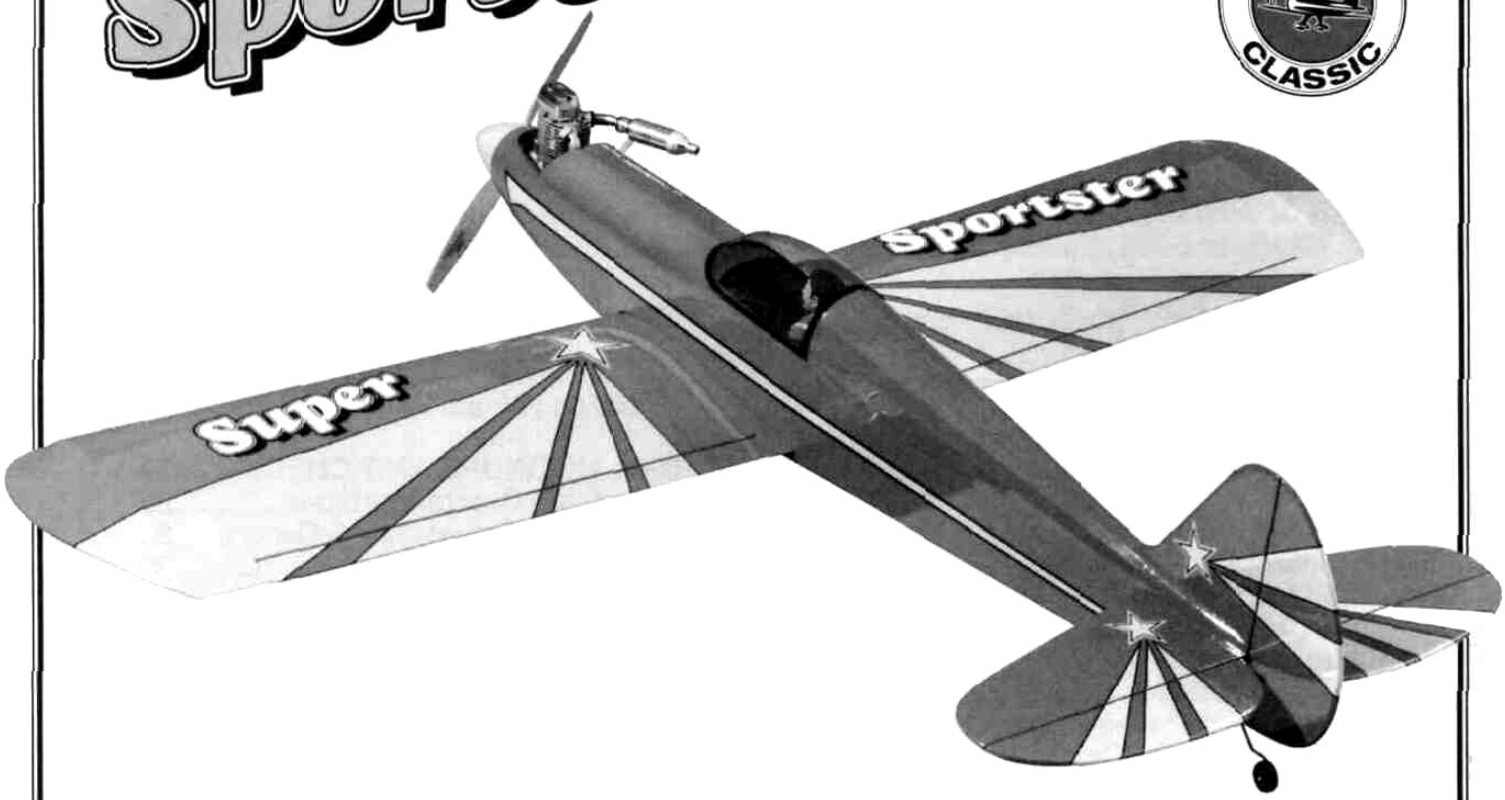
Super Sportster™ 40 MK II



Instruction Manual

WARRANTY

Great Planes Model Manufacturing Co. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. **In no case shall Great Planes' liability exceed the original cost of the purchased kit.** Further, Great Planes reserves the right to change or modify this warranty without notice.

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyers are not prepared to accept the liability associated with the use of this product, they are advised to return this kit immediately in new and unused condition to the place of purchase.

READ THROUGH THIS MANUAL BEFORE STARTING CONSTRUCTION. IT CONTAINS IMPORTANT WARNINGS AND INSTRUCTIONS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

GREAT PLANES® MODEL MANUFACTURING COMPANY
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WWW GREATPLANES.COM

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PROTECT YOUR MODEL, YOURSELF & OTHERS... FOLLOW THIS IMPORTANT SAFETY PRECAUTION

Your Super Sportster 40 Mk II is not a toy, but rather a sophisticated, working model that functions very much like an actual airplane

Because of its realistic performance, the Sportster, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage property

To make your R/C modeling experience totally enjoyable, we recommend that you get experienced, knowledgeable help with assembly and during your first flights You'll learn faster and avoid risking your model before you're truly ready to solo Your local hobby shop has information about flying clubs in your area whose membership includes qualified instructors

You can also contact the national Academy of Model Aeronautics (AMA), which has more than 2,500 chartered clubs across the country. Through any one of them, instructor training programs and insured newcomer training are available.

Contact the AMA at the address or toll-free phone number below:

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9252
(800) 435-9262
Or via the internet at http.//www.modelaircraft.org

Precautions

1 You must assemble the plane according to the instructions Do not alter or modify the model, as doing so may result in an unsafe or unflyable model In a few cases the instructions may differ slightly from the photos In those instances you should assume the written instructions are correct.

2 You must take time to build straight, true, and strong

3. You must properly install all R/C and other components so that the model operates properly on the ground and in the air.

4 You must test the operation of the model before the first and each successive flight to insure that all equipment is operating, and you must make certain that the model has remained structurally sound

Note: We, as the kit manufacturer, can provide you with a top quality kit and great instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow directions to end up with a well-built model that is straight and true.

We can be reached by E-Mail at: *productsupport@greatplanes.com*

Introduction

Thank you for purchasing the Great Planes Super Sportster 40 Mk II for your next project We are sure that you will find a great deal of modeling satisfaction while building and flying this new version of the classic Super Sportster

For more than a decade the Super Sportster family of R/C aircraft have helped modelers refine their building skills and develop the piloting skill to move on to higher performance planes For many modelers Super Sportsters provided their first taste of flying taildraggers-a transition made easy by widely spaced landing gear and stable ground handling

Since their introduction, Super Sportsters have been accepted as just about the best aerobatic trainers and sport planes of all time with well over 50 000 successfully built and flown by modelers all over the world The Super Sportster 40 Mk II continues this tradition of excellence but adds the dimension of computer designed parts for a more precise fit, interlocking fuselage components for faster more accurate assembly, and redesigned nose for a sleeker profile without sacrificing the classic Sportster appearance

The Super Sportster 40 Mk II incorporates several other improvements, such as redesigned wheel pants that prevent them from rocking on the gear legs a new canopy that fits the contour of the fuselage perfectly simplified wing fairing construction, interlocking wing panels that eliminate the need for fiberglassing the center section and lighter weight for better performance So, dust off your work bench, put a new blade in your hobby knife, load some fresh sandpaper, and let's build a *Sportster!*

Decisions You Must Make

Engine Selection

There are many engines that will work well in the Super Sportster 40 Mk II, but for unlimited performance we recommend a *hot* 2-stroke such as an 0 S 46SF or SuperTigre G45, and in the 4-stroke category, an 0 S 70 Surpass. Your choice of 2-stroke or 4-stroke engine will determine the location of the throttle servo and pushrod exit

Landing Gear Configuration

This kit includes materials for a taildragger set-up Historically, most modelers have built the Sportster in this configuration, so the nose gear wire and steering assembly have been dropped from the included parts in order to save most modelers some money. The wing ribs that support the landing gear are die-cut for either tricycle or conventional landing gear, so if you prefer to add an optional nose wheel, we have provided a list of the necessary parts on page 9, as well as instructions for doing the installation

Other Items Required

D 4-Channel radio with 4 servos

D Propeller (Top Flite" Power Point"')

D 10 oz Fuel tank (Great Planes #GPMQ4104)

D 12" Medium fuel tubing (Great Planes #GPMQ4131)

D (2) 2-1/2" Main wheels (Great Planes #GPMQ4223)

D (1) 1" Tail wheel (Great Planes #GPMQ4241)

D (4) 5/32" Wheel collars (Great Planes #GPMQ4306)

D (2) 3/32" Wheel collars (Great Planes #GPMQ4302)

D 2-1/2" Spinner (Great Planes #GPMQ4520)

D (2) Rolls covering film (Top Flite MonoKote^)

D 2" Pilot figure *(optional-* Williams Bros #184-2")

D 1/2" Latex Foam Rubber Padding (HCAQ1050)

D Engine 40 - 46 2-stroke
48- 70 4-stroke

D Straightedge with scale

D Masking Tape (required for construction)

D Sandpaper (coarse, medium, fine grit)*

D T-Bar Sanding Block (or similar)

D Waxed paper

D Lightweight Balsa Filler such as Hobbico" HobbyLite" (Hobbico #HCAR3400)

D 1/4-20 Tap and Tap Wrench

D Isopropyl Rubbing Alcohol (70%)

D Auto body filler (Bondo or similar)

D Dremel Moto-Tool or similar (optional)

Drill Bits D 1/16" D 1/8" D 3/16" **(Long Bit)**
D 5/64" D 9/64" D 13/64"
D 3/32" D 5/32" D 1/4"
D 7/64" D3/16"

Suggested Supplies And Tools

*We recommended **Great Planes Pro**"CA and Epoxy*

D 2 oz CA (Thin, Great Planes #GPMR6003)

D 2 oz CA+ (Medium, Great Planes #GPMR6009)

D 1 oz CA- (Thick, Great Planes #GPMR6014)

D 6-Minute Epoxy (Great Planes #GPMR6045)

D 30-Minute Epoxy (Great Planes #GPMR6047)

D G P" wood glue (Great Planes #GPMR6161)

D Hand or Electric Drill

D Sealing Iron (Top Flite #TOPR2100)

D Heat Gun (Top Flite #TOPR2000)

D Hobby Saw (X-acto Razor Saw)

D Hobby Knife, #11 Blades

D Razor Plane (Master Airscrew)

D **Pliers**

D Screw Drivers (Phillips and flat tip)

D Round file (or similar)

D T-Pins

D String

***Note:** On our workbench, we have four 11" T-Bar sanders, equipped with #50, #80 #150 and #220-grit sandpaper This set-up is all that is required for almost any sanding task Custom sanding blocks can be made from balsa for sanding hard to reach spots We also keep some #320-grit wet or dry sandpaper handy for finish sanding before covering

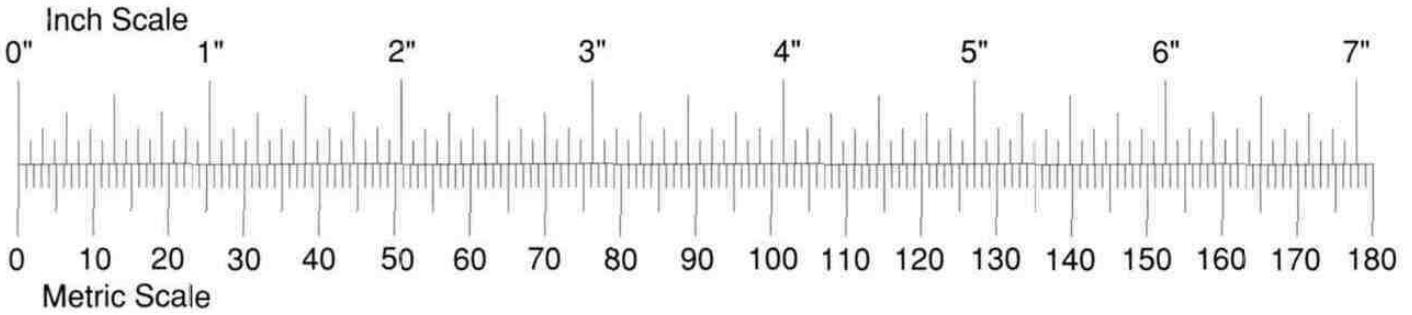
Common Abbreviations Used In This Manual And On The Plans

Fuse = Fuselage
LE = Leading Edge (front)
TE = Trailing Edge (rear)
Ply = Plywood
Stab = Stabilizer
" = Inches

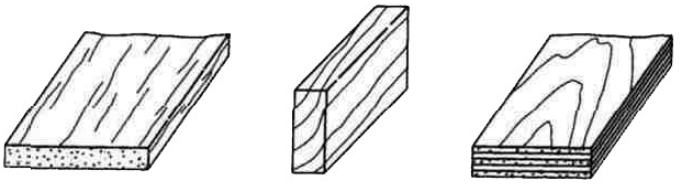
Metric Conversions

Inches x 25.4 = mm (conversion factor)

1/64"	= .4 mm	3/16"	= 4.8 mm	1"	= 25.4mm	21"	= 533.4mm
1/32"	= .8mm	1/4"	= 6.4 mm	2"	= 50.8 mm	24"	= 609.6 mm
1/16"	= 1.6mm	3/8"	= 9.5 mm	3"	= 76.2 mm	30"	= 762.0mm
3/32"	= 2.4 mm	1/2"	= 12.7mm	6"	= 152.4mm	36"	= 914.4mm
1/8"	= 3.2 mm	5/8"	= 15.9mm	12"	= 304.8mm		
5/32"	= 4.0 mm	3/4"	= 19.0 mm	18"	= 457.2mm		



Types of Wood



Balsa **Basswood** **Plywood**

Get Ready To Build

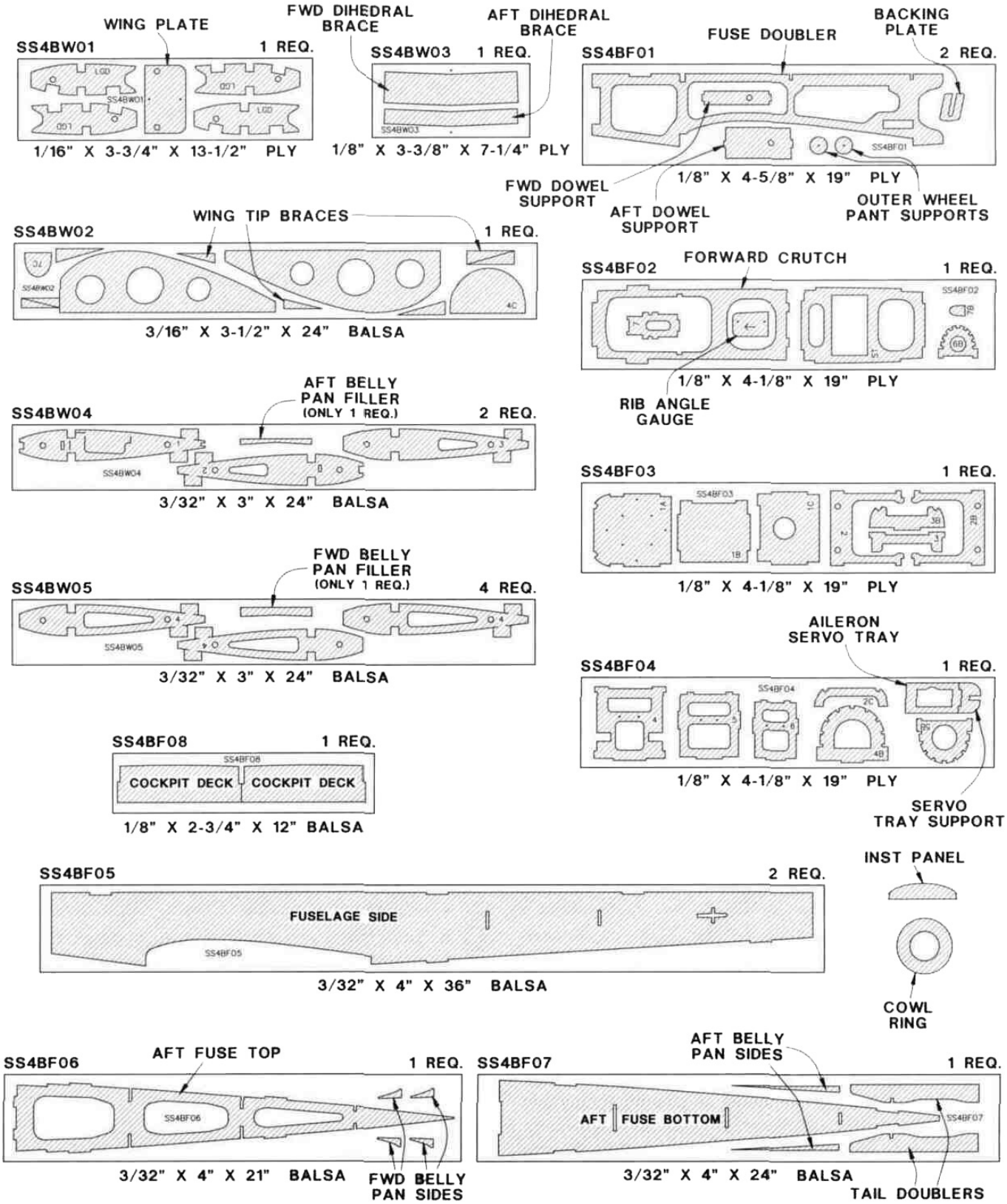
D 1. Unroll the plan sheets. Re-roll the plans inside out to make them lie flat.

D 2. Remove all parts from the box. As you do, figure out the name of each part by comparing it with the plans and the parts list included with this kit Using a felt tip or ball point pen, lightly write the part **name** or **size** on each piece to avoid confusion later Use the die-cut patterns shown on page 6 to identify the die-cut parts and mark them **before** removing them from the sheet Save all leftovers If any of the die-cut parts are difficult to punch out, do not force them' Instead, cut around the parts with a hobby knife. After punching out the die-cut parts, use your T-Bar or sanding block to **lightly** sand the edges to remove any die-cutting irregularities.

D 3. As you identify and mark the parts, separate them into groups, such as **fuse** (fuselage), **wing, fin, stab** (stabilizer), and **hardware.**

Zipper top food storage bags are handy to store your parts as you sort, identify, and separate them into subassemblies

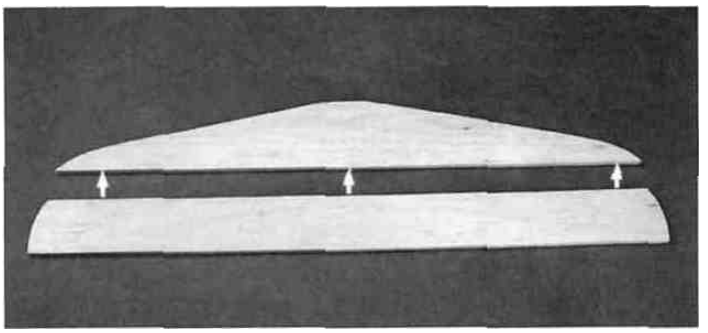
Die-Cut Patterns



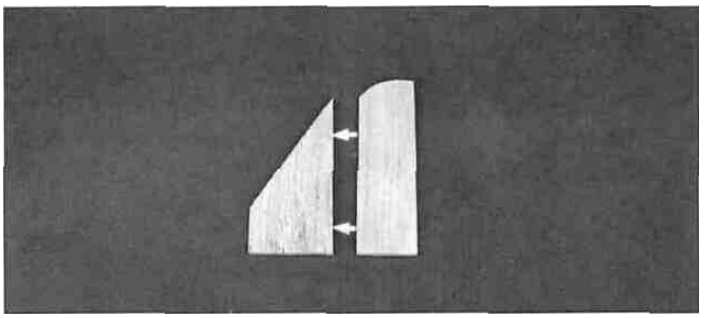
Building The Tail Surfaces

Build The Stabilizer And Fin

Work over the plans, covered with waxed paper, on a flat work surface. Refer to the plans to identify the parts and their locations.



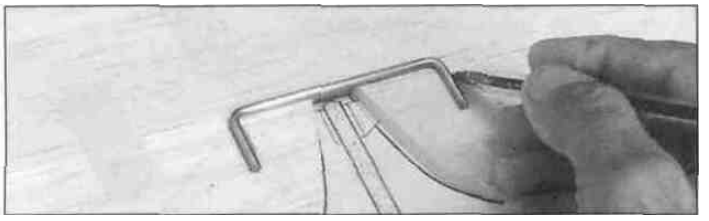
D 1. Locate the shaped 1/4" balsa **forward** and **aft stab** parts. Check their fit and sand the mating edges as needed. Glue the two parts together with a thin bead of medium CA. Wipe off any excess from the surface before it cures.



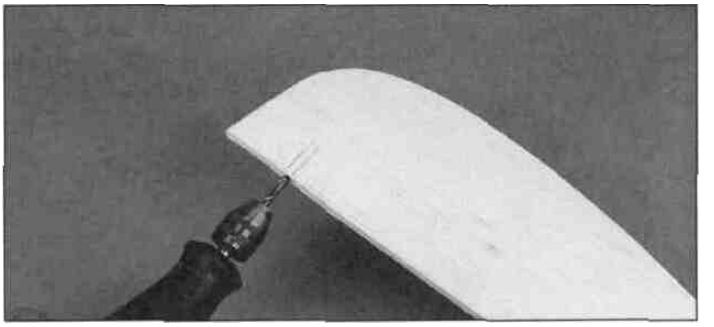
D 2. Locate the shaped 1/4" balsa **forward** and **aft fin** parts. Check their fit and sand the mating edges as needed. Glue the two parts together with a thin bead of medium CA. Wipe off any excess from the surface before it cures.

D 3. Sand the joints of both assemblies smooth with sharp 220-grit sandpaper and a sanding block.

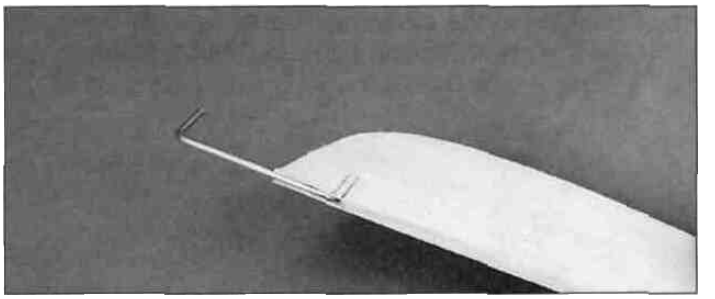
Join the Elevators



D 4. Tape the two shaped 1/4" balsa **elevators** in position on the TE of the stab. Center the bent **elevator joiner wire** over the elevators as shown, then mark the location of the "arms."



