

F4U Corsair



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 INSTRUCTION MANUAL FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.



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(217)398-8970

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

Your F4U Corsair is not a toy, but rather a sophisticated, working model that functions very much like an actual airplane.

Because of its realistic performance, the Corsair, 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 2,300 chartered clubs across the country. Through any one of them, instructor training programs and insured newcomer training are available.

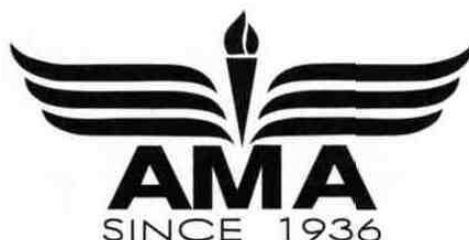
Contact AMA at the address or toll-free phone number below:

Academy of Model Aeronautics

5151 East Memorial Drive

Muncie, IN 47302-9252

(800) 435-9262



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.

Please inspect all parts carefully before starting to build. If any parts are missing, broken or defective, or if you have any questions about building or flying this model, please give us a call at (217) 398-8970 and we'll be glad to help.

Introduction

Thank you for purchasing the Great Planes F4U Corsair 40 to build as your next project! This kit has been engineered using state-of-the-art Computer Aided Design technology to provide the best parts fit and interlocking construction available. The result is a kit that builds easily and flies great.

The Great Planes F4U Corsair .40 has been designed to be built *flat on the board*. It is a super-flying model with no bad traits. Anyone who has had a little taildragger time will not experience any difficulty with ground handling or flying. With a hot 40 or .46, the Great Planes Corsair will do all the tricks in the book, and at a very exciting pace. Install a non-Schnuerled engine and enjoy a more relaxed flying experience - but one that still allows most common flight maneuvers.

The Corsair .40 is equally at home on a paved runway or operating from a grass strip. The construction is tough and there are no retracts to worry about, so rough fields can be handled with confidence. The thick, high-lift airfoil with built-in washout allows the model to slow down for smooth landings without the need for flaps.

To fully enclose the engine within the Corsair's cowl, we suggest using a 2-stroke engine with a Pitts-style muffler. There is plenty of room to install up to a 70 4-stroke if you choose. However, the top of the cylinder head and exhaust pipe/muffler will protrude through the cowling.

We hope you enjoy your Great Planes F4U Corsair .40 as much as we do. It's a blast to fly!

Decisions You Must Make

Engine Selection

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

Other Items Required

- D Four-channel radio with four servos
- D Propeller (Top Flite® Power Point®)
- D 10 oz Fuel tank (GPMQ4104)
- D Medium fuel tubing (12") (GPMQ4131)
- D 2-3/4" Main wheels (2) (GPMQ4224)
- D 1" Tail wheel (1) (GPMQ4241)
- D 5/32" Wheel collars (4) (GPMQ4306)
- D 3/32" Wheel collars (2) (GPMQ4302)
- D Aluminum spinner nut (GPMQ4630 - 1/4")
(GPMQ4631-5/16")
- D Covering film (2) rolls (Top Flite® MonoKote®)

- D 2-1/2" Pilot figure (Williams Bros #176)*
- D 1/4" Latex Foam Rubber Padding (HCAQ1000)
- D Easy Fueler" fuel filling valve (GPMQ4160)*
- D Switch and Charge Jack (GPMM1000)*
- D Paint for cowl (Top Flite@LustreKote" paint)
- D Engine 40 - 46 2-stroke
 48- 70 4-stroke

*These items are suggested optional items to dress up your Corsair 40

Suggested Supplies And Tools

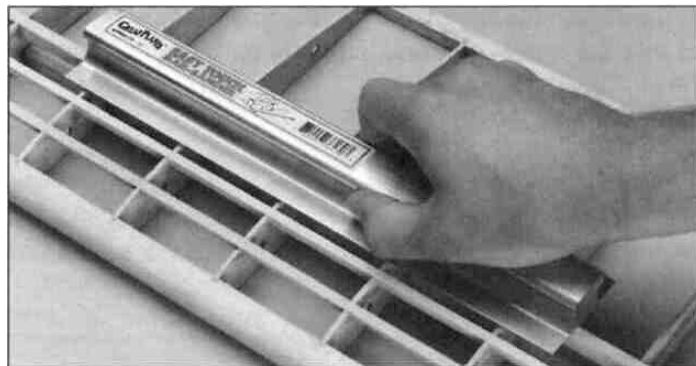
We recommended **Great Planes Pro" CA and Epoxy**

- D 2 oz Pro CA (thin GPMR6003)
- D 2 oz Pro CA+ (medium GPMR6009)
- D 1 oz Pro CA-(thick GPMR6014)
- D 6-Minute Pro Epoxy (GPMR6045)
- D 30-Minute Pro Epoxy (GPMR6047)
- D 4oz Pro Wood Glue (GPMR6161)
- D Hand or electric drill
- D Sealing iron (TOPR2100)
- D Hotsock(TOPR2175)
- D Heat gun (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 (HCAQ5150)
- D String
- D Straightedge with scale
- D Masking tape (required for construction)
- D Sandpaper (coarse medium, fine grit)*
- D Easy-Touch Bar Sander (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)

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

EASY-TOUCH[™] BAR SANDER

On our workbench, we have three 11" **Great Planes Easy-Touch Bar Sanders** equipped with #80, #150 and #220-gnt sandpaper This setup 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-gnt wet-or-dry sandpaper handy for finish sanding before covering



Great Planes **Easy-Touch Bar Sanders** are made from lightweight extruded aluminum and can be found at most hobby shops They are available in two sizes - 11" (GPMR6170) for most general purpose sanding and 22" (GPMR6172) for long surfaces such as wing leading edges We recommend using the 2" wide self-adhesive sandpaper sold in 12" rolls by Great Planes Standard sandpaper can be attached by gluing it to the sander with brush-on rubber cement Apply the rubber cement to both the bottom of the sander and the back of the sandpaper When both surfaces are dry to the touch, press the sandpaper firmly onto the sander Spray adhesive can be used for this purpose but it's much harder to remove the sandpaper when you need to replace it Use a knife blade for cutting sandpaper, not your good scissors'

Easy-Touch Sandpaper 12" Roll
GPMR6180- 80-gnt
GPMR6183-150-grit
GPMR6185-220-grit

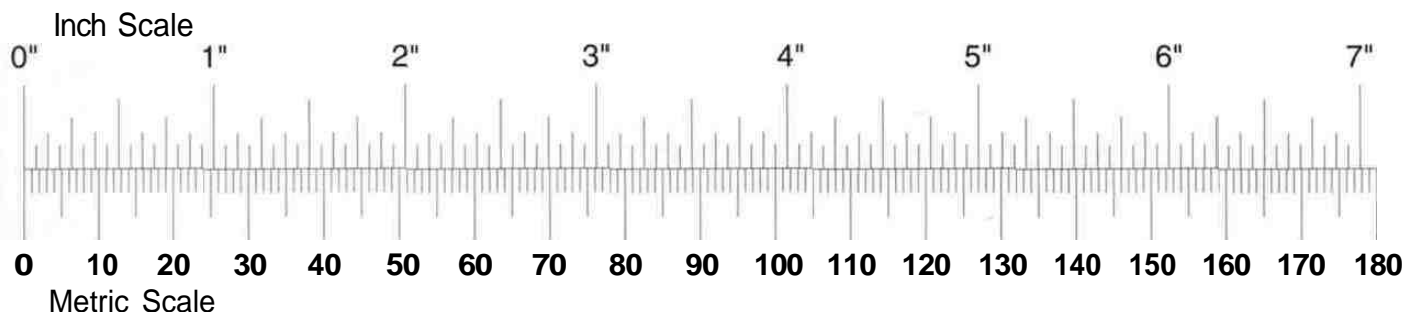
Common Abbreviations Used In This Manual And On The Plans

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

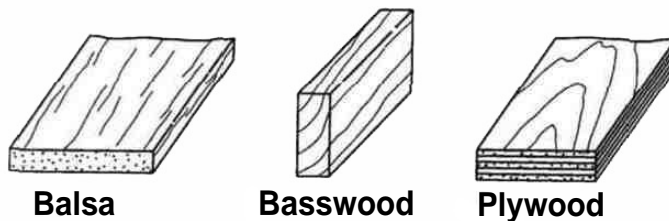
Metric Conversions

Inches x 25.4 = mm (conversion factor)

1/64" = .4 mm	3/16" = 4.8 mm	1" = 25.4 mm	21" = 533.4 mm
1/32" = .8 mm	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" = 762.0 mm
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" = 19.0mm	18" = 457.2mm	



