" ahead of, and parallel to, the joint between the two bottom sheets, as shown. Note which way the gear faces.
- 171. Using the four pre-drilled holes in the Main Landing Gear as a guide, drill 3/16" tap holes through the bottom sheet and Landing Gear Block.
- 172. Drill out the holes in the Main Landing Gear with a 1/4" drill bitt.

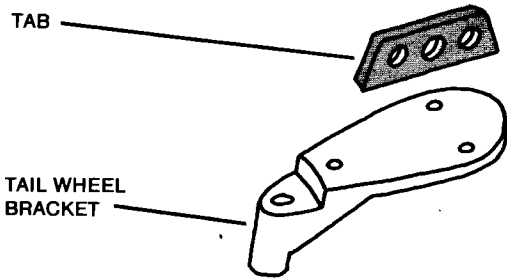
WHEEL
AXLES



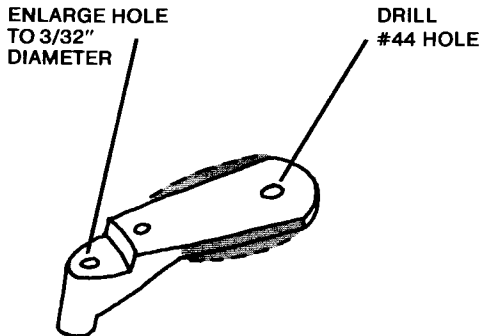
- 173. Cut threads in the Landing Gear Block with a 1/4"-20 tap.
- 174. Install the Main Landing Gear with four 1/4"-20 x 3/4" nylon bolts. Install the Wheel Axles as shown.

Note: The nylon bolts give the Landing Gear a "knock-off" feature. In the event of a very rough landing, the Main Gear will shear the bolt heads and come off the model, preventing damage to the Fuselage. To remove a broken bolt from the Landing Gear Block, heat the point of a screwdriver and push it into the bolt. After it cools, the broken bolt can be screwed out of the Landing Gear Block.

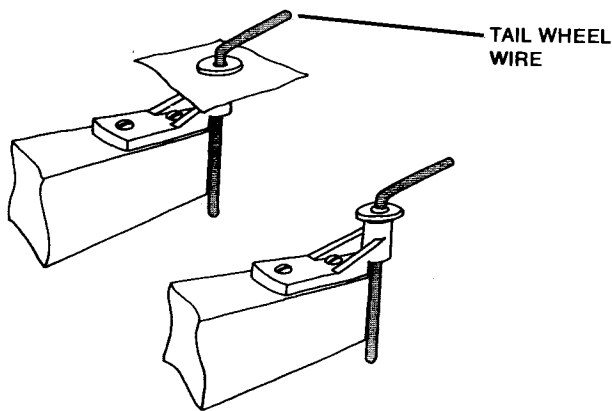
Tail Wheel



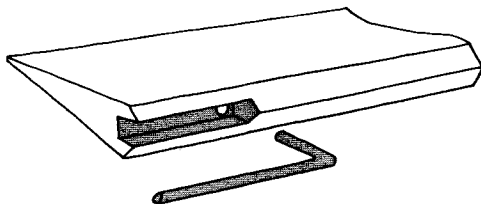
- 175. Cut the tab off of the Tail Wheel Bracket, as shown.



- 176. Position the Tail Wheel Bracket on the plywood Mounting Plate in the Fuselage as shown on the plan. Remove the portions of the bracket that extend beyond the Fuselage Sides.
- 177. Drill a #44 hole in the bracket for a #2 x 3/8" sheet metal screw.
- 178. Using the Tail Wheel Bracket as a guide, drill two #50 tap holes in the plywood plate.
- 179. Enlarge the 1/16" hole in the Tail Wheel Bracket to 3/32" to accept the Tail Wheel Wire.



- 180. Bend the Tail Wheel Wire, as shown. Slip a washer over the wire and push the wire through a piece of paper. Install this assembly on the Tail Wheel Bracket, as shown. Solder the washer to the Tail Wheel Wire. Remove the paper after the solder cools.
- 181. Make the remaining bends in the Tail Wheel Wire, as shown on the side view of the plan.

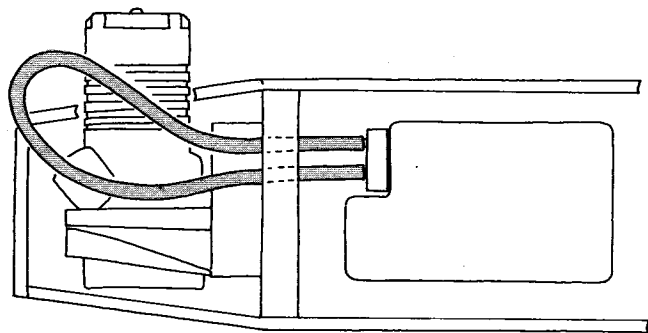


- 182. Slot and drill a 3/32" hole in the Rudder to accept the Tail Wheel Wire.