D 5. Carefully draw a centerline all around the edges of both elevators. Drill a 1/8" diameter pilot hole into the LE of each elevator (on the centerline) at the marked location. Re-drill the holes with a 9/64" bit. The holes must be at least **1-1/8" deep.**

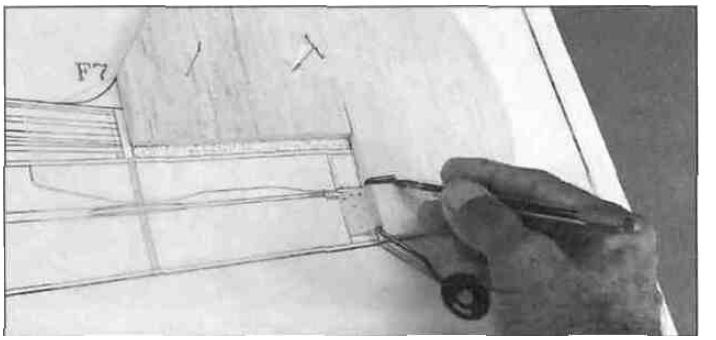


D 6. Cut a 1/8" deep groove in the elevator LE between the inside edge and the hole you drilled. Insert the joiner wire. Adjust the depth of the groove until the joiner wire is **flush with the LE.**

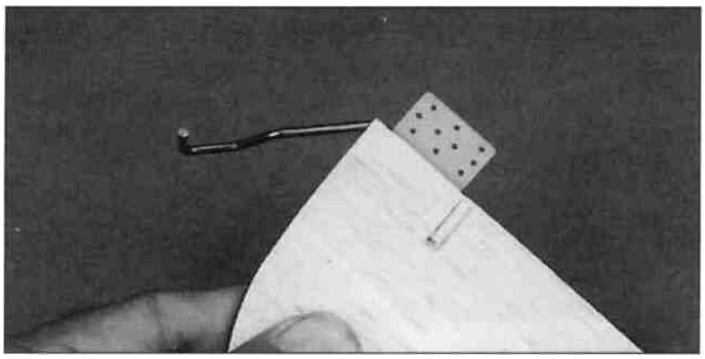
D 7. Test fit the joiner wire into both elevators. Make sure that both elevators are flat on the work surface and that the tips of the elevators align with the tips of the stab.

D 8. Sand the LE of the elevators to a "V" shape as shown on the plans. Sand a radius on the LE and tip ends of the stab and the TE of the elevator. Leave the TE of the stab squared off.

Fit The Rudder

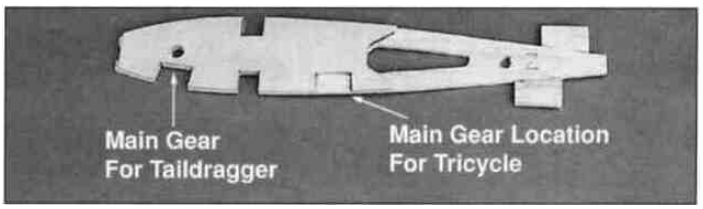


D 9. Position the shaped 1/4" balsa **rudder** over the plans. Align the bent wire tail gear over the bottom end of the rudder as shown on the plans. Mark the tail gear "arm" location on the centerline of the rudder LE. Drill a 7/64" hole 5/8" deep at this spot.



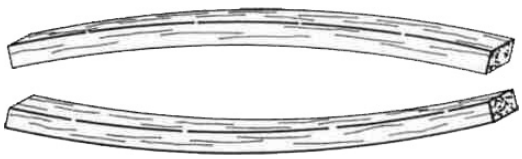
D 10 Cut a groove from the tail gear hole to the bottom end of the rudder that will allow the nylon tail gear bearing to fit flush with the LE of the rudder

D 11 Carefully draw a centerline all around the edges of the rudder Sand the LE of the rudder to a "V" shape as shown on the plans Sand a radius on the LE of the fin and the TE of the rudder Leave the TE of the fin squared off.

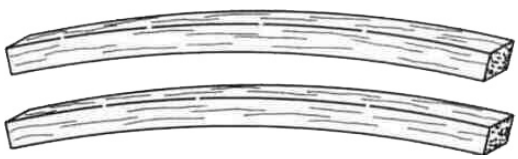


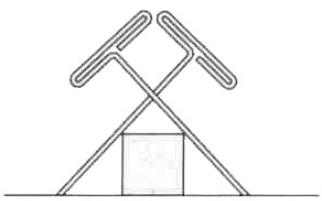
D 2 After the epoxy has cured, cut out the appropriate notch in each W-2 and W-3 rib for the landing gear rails **If you are building a taildragger, cut away the balsa from the front notch.** For a tricycle gear configuration, remove the balsa from the rear notch

TWO WARPED SPARS INSTALLED THIS WAY WILL RESULT IN A STRAIGHT WING



TWO WARPED SPARS INSTALLED THIS WAY WILL RESULT IN A WARPED WING

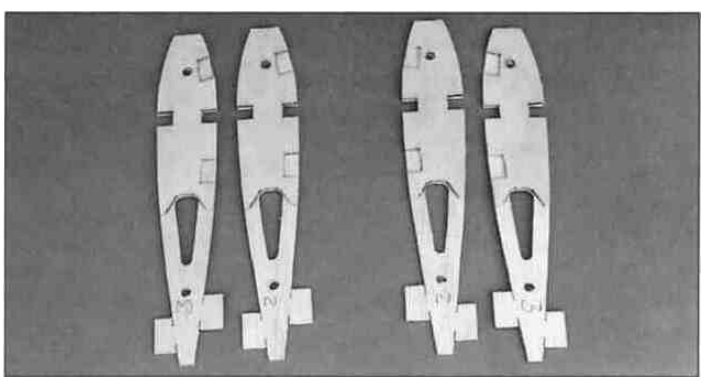




Building The Wing

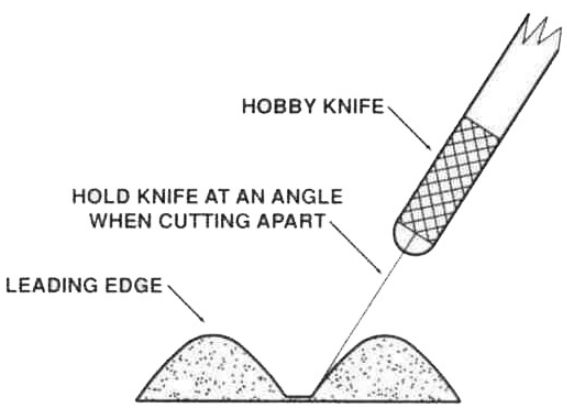
Note: The wing panels are built **"UPSIDE-DOWN"** on the plans Since it is the standard convention to show the Top View of the wing, and the wing panels are built upside-down, the LEFT wing panel is built over the RIGHT Wing Top View and vice-versa **This does not present any problems; just be sure to build a left and a right wing.**

Build The Wing Panels

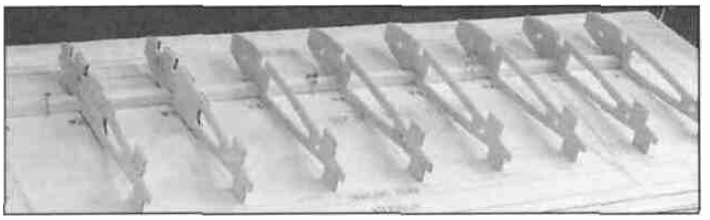


D 1 Lay out 3/32" die-cut wing ribs **W-2 and W-3 exactly as shown** in the photo Position the 1/16" die-cut birch ply **doublers (LGD)** on each rib as shown By so doing we will be making a **right and a left pair** Use 30 minute epoxy to glue the doublers to the ribs Make sure that the doublers are perfectly aligned with the ribs spar notches

D D 3 Use the cross-pinning technique to pin a 3/8" x 3/8" x 25-1/4" balsa **spar** over a wing plan ***Don't forget the waxed paper.***

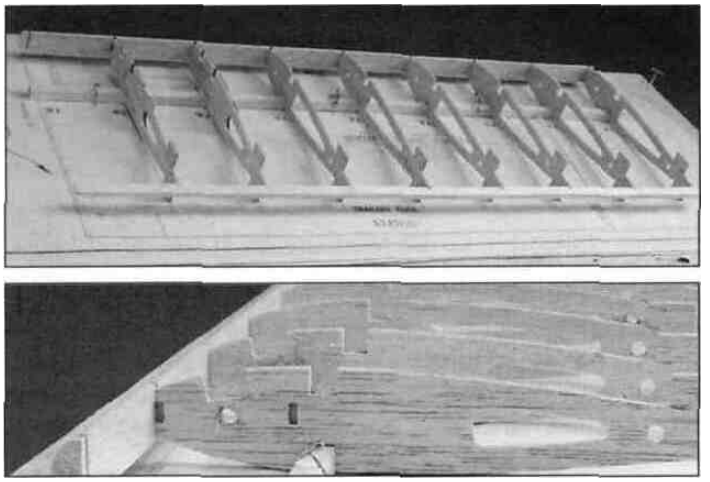


D 4 The shaped and notched wing **leading edges** (LE) and **trailing edges** (TE) are fastened together by thin strips of balsa Separate them by cutting with a hobby knife, as shown in the sketch above



D D 5. **Don't use any glue until instructed to do so. As** the wing panels are built upside-down, fit the W-2 and W-3 ribs to the spar with the landing gear notches pointing upward. Check that the ply doublers are on the correct side of the ribs as shown on the plans. Add the remaining W-4 ribs all the way to the wing tip. The **jig tabs on the building board should be closer to the TE** than the jig tabs facing upward.

D D 6. Sight down the length of the TE. Check that all ribs are aligned and have the correct side up.

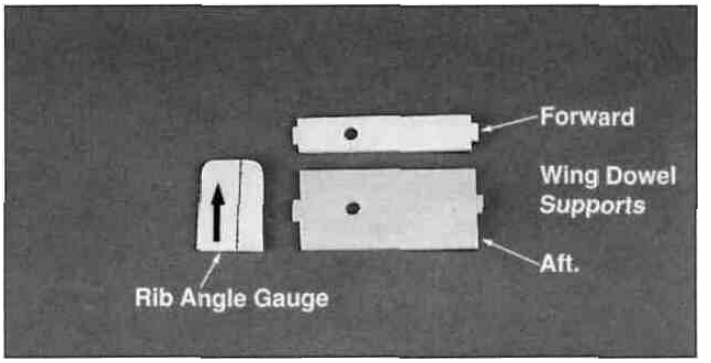


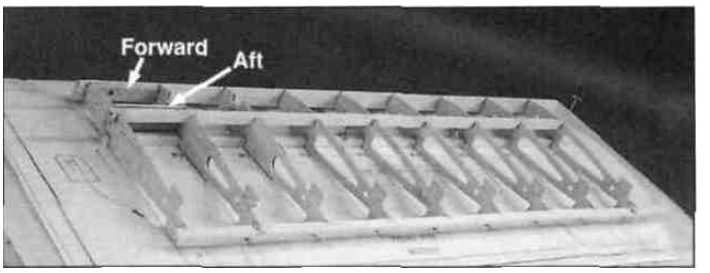
D D 7. Fit the notched leading and trailing edges to the ribs. The LE must be centered vertically on each rib. The TE should be flush with the top and bottom of the ribs. Align the ribs over the plans and true everything up. Glue W-2 and the wing tip W-4 rib to the TE, then pin the TE to the building board to keep the wing flat.

D D 8. Sight down the TE from the wing tip. If the TE is not straight, insert folded paper strips under the jig tabs of each low rib until the TE is straight. While holding each rib in contact with the building board (or paper shims), use thin CA to **glue** all remaining ribs to the TE.

D 1-1 9. Repeat this gluing process for the LE. Start with the two outside ribs, then work toward the center. Make sure that each rib is pressed firmly onto the spar and is also aligned with the plans.

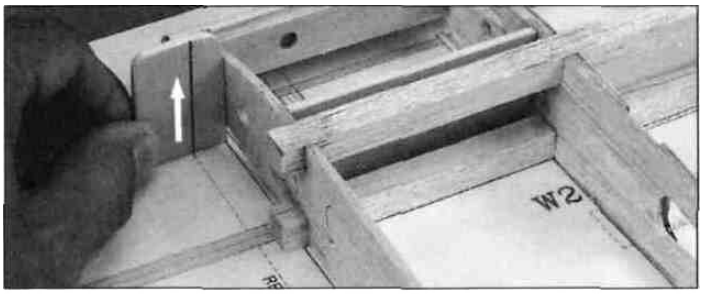
D D 10. Glue the ribs to the lower spar, then install and glue the **upper** 3/8" x 3/8" x 25-1/4" **balsa spar** in position. Be sure to keep the ribs vertical as you do this step.





D D 11. Test fit the forward and aft die-cut 1/8" ply **wing dowel supports** in the notches in W-2. The aft wing dowel support will fit correctly only one way. Wiggle rib W-1 into position, popping it into the LE and TE notches.

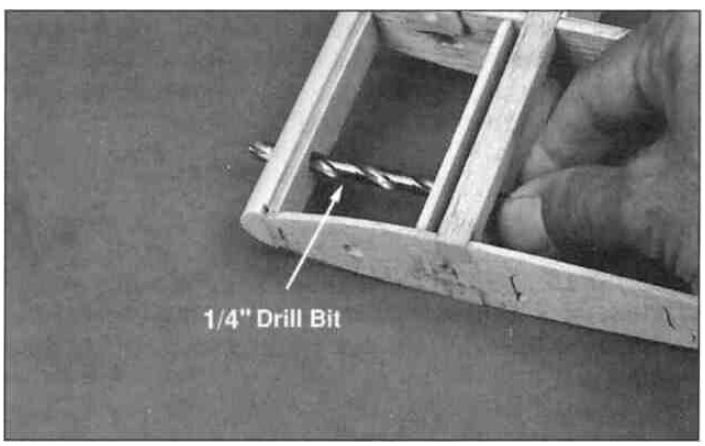
Note: The LE and TE notches need to be widened slightly to allow for the rib angle. The tabs on the wing dowel supports fit into the die-cut slots in W-1. Don't glue anything yet!



D D 12. Draw a line through the two index marks on the die-cut 1/8" ply **rib angle gauge.** Hold the gauge against W-1 **with the line you drew on the reference line on the plans.** The angle of the rib and wing dowel supports should **match** the angle of the gauge. If not, examine your work and correct any mistakes before gluing the assembly in place. When satisfied with the fit, use **medium CA** to glue the assembly together.

D D 13. Trim and sand the LE, TE, and spars **flush with W-1.** Trim **only the TE and spars** flush with W-4 at the tip. Leave the LE *long* for the time being.

D D 14. Install 1/16" x 3" x 1-3/8" balsa **shear webs** on the **aft** side of the spars from W-2 to the wing tip. Install one extra shear web on the **forward** side of the spars between ribs W-2 and W-3. Use medium CA and be sure to get a secure bond. It's not necessary for the webs to be glued to the ribs.

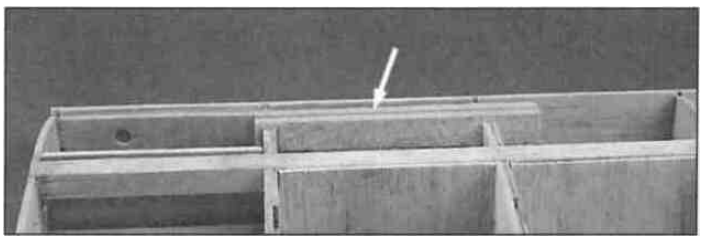


D D 15. Use a 1/4" drill bit to drill the wing mounting **dowel hole** through the LE. The best way to have the holes line up perfectly is to manually twist the drill bit with your fingers as shown in the photo. If you have a "Pin Vise" tool, this would work even better. You can also mark the location of the hole with a pin pushed through from the **inside** of the dowel support, then drill the hole from the LE inward. If you use the last technique, start with a **3/32" pilot hole,** then **slowly enlarge the hole** while making adjustments to the alignment.

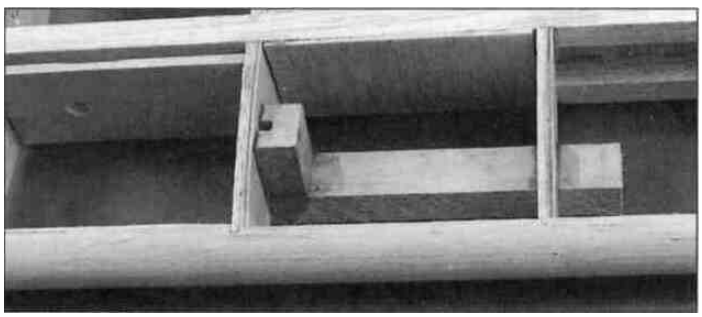
D D 16. Round off both ends of the 1/4" x 2-3/4" hardwood **wing dowels** (See wing plan) Test fit a dowel **(without gluing)** into the LE and aft dowel support. The fit should be snug, so don't enlarge any of the holes more than necessary. When satisfied with the fit, remove the wing dowel and set it aside for later use.

D 17. Repeat steps 3-16 for the other wing panel.

Install The Landing Gear Rails



D 1. Test fit the 7/16" x 5/8" x 4" grooved basswood **landing gear rails** into the notches on W-2 and W-3. If necessary, carefully sand the notches to allow a snug fit. The landing gear rails should **protrude above the ribs by 3/32".**



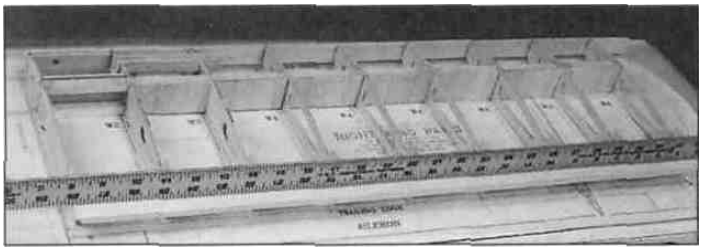
D 2. Use **30-minute epoxy** to glue the rails in position. Epoxy (and clamp for a secure bond) the 7/16" x 5/8" x 3/4" grooved hardwood **landing gear blocks** to the inside of the landing gear rails and also to the ply doubler on W-2. It is essential that the landing gear blocks be accurately aligned with the landing gear rail.

D 3. After the epoxy has fully cured, drill a 5/32" hole **through** the landing gear rail working from the top of the landing gear block, as shown. By drilling in this manner the block acts as a guide for perfect landing gear alignment.

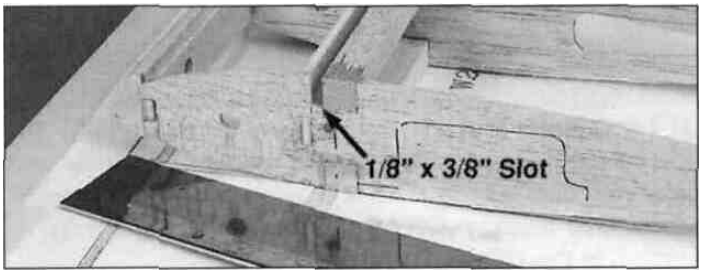
D 4. Carve a slight radius in the groove of the landing gear rails at the location of the hole. This radius will permit the landing gear wire to fully seat in the groove.

Sheet The Bottom LE & TE

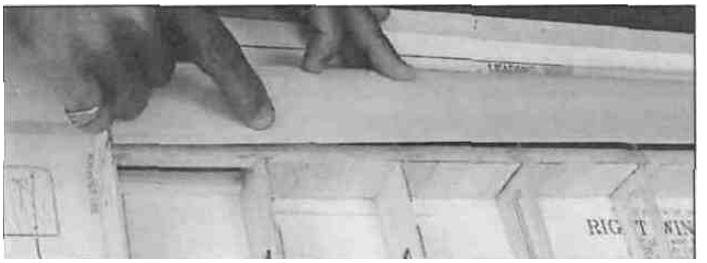
D D 1. Pin a wing panel back on the building board with the landing gear rail pointing upward. Sight down the TE to **check** for straightness-shim the ribs as necessary.



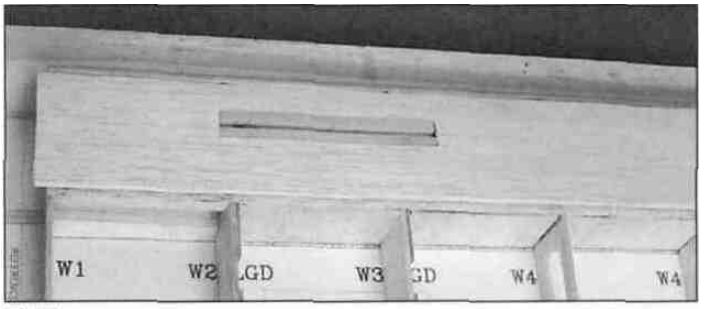
D D 2. Lightly sand the TE to remove any bumps. Use medium CA to glue a 3/32" x 7/8" x 25-1/4" balsa TE sheet to the TE. (Refer to the cross-section on the plans.) Hold a straightedge across the sheeting while the CA cures to keep the TE flat and straight.



D D 3. Use a razor saw or hobby knife to cut a 1/8" x 3/8" slot through the W-1 rib between the spar and aft dowel support as shown in the photo. Do not cut more than 3/8" down. *After the wing is sheeted, we will finish cutting out the opening for the ply wing joiners.*

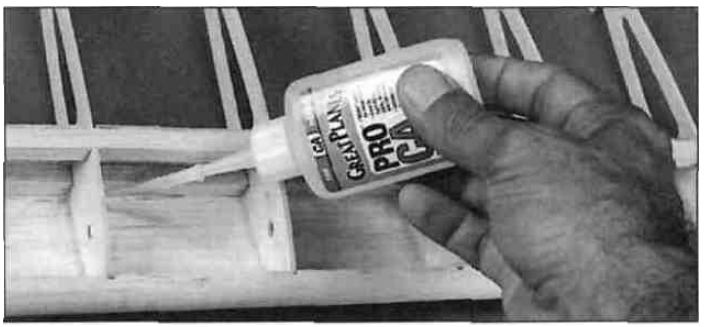


D D 4. Butt a 3/32" x 2-1/2" x 25-1/4" balsa sheet tightly against the lip of the LE. Press down on the sheet with your fingers in the vicinity of the landing gear rail to make an impression of the landing gear rail on the inside of the sheet. Turn the LE sheet over, then cut the access hole for the landing gear rail using the impression mark as a guide.