Types Of Wood



Get Ready To Build

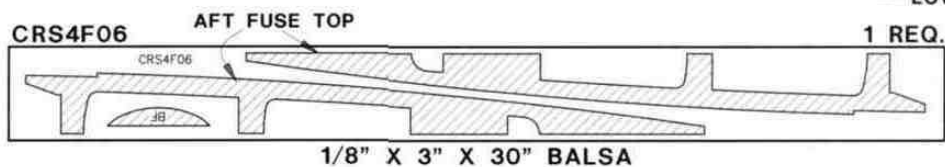
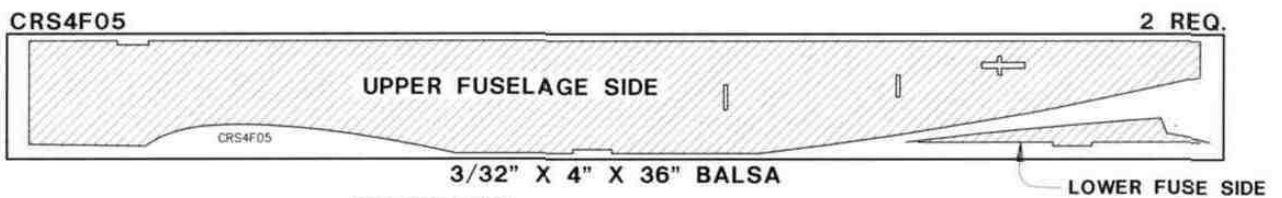
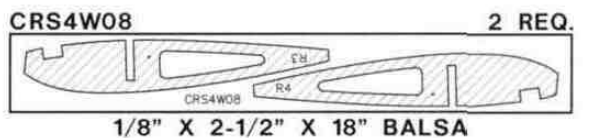
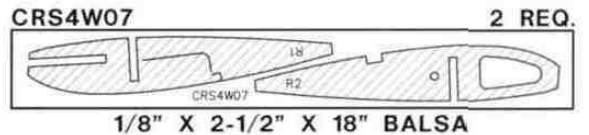
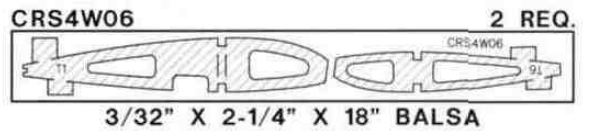
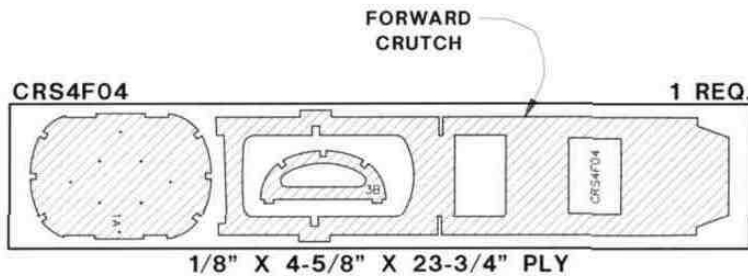
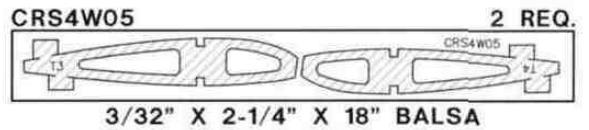
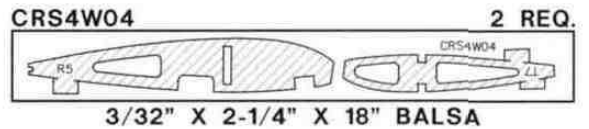
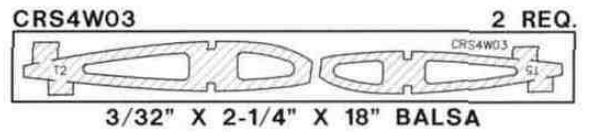
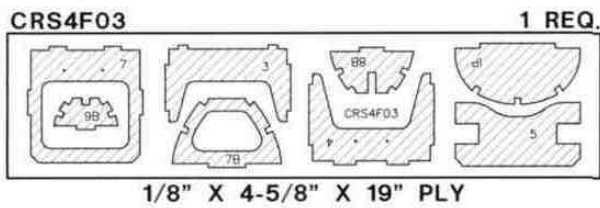
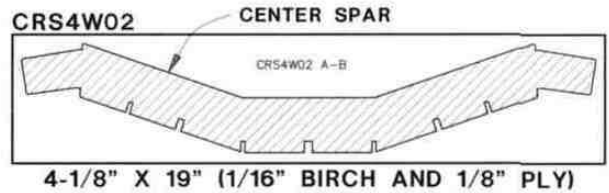
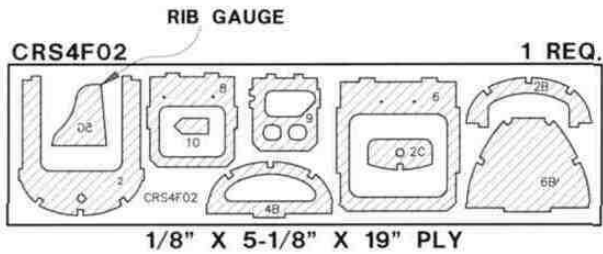
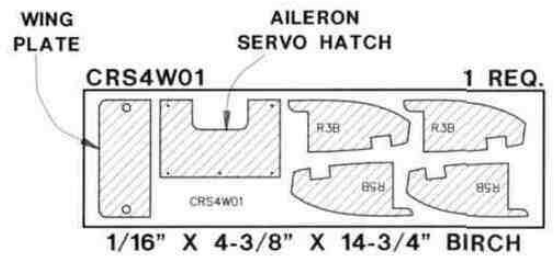
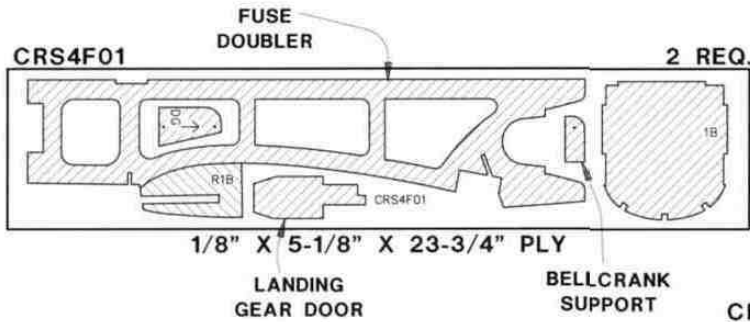
D 1 Unroll the plan sheets. Reroll the plans inside out to make them lie flat

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. Most part numbers start with CRS4. This identifies the kit. The numbers following CRS4 identify the part. Using a felt-tip or ballpoint 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 scraps. If any of the die-cut parts are difficult to remove, do not force them. Instead, cut around the parts with a hobby knife. After removing the die-cut parts, use your Easy-Touch Bar Sander 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.



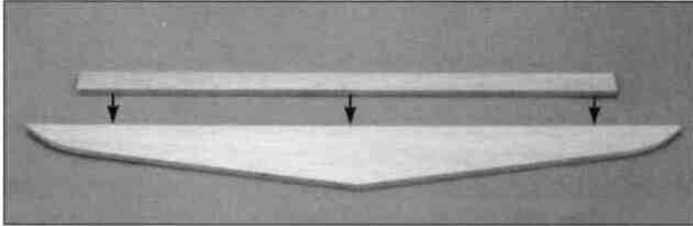
Die-cut Patterns



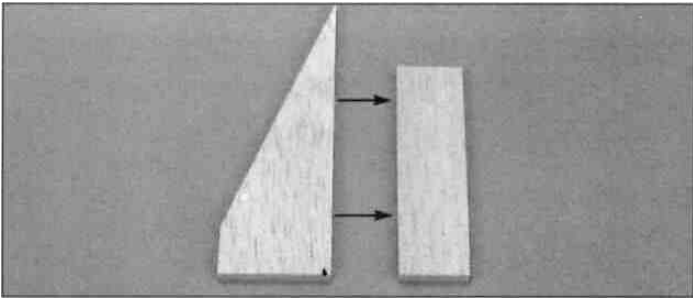
Build The Tail Surfaces

Build The Stabilizer And Fin

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



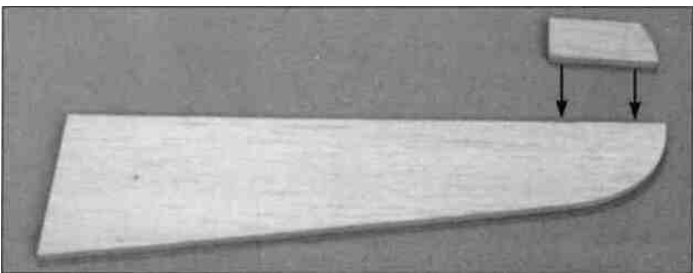
D 1. Locate the shaped 1/4" balsa **forward (S01)** and **aft stab (S02)** parts. Check their fit and sand the mating edges as needed. Mark a centerline on both parts. Align the centerlines on the stab parts with the centerline on the plans. Glue the two parts together with a thin bead of medium CA. Wipe off any excess from the surface before it cures.