Finishing

The Super Hots is very light for its size and you can use any finishing technique that you like. We recommend "Super Monokote". You will need two 6 foot rolls to cover the Super Hots, not including trim colors.

Equipment Installation

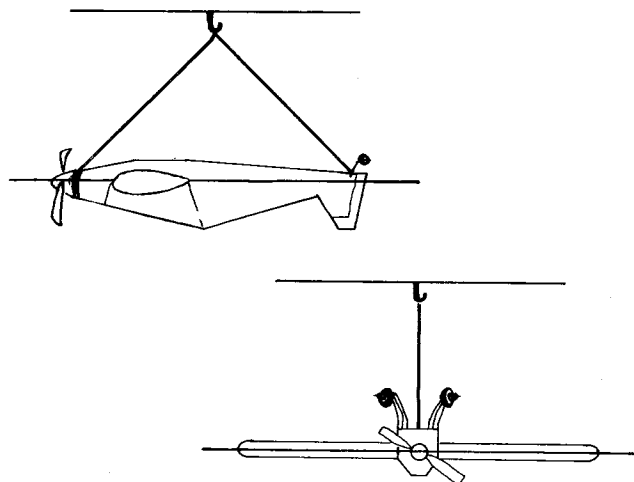


The plan shows the fuel lines running through 1/4" holes in the firewall. To install the tank, push a length of fuel line through the firewall from the front, as shown. Connect the ends to the tank and pull it into position. Then, slip sheets of foam rubber into the tank compartment to cushion the tank. Install the engine, cut the fuel line to length and connect the feed line to the carburetor.

The receiver and battery pack can be installed in the positions shown on the plan simply by sandwiching them between two layers of 3/4" foam rubber. The receiver antenna should be run through a small hole in the bottom of the fuselage and the end held by a spring, or rubber band, to the tail wheel leg. If necessary for weight and balance, a flat four cell battery pack can be installed under the fuel tank in the tank compartment. Locate the switch anywhere on the fuselage side, under the wing and below the 1/16" plywood wing saddle doubler.

If you are using the wire pushrods that come with the kit, apply some light machine oil, such as 3-in-1 oil, to the pushrods before slipping them into the nylon tubes. The oil will prevent rust which could cause binding.

Weight and Balance

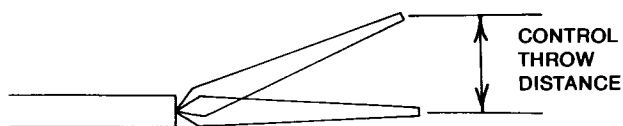


The center of gravity (C.G.) shown on the plan will provide the best all-around performance, and we recommend that you make the initial flights with the model balanced at this point. If necessary, add weight to the nose or tail to establish the C.G.

Although not critical, any model's performance in looping maneuvers will be improved if the wings are also balanced. To do this, tie a piece of strong string around the prop shaft and the tail wheel leg. With ALL equipment installed and the model ready to fly, suspend the assembled model from the ceiling, as shown. Add weight to the light wing until the model hangs in a wings level attitude.

The best material for wing weight is lead shot mixed with epoxy. It can be poured through a small hole in the leading edge sheeting and the hole covered with a small piece of Monokote. Lead shot can be purchased at most Gun Shops.

Control Throws



The following Control Throws are recommended starting points and can be increased or decreased to suit your preference. They are measured at the widest point of each control surface with a ruler, as shown:

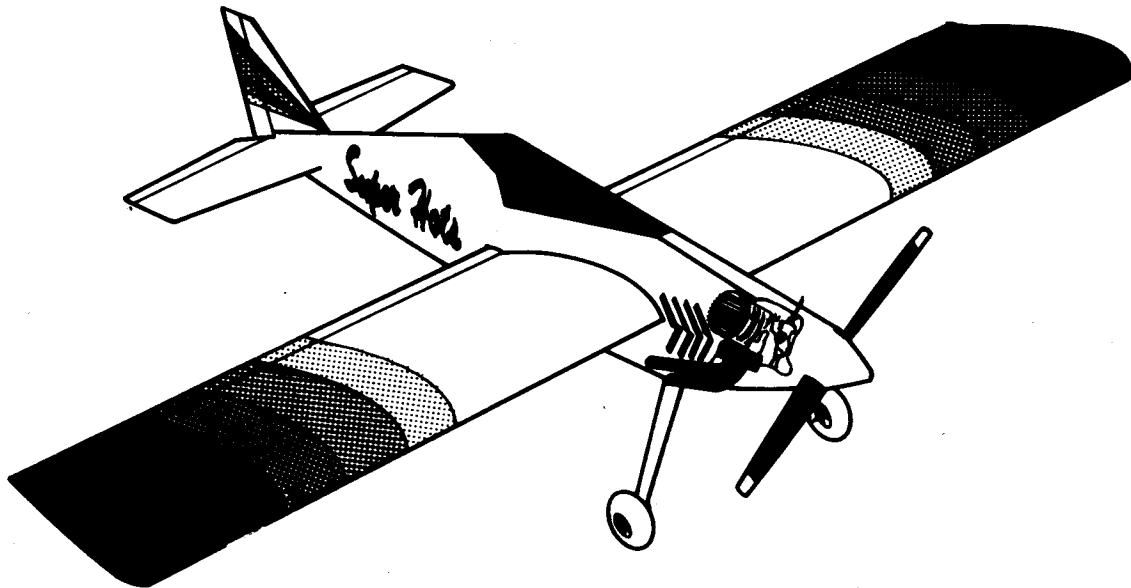
Ailerons - 1/4" up, 1/4" down

Note: for Dual Rate Radios, set high rate Aileron at 3/8" up, 3/8" down.

Elevators - 3/4" up, 3/4" down

Note: For Dual Rate Radios, set high rate Elevator at 7/8" up, 7/8" down.

Rudder - 1-1/2" left, 1-1/2" right



The Super Hots is a high-performance model. With a hot schnuerle ported .60CC engine, it is capable of taking off in less than 10 feet. It can climb vertically out of sight and is capable of knife-edge loops with the recommended C.G. and rudder throws. Even with this kind of performance, the model is very stable and predictable; and is easy to fly.

The glide ratio is quite high and the model has a very flat glide. For this reason, we recommend that you set the engine idle as low as possible in order to land. The slick wing is resistant to stalling and landings can be made at very low airspeeds.

We hope you have enjoyed building and flying your Super Hots; and would appreciate your taking a few minutes to fill out and return the postage-paid Registration Card in the kit. We welcome any suggestions or comments you may have for improving our kits and instructional material.

Thank You,
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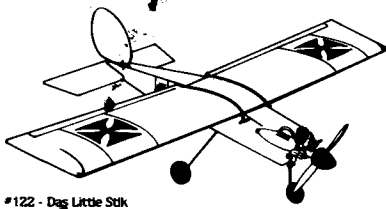
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WALNUT - Sheets & Strips
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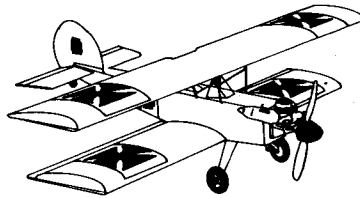
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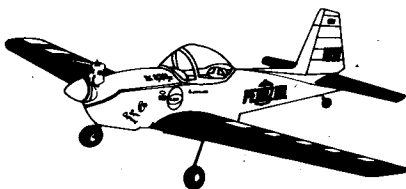
#122 - Das Little Stik
#128 - Sweet Stik
#154 - Super Sweet Stik



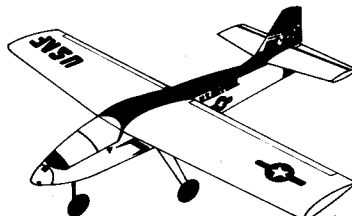
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	Wing Span (inches)	Wing Area (sq. inches)	Engine		Radio (channels)
			(2-cycle)	(4-cycle)	
#122 Das Little Stik - .20 A Stable, Sporty Flyer	47½	450	.20 - .30	.30	4
#128 Sweet Stik - 40 The Original Sport Flyer	52¼	594	.30 - .45	.60	4
#154 Super Sweet Stik - 60 An Ideal Fun-Fly Ship	60	780	.45 - .61	.60 - .90	4
#143 The Twin Stik A Great Twin Engine Trainer	54	600	.19 - .30	-	4
#155 Giant Sweet'n Low Stik The Giant of Sport Flyers	86	1469	2 c.i. (Gasoline)	.240 - .270 (Twin)	4
#151 Sweet'n Low Stik For Pattern-like Performance	54	600	.30 - .50	.49 - .60	4
#153 Das Bipe Stik A Great Sport Biplane	43 (Top) 37 (Bottom)	695	.25 - .40	.40 - .60	4



#126 - Super Chipmunk ARF



#134 - Attacker ARF

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	Wing Span (inches)	Wing Area (sq. inches)	Engine		Radio (channels)
			(2-cycle)	(4-cycle)	
#125 Cessna Cardinal ARF Our Most Popular ARF Kit	46	290	.09 - .15	-	2 - 4
#126 Super Chipmunk ARF For Scale Looks And Aerobatics	46	325	.15 - .19	-	4
#134 Attacker ARF The Sport and Aerobatic Ship	48	430	.19 - .40	-	4
#135 Piper J-3 Cub A Scale Look that Really Performs	45	290	.09 - .15	-	2 - 4
#136 Lazy Bird ARF The Ideal Two-Meter Glider	78¼ (2 Meters)	550	(Flying Weight- 32 oz.)		2

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