D D 5. Test fit the LE sheet in position. When satisfied with the fit, press the forward edge of the sheet tightly against the LE and the ribs, then wick thin CA along the forward seam. Wipe off any excess CA before it cures. Roll the sheet into contact with the spar. Working from the center toward the tip, wick thin CA between the sheet and the spar.

D D 6. Wick CA around the seam between the sheeting and the landing gear rail.



D D 7. Lift the wing off the building board. Then, while holding it flat on your work surface, wick thin CA between the ribs and the sheet from the inside of the wing. Add a fillet of medium or thick CA along the inside of the LE.

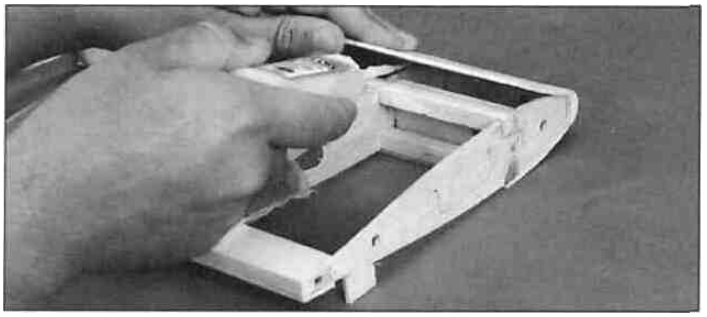
D 8. Repeat steps 1-7 to sheet the bottom of the other wing panel.

Sheet The Top LE & TE

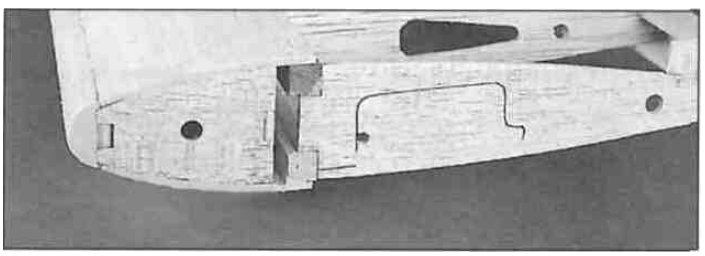
D D 1. Pin the wing to the building board with the sheeted side facing down. Trim and sand the jig tabs from the top of the ribs (the sheeted side.) Sight down the TE to make sure it's straight. Shim any low ribs.

D D 2. Glue a 3/32" x 7/8" x 25-1/4" balsa sheet to the TE and ribs as you did with the bottom of the wing panel.

D D 3. Cut a 1/8" x 3/8" slot in W-1 between the spar and the dowel support as you did in step #3 of the previous section.



D D 4. Test fit a 3/32" x 2-1/2" x 25-1/4" balsa sheet along the LE of the wing panel. Make sure that it fits flush. Wick thin CA along the LE joint while holding the sheet in position. Gently lift the aft edge of the sheet and quickly apply a bead of medium CA to the top of each rib. Press the sheet into contact with the ribs and hold it there until the CA cures. Wick thin CA along the joint between the sheet and the spar. Hold the sheet edge down while the CA cures.

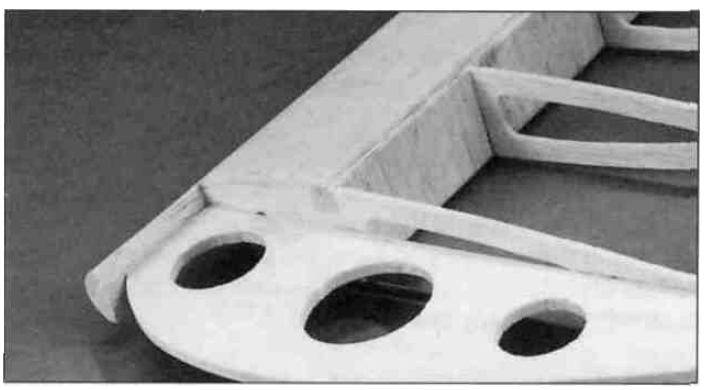


D D 5. Finish cutting the access slots in W-1 for the wing joiners as shown in the photo. Notice, there is a partially die-cut line 1/8" behind the forward edge of the spars. Finish cutting both ends of this line with a hobby knife. *This* ***space*** *is for the wing joiner doubler.*

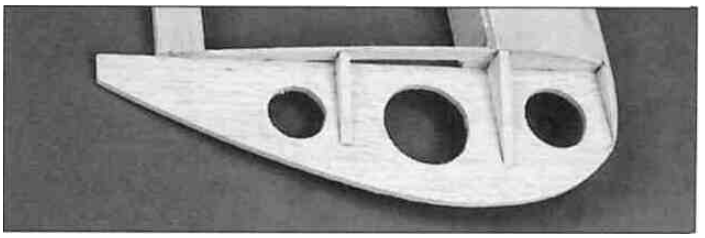
D D 6. At this stage, all remaining jig tabs should be trimmed **off** and the rib edges sanded smooth.

D 7. Repeat steps 1-6 to sheet the top of the other wing panel.

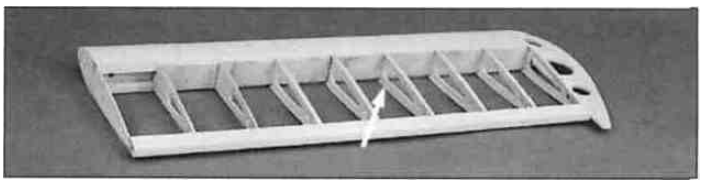
Add Wing Tips And Cap Strips



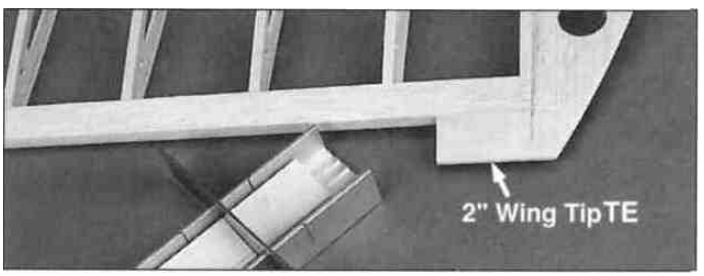
D D 1. Center a die-cut 3/16" balsa **wing tip** on the outboard W-4 rib between the spars. The forward edge must be centered on the LE, and the aft end should align with the TE. Glue the tip in position at a 90° angle to W-4. Repeat for the other wing panel.



D D 2. Glue the die-cut 3/16" balsa **wing tip braces** to the top and bottom of the wing tips at the locations shown on the plans. Refer to the wing plan, then shape the LE to blend with the wing tip as shown in the photo.



D D 3. Cut and install **cap strips** made from six 3/32" x 1/4" x 24" balsa sticks onto the top and bottom of each **W-4 rib** between the LE and TE sheeting. **Do not** cap the W-3, W-2, and W-1 ribs as they will be fully sheeted later.

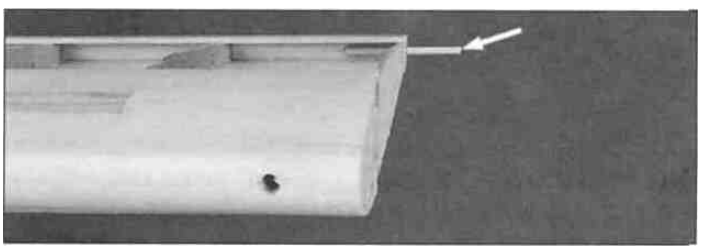


D D 4. Cut **one 2"** length from **each** of the two 1-1/8" x 24" tapered balsa ailerons. Be sure to measure carefully and make your cuts square. *This is where a miter box comes in handy.* Use medium CA to glue both 2" **wing tip TE** in position, to the TE'S and wing tips.

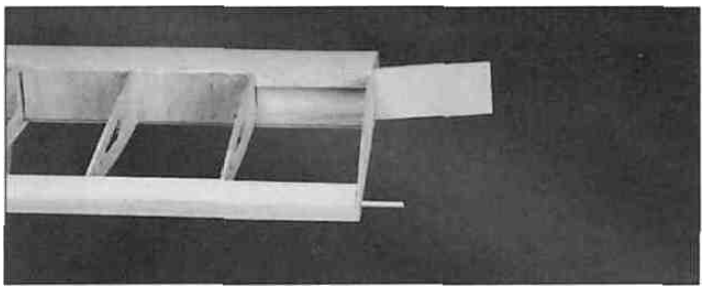
D 5. Repeat steps 1 -4 for the other wing panel.

Join The Wing Panels

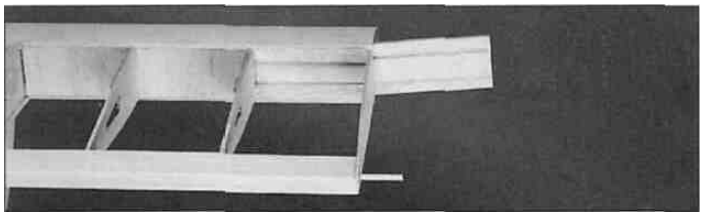
Note: Before actually using any glue for steps 1 - 4, **test fit the entire assembly** to make sure the wing panels fit properly. Although dihedral angle is not critical, when the center section is on the building board, **both wing tips should be raised 1".**



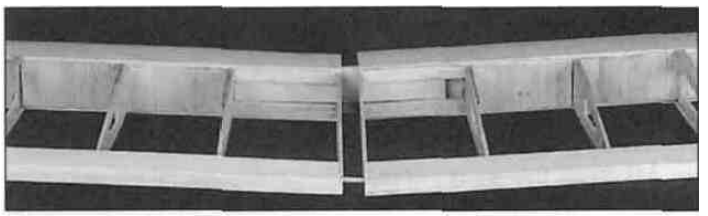
D 1. Insert 1" of the 1/8" x 2" hardwood **alignment dowel** through the hole at the aft end of W-1. Glue it to the **inside** of the TE with CA.



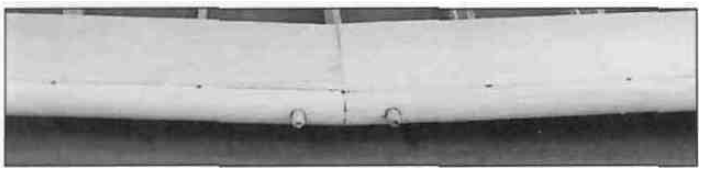
D 2 Coat the exposed aft surface of the ply wing dowel support with **30-minute epoxy** Use a stick or brush to apply epoxy to the forward edge of both wing spars and the 1/8" x 1-7/16" x 6-1/8" die-cut ply **forward dihedral brace** Slide the brace into the slot until it touches W-2



D 3 Completely coat one side of the 1/8" x 5/8 x 6-1/8" die-cut ply **aft dihedral brace** with 30-minute epoxy, then insert it behind *(and gluing it to}* the forward dihedral brace Work a little epoxy around the edges to obtain a good bond with the spars



D 4 Working quickly apply 30-minute epoxy to the wing dowel support and spars of the other wing panel and also to the mating surfaces of the W-1 ribs Slide the two wing panels together Glue the 1/8" alignment dowel to the inside of the second wing panel Make sure the panels are aligned from LE to TE, then clamp or tape the two panels together.



D 5 Before the wing *joining* epoxy has cured, work some 30-minute epoxy into both of the dowel holes in the LE Insert the 1/4" x 2-7/8" hardwood wing dowels through the LE and into the ply aft dowel support

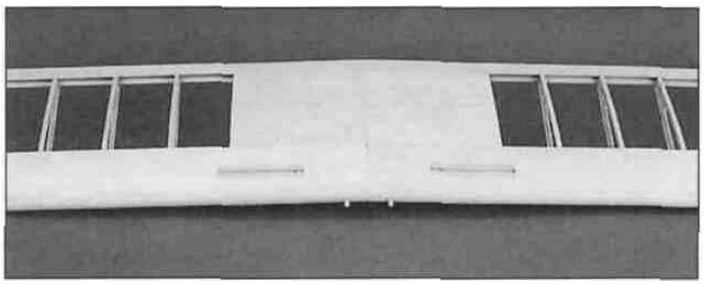
Sheet Bottom & Top Center Of Wing

CA is much harder than balsa, **so** when you sand edge glued sheets you will usually end up with a ridge along the joint To avoid this problem, the Great Planes Model Shop team has reverted to using wood glue for this application We prefer Great Planes Wood Glue as it sets quickly, is water resistant, and sands easily We put a blob of the glue on a sheet of waxed paper, then apply it to the edge of the wood with a fingertip After joining the sheets, wipe off any excess with a tissue, then use a couple of strips of masking tape to hold the sheets together while the glue sets

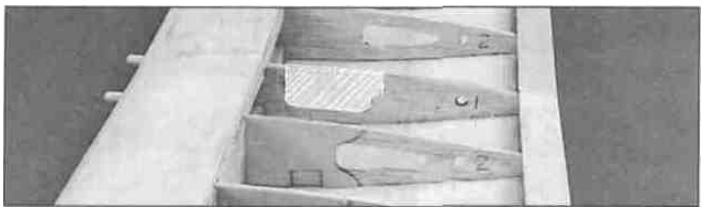
Sand the joint by using a sanding block and 220-grit sandpaper Work the block in a circular motion across the joint until smooth

D 1 Cut eight 6-1/2" long pieces of sheeting from two 3/32" x 3" x 30" balsa sheets Lightly sand off the edges to remove balsa *fuzz* Make four **center skins** by edge gluing four pairs of the 6-1/2" sheets together.

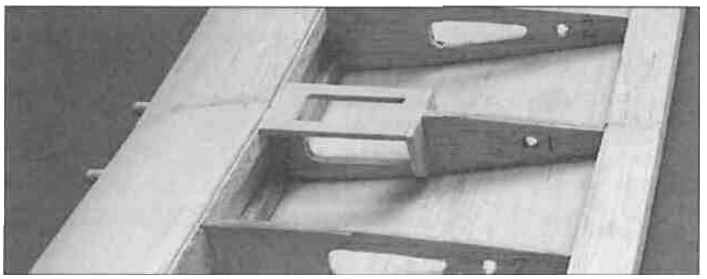
D D 2 Trim one of the bottom skins to fit between the LE and TE sheeting from W-1 to W-3 Be sure that the skin **covers only one** W-1 rib Glue it in place.



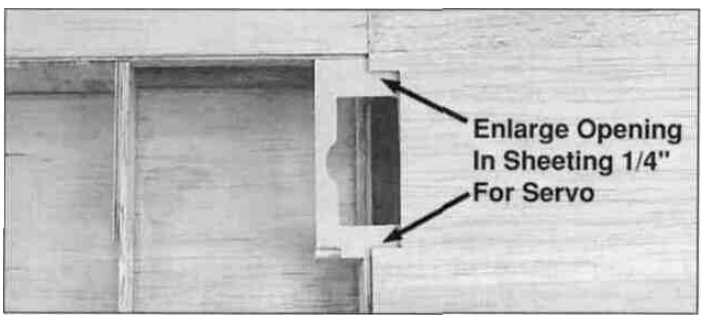
D 3 Repeat step 2 for the other wing panel **IMPORTANT:** Be sure to obtain a good glue joint along the wing's centerline where the sheeting fits together *Place a pad of foam rubber on top of your workbench to protect the bottom sheeting from hangar rash while you work on the top surface.*



D 4. Refer to the photo above, then use a razor saw or hobby knife to finish cutting the servo opening in the W-1 ribs. *The opening has been partially die-cut.*

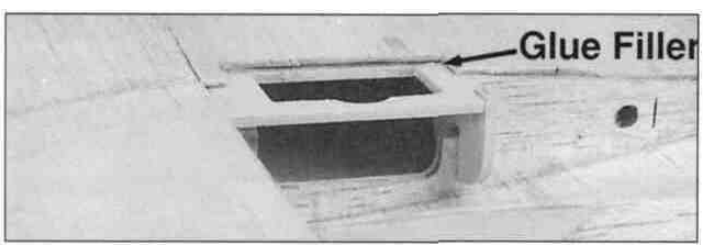


D 5. Install the die-cut 1/8" ply **servo tray support** at the rear of the servo opening. Fit the die-cut 1/8" ply **servo tray** into the notch on top of the servo tray support, then press it into position on top of W-1. The servo tray should be flush with the top edge of the spar and even with the top edge of W-1. After you have checked the fit, glue the parts in position with medium CA.

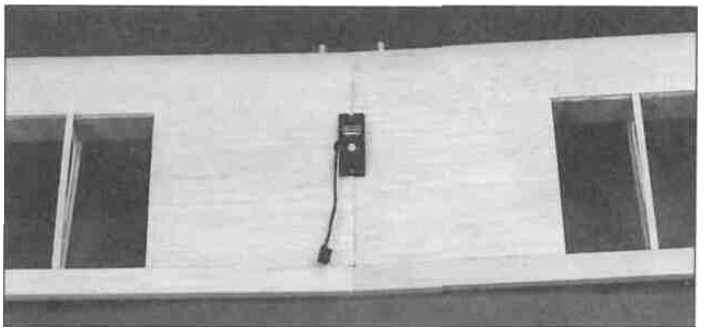


D 6. Trim a 6-1/2" balsa center skin to fit between the LE and TE from W-1 to W-3. Align the inboard edge of the skin with the centerline of the wing (between the two W-1 ribs), then mark and cut *"half"* of the servo opening. Enlarge the sheeting opening 1/4" on both ends to allow the servo grommets to clear the sheeting. Test fit the sheeting and servo.

LI 7. Glue the sheeting in position with medium **CA.**

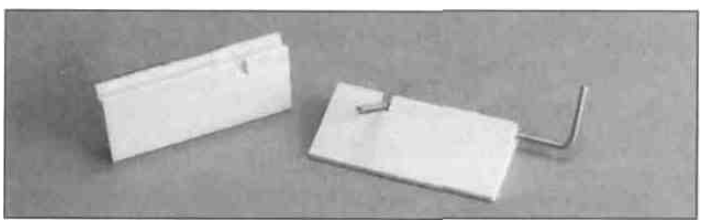


Note: Because the top of the wing is curved and the servo tray is flat, apply a thick bead of glue to the top of the servo tray, then allow the skin to curve naturally without squeezing it into contact with the servo tray. The CA will provide support for the skin.

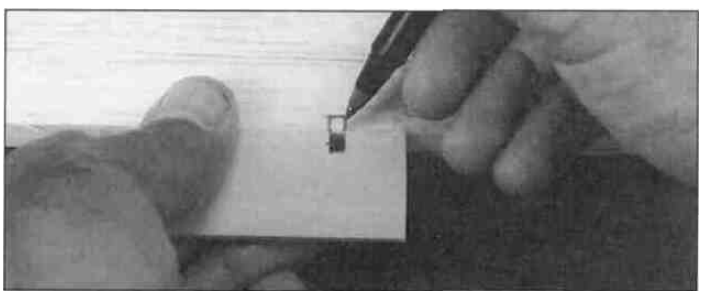


D 8. Cut and install another skin for the other half of the wing center section. Cut the other half of the servo opening as you did in step #6.

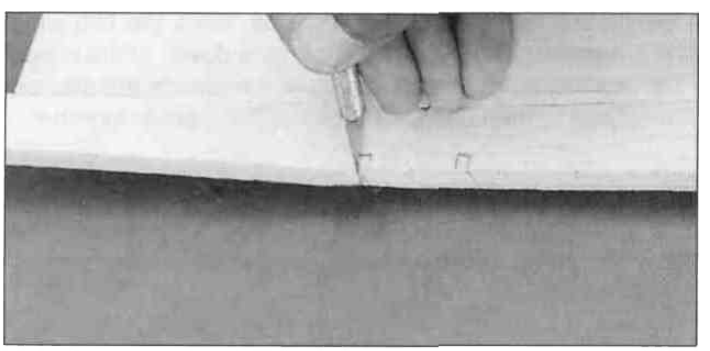
Wing Completion



D D 1. Position the tapered and grooved 1-1/8" x 2-1/2" hardwood **wing center TE** pieces over the plans and mark the location of the aileron torque rod exits. Cut a notch in the **top forward** edge as shown in the photo.



D D 2. Hold the wing center TE against the aft edge of the wing, aligned with the wing's centerline. Mark the torque rod notches on the **top** of the wing.

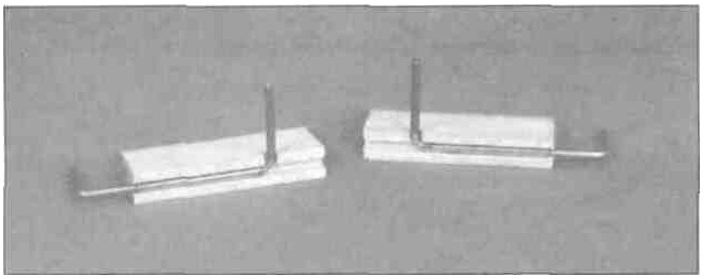


D D 3. Cut shallow notches on the **top** aft edge of the wing to allow the torque rod to move freely.

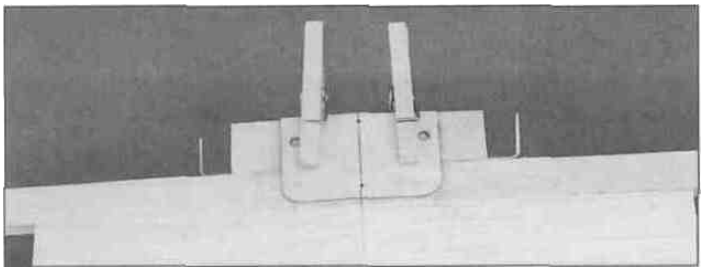
D D 4. Sand the nylon surface of both torque rod tubes with coarse sandpaper to roughen them up for better glue adhesion.

Important: Sand a slight angle on the inboard edge of the wing center TE to permit the two pieces to fit flush when matched to the dihedral angle.

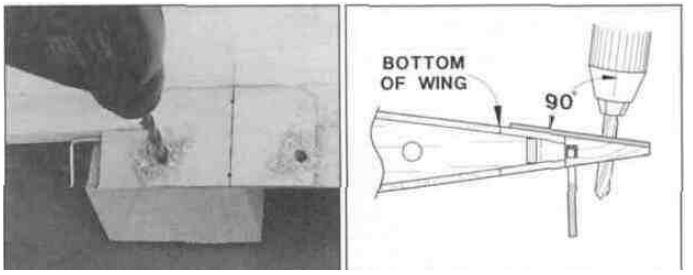
D D 5. Lightly coat the torque rods with petroleum jelly, then slide the nylon tube back and forth a few times to lubricate the inside of the tube. This procedure will help prevent the torque rod from being glued to the tube during the next step.