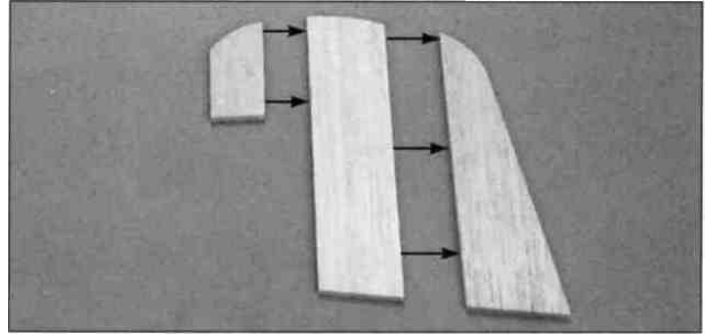
D 2. Locate the shaped 1/4" balsa **fin front (S05)** and **fin rear (S06)** parts. Check their fit and sand the mating edges as needed. Glue the two parts together with a thin bead of medium CA. Wipe off any excess from the surface before it cures.

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

Build The Elevators And Rudder



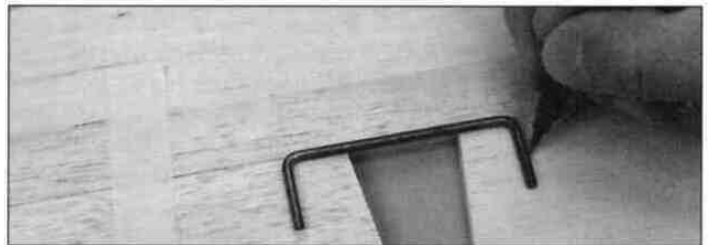
D 4. Locate the shaped 1/4" balsa **elevators (S03)** and **balance tabs (S04)**. Check their fit and sand the mating edges as needed. Glue the balance tabs to the elevators with a thin bead of medium CA. Wipe off any excess from the surface before it cures.



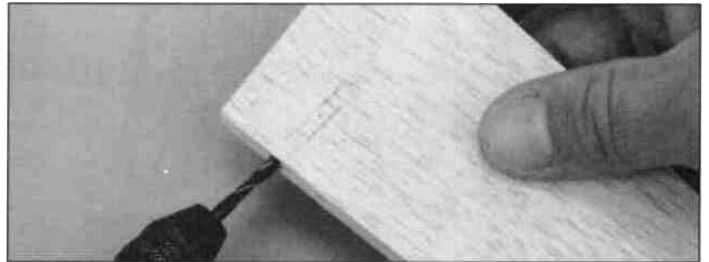
D 5. Locate the shaped 1/4" balsa **balance tabs (S09)**, **rudder front (S07)** and **rudder rear (S08)** parts. Check their fit and sand the mating edges as needed. Glue the three parts together with a thin bead of thin CA. Wipe off any excess from the surface before it cures.

D 6. Sand the joints of the elevators and rudder smooth with **sharp** 220-grit sandpaper and a sanding block.

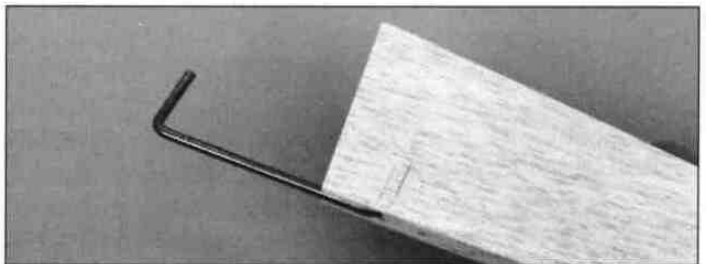
Join The Elevators



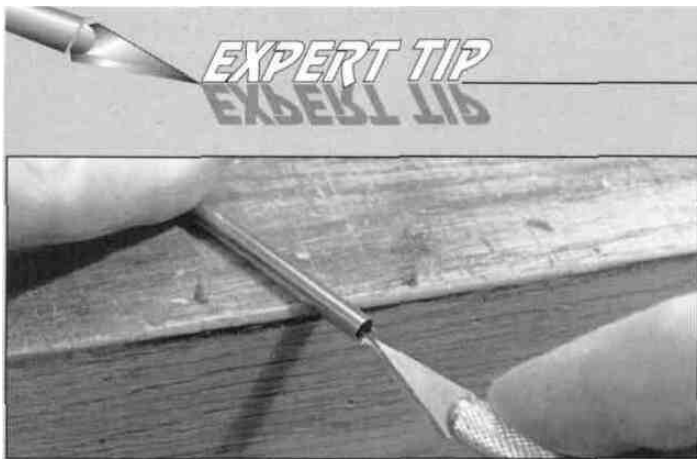
D 7. Tape the two shaped 1/4" balsa **elevators** in position on the TE of the stab. Center the bent **elevator joiner wire (WBNT101)** over the elevators as shown, then mark the location of the "arms."



D 8. Carefully draw a centerline 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. Redrill the holes with a 9/64" bit. The holes must be at least 1-1/8" **deep**.



D 9. Cut a 1/8" deep groove in the elevator LE between the inside (root) edge and the hole you drilled (see the "Expert Tip" on page 8). Insert the joiner wire. Adjust the depth of the groove until the joiner wire is **flush with the LE**.



EXPERT TIP
EXPERT TIP

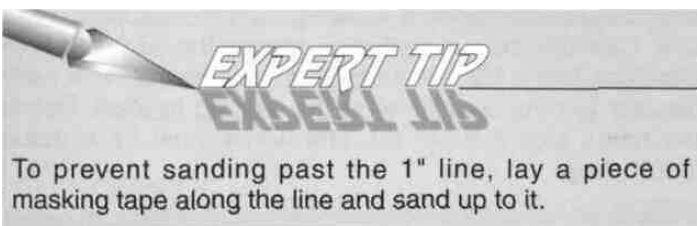
To cut a clean groove, use a hobby knife to sharpen the inside end of a brass tube. While applying pressure on the brass tube, slide it along the area where the groove is to be cut.

D 10. 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.

Finishing The Tail Surfaces



D 11. Draw a line 1" from the TE on both sides of the elevators. Carefully sand a taper from this line to the TE. Remove equal amounts of balsa from each side of the elevator until the TE is 1/8" thick.



EXPERT TIP
EXPERT TIP

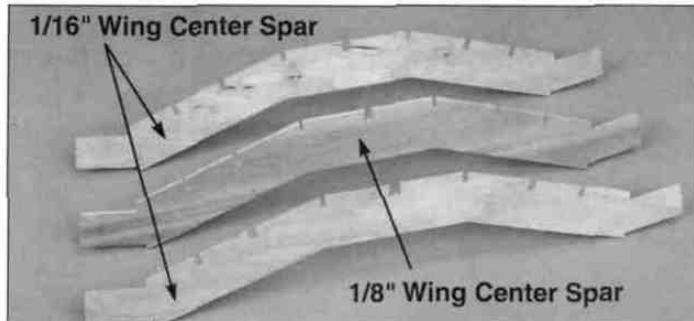
To prevent sanding past the 1" line, lay a piece of masking tape along the line and sand up to it.

D 12. Taper the TE of the rudder using the same procedure as used for the elevators.

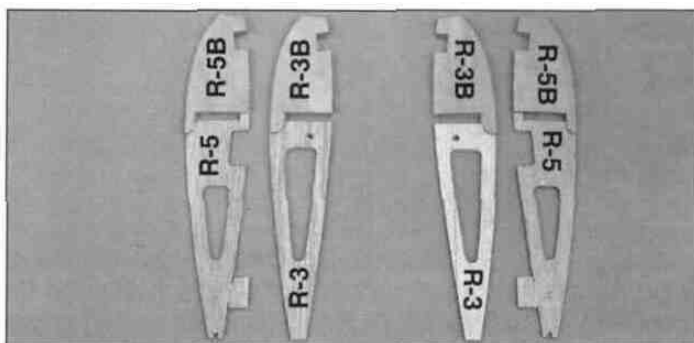
D 13. Sand the LE of the elevators and rudder to a "V" shape as shown on the plans. Sand a radius on the LE and tip ends of the stab and fin. Leave the TE of the stab and fin squared off.

Build The Wing

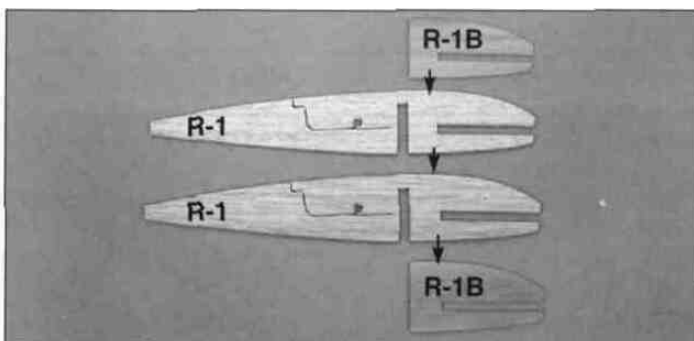
Build The Wing Center Section



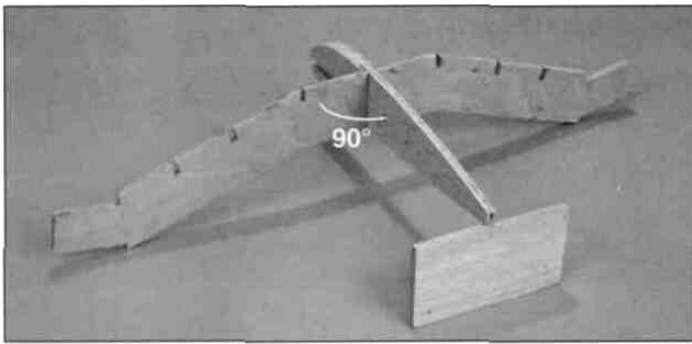
Lt 1. Locate the 1/8" die-cut ply (W02A) and the two 1/16" die-cut birch ply (W02B) wing center spars. Use 30-minute epoxy to glue the 1/16" die-cut birch ply center spar to the front and back of the 1/8" die-cut ply center spar. **Make sure that all three center spars are perfectly aligned.** Wipe off any excess epoxy with alcohol and a paper towel.



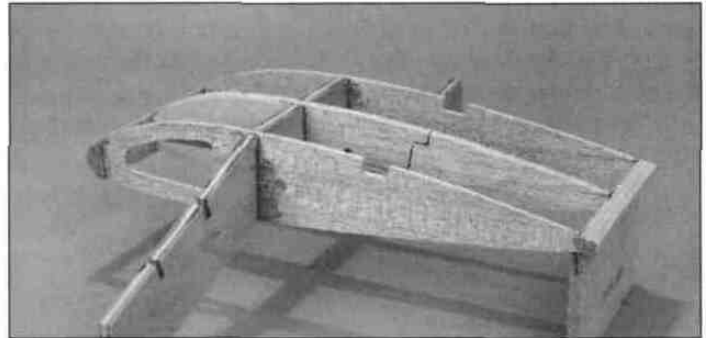
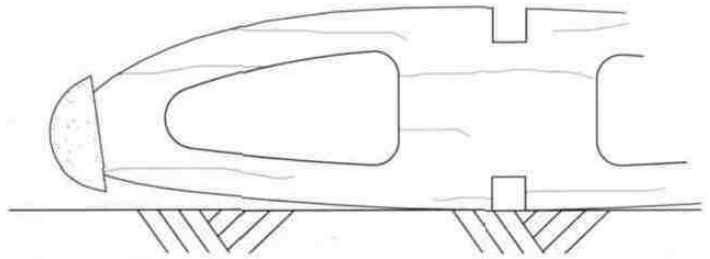
D 2. Lay out the 3/32" die-cut wing ribs R-5 (W04) and the 1/8" die-cut wing ribs R-3 (W08) exactly as shown in the photo. Position the 1/16" die-cut birch ply doublers R-3B and R-5B (W01) on each rib as shown. By so doing we will be making a right and a left pair. Use 30-minute epoxy to glue the doublers to the ribs. Make sure that the doublers are perfectly aligned with the ribs.



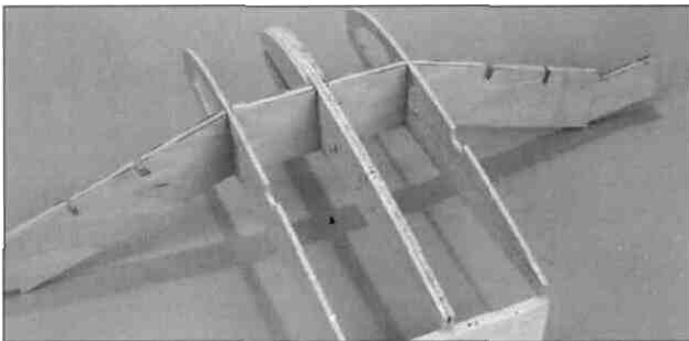
D 3. Locate the 1/8" die-cut ribs R-1 (W07) and the 1/8" die-cut ply doublers R-1B (F01). Use 30-minute epoxy to glue ribs R-1 together. Then, use epoxy to glue ribs R-1 between the rib doublers R-1B. Make sure that all four pieces are perfectly aligned. Wipe off any excess epoxy with alcohol and a paper towel.



D 4. Pin the wing center spar over the plans perpendicular to the building board. Fit the **R-1 rib assembly** in the **center spar**. Place the **center jig (W10)** under the TE of the rib assembly. Glue the rib assembly perpendicular to the center spar using thin CA.

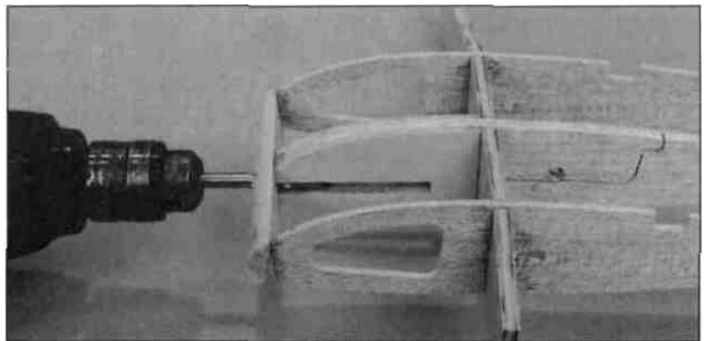


D 7. Cut a 4-3/8" long piece of **LE** and sub **TE**. Fit the LE, then the sub TE to the ribs. The LE must be **centered vertically** on each rib. The sub TE should be **flush** with the top and bottom of the ribs. Glue ribs R-1 and R-2 to the LE and sub TE. **Do not** glue the sub TE to the center jig.

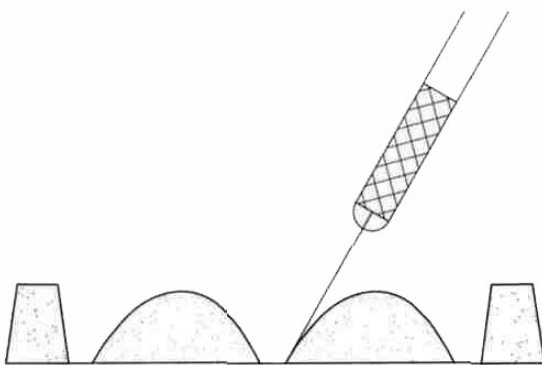


D 5. Fit the 1/8" die-cut rib **R-2 (W07)** on the center spar. Locate the 1/8" die-cut ply **dihedral gauge (F01)**. One edge of the gauge is angled to set the dihedral of the wing, the other edge is 90° to the bottom of the gauge. Use the 90° edge to align the ribs R-2 perpendicular to the center spar. Pin the TE of the ribs on the center Jig. Glue ribs R-2 perpendicular to the center spar using thin CA.

D 8. Sand the ends of the LE and sub TE flush with ribs R-2.

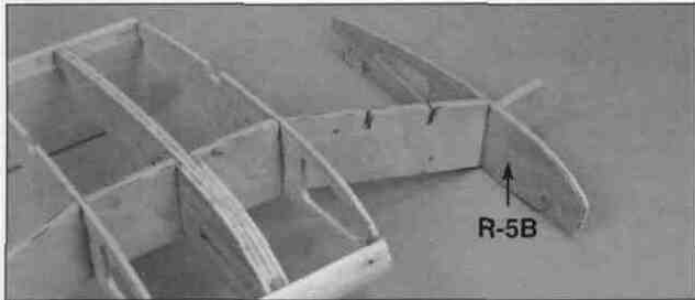


D 9. Use a 3/32" drill bit to drill the **wing mounting dowel** hole through the LE. The best way to line up the drill with the slot in ribs R-1 is to sight down the LE from the side. Use a 1/4" drill to enlarge the hole while making adjustments to the alignment.