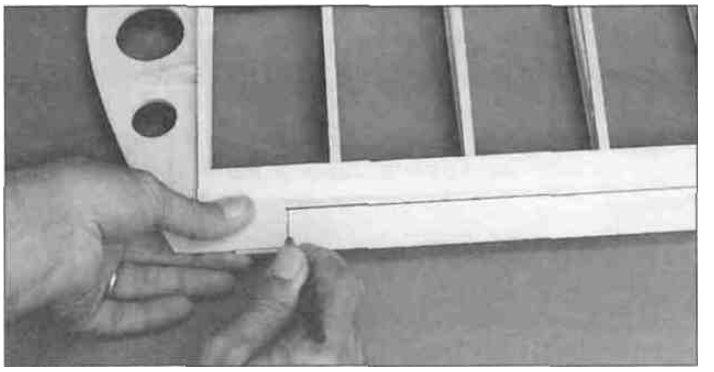
D D 6. Coat the center portion of the nylon tubes with 30-minute epoxy. Then insert the tubes into the grooves of the wing center TE. Wipe off any epoxy that may squeeze out with a tissue. Apply epoxy to the forward edges of the wing center TE, then glue them in position as shown on the plans. Use masking tape to hold the wing center TE in position while the epoxy cures.



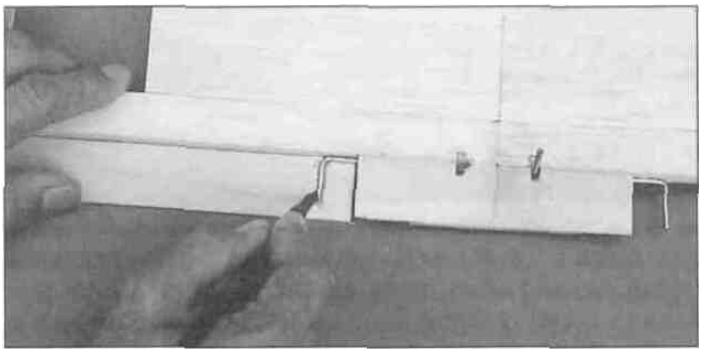
D 8. Draw a centerline through the two punch marks on the 1/16" die-cut birch ply wing plate. After the wing center TE'S are completely secure, use 6-minute epoxy to glue the wing plate in position on the **bottom** of the wing. Use the centerline you drew to align the wing plate with the centerline of the wing. The aft edge of the wing plate must be flush with the aft edge of the wing center TE. Clamp the wing plate in position while the epoxy cures.



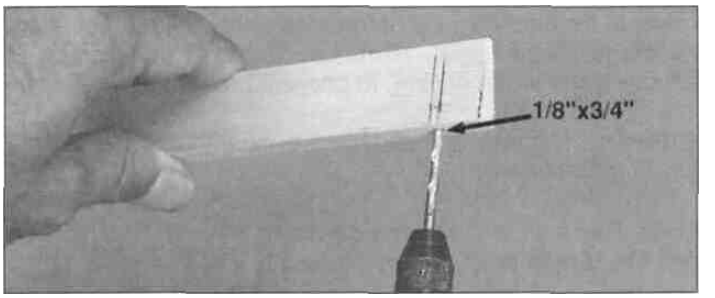
D 9. Drill two 1/4" holes through the wing center TE using the holes in the wing plate for the locations.



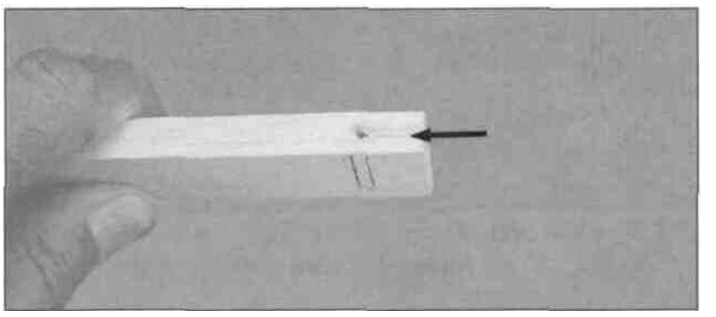
D 10. While holding an aileron against the inside edge of the wing center TE, draw a line on it that matches the inside edge of the wing tip TE. Cut the aileron 1/8" shorter than the TE opening to allow for covering material.



D 11. Hold the aileron in position, centered in the opening, then mark the location of the torque rod arms.



D D 12. Drill a 1/8" hole 3/4" deep into the forward edge of the aileron to accept the torque rod arm.



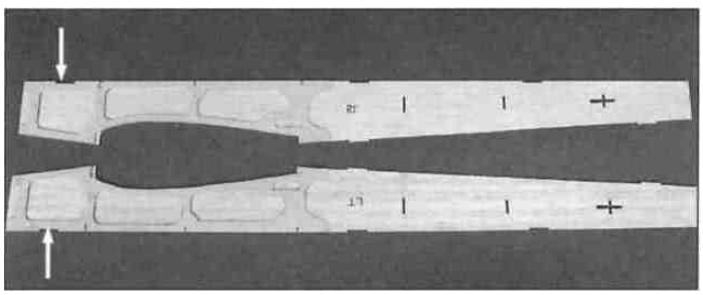
D D 13. Cut a groove from the *hole* to the inboard edge of the aileron to accept the torque rod. **Hint:** A sharpened piece of 1/8" brass tubing works well for this task.

D 14. Draw a centerline on the forward edge of the aileron. Sand the forward edge of the aileron to a "V." Refer to the cross section of the wing on the plans for the desired angle.

Well, you are about halfway through the framing stage, so clean up your workbench, have a soda, and let's build the fuse.

BUILD THE FUSELAGE

Build The Lower Fuselage



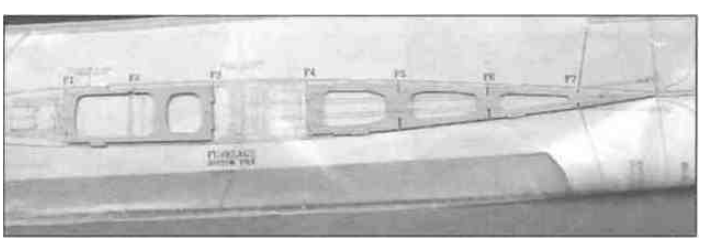
D 1. Locate both die-cut 3/32" balsa **fuse sides.** Place the fuse sides on a flat work surface with the wing saddles **facing toward each other** as shown in the photo. Use medium CA to glue the die-cut 1/8" ply **fuse doublers** in position. **Note:** Be sure that you make a right and left fuse side. The edges must be flush and the 1/8" x 1" notch at the forward end of each fuse side **exactly match** the doublers notch.

IMPORTANT: Drill a 3/16"dia. hole through the die punch marks in formers F4 - F6 before assembly. These holes are for the pushrod tubes. **Hint:** Lay the part on a piece of leftover wood when drilling, to prevent break-out.

Note: The formers are stamped only with the necessary part of their names.

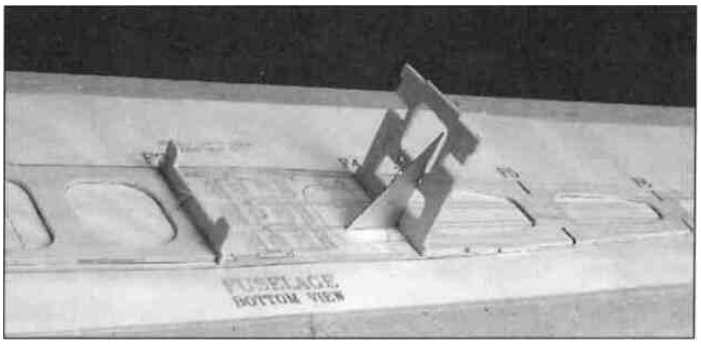
Note: The fuse is built **upside-down** over the plans. The plan sheet may be cut apart if space is a problem.

D 2. Cover the **bottom view** of the fuse plans with waxed paper.

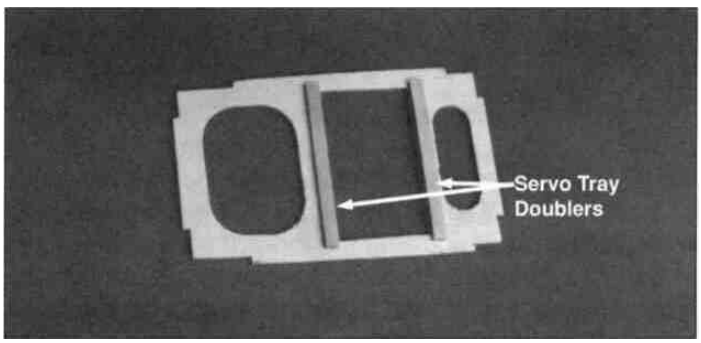


D 3. Position and pin the die-cut 3/32" balsa **aft fuse top** and die-cut 1/8" ply **forward crutch** over the plans.

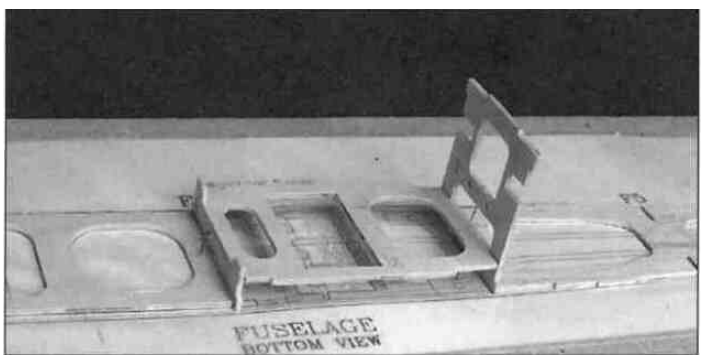
Note: All fuse formers must be installed with their **die-stamped numbers facing forward.** This is to ensure correct alignment of the pushrod holes and locking tabs.



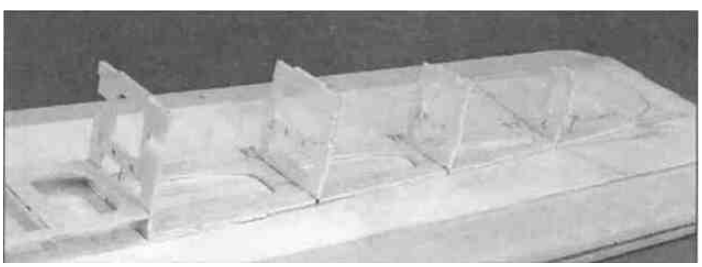
D 4. Glue **F-3** and **F-4** into the notches of the forward crutch and the aft fuse top as shown. Use a triangle to hold **all** the formers vertical while the CA cures.



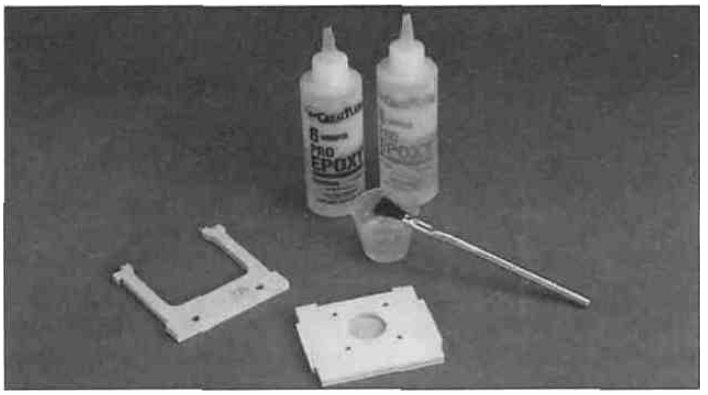
D 5. Cut two 1/8" x 1/4" x 3" ply **servo tray doublers** from leftover die-cut ply. Glue these doublers as shown above, to the die-cut 1/8" ply **servo tray.**



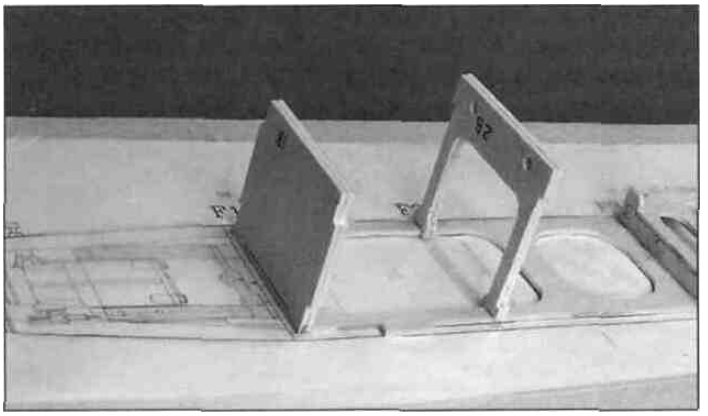
D 6. Glue the servo tray into the notches of F-3 and F-4 with the doublers facing **down** toward the plans.



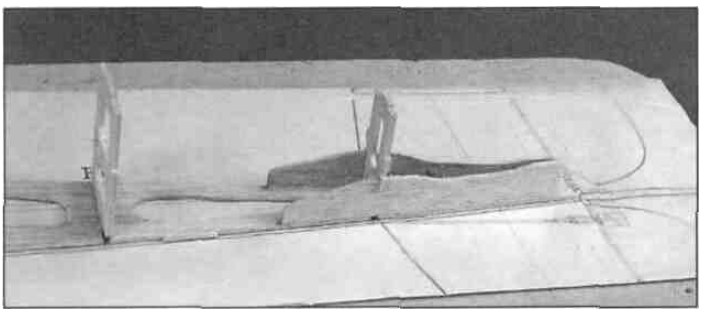
D 7. Glue **F-5, F-6,** and F-7 into their notches on the aft fuse top. Make sure that the die-stamped numbers **face toward the nose** of the model.



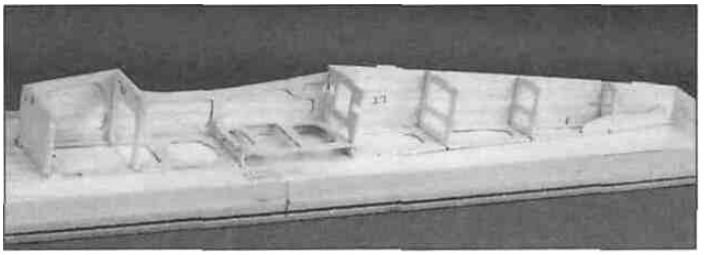
D 8. Use 6-minute epoxy to glue **F-1B** to **F-1C** and **F-2** to **F-2B. Important:** F-1B is **slightly shorter** than F-1C to allow for the angle of the cowl bottom. The same height difference applies to F-2B, which is shorter than F-2.



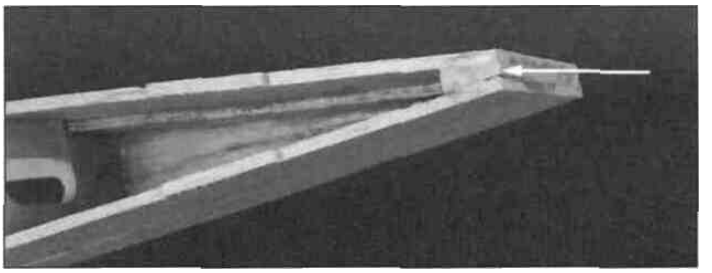
D 9. Use 6-minute epoxy to glue the F-1 and F-2 assemblies into the notches on the forward ply crutch.



D 10. Glue the left and right die-cut 3/32" balsa **tail doublers** to the aft fuse top and F-7 as shown in the photo. **Do not glue the tail doublers to each other at the aft end.**



D 11. Fit a **fuse side** in position. Make sure all of the **notches and tabs are fully seated.** Wick thin CA into all joints between the formers, the forward crutch, and the aft fuse **top.** Add a fillet of medium CA to one side of each former where they touch the fuse sides. Repeat this operation for the other fuse side.

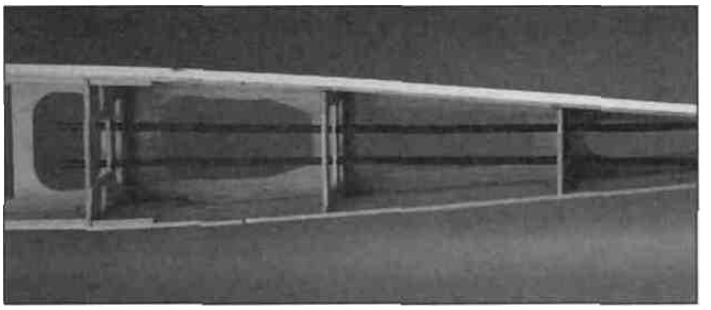


D 12. Glue the 9/16" x 2" tapered balsa tail wedge between the fuse sides, flush with the aft edge of the fuse. Use a triangle between the fuse side and the building board to check vertical alignment of the tail wedge.

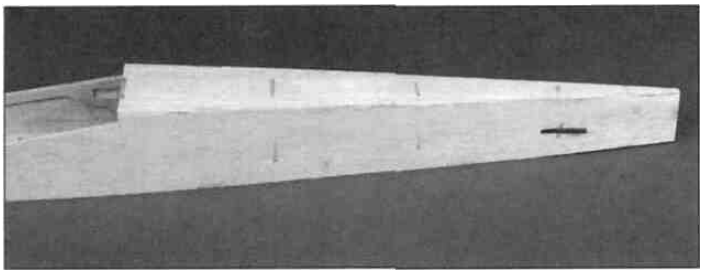
D 13. Remove the lower fuse frame from the building board and give it a quick once-over with a sanding block and 150-grit sandpaper.

Install Pushrod Tubes

D 1. Cut the 36" **outer pushrod tube** in half to make **two** 18" tubes. Sand the outside of the tubes with 80-grit sandpaper to roughen them up.

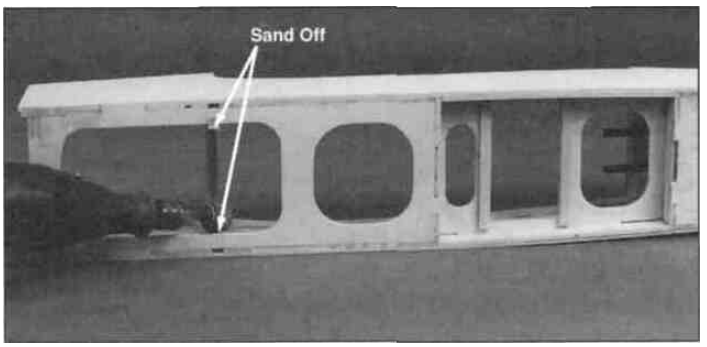


D 2. Slide the pushrod tubes through the holes in formers F-4 through F-7, and out through the slots in the fuse sides. About 1-1/4" of the tubes should be protruding forward of F-4. Glue the pushrod tubes to all of the formers and to the **inside** of the fuse sides with medium CA.

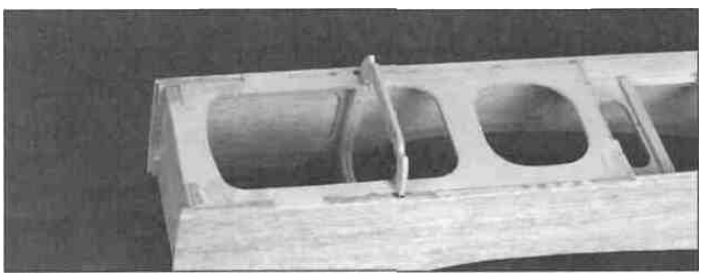


D 3. With the fuse on a flat surface glue the die-cut 3/32" balsa **aft fuse bottom** to the formers and the fuse sides.

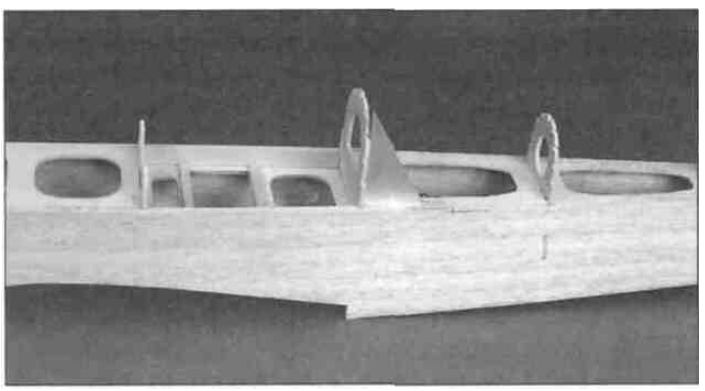
Build The Fuselage Top



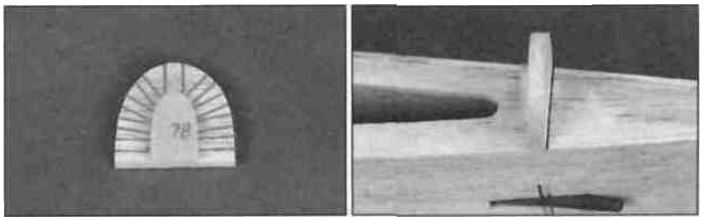
D 1. Sand or cut off the two *little bumps* on the inside of F-2.



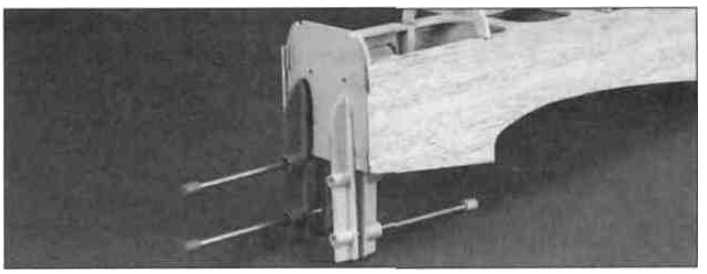
D 2. Refer to the side view of the plans. Notice that the die-cut ply former **F-2C** is positioned directly over the lower **aft** F-2 former and does not use a tab for alignment. Glue it to the die-cut forward crutch with medium CA.



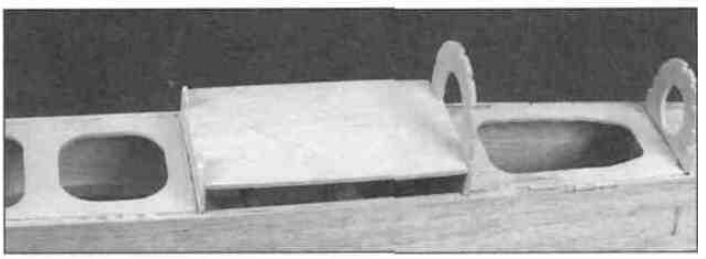
D 3. Glue die-cut ply formers **F-3B, F-4B, F-5B,** and **F-6B** into their notches on the fuse top. Use a triangle to maintain vertical alignment.



D 4. Use the F-7 cross-section on the plans to mark stringer locations. Center the bottom edge of die-cut 1/8" ply **F-7B** on the die-cut 3/16" balsa **F-7C,** then glue it in position. Draw a line across the aft edge of former F-7 on the aft fuse top. Align the aft edge of former F-7C with this line and glue it to the aft fuse top. *F-7B faces toward the nose of the model.*

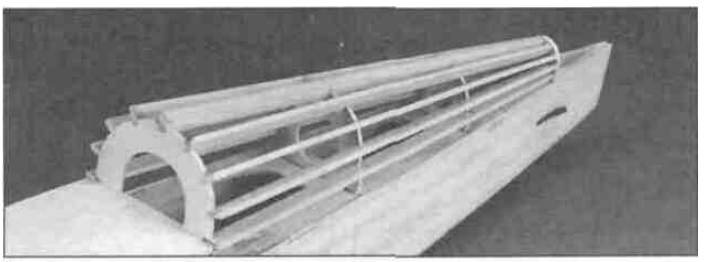


D 5. Use 6-minute epoxy to glue the die-cut 1/8" ply **F-1A** to the forward face of F-1B and to the **fuse sides.** Clamp it in place while the epoxy cures. **Sand the forward edges of the fuse sides flush with F-1A after the epoxy has cured.**

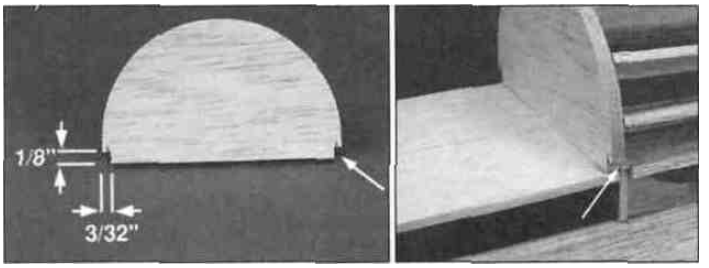


D 6. Hold the two halves of the die-cut 1/8" balsa **cockpit deck** together. If the tabs on both ends don't match **exactly,** turn one of the pieces *end-for-end.* When the pieces match, edge glue them together to make the full cockpit deck. Test fit the cockpit deck between F-3B and F-4B. It will fit correctly only in one direction. Glue it in place.

D 7. Cut the 3/16" x 3/8" x 18" balsa **aft top stringer** to fit flush with the forward face of F-4 and the forward face of F-7C. Glue the stringer into the top center notches of the formers.



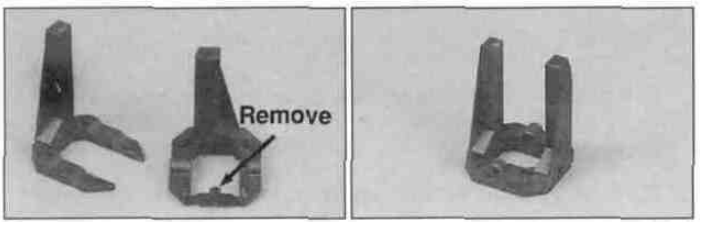
D 8. Cut and install the 1/8" x 3/8" x 18" balsa **side stringers** to fit in the remaining notches from F-4 to F-7C. Sand the stringer ends flush with F-4.



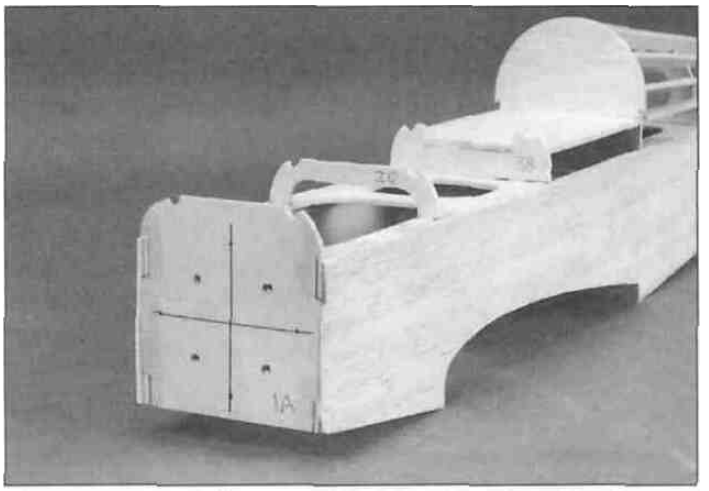
D 9. Cut a notch 1/8" x 3/32" in both corners of the die-cut 3/16" balsa F-4C. Center and glue F-4C to F-4B and also to the forward edge of all aft stringers. Notch 3/32" from the forward corners of both bottom stringers as shown in the photo. These *notches will provide a recess for the forward side sheeting.*

Install The Engine And Tank

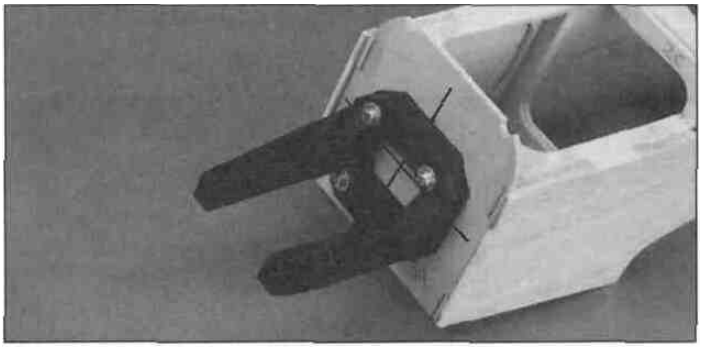
The Great Planes **adjustable engine mount** is simple and convenient to use. It may be used to mount most .40 - .60 two-stroke and .40 - .70 four-stroke engines. Nose gear bearings are incorporated in the mount and work whether the mount is horizontal or vertical. The bearing hole is 5/32" [4 mm] diameter.



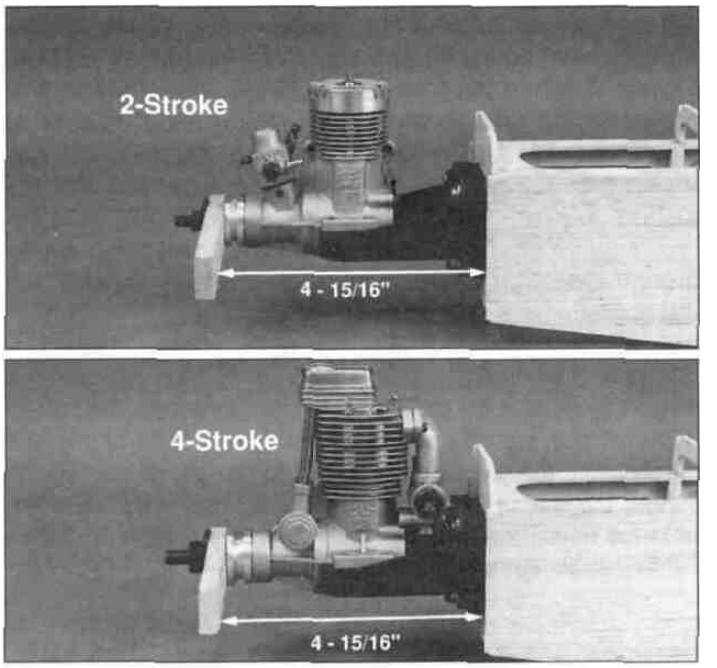
D 1. Cut or break the "spreader bar" from each mount half. Carefully trim any extra material left by the spreader bar from each mount half. The surfaces where the spreader bars were attached must be smooth to allow the mount halves to fit together. Trim the flashing off any rough edges if necessary. Assemble the mount halves as shown.



D 2. Draw centerlines on **F-1A** by connecting the punch marks on the firewall.



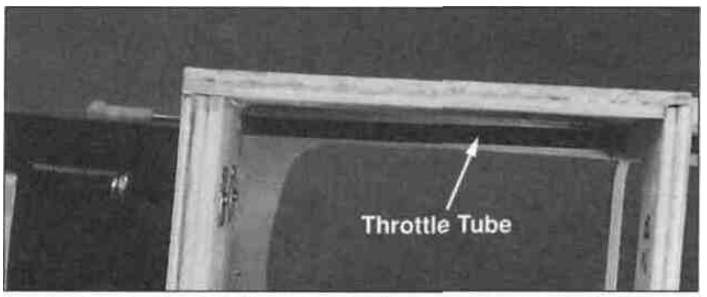
D 3. Drill an 11/64" diameter hole at each of the four die-punch marks on F-1A, then install the mount using **four 6-32 x 1" machine screws,** #6 **flat washers, and 6-32 blind nuts.** Tighten the machine screws all the way to draw the blind nuts into position, then loosen them slightly to allow the mount to be adjusted to fit the engine. Secure the blind nuts to the firewall with a drop or two of medium CA around the flange.



D 4. Slide the engine mount halves apart until the **engine mounting lugs** will sit flat on the beams. Adjust the mount until the firewall centerline is centered **between** the "tick" marks on the mount. Tighten the 6-32 screws to hold the mount firmly in position against the firewall. Position the engine so that the backplate of a spinner will be 4-15/16" in front of the firewall. Mark the engine mounting holes on the mount. Remove the engine and drill a 7/64" hole through the beams at each mark. Install the engine with the 6-32 x 3/4" sheet metal screws that have been provided with this kit.

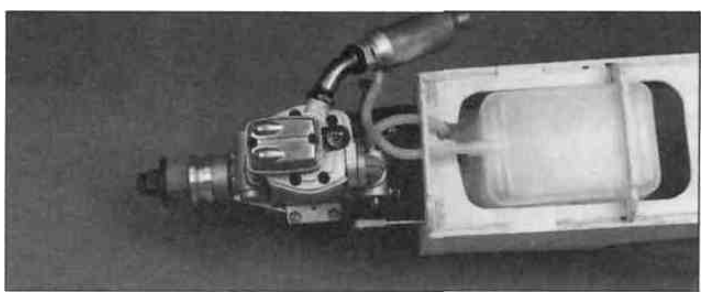
Note: When installing an 0. S. .70 4-stroke engine, you will need to remove the choke mechanism in order to position the engine far enough back on the mounting rails to achieve the 4-15/16" distance from the firewall.

D 5. Mark the location for the throttle pushrod hole on F-1A.



D 6. Use a long drill bit to drill a 3/16" hole through the firewall at the throttle hole location you marked in step 5. Drill through F-2. Insert a 10" length of **outer pushrod tube** through these holes, leaving about 1/4" protruding past the firewall. Glue the pushrod tube in place. Attach a **ball link** to the throttle arm on the engine, then use a drop of 6-minute epoxy to secure the nut in place. Screw a **ball link socket** onto a 2-56 x 36" **threaded wire pushrod.** Cut the pushrod to reach from the throttle to about 1-1/2" past the throttle servo opening in the servo tray. Insert the pushrod through the outer pushrod tube, then attach the ball link and socket.

Note: We used a 10 oz. Great Planes tank (#GPMQ4104) in our prototypes. By using the supplied right-angle fuel supply tube, the fuel can be routed to the top of the firewall without the risk of kinking the tube. You may also route the fuel tube below the forward crutch to make fishing the tubes a little easier. The choice is yours.



D 7. Temporarily install the fuel tank. *It's a lot easier to see what is happening at this stage of construction.* Decide where you want the fuel and vent tubes to exit the firewall and mark the locations. Remove the tank and drill two 15/64" (or 7/32") fuel tube holes through the firewall at the locations you marked. Re-install the tank and connect the fuel tubes. Check for kinks and rectify any problems before proceeding.

Install Optional Nose Gear

(Skip for the standard taildragger)

You will need that are not included:

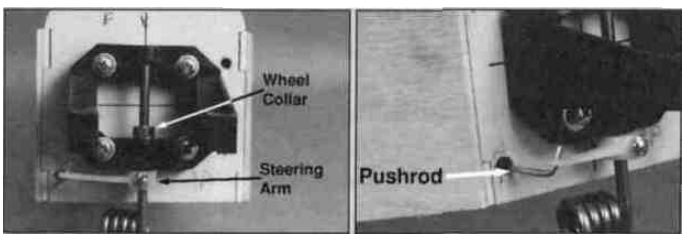
D 5/32" straight nose gear wire with coils
(Great Planes #GPMQ4262)

D 5/32" adjustable axle
(Great Planes #GPMQ4280)

D 5/32" wheel collar and set screw
(Great Planes #GPMQ4306)

D 5/32" steering arm with collar
(Great Planes #GPMQ4264)

D 15" pushrod tube and .074" **wire**
(Great Planes #GPMQ3716)



Refer to these photos when performing the following steps

D 1. Slide the **5/32" steering arm** with its wheel collar over the short end of the **nose gear wire.**

D 2. Insert the nose gear wire into the bottom hole of the engine mount.

D 3. Slide a **5/32" wheel collar** onto the wire, then push the wire into the top hole in the engine mount.

D 4. Check that the nose gear spring coils clear the firewall then tighten the wheel collar and steering arm on both sides of the engine mount as shown in the photo. This will lock the nose gear in position.

D 5. Drill a 3/16" hole through the firewall and F-2 that aligns with the steering arm and the rudder servo. **Important:** The steering pushrod must be on the **opposite side** of the firewall from the throttle.

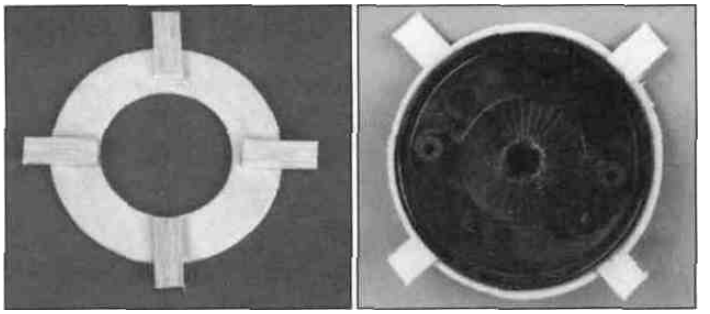
D 6. Insert a 15" length of **outer pushrod tube** through the holes and glue it in position, flush with the forward side of F-1A.

D 7. Enlarge the **last hole** in the steering arm to 5/64"

D 8. Make a bend in the **pushrod wire** 1/4" from one end. Insert the unbent end of the pushrod into the outer tube, then work the bent section into the enlarged hole in the steering arm. Test the linkage for free movement.

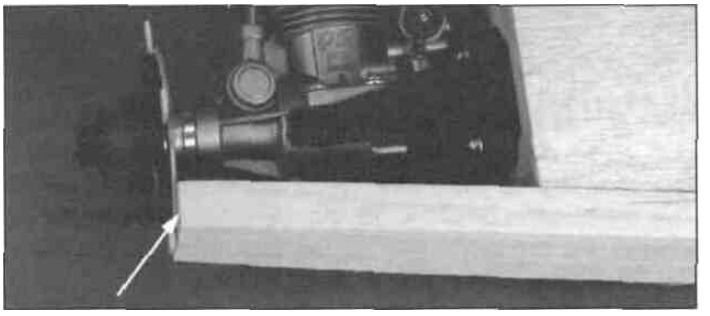
We will cover final installation and servo hookup later in this manual.

Install The Cowling

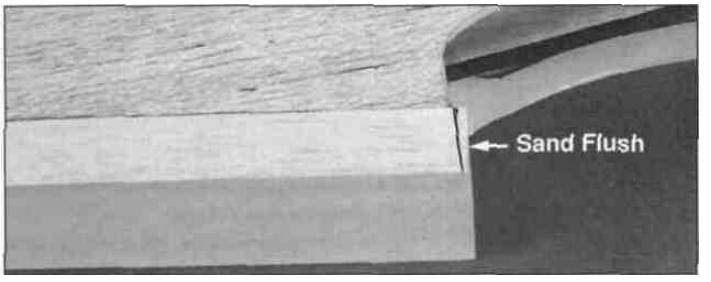


D 1. Make four 1/16" x 1/4" x 1/2" balsa **shims** from leftover. Spot glue these shims to the die-cut 1/16" ply cowl ring as shown in the above photo. Center a **2-1/2" spinner** backplate over the cowl ring then spot glue it to the shims.

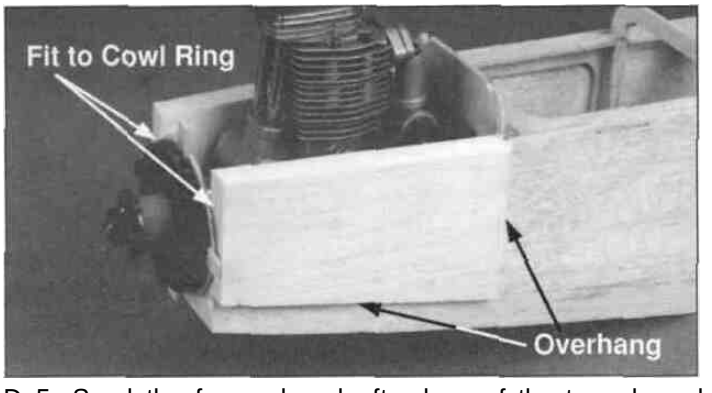
D 2. Slide the cowl ring assembly down the prop shaft and secure it with the prop nut.



D 3. Position the 5/8" x 4" x 10" shaped balsa **cowl bottom** on the bottom of the fuse. Sand the forward edge until it fits flush with the ply spinner ring, then glue it in position.

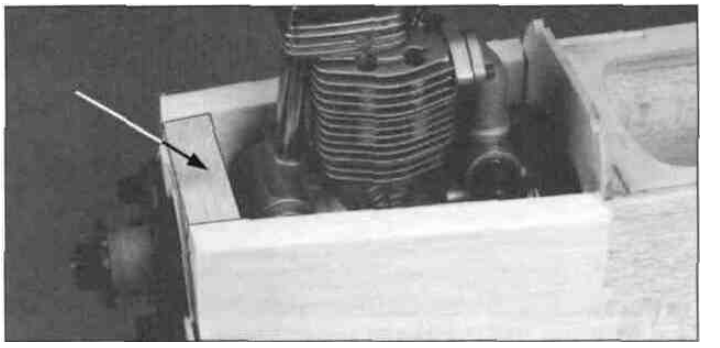


D 4. Sand the aft end of the cowl bottom flush with F-2.



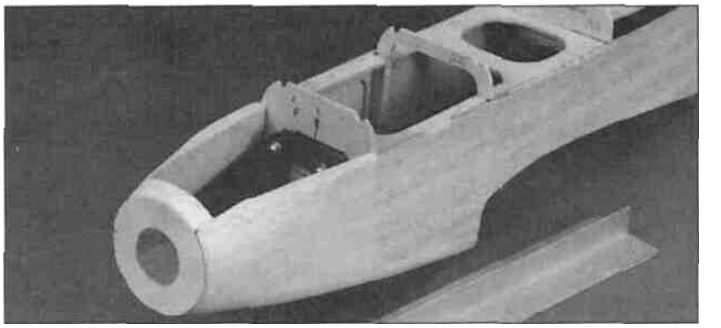
D 5. Sand the forward and aft edges of the two shaped 1/2" balsa cowl sides until they fit evenly between the cowl ring and the firewall. The sides overhang the fuse and cowl bottom about 3/16". Glue the sides in position.

D 6. Cut two 2-3/4" long pieces of **3/8" triangular balsa** from the 9" stick. Glue these pieces to the cowl bottom and the cowl side as shown on the fuse plan.



D 7. Sand both ends of the 1/2" x 5/8" x 2-1/4" balsa **forward cowl filler** to fit between the cowl sides behind the spinner ring. Glue it in place. **Note:** The cowl filler may require a little extra shaping to provide clearance for a 2-stroke carburetor.

D 8. Carefully cut the shims to remove the spinner backplate from the cowl ring. Remove the engine, then sand the cowl ring to remove the shims and glue.

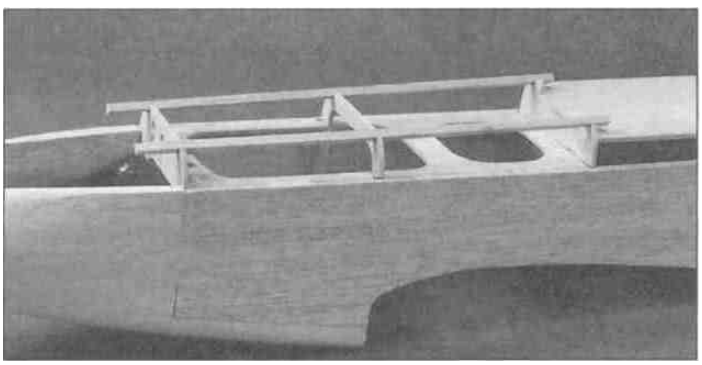


D 9. Use a razor plane, whittling knife, and 80-grit sandpaper to shape the cowl and blend it with the fuse sides and cowl ring as shown on the plans. Re-install the engine and spinner, then finish off the sanding of the cowl ring, tapering it to match the angle of the spinner.

Complete The Fuse Top

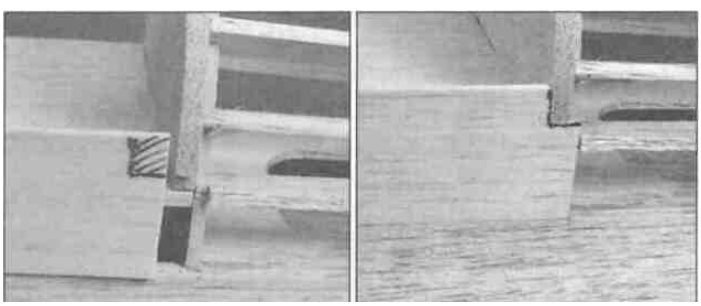
Skip this step if you are building a taildragger

D 1. If you are going to be installing nose gear, you should mark the location of the nose gear wire by inserting an ice pick or sharpened piece of wire through the bearing holes in the engine mount from the top, out through the bottom of the cowl. Enlarge the initial hole to provide clearance for the nose gear wire and spring coil.