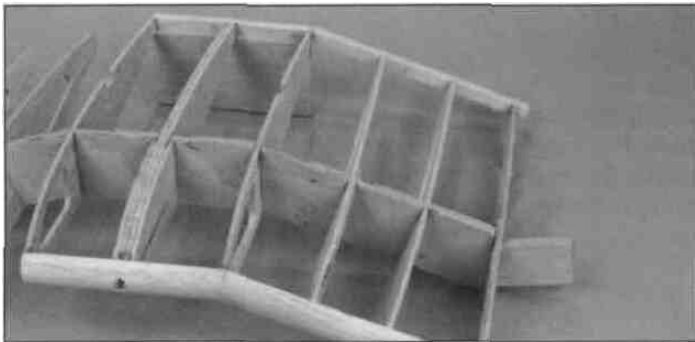


D 6. The shaped and notched wing **leading edges (W12)** and **sub-trailing edges (W12)** are fastened together by thin strips of balsa. Separate them by cutting with a hobby knife, as shown in the sketch above.

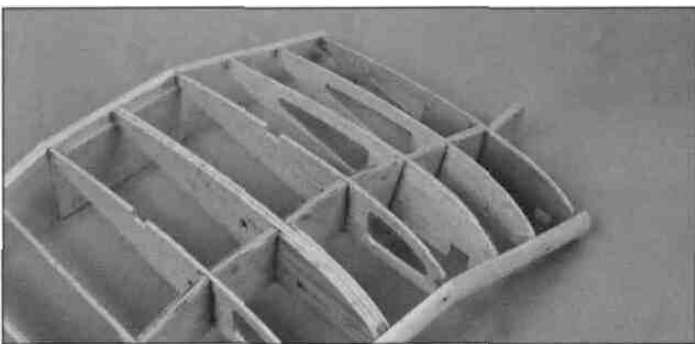
D 10. Chamfer both ends of the 1/4" x 3-1/2" hardwood **wing dowel (DOWLS030)**. Test fit the dowel (without glue) into the LE and ribs R-1. The fit should be snug, so don't enlarge the slot any more than necessary. When satisfied with the fit, remove the wing dowel and set it aside for later use.



D 11. Slide ribs R-5 onto the center spar so that the ply doubler R-5B is **toward** rib R-2. Align rib R-5 over the plan. Make sure that the TE of ribs R-2 are seated on the center jig and the jig tabs on ribs R-5 are against the building board. Use the rib gauge (5G) (F02) to check the angle of R-5. Then, glue the ribs perpendicular to the center spar with medium CA.

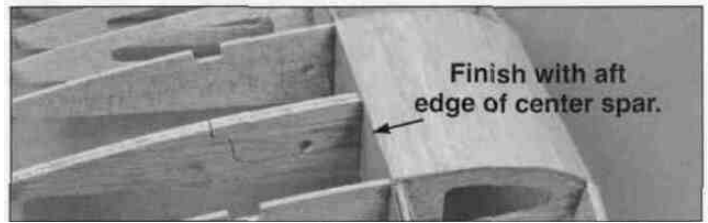


D 12. Fit ribs R-3 and the 3/32" die-cut ribs R-4 (W08) into the center spar. The ply doubler R-3B on rib R-3 is toward rib R-4. Do not glue the ribs to the center spar. Cut two 6" long pieces, one from each LE and sub TE. Trim one end of the LE so that it fits flush against the LE at rib R-2 and is centered vertically on the front of rib R-5. Glue the LE in place with medium CA. Trim one end of the sub TE so that it fits flush against the sub TE at rib R-2 and is flush with the top and bottom of rib R-5. Glue the sub TE to rib R-5 and the TE at rib R-2 with medium CA. Repeat this process for the other side.

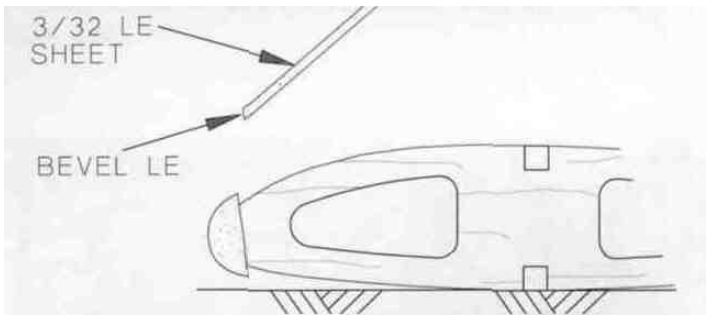


D 13. Locate the 1/8" die-cut ply **dihedral gauge (F01)**. One edge of the gauge is angled to set the dihedral of the wing. The other edge is 90° to the bottom of the gauge. Use the **90°** edge of the dihedral gauge to align ribs R-3 and R-4 perpendicular to the center spar. Check that the LE is centered vertically on the ribs and the sub TE is flush with the top and bottom of the ribs. Glue the ribs to the LE and sub TE with thin CA and to the center spar with medium **CA**.

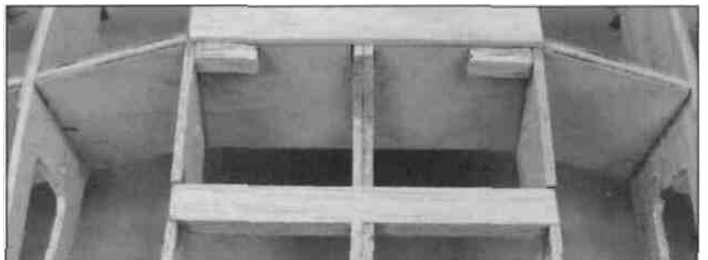
Sheet The Top Of The Center Section



D 1. Lightly sand the top of the ribs flush with the center spar. Cut a 4-1/2" long piece from a 3/32" x 4" x 30" balsa **LE sheet (W13)** to fit between ribs R-2. Sand a bevel on the front edge of the sheet. Test fit the LE sheet in position. Trim the back edge flush with the back of the center spar. 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. Apply a bead of thick CA on the top of ribs R-1 and R-2. Roll the sheet into contact with the ribs and the center spar. Wick thin CA between the sheet and the center spar.



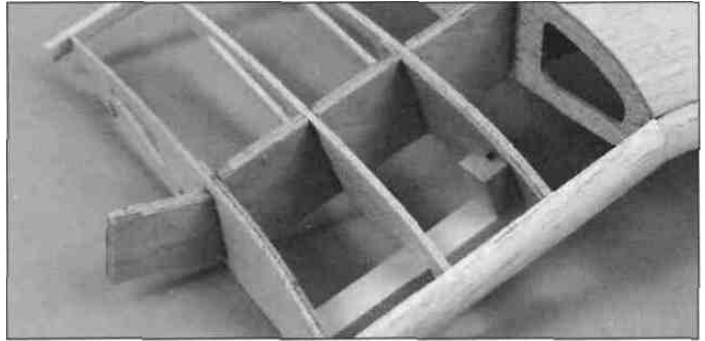
D 2. Refer to the photo above, then use a razor saw or hobby knife to finish cutting the partially die-cut aileron servo opening in ribs R-1.



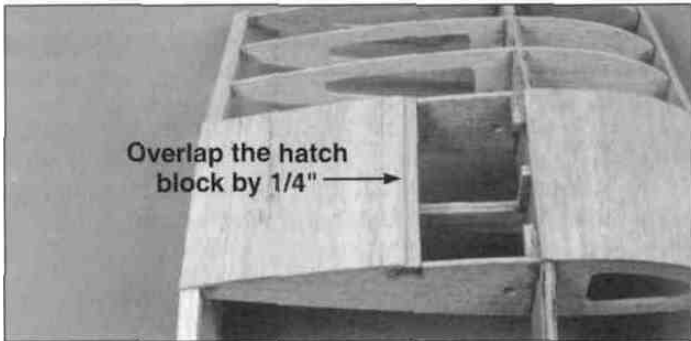
D 3. Cut two 3/4" long pieces from the 1/4" x 1/2" x 6" balsa hatch mounting block (W16). Glue the 1/4" edge of the two pieces flush with the top of the center spar and ribs R-2 with thin CA. Use medium CA to glue the remaining 1/4" x 1/2" mounting block in the slots die-cut in ribs. Trim the mounting block flush with ribs R-2.

EXPERT TIP

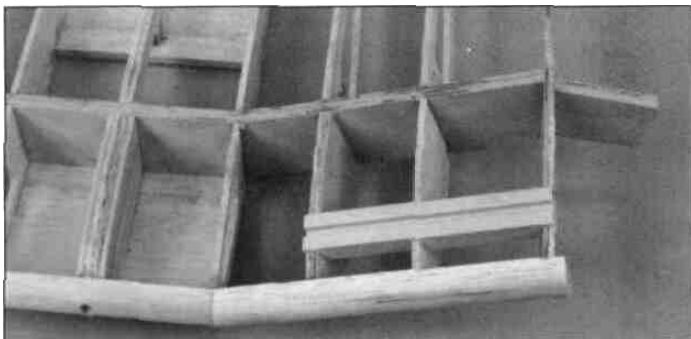
CA is much harder than balsa, so when you sand edge glued sheets you will usually end up with a ridge along the joint. To avoid this problem, the Great Planes Model Shop team has reverted to using wood glue for this application. We prefer Great Planes Wood Glue as it sets quickly, is water resistant 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 sheet, 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 fresh 220-grit sandpaper. Work the block in a circular motion across the joint until smooth.



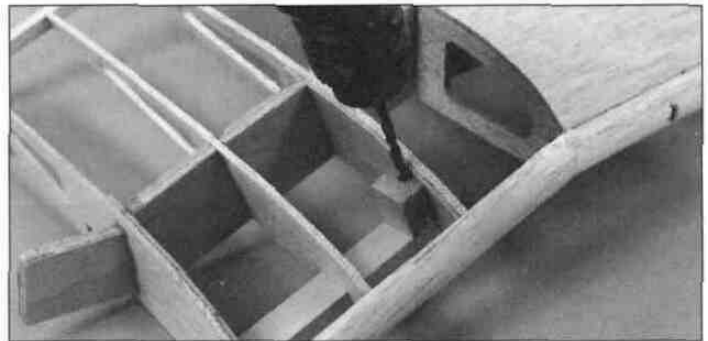
D 6. Use 30-minute epoxy to glue the rails in position. Glue (and clamp for a secure bond) the 7/16" x 5/8" x 3/4" grooved hardwood **landing gear blocks (HRDWD022)** to the inside of the landing gear rails and also to the ply doubler on R-3 with 30-minute epoxy. It is essential that the landing gear blocks be accurately aligned with the landing gear rail.



D 4. Lightly sand the sub TE to remove any bumps. Cut two 4-1/2" long pieces from a new 3/32" x 4" x 30" balsa **LE sheet** to fit between ribs R-2. Refer to the cross-section on the plans. Edge glue the two pieces together to make a center skin. Trim the center skin so that it overlaps the 1/4" x 1/2" x 4-1/4" balsa hatch block by 1/4". Glue the sheet to the ribs and sub TE with medium CA.

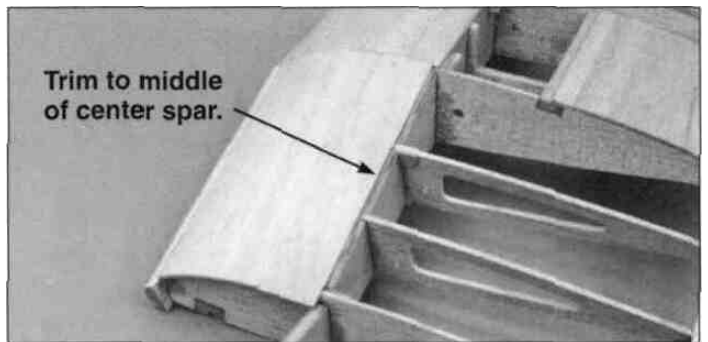


D 5. Remove the center section from the building board and test fit the 7/16" x 5/8" x 4" grooved basswood **landing gear rails (HRDWD013)** into the notches in ribs R-3, R-4 and R-5. If necessary, carefully sand the notches to allow a snug fit. The landing gear rails should **protrude above the ribs by 3/32"**.

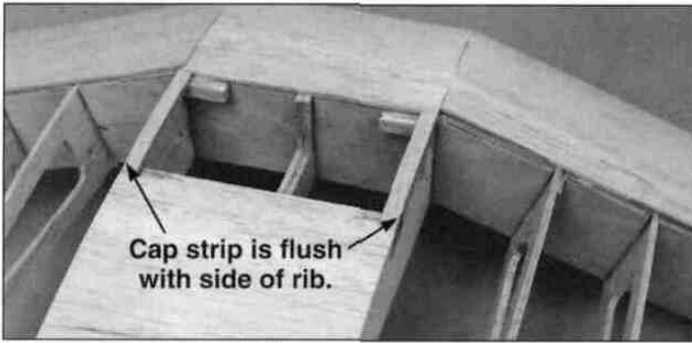


D 7. After the epoxy has fully cured, drill a 5/32" hole **through** the landing gear rail working from the top of the landing gear block, as shown. By drilling in this manner, the block acts as a guide for drill bit.

D 8. 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.



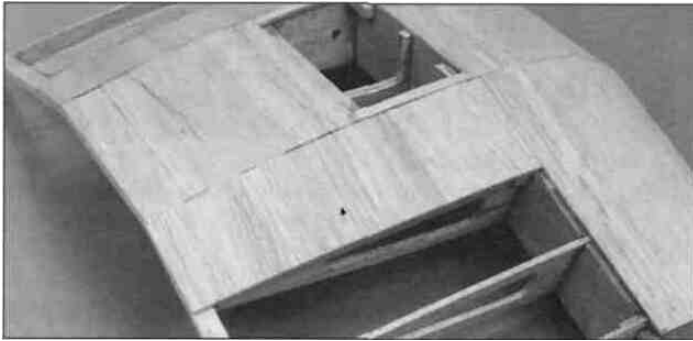
D 9. Pin the wing center section back on the building board. Cut four 6-1/2" long pieces from a new 3/32" x 4" x 30" balsa **LE sheet**. Test fit one LE sheet between ribs R-2 and R-5. Trim the aft edge of the sheet to the center of the center spar. When satisfied with the fit, press the forward edge 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. Apply a bead of thick CA on the top of ribs R-3, R-4 and R-5 and roll the sheet into contact with the ribs and the center spar. Wick thin CA between the sheet and the center spar.



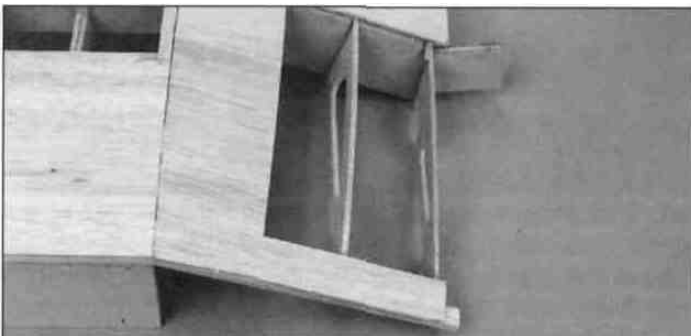
Cap strip is flush with side of rib.

D 10. Fit a 3/32" x 1/4" balsa **cap strip** between the LE and TE sheeting so that it's flush with rib R-2. Glue the cap strip to rib R-2 and the sheeting with thin CA.

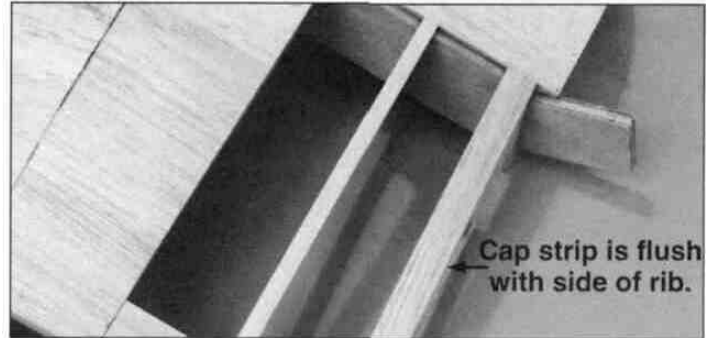
D 11. Cut eight 2-3/8" long pieces of sheeting from the remaining piece of 3/32" x 4" x 21" balsa LE sheet. Make four **center skins** by edge gluing four pairs of the 2-3/8" sheets together.



D 12. Trim a center skin to fit behind the center spar and on top of the sub TE from rib R-2 to R-3. **Important:** Be sure to get a good glue joint along rib R-2. Glue it in place with medium CA. Repeat the process for the other side.



D 13. Cut four 4" long piece from **each** of the four 3/32" x 7/8" x 24" piece of **TE sheet (W14)**. Use medium **CA** to glue the 4" TE between ribs R-3 and R-5.



Cap strip is flush with side of rib.

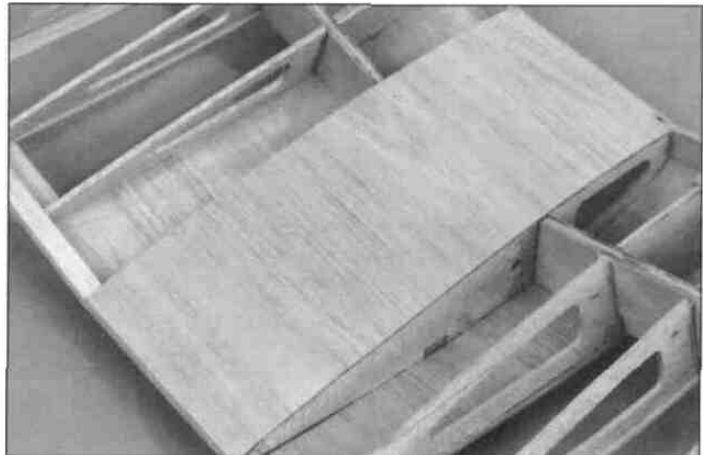
D 14. Use medium CA to glue the 3/32" x 1/4" balsa **cap strips (W19)** to the top of ribs R-4. Glue 3/32" x 1/2" balsa **cap strips (W20)** to the top of ribs R-5. The edge of the cap strips on R-5 are flush with the outside edge of the ribs.