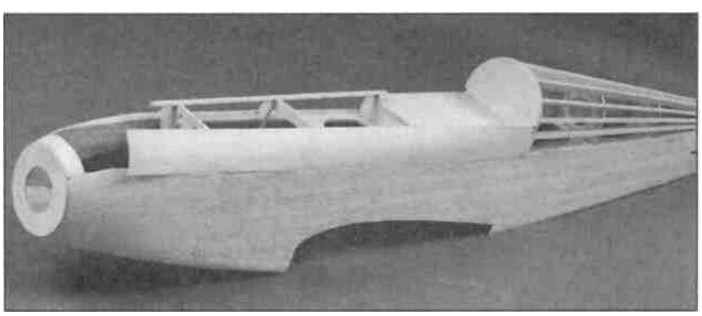


D 2. Cut the 3/16" x 3/16" x 24" balsa stringer into two 10-1/2" long pieces. Glue the stringers into the notches on the corners of F-1A, **F-2C,** and F3-B. The aft end of each stringer should extend past F-3B by 3/8". *They will also overhang F-1A by 7/8".*

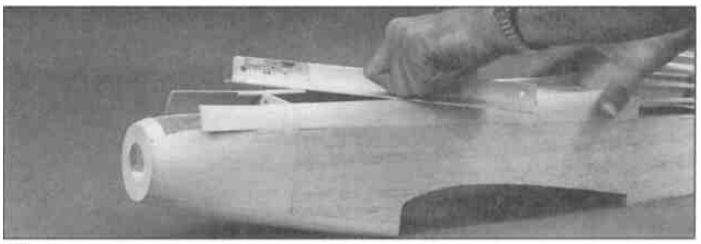
D 3. Cut two 3/32" x 1-1/4" x 18" balsa sheets for the **forward deck sides** from a 3/32" x 2-1/4" x 18" balsa sheet.



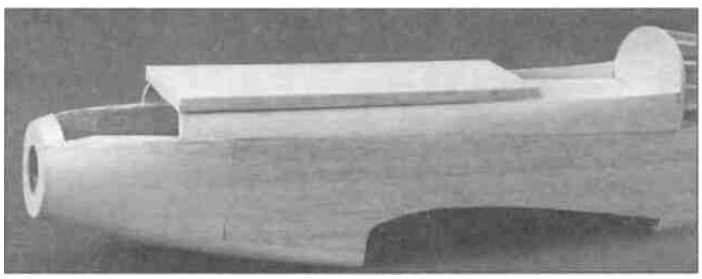
D 4. Hold a sheet against the fuse side, then mark and cut the aft edge to fit the notch you made at F-4B. Check that the outer cockpit floor edges have been sanded to match the F-3B former.



D 5. If the sheet feels too stiff to be curved without splitting, wet the **outside surface** with water, then flex it with the grain several times to soften *it up* before proceeding. Glue the forward deck sides to the top edge of the fuse. Apply a bead of glue to the top stringer, formers, and cockpit floor, then roll the sheet into position. Hold it in place while the CA cures.

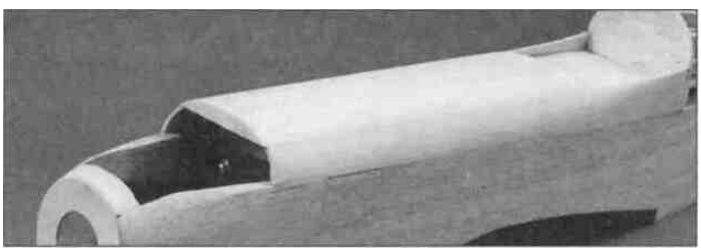


D 6. Trim and sand the top of the forward deck sides and stringers flush with the tops of the formers.

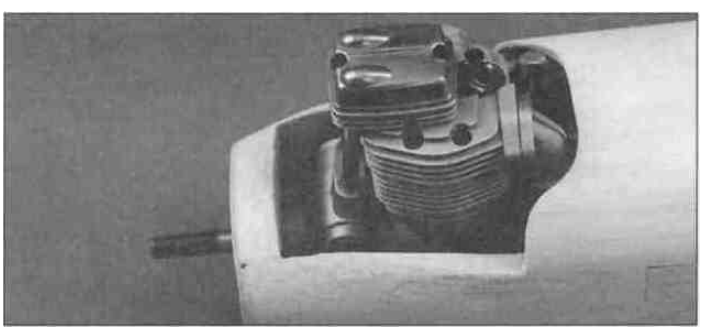


D 7. Bevel one end of the 3/8" x 3" x 12" balsa forward deck top block to match the plans at the instrument panel. Glue the block in position with the aft edge even with the aft edge of the stringers. Cut off the forward deck top block and sides about 1-3/4" forward of the firewall.

D 8. Glue the die-cut 1/32" ply instrument panel to the aft edge of the forward deck top block and to the cockpit floor.



D 9. Use a razor plane and coarse sandpaper to shape the forward deck top block to match the radius shown on the cross sections on the plans.

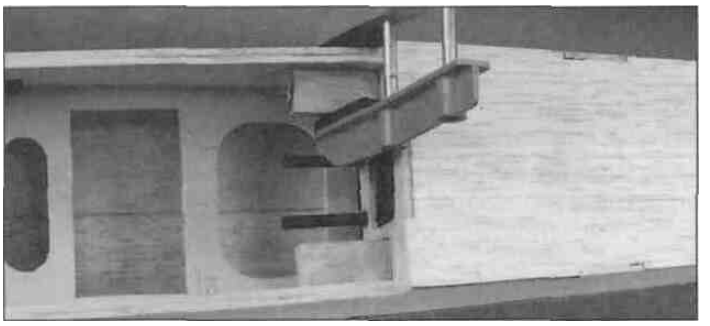


D 10. Use the "eyeball" method to cut and sand the top portion of the cowl to fit around your engine. Work slowly, removing only a little material at a time. Test fit the engine after each adjustment to be sure you don't go too far.

Mount The Wing To The Fuselage

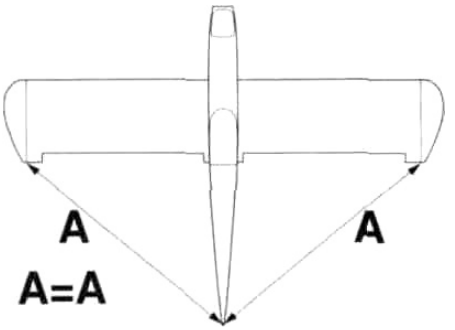
EXPERT TIP

From this point on, the model will need to be supported upside-down. You could invest a few dollars in a Robart Super Stand or cut an old styrofoam ice chest or cardboard box to fit the fuse. Foam padding in the *cradle* will prevent unnecessary hangar rash.

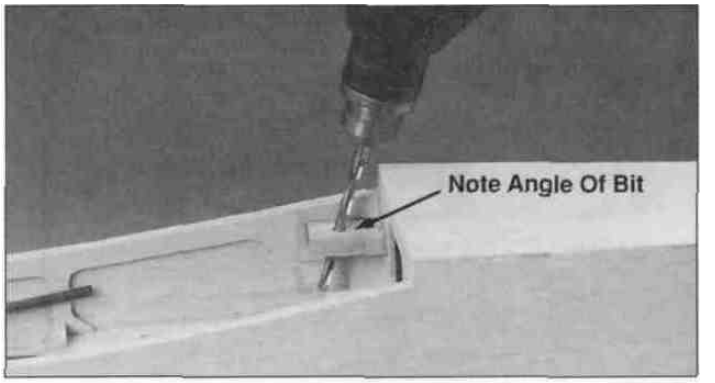


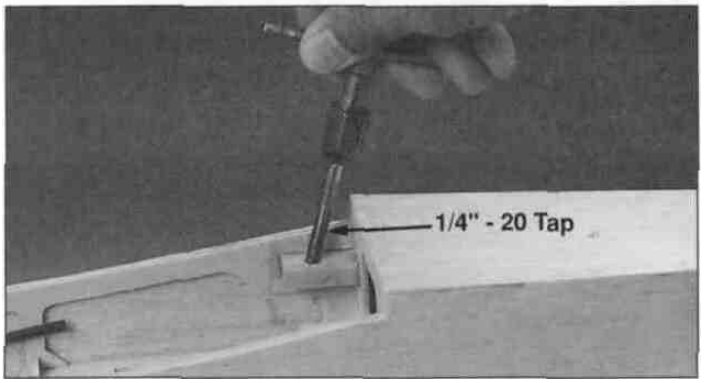
D 1. Use 30-minute epoxy to glue the 3/8" x 3/4" x 1-3/8" hardwood **wing bolt blocks** into the notches at F-4. Add fillets of epoxy all around these blocks, for a secure bond.

D 2. Clean out the wing dowel holes in F-2 with a 1/4" drill bit. Test fit the wing and adjust the dowel holes if needed with a round file.



D 3. Seat the wing in the wing saddle and visually align it with the fuse. Pin a string to the tail post, then extend it out to a wing tip. Put a piece of tape on the string to mark the intersection of the string and the wing tip. Swing the string over to the other wing tip and see if the distances are the same (see diagram). Make slight adjustments to the angle of the wing until the distance from the tail to the tips is equal.

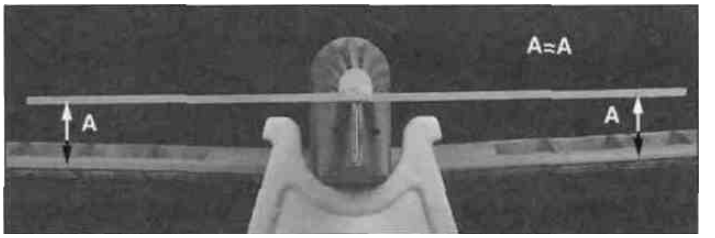




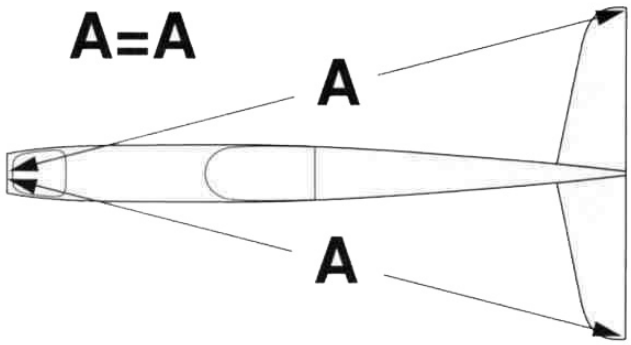
D 4. Tape the wing in position so it can't move. Run a 1/4" drill bit through the holes in the aft end of the wing to **lightly mark** the wing bolt blocks. Do **not** drill a hole with the **1/4" bit.** Remove the wing and drill a 13/64" (or use a #10 drill bit) through each of the wing mounting blocks. Angle the holes as shown on the side view of the fuse plans. Cut threads in each block with a 1/4"-20 tap. Put a couple **of** drops of thin CA on the threads and, after it has fully cured, run the tap back through the holes to clean up the threads. Bolt the wing to the fuse with two nylon 1/4"-20 wing bolts and leave it in place for the next few steps.

Attach The Stab and Fin

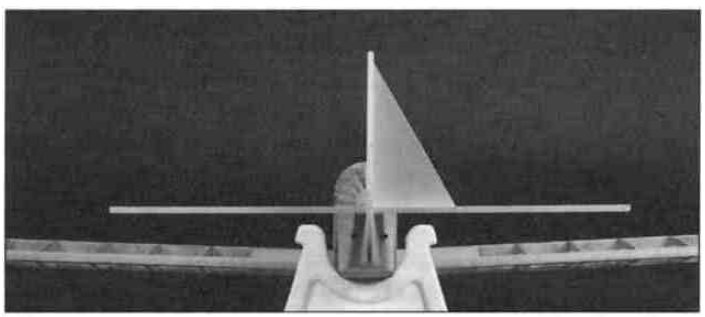
D 1. Draw an accurate centerline on the top of the stab, perpendicular to the TE of the stab. Draw two more lines parallel to the centerline, 1/8" on each side.



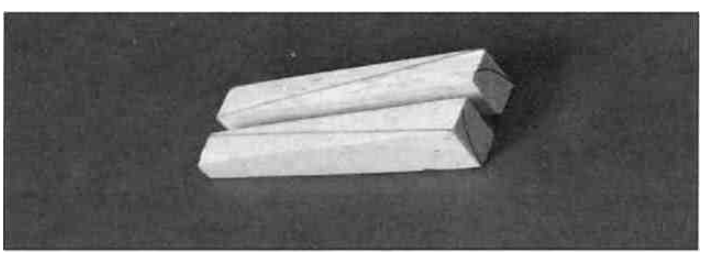
D 2. Center the stab on the stab saddle and pin it in position. Study the aft end of the structure from 6-10 feet back. If the stab tips are not equidistant above the wing, carefully sand the high side of the saddle until the stab is aligned.



D 3. Center the stab visually using the centerline you drew in step #1. Measure the distance from each stab tip to a pin centered at the nose. Use 30-minute epoxy to glue the stab in position.



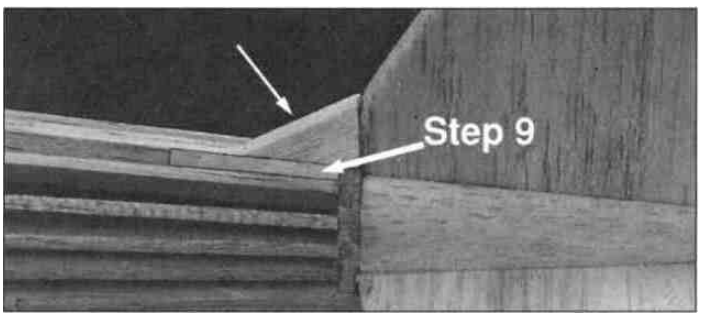
D 4. Position the fin between the lines on the stab, with the stab TE and fin TE flush, then pin it in place. Check that it's aligned with the centerline of the fuse with a long straightedge held against the fin and the fuse top center stringer. Use thick CA to glue the fin in position while holding a triangle against it and the stab to maintain vertical alignment.



D 5. Locate the two 1/2" x 1" x 4-5/8" tapered fin fillets. Draw a diagonal line on the top side (that's the side that slopes) of each part as shown in the photo. Position the fillet blocks against the aft side of F-7C. Trace the curvature on the high end of the fillet blocks.

D 6. Cut along the line with a hobby saw to remove the excess, then use a razor plane and sanding block to round the fillet to match the curved line on its forward edge.

D 7. Use thick CA to glue the shaped fin fillets to the stab, fin, and fuse.



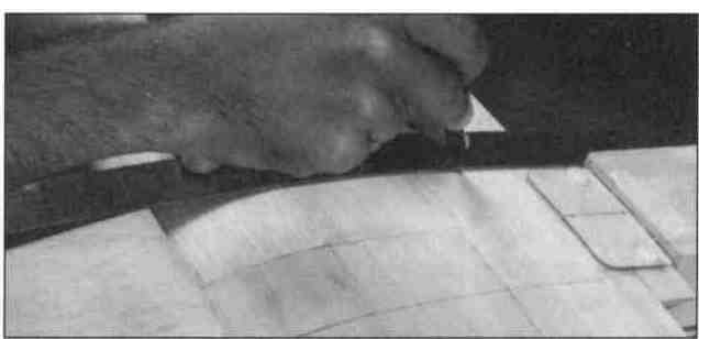
D 8. Glue the 1/4" triangular fin leading edge fairing to the fin and the top stringer. Sand the top edge of the fairing to match the concave shape shown on the plans.

D 9. Fit a leftover of 3/32" sheet between the top stringer as shown in photo for step 8.

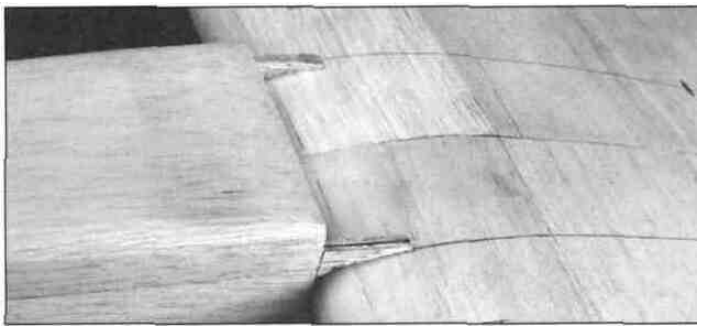
Hang in there. Only a few more things to do before you start covering.

Build The Wing Belly Pan

Note: Before working on the belly pan, we suggest that you remove the wing from the fuse, then insert a layer of waxed paper between the F-2 / LE joint and F-4 / TE joint of the wing. This will help prevent the wing from being accidently glued to the fuse.

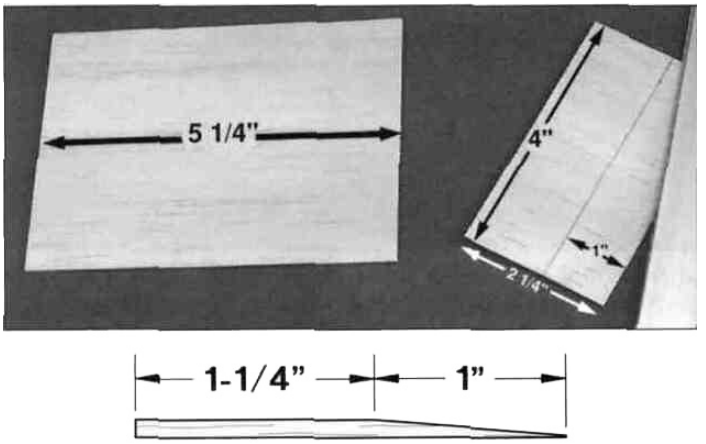


D 1. Hold a flexible ruler across the bottom of the wing, touching the fuse at both the forward and trailing edges. Draw lines on both sides of the wing bottom as shown.



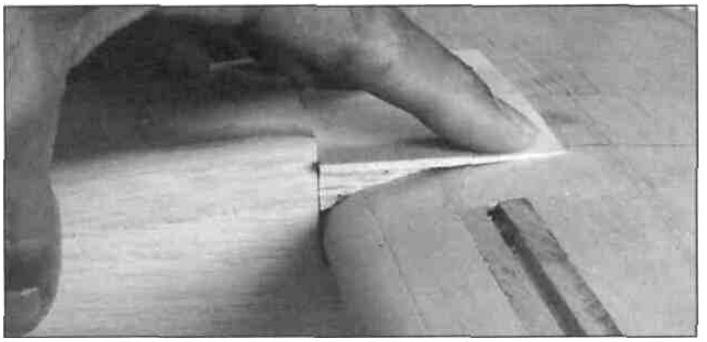
D 2. Glue two die-cut 3/32" balsa **forward belly pan sides** together for both sides of the belly pan. Glue these assemblies to the bottom of the wing, flush with the inside of the lines you just drew, touching F-2.

D 3. Fit the die-cut 3/32" balsa **forward belly pan filler** between the two belly pan sides and the LE of the wing. The top of the filler piece must be flush with the top edges of the belly pan sides.



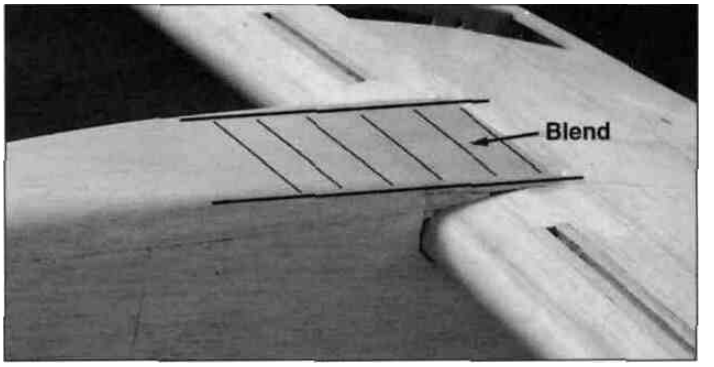
(ACTUAL SIZE)

D 4. Cut a 3/32" x 2" x 15" balsa sheet in half to make two 7-1/2" pieces. Edge glue two 3/32" x 2" x 7-1/2" balsa **belly pan sheets** together. Cut 2-1/4" from the 7-1/2" dimension. Sand a taper across the aft 1" width of the 2-1/4" sheet. The taper should look like a *chisel* point.



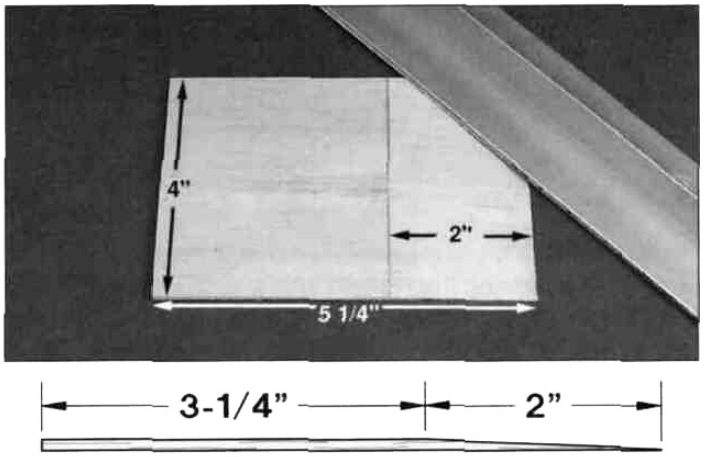
D 5. Glue the 2-1/4" belly pan sheet to the side pieces, forward filler, and the wing sheeting.

D 6. Use the lines you drew in step 1 to sand the sheet to the correct width.



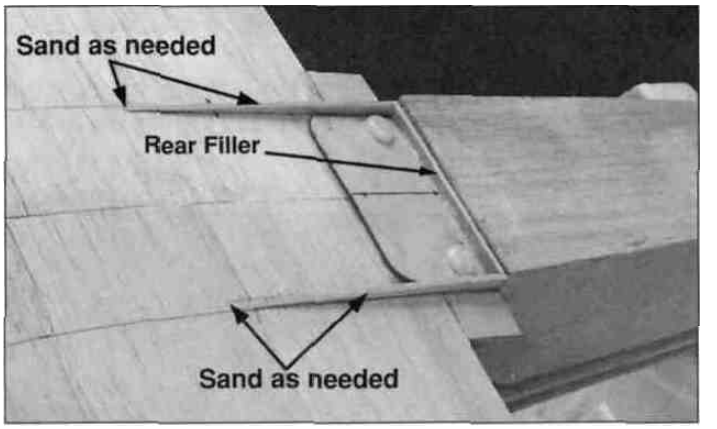
D 7. Razor plane and sand the aft end of the bottom cowl block to blend with the belly pan. *The shaping should start at about the location of the firewall.* Sand the bottom two corners to match the radius shown on the cross section **of** the plans.

D 8. The remaining piece of **belly pan sheeting** should be 5-1/4".

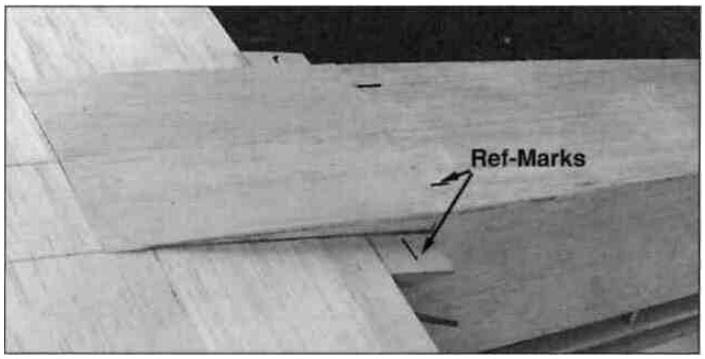


(NOT ACTUAL SIZE)

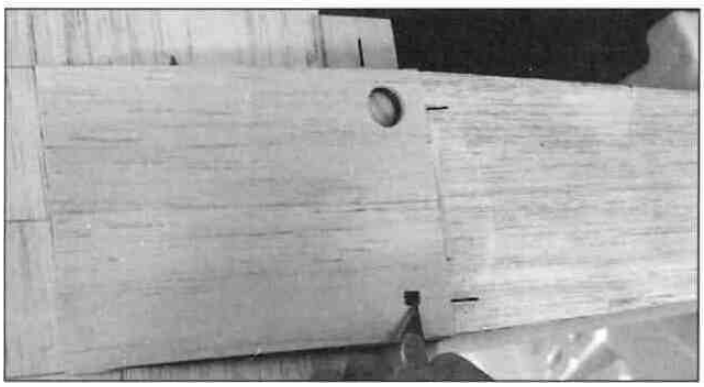
D 9. Draw a line 2" from one end, across the 4" width. Sand the sheet to a *chisel* point, tapering from the line to one edge.



D 10. Glue the two die-cut 3/32" x 5" **aft belly pan sides** along the inside edges of the lines drawn on the wing. The wide end should be touching F-4. Refer to the fuse plans, then lightly sand the aft belly pan sides to maintain a straight line from the aft fuse bottom when the sheeting is applied. Glue the die-cut 3/32" balsa **rear filler** between the two sides and the wing.



D 11. Draw a couple of **reference marks** on the TE and the fuse to help locate the wing mounting bolts, then glue the aft belly pan sheet to the sides, aft filler, and wing sheeting. Trim the edges to match the fuse lines.

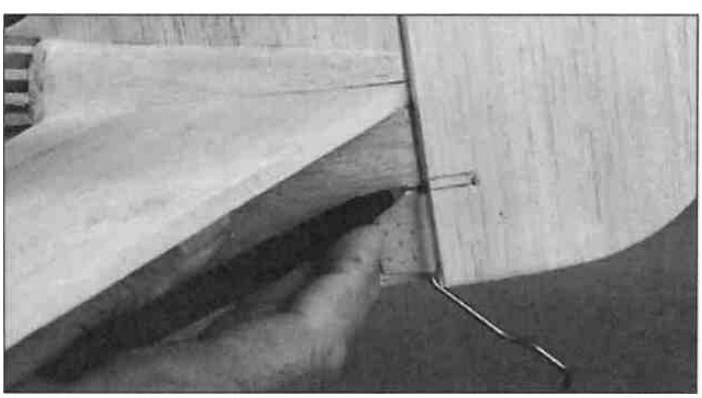


D 12. Use a pin and the reference marks to locate the wing bolt heads. Cut a small (1/8" square) opening to see exactly where you are in relation to the bolt head, then enlarge the hole in a circular fashion — a little at a time — until the wing bolts can be removed.

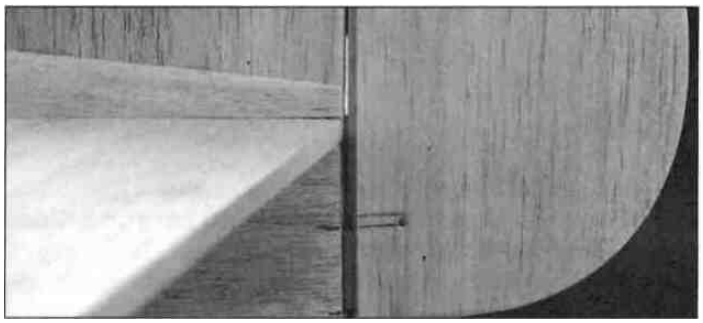
D 13. Sand the aft belly pan to blend with the fuse and the wing. Remove the wing and clean up the LE and TE of the belly pan.

Install The Tail Gear

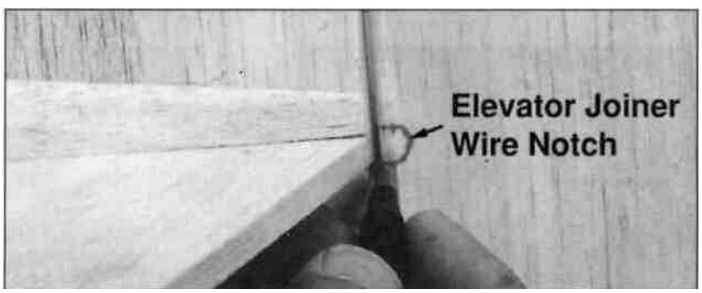
D 1. Insert the tail gear "arm" into the hole you made in the rudder, then hold the rudder up to the fin. Center the rudder top to bottom.



D 2. Mark the location of the **tail gear bearing** on the aft edge of the fuse. Cut a slot in the center of the tail post to accept the tail gear bearing. **Hint:** Use a 1/16" bit to drill several closely spaced holes, then connect the holes using a hobby knife.



D 3. Temporarily install the bearing and rudder. The **rudder should fit flush** with the fin and aft edge of the fuse. If not, check if the bearing is fully seated or that the groove in the rudder is deep enough. The bearing won't be glued in place until after the model is covered.

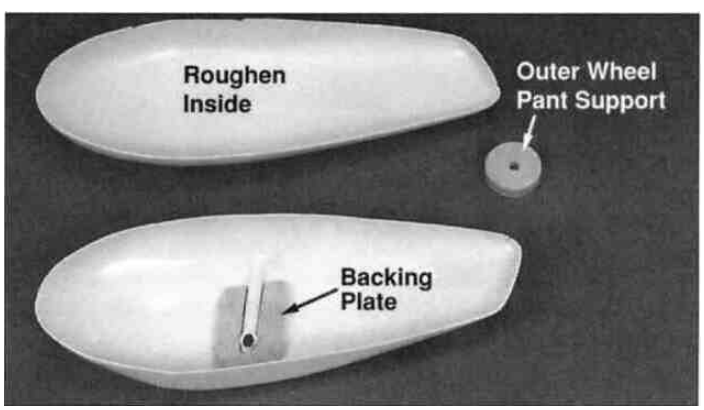


D 4. While you have the rudder in position mark the location of the elevator joiner wire on the rudder. Use a round file or Dremel tool to grind a half-round notch to provide clearance for the joiner wire.

Assemble The Wheel Pants

D D 1. Use a sharp #11 blade in a hobby knife to score around the cut-lines of the right and left halves of both **wheel pants.** By flexing the plastic, the excess material will break free — if not, carefully repeat the scoring operation, then try again.

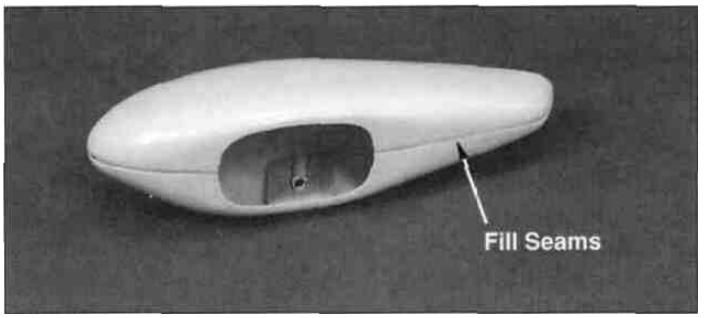
D D 2. Sand the mating surfaces with coarse sandpaper.



D D 3. Drill a 5/32" hole through the **inside halves** of both pants at the bottom of the groove for the landing gear leg.

Roughen the inside of the pants around the gear leg hole, then glue a die-cut 1/8" ply **backing plate** to the inside of each **grooved** half Roughen the inside of the opposite wheel pant half but don't glue the **outer wheel pant support** in position until final assembly

D D 4 Join the two halves of the wheel pants by holding them together, then flowing a few drops of thin CA into the seam. Hold the parts together until the CA cures. Accelerator will attack the plastic, so avoid using it.



D D 5 Cut out the opening for the wheels on the bottom of the pants with a sharp hobby knife Round off the inside edges with a round file or Dremel Moto-Tool" and sanding drum.

D D 6 The seams should be filled with Automotive body filler (Bondo) then sanded smooth in preparation for painting *We will cover installation after finishing.*

FINISHING

Many surface blemishes on a framed model are caused by bumps and balsa chips on the work surface This type of ding" is best repaired by applying a drop or two of window cleaner or tap water to the blemish, then running a sealing iron over the spot to expand the wood fibers After the surface has dried, sand the *expanded area* smooth

Final Sanding

D 1 Fill any scuffs, dings, and the forward end of the pushrod tube exit slots with balsa filler After the filler has hardened, cut the pushrod tubes flush with the fuse sides, then sand the entire structure with progressively finer grades of sandpaper, ending with 320-grit.

Fuelproofing

Fuelproofing may be done either before or after covering

D 1. Fuelproof the engine compartment paying special attention to the firewall K&B paint or 30-minute epoxy is recommended

D 2 Fuelproof any external exposed wood and the inside of the fuel tank compartment

Balance The Airplane Laterally

SPECIAL NOTE: Do not confuse this procedure with "checking the C.G." or "balancing the airplane fore and aft." That very important step will be covered later in the manual.

Now that you have the basic airframe nearly completed, this is a good time to balance the airplane **laterally** (side-to-side) Here is how to do it

D 1 Temporarily attach the wing and engine (with muffler) to the fuselage

D 2 With the wing level, lift the model by the engine propeller shaft and the fin post (this may require two people). Do this several times.

D 3. If one wing always drops when you lift the model, it means that side is heavy Balance the airplane by gluing weight to the other wing tip.

Note: An airplane that has been laterally balanced will track better in loops and other maneuvers.

Cover The Structure With MonoKote

The Super Sportster 40 Mk II does not require much painting to obtain the scheme shown, on the box, as most of the finish is done with **Top Flite MonoKote** The only painting required is for the wheel pants

The technique we will describe here is the how the model pictured on the box was finished Make sure the structure is smoothly sanded with 320-grit sandpaper Remove all dust from the structure with a **Top Flite Tack Cloth** so the MonoKote will stick well

Cover the aircraft with MonoKote using the sequence below Make sure the MonoKote is thoroughly stuck down to the structure and all of the edges are sealed Use a **Top Flite MonoKote Hot Sock** on your covering iron to avoid scratching the MonoKote.

MONOKOTING TECHNIQUE

You can practically eliminate MonoKote wrinkles that sometimes occur when the model is left out in the sun or in the back of your car by following this technique used in the **Great Planes** model shop:

A Cover your sealing iron with a **Top Rite Hot Sock** and turn the heat about 3/4 of the way to the high setting.

B Say we are going to cover the Stab cut a piece of MonoKote film about 2" larger all around Strip off the backing and position the film Tack the film down **smack dab in the middle of the Stab.**

C. Pull (as in stretch) the film toward the tip, sealing it to the balsa from **the center out to the tip** Work out any **wrinkles and air pockets** as you proceed with a combination of **circular and back and forth motion.**

D Do the same procedure working the **opposite direction** from the center.

E Pull and seal **diagonally toward the four corners,** always starting from the center The trick is to shrink out any wrinkles before you seal the film tothe surface.

F. Use a heat gun to heat and stretch the film around curved surfaces like the stab and rudder tips, while pulling on the excess material You may need to pull hard to get out all of the wrinkles, so wear a glove if you need to. Follow-up the heat gun with your sealing iron to secure the bond.

The idea behind this approach (which can be applied to any part of the model) is to **pre-stretch the MonoKote** as it's applied, and remove the air pockets that can expand later which cause the sags and wrinkles

When covering areas that involve sharp junctions, like the tail section, cut narrow strips (3/8" to 1/2") and apply them in the corners **before** covering the major surfaces The larger pieces of MonoKote will overlap and capture these smaller pieces This technique also bypasses the need to cut the MonoKote in these areas after it has been applied **DO NOT, under any circumstances, attempt to cut the covering material after it has been applied to the fin and stab, except around the leading and trailing edges and the tip.** Modelers who do this often cut through the covering and part-way into the balsa stab This can weaken the stab to the point where it may fail in flight'

Recommended Covering Sequence

1. Tail Junction Strips as described above
2. Rudder left and right side
3 Bottom of elevators
4. Top of elevators
5. Stab bottom
6 Stab top
7. Fin left and right side
8. Fuse bottom
9 Fuse sides
10 Fuse top
11. Ends of ailerons
12 Bottom of ailerons
13. Top of ailerons
14. TE surfaces of wing and belly pan
15 Bottom of left wing panel
16 Bottom of right wing panel
17 Sides and bottom of belly pan
18 Top of left wing panel (overlap covering 1/4" at wing LE and wing centerline)
19 Top of right wing panel (overlap covering 1/4" at the LEandwingcenterline)

Painting (Wheel Pants)

Paints used on the prototype:

We used *K & B Super Poxy* primer and color coat.

Surface Preparation:

Mix **equal parts** of K & B primer, hardener, and thinner, then stir the mixture well Spray the **wheel pants** with a **thin** coat of primer Add a second coat of primer to areas that need it Its best to allow the primer to dry overnight before sanding Wet sand the primer with 320 and 400 grit sandpaper using a sanding block where possible Most of the primer should be sanded off

Color Application:

The wheel pants were sprayed with K & B Super Poxy We custom mixed the paint to match the Red MonoKote by adding a little #8116 Yellow to their standard #8113 Red color Keep a swatch of MonoKote handy to test and compare the color on a regular basis All paints dry slightly darker than they appear while wet Spray on the color **coat** when satisfied with the match.

K & B paints are not difficult to use if you have spray equipment or an airbrush Use equal parts of the mixed color paint (Part A) and gloss hardener (Part B),then stir well Use about 1/3rd of the total volume of parts A and B combined of K & B thinner Remember to use an approved respirator or mask

Final Hookups And Checks

Install The Control Surfaces

***We** have found that it's much simpler to do all hinging and control horn installation after the model is covered*

Note: Refer to the fuse plan for the hinge making instructions Cut 15 hinges from the 2" x 9" supplied material

D 1 Install the **elevator joiner wire** by thoroughly cleaning the "arms with rubbing alcohol and roughening them with coarse sandpaper Fill the holes you drilled in the elevators with 30-minute epoxy then insert the wire arms all the way in Make sure that both elevators are flat on the work surface and are straight along the hinge line

D 2 After the epoxy has cured, attach the elevator assembly to the stab with six hinges using the technique described in the **Expert Tip section following these four steps** After the CA has cured, flex the elevators to check for free movement

D 3 Cut the hinge slots for the rudder and test fit the rudder to the fin with the tail gear in position When satisfied with the fit remove the rudder Then use 30-minute epoxy to fasten the tail gear bearing into the fuse Coat the wire where it passes through the bearing with petroleum jelly to prevent it from becoming glued to the bearing

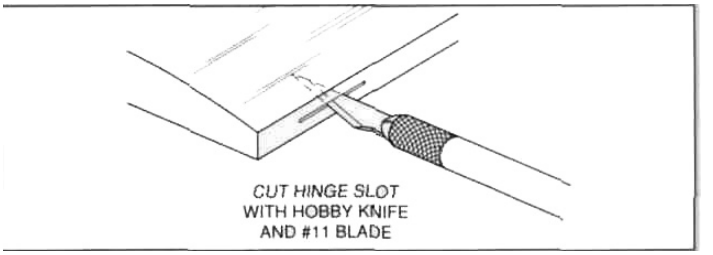
D 4 Pack the tail gear hole in the rudder with epoxy, then install the rudder in the same way as the elevators, using three hinges Use a tissue dampened with alcohol to remove any excess epoxy that squeezes out

EXPERT TIP

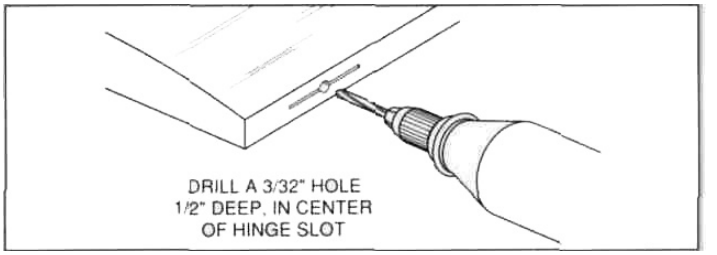
The hinge material supplied in this kit consists of a 3-layer lamination of mylar and polyester It is specially made for the purpose of hinging model airplane control surfaces Properly installed this type of hinge provides the best combination of strength, durability and ease of installation We trust even our best show models to these hinges, but **it is essential to install them correctly**

Please read the following instructions and follow them carefully to obtain the best results These instructions may be used to effectively install **any** of the various brands of CA hinges, a

The most common mistake made by modelers when installing this type of hinge is not applying a sufficient amount of glue to fully secure the hinge over its entire surface area or, the hinge slots are very tight restricting the flow of CA to the back of the hinges This results in hinges that are only 'tack glued approximately 1/8" to 1/4" into the hinge slots The following technique has been developed to help ensure thorough and secure, gluing



A Cut the hinge slot using a #11 blade in a standard #1 knife handle The CA hinges provided have a thickness that fits this type of slot very well Trial fit the hinge into the slot If the hinge does not slide in easily, work the knife blade back and forth in the slot a few times to provide more clearance (it is really the **back edge** of the blade that does the work here in widening the slot)



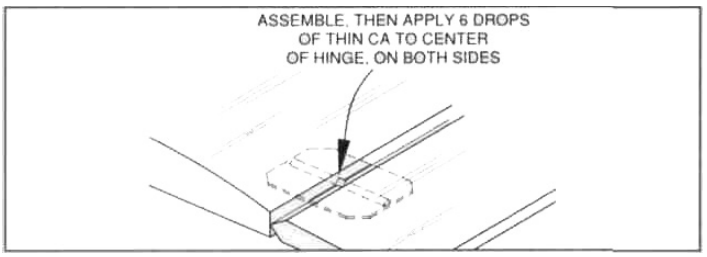
B Drill a 3/32" hole, 1/2" deep, in the center of the hinge slot. If you use a Dremel Moto-Tool for this task, it will result in a cleaner hole than if you use a slower speed power or hand drill Drilling the hole will twist some of the wood fibers into the slot, making it difficult to insert the hinge, so you should re-insert the knife blade working it back and forth a few times to clean out the slot

C Trial fit the hinges into the slots and temporarily attach the control surface to verify the fit and operation

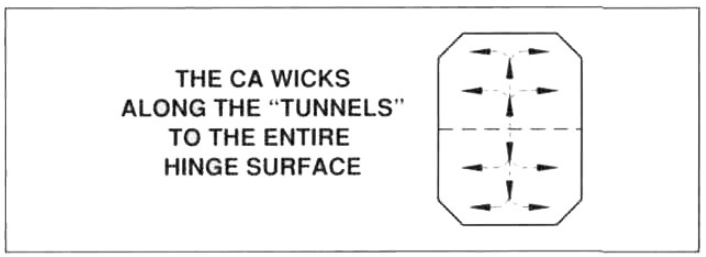
D Rather than just making a single slit, it is better to cut away a narrow rectangle of covering to provide an adequate opening for the CA glue to wick into the slot

E Insert the hinges and install the control surface Verify the left right positioning of the control surface and close up the hinge gap to 1/32" or less It is best to leave a very slight hinge gap rather than closing it up tight, to help prevent the CA from wicking along the hinge line Make sure the control surface will deflect to the recommended

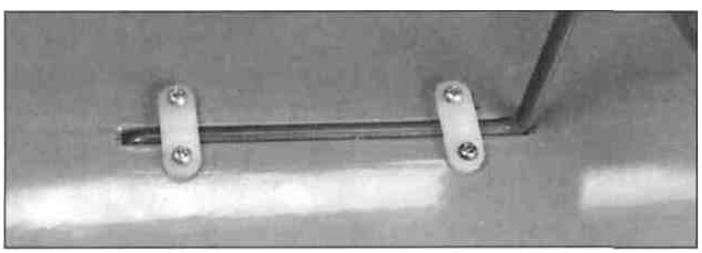
throws without binding If you have cut your hinge slots too deep, the hinges may slide in too far, leaving only a small portion of the hinge in the control surface To avoid this, you may **insert a small pin** through the center of each hinge, before installing This pin will keep the hinge centered while installing the control surface Remove the pins before proceeding.



F. Apply 6 drops of thin CA adhesive to both sides of each hinge, allowing a few seconds between drops for the CA to wick into the slot Note that the small tunnels" you created by drilling the 3/32" holes allow the CA to freely travel in to the entire surface of the hinge, producing an extremely secure bond



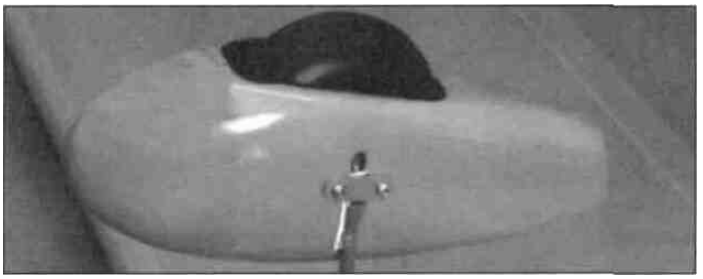
Install The Landing Gear and Canopy



D D 1 Seat the landing gear in the groove on the bottom of the wing Secure it with two nylon straps and four #2 x 3/8" sheet metal screws.

Note: Do a dry run before gluing the outer wheel pant supports in position You may need to adjust the "supports" thickness

D D 2 Refer to the plans to see how the wheels are installed in the wheel pants Start the sequence by inserting the landing gear into the wheel pant Then slide on a **5/32" wheel collar,** followed by the **wheel** Work a **second** wheel **collar** into position, then seat the outer wheel pant support on the axle Work a little 6-minute epoxy onto the back side of the outer wheel pant support then align the pant with the wing Press the support into position and hold it while the epoxy cures



D D 3 Attach the wheel pant to the landing gear leg with a **nylon strap** and two #2 **x 3/8" sheet metal screws.** Tighten the wheel collars

D 4 Secure the tail wheel to the tail gear with two **3/32" wheel collars.**

D 5 Paint the inside of the cockpit flat black (your option) Trim and install the instrument panel decal

D 6 Trim the canopy with scissors using the embossed cut lines for reference

D 7 Position the canopy on the fuse as shown on the plans, then lightly trace its edges on the covering with a ball point pen Trim about a 1/16" wide strip of covering from around the line you just traced By removing covering the canopy will adhere better

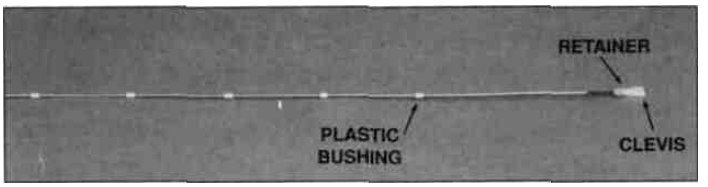
D 8 Before installing the canopy you may wish to add a pilot figure We used a Williams Bros #184 Sportsman" pilot but the torso needed shortening to fit the canopy height Use the photo on the side of the box for reference.