D 15. Remove the center section from the building board and sand the LE, TE and the sheeting flush with both the R-5 ribs.

Sheet The Bottom Of The Center Section

D 1. Remove the jig tabs from rib R-5. Sand the bottom of the ribs flush with the center spar and the TE.

D 2. Cut a 4-1/2" long piece of sheeting from each of the three 3/32" x 4" x 30" balsa sheets that are left. Lightly sand off the edges of the 4-1/2" long pieces to remove any balsa "fuzz." Make a **center skin** by edge gluing the pieces together.

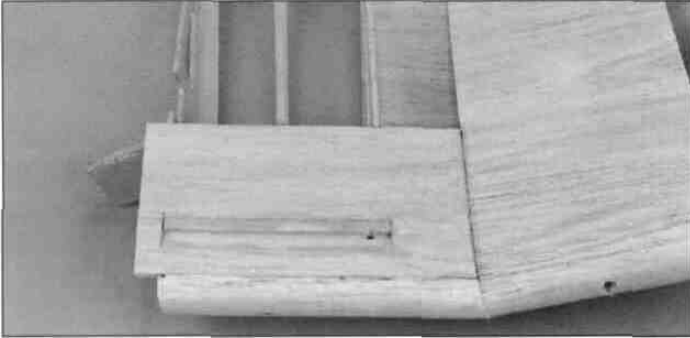


D 3. Trim the center skin to fit between the LE and sub TE between the R-2 ribs. Be sure the skin is flush with the side of **R-2**. Glue in place with medium **CA**.

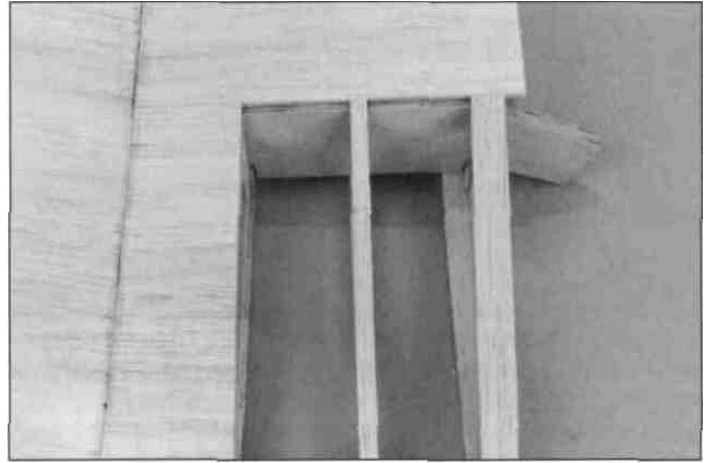


LI 4. Hold a 3/32" x 4" x 6-1/2" balsa sheet (cut in step 9, page 11) tightly against the LE. Press down on the sheet with your fingers in the vicinity of the landing gear rail to

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. Trim the aft edge of the sheet to overlap the center spar halfway.

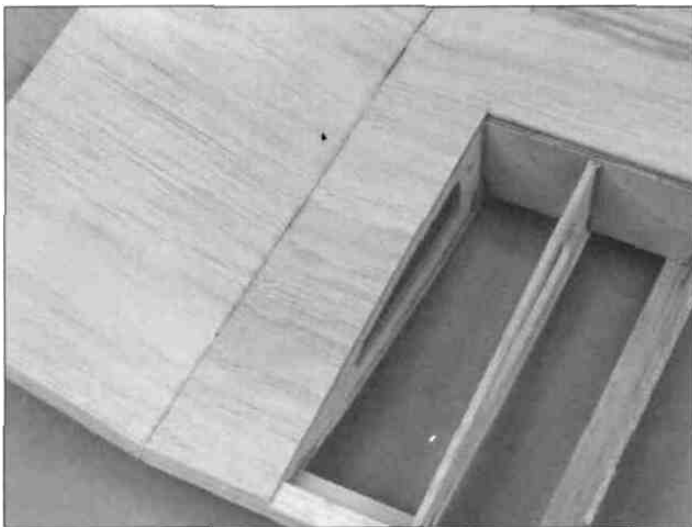


D 5. Test fit the LE sheet in position. When satisfied with the fit, press the forward edge of the sheet tightly against the LE and the ribs, then wick thin CA along the forward seam. Wipe off any excess CA before it cures. **Gently** lift the aft edge of the sheet and quickly apply a bead of medium (or thick) 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, the center spar and the landing gear rail. Hold the sheet edge down while the CA cures. Repeat on the other half of the center section.

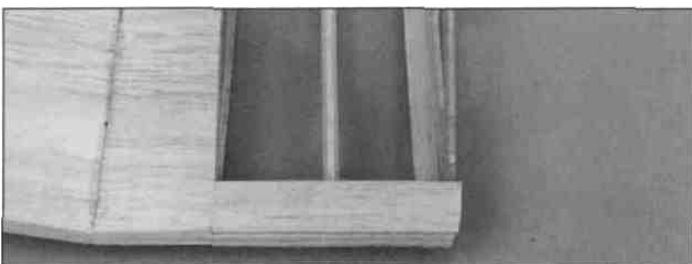


D 8. Use medium CA to glue the 3/32" x 1/4" balsa **cap strips** to the top of the R-4 ribs. Glue 3/32" x 1/2" balsa **cap strips** to the top of the R-5 ribs. The edge of the cap strips on the R-5 ribs must be flush with the side of the ribs.

D 9. Sand the LE and TE sheeting flush with the R-5 ribs.



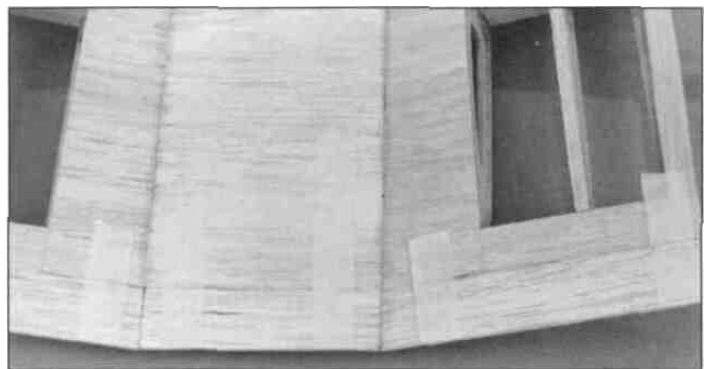
D 6. From the 2-3/8" wide center skins (cut in step 11, page 12) trim the skins to fit between the LE sheeting and the sub LE from ribs R-2 to R-3. Glue them in place with medium **CA**.



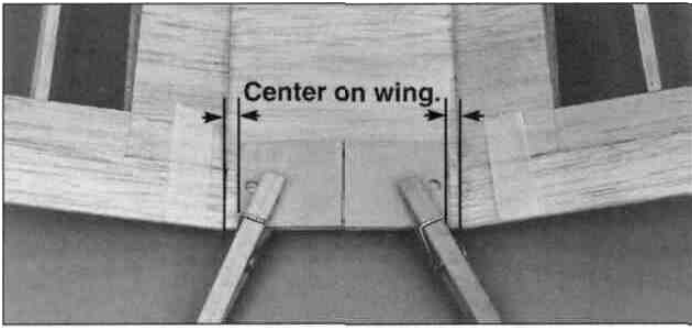
D 7. Use medium CA to glue previously cut 3/32" x 7/8" x 4" balsa **TE sheet** to the TE. Refer to the cross-section shown on the plans.

Trailing Edge Installation

D 1. Sand the TE sheeting flush with the sub TE.



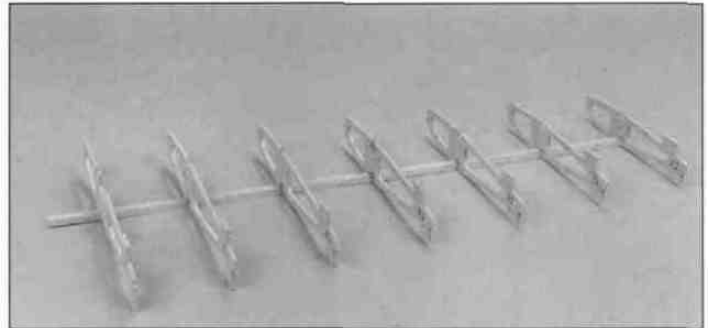
D 2. Cut a 4-1/2" long TE from one of the 1-1/8" x 24" tapered **aileron** (W17). From each of the two 1-1/8" x 6-7/8" TE (W18), cut a 5-3/4" piece. The leftover 1-1/8" TE will be used on the outer wing panels. Fit the 4-1/2" long TE on the aft edge of the wing center section. Glue the TE to the aft edge with 6-minute epoxy. Use masking tape to hold it in position until the epoxy cures. Wipe off any epoxy that may squeeze out with a paper towel. Bevel the ends of the TE to match the angle at the center section. Trim the 5-3/4" TE to fit the outboard sub TE and glue them in position with medium CA.



D 3. After the wing center section TE'S are completely secure, use 6-minute epoxy to glue the 1/16" die-cut birch ply wing plate (W01) in position on the **bottom** of the wing. The aft edge of the wing plate must be centered and flush with the aft edge of the TE. Clamp the wing plate in position while the epoxy cures.

D 4. Sand the TE flush with the ribs R-5.

D 5. Use 220-grit sandpaper to thoroughly sand the entire wing center section.



D D 2. **Don't use any glue until instructed to do so.** As the wing panels are built upside-down, fit ribs T-1 through T-7 over the spar. **The jig tabs against the building board should be closer to the TE** than the jig tabs facing upward.

D D 3. Sight down the length of the TE. Check that all ribs are **aligned** and have the **correct side up**.

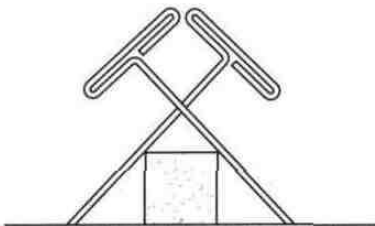
Build The Outer Wing Panels

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.**

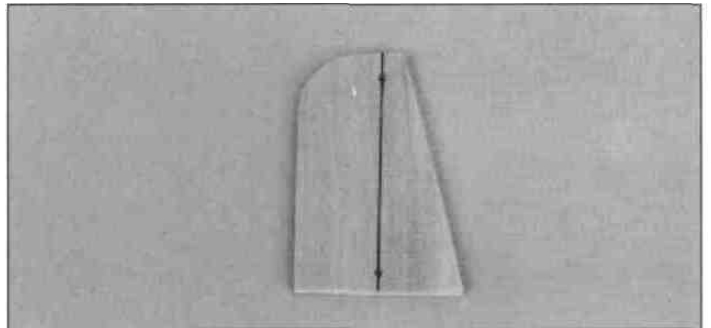
**TWO WARPED SPARS INSTALLED
THIS WAY WILL RESULT IN A
STRAIGHT WING**



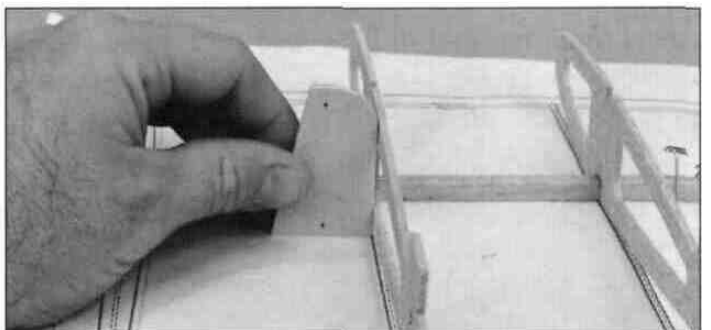
**TWO WARPED SPARS INSTALLED
THIS WAY WILL RESULT IN A
WARPED WING**



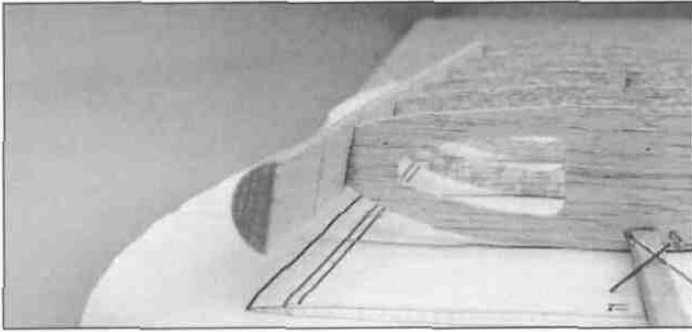
D D 1. Use the cross-pinning technique, (see sketch above), to pin a 3/8" x 3/8" x 24" balsa **spar (W15)** over a wing plan. **Don't forget to cover the plans with waxed paper.**



D D 4. Draw a line through the two index marks on the 1/8" die-cut ply **dihedral gauge (F01)**.



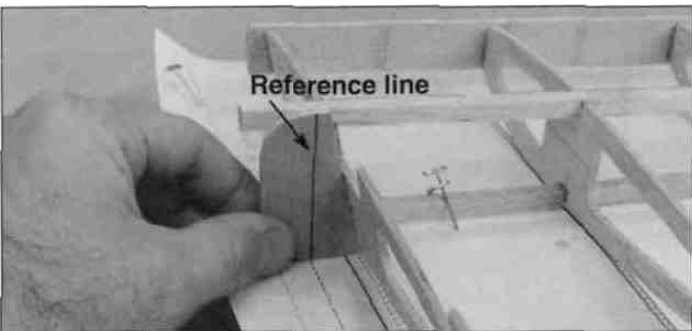
D D 5. Glue ribs T-2 and T-7 to the lower spar aligned over the plan and **perpendicular** to the building board. Use the 90° **back edge** of the dihedral gauge to keep the ribs perpendicular to the building board.



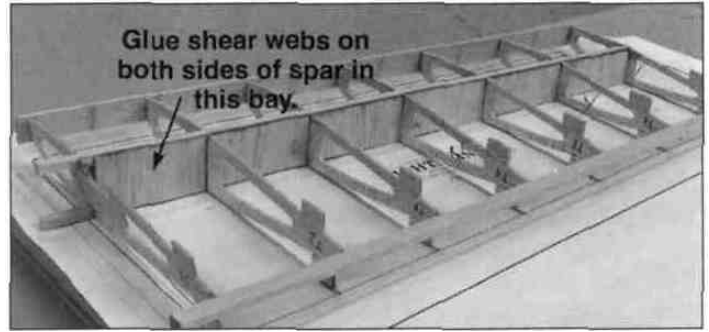
D D 6. Glue the LE, **centered** vertically, on ribs T-2 and T7. Glue the remaining sub TE **flush** to the top and bottom of ribs T-2 and T-7.

D D 7. Glue ribs T-3 through T-6 to the LE and sub TE so that they are perpendicular to the building board and their jig tabs are against the building board. Start with the outside ribs and work toward the center. Make sure each rib is pressed against the lower spar and aligned with the plans.

D D 8. Glue the ribs to the lower spar. Next, install and glue the **upper** 3/8" x 3/8" x 24" balsa **spar** in position. Be sure to keep the ribs perpendicular to the building board as you perform this step.

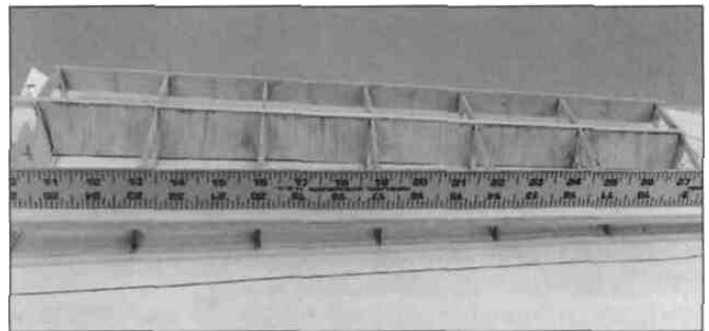


D D 9. Align rib **T-1 (W06)** over the plans. Hold the dihedral gauge against T-1 with the line meeting the gauge on the **reference line** on the plans. The angle of the rib should match the angle of the gauge. When satisfied with the fit, use medium CA to glue the rib to the LE, sub TE and spars.

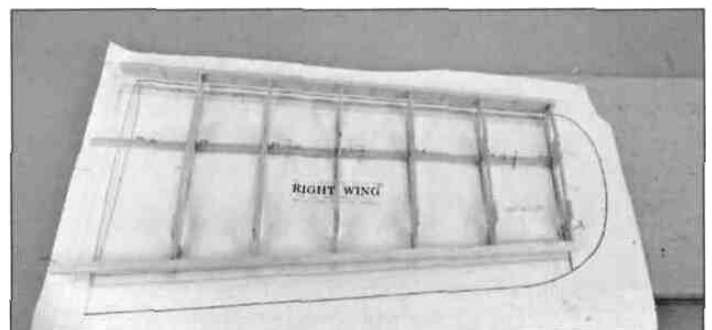