D 9 Clean the inside of the canopy with window cleaner and allow it to dry Use R/C-56 or 6-minute epoxy to glue the canopy in position After the glue has cured use 1/4" trim tape to conceal the edges

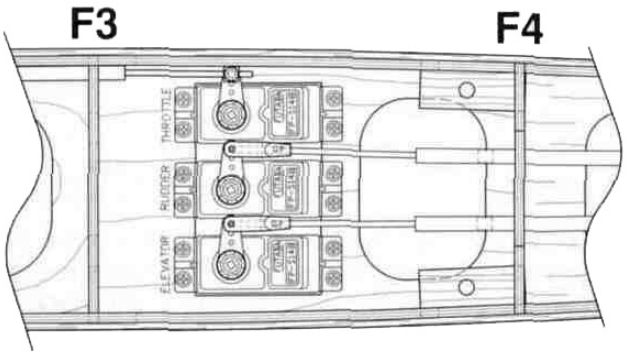
Radio Installation

Note: If you are installing a 4-stroke or heavy engine, you should wrap a flat battery pack with 1/4" foam rubber and install it between the servo tray and the cockpit floor (as shown in the photo for step #5) before mounting the servos

D 1 Mount three servos in the servo tray following the manufacturer s recommendations Install 'cross" style horns on all servos, cutting off the unused arms

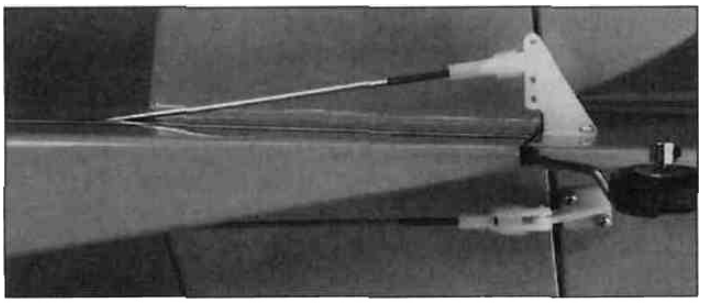


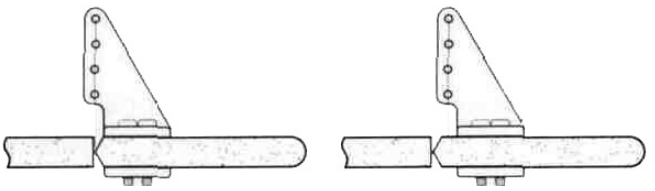
D 2. Slide a silicone retainer over the "hex" end of a **nylon clevis.** Screw the clevis 14 turns onto the threaded end of a **36" wire pushrod.** Cut the unthreaded end to shorten the wire to **24".** Cut five **1/4" bushings** from the plastic inner pushrod tube provided in the kit. Slide the bushings on the wire pushrod, spacing them about 3" apart as shown on the plans. If they are too loose, put a drop of thin CA on the pushrod wire at each bushing to hold them in place. **Locate the two bushings on both ends so that they will not exit the pushrod tubes.** Trim the backing plate from a **nylon control horn,** then clip the clevis to the outer hole of the horn. Make a second pushrod assembly exactly the same as the first.



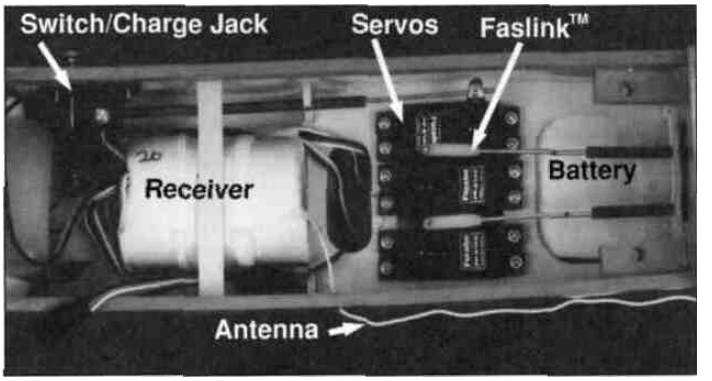
ALTERNATE SERVO LAYOUT
FOR A 4-STROKE TAILDRAGGER

D 3. Refer to the plans to determine which side the elevator and rudder pushrods will exit the fuse.





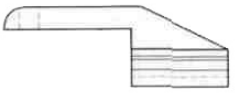
D 4. Insert the pushrods into the tubes in the fuse, then hold a horn in position on either the elevator or rudder (see sketch above for correct alignment). The pushrod should not be bent and should slide easily in the tube. Mark the location for the horn screws on the control surface. Drill the 3/32" horn screw holes through the control surface, then prick a few pin holes into the wood under the horn's location. Apply a drop or two of thin CA to the pin holes to strengthen the wood. When cured, screw the horn in place with two 2-56 machine screws and the backing plate. Repeat for the other control surface.



The photo shows a 4-Stroke, Taildragger Setup
(Refer to this photo when performing steps 5 thru 11)

D 5. Connect the receiver to the servos, switch, and battery. Turn on your transmitter and receiver, then center the elevator and rudder servos. *Be sure that the trim levers are centered.*

D 6. Center the elevator, then mark the pushrod where it crosses the outside servo horn hole. Enlarge the servo horn hole with a 5/64" drill bit.



D 7. Make a 90° bend in the pushrod on your mark then insert it through the enlarged hole in the servo horn. Secure it in place with a **nylon Faslink".**

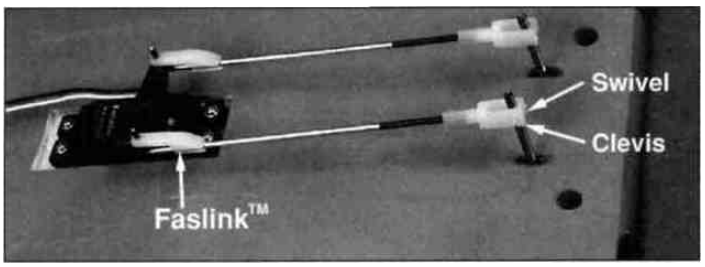
D 8. Repeat steps 6 and 7 for the rudder.

D 9. Hook up the throttle using a brass quick connector on the servo horn. Make sure that the servo does not stall at either end of its travel.

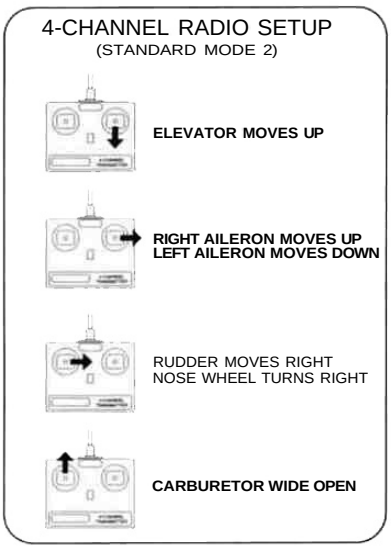
D 10. Wrap your receiver in a plastic bag, then wrap with foam rubber. Secure the foam with a couple of rubber bands.

D 11. Route the antenna out of the fuselage side as shown in the photo at step 5. Anchor the antenna to the top of the fin or to the tail gear wire with a rubber band. Do not trim any excess wire from the antenna.

D 12. Mount the receiver switch and charging Jack through the fuselage on the side of the fuse opposite to the muffler exhaust. We suggest using a Great Planes **Switch/Charging jack mount** (GPMM #1000) because of its ease of installation and tidy appearance.



D 13. Install the aileron servo as shown using two **6" wire pushrods, swivel clevises,** and **Faslinks.** We suggest that the swivels be screwed 1/4" below the top edge of the aileron torque rod arms to start with. *Lowering the swivels will cause the ailerons to deflect more if you need more throw.*



D 14. Turn on the radio system and check the direction of all control functions. They must all move in the direction shown in the sketch. If not, change the position of the reversing switches on your transmitter.

Control Surface Throws

We recommend the following control surface throws:

Note: Throws are measured at the **widest part** of the elevators, rudder, and ailerons. Adjust the position of the pushrods at the control/servo horns to control the amount of throw.

ELEVATOR:

(High Rate)	(Low Rate)
1/2" up	5/16" up
5/8" down	3/8" down

RUDDER:

1-3/8" right
1-3/8" left

AILERONS:

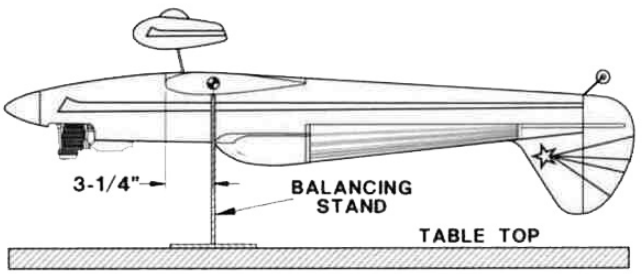
(High Rate)	(Low Rate)
5/16" up	3/16" up
5/16" down	3/16" down

Note: If your radio does not have "dual rates," then set up the control surfaces to move between the **high rate** and **low rate** throws.

Note: The balance and surface throws for this aircraft have been extensively tested. We are confident that they represent the settings at which the Super Sportster 40 Mk II flies best. Please set up your aircraft to the specifications listed above. If, after a few flights, you would like to adjust the throws to suit your tastes, that's fine. Too much throw can force the plane into a stall, so remember, *"more is not better"*

Balance Your Model

Note: This section is VERY important and must NOT be omitted! A model that is not properly balanced will be unstable and possibly unflyable.



D 1. Accurately mark the balance point on the **top** of the wing on both sides of the fuselage. The balance point is shown on the plan (CG), and is located **3-1/4" back from the leading edge** as shown in the sketch and on the plans. **Hint:** Use the full-size wing plan to help you accurately locate the proper balance point on the wing. This is the balance point at which your model should balance for your first flights. Later, you may wish to experiment by shifting the balance up to **1/4" forward or back** to change the flying characteristics. Moving the balance **forward** may improve the smoothness and arrow-like tracking, but it may then require more speed for takeoff and make it more difficult to slow down for landing. Moving the balance **aft** makes the model **more agile** with a lighter and snappier "feel" and often improves knife-edge capabilities. In any case, **please start at the location we recommend and do not at any time balance your model outside the recommended range.**

D 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an **empty** fuel tank, hold the model upside-down with the stabilizer level.

D 3. Lift the model at the balance point. If the tail drops when you lift, the model is "tail heavy" and you must add weight* to the nose to balance. If the nose drops, it is "nose heavy" and you must add weight* to the tail to balance. **Note:** Nose weight may be easily installed by using a "Spinner Weight" or gluing lead weights into the engine compartment. Tail weight may be added by using Great Planes (GPMQ4485) "stick-on" lead weights, and, later, if the balance proves to be OK, you can open the fuse bottom and glue these in permanently.

** If possible, first attempt to balance the model by changing the position of the receiver battery and receiver If you are unable to obtain good balance by doing so, **then** it will be necessary to add weight to the nose or tail to achieve the proper balance point.*

Preflight

Charge the batteries

Follow the battery charging procedures in your radio instruction manual You should **always** charge your transmitter and receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

Find a safe place to fly

The best place to fly your R/C model is an AMA (Academy of Model Aeronautics) chartered club field Ask your hobby shop dealer if there is such a club in your area and join Club fields are set up for R/C flying and that makes your outing safer and more enjoyable The AMA also can tell you the name of a club in your area We recommend that you join AMA and a local club so you can have a safe place to fly and have insurance to cover you in case of a flying accident (The AMA address is listed on page 2 of this instruction book).

If a club and its flying site are not available, you need to find a large grassy area at least 6 miles away from any other R/C radio operation, like R/C boats and R/C cars and away from houses, buildings and streets A schoolyard may look inviting but it is too close to people, power lines and possible radio interference.

Ground check the model

If you are not thoroughly familiar with the operation of R/C models, ask an experienced modeler to check to see that you have the radio installed correctly and that all the control surfaces do what they are supposed to The engine operation also must be checked and the engine "broken-in" on the ground by running the engine for at least two tanks of fuel **Follow the engine manufacturer's recommendations for break-in.** Check to make sure all screws remain tight, that the hinges are secure and that the prop is on tight

Range check your radio

Wherever you do fly, you need to check the operation of the radio before every time you fly This means with the transmitter antenna collapsed and the receiver and transmitter on, you should be able to walk at least 100 feet away from the model and still have control Have someone help you Have them stand by your model and, while you work the controls, tell you what the various control surfaces are doing.

Repeat this test **with the engine running** at various speeds with an assistant holding the model It the control surfaces are not always acting correctly, **do not fly!** Find and correct the problem first.

Engine safety precautions

Note: Failure to follow these safety precautions may result in severe injury to yourself and others.

Keep all engine fuel in a safe place, away from high heat, sparks or flames, as fuel is very flammable Do not smoke near the engine or fuel, and remember that the engine exhaust gives off a great deal of deadly carbon monoxide. Therefore **do not run the engine in a closed room or garage**

Get help from an experienced pilot when learning to operate engines

Use safety glasses when starting or running engines.

Do not run the engine in an area of loose gravel or sand, as the propeller may throw such material in your face or eyes.

Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you start and run the engine.

Keep items such as these away from the prop' loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects (pencils, screw drivers) that may fall out of shirt or jacket pockets into the prop.

Use a "chicken stick" device or electric starter, follow instructions supplied with the starter or stick Make certain the glow plug clip or connector is secure so that it will not pop off or otherwise get into the running propeller.

Make all engine adjustments from **behind** the rotating propeller.

The engine gets hot! Do not touch it during or after operation Make sure fuel lines are in good condition so fuel will not leak onto a hot engine causing a fire.

To stop the engine, cut off the fuel supply by closing off the fuel line or follow the engine manufacturer's recommendations Do not use hands, fingers or any body part to try to stop the engine Do not throw anything into the prop of a running engine.

AMA Safety Code

Read and abide by the following Academy of Model Aeronautics Official Safety Code

General

1 I will not fly my model aircraft in sanctioned events **air** shows, or model flying demonstrations until it has been proven to be airworthy by having been previously successfully flight tested

2 I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator I will give right of way to and avoid flying in the proximity of full scale aircraft Where necessary, an observer shall be used to supervise flying to avoid having models fly in the proximity of full scale aircraft

3 Where established I will abide by the safety rules for the flying site I use and I will not willfully and deliberately fly my models in a careless reckless and/or dangerous manner

4 I will not fly my model unless it is identified with my name and address or AMA number, on or in the model

5 I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind)

Radio control

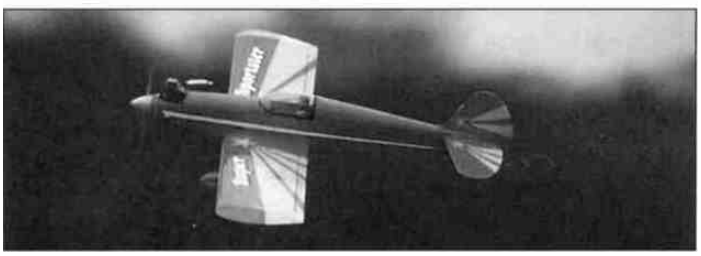
1 I will have completed a successful radio equipment ground check before the first flight of a new or repaired **model**

2. I will not fly my model aircraft in the presence **of** spectators until I become a qualified flier, unless assisted by an experienced helper

3 I will perform my initial turn after takeoff away from the pit or spectator areas and I will not thereafter fly over pit or spectator areas, unless beyond my control

4 I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission

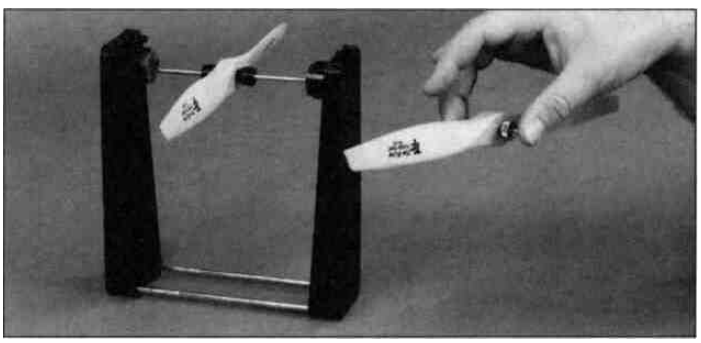
Flying Your Model



The Great Planes Super Sportster Mk II is a great flying sport airplane that flies smoothly and predictably, yet is highly maneuverable Compared to other sport planes, its flight characteristics are quite docile and forgiving It does not however have the self recovery characteristics of a primary R/C trainer therefore you must either have mastered the basics of R/C flying or obtained the assistance of a competent R/C pilot to help you with your first flights

Balance The Propeller

Balance your propellers carefully before flying **An** unbalanced prop is the single most significant cause **of** damaging vibration Not only will engine mounting screws and bolts vibrate out possibly with disastrous effect, but vibration will also damage your radio receiver and battery Vibration will cause your fuel to foam, which will, in turn, cause your engine to run rough or quit



We use a Top Flite Precision Magnetic Prop Balancer (#TOPQ5700) in the workshop and keep a **Great Planes Fingertip Balancer** (#GPMQ5000) in our flight box.

Takeoff

If you have dual rates on your transmitter set the switches to high rate for takeoff especially when taking off in a crosswind Although this model has good low speed characteristics you should always build up as much speed as your runway will permit before lifting off as this will give you a safety margin in case of a flame out When you first advance the throttle and the tail begins to lift the plane will start to turn left (a characteristic of all taildraggers) Be ready for this and correct by applying sufficient right rudder to hold it straight down the runway The left turning tendency will go away as soon as the tail is up and the plane picks up speed Be **sure** to allow the tail to come up. Depending on the surface you are flying from you will need to apply very little to no up elevator until flying speed is obtained Don t hold the tail on the ground with too much up elevator as the Sportster will become airborne prematurely and will possibly stall When the plane has sufficient flying speed lift off by smoothly applying up elevator (don't "jerk" it off to a steep climb[1]), and climb out gradually

CAUTION (THIS APPLIES TO ***ALL*** R/C AIRPLANES) If, while flying, you notice any unusual sounds, such as a low-pitched "buzz," this may be an indication of control surface "flutter" Because flutter can quickly destroy components of your airplane any time you detect flutter you must **immediately** cut the throttle and land the airplane' Check all servo grommets for deterioration (this will indicate which surface fluttered), and make sure all pushrod linkages are slop-free If it fluttered once, it probably will flutter again under similar circumstances unless you can eliminate the slop or flexing in the linkages Here are some things which can result in flutter Excessive hinge gap, Not mounting control horns solidly, Sloppy fit of clevis pin in horn, Elasticity present in flexible plastic pushrods Side play of pushrod in guide tube caused by tight bends, Sloppy fit of pushrod wire in servo arm, Insufficient glue used when gluing in the elevator joiner wire or aileron torque rod, Excessive flexing of aileron, caused by using too soft balsa aileron, Excessive "play" or "backlash" in servo gears, and insecure servo mounting

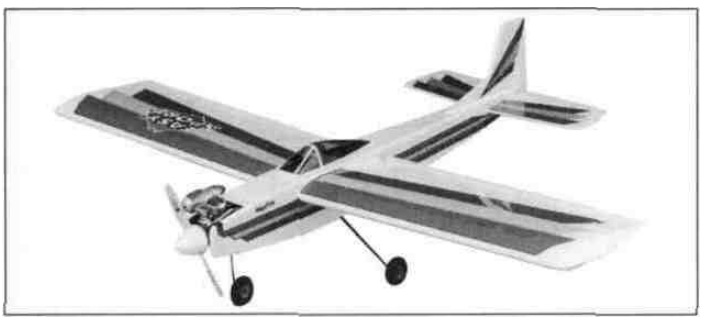
Flying

We recommend that you take it easy with your Sportster for the first several flights, gradually "getting acquainted" with this classic sport plane as your engine gets fully broken-in Add and practice one maneuver at a time, learning how she behaves in each For ultra-smooth flying and normal maneuvers, we recommend using the "low rate' settings as listed on page 32 "High rate" elevator may be required for crisp snap rolls and spins Speed is the key to good knife-edge performance

Landing

When it's time to land, fly a normal landing pattern and approach Keep a few clicks of power on until you are over the runway threshold For your first landings, plan to land slightly faster than stall speed and on the main wheels, as this is the easiest way to land your Sportster Later, with a little technique, you will find you can make slow, 3-point landings

Have a ball! But always stay in control and fly in a safe manner.



EASY SPORT" 40.....GPMA0150
The 59 2" span Easy Sport 40 lets you move up from trainers with confidence While it has the ideal proportions **for** easy, trainer-like low-speed flight, the model s light wing loading and shoulder-mounted wing with symmetrical airfoil increase maneuverability CAD engineering and interlocking, all-wood parts make it easy to assemble. Requires a 2-stroke .35-.46 or 4-stroke .48-.60 engine and 4-channel radio.

PIPER J-3CUB.....GPMA0160
Created from drawings of the original aircraft, Great Planes' Cub kit takes advantage of today's finest engineering, including state-of-the-art interlocking construction Nearly all the wood parts are balsa for easy finishing—and numerous scale details provide irresistible realism The kit can be built with a 76 5" span or clipped 61 5" span wing. Required are a 2-stroke 40-.60 or 4-stroke 48- 80 engine and a 4-channel radio.

F-15EAGLE.....GPMA0438
Any pilot who's mastered a trainer can build and fly this 47" span, jet-like sport model Its Auto-Lock'" construction simplifies assembly, and two degrees of wing washout provide reassuring flight stability But the F-15 is virtually indistinguishable from a powerful dueled fan jet in the air' Requires a 2-stroke 40-.50 engine and 4-channel radio with 4 servos.

GREAT PLANES®
MODEL MANUFACTURING COMPANY

TWO VIEW

Photocopy this drawing and use the copies to design your trim scheme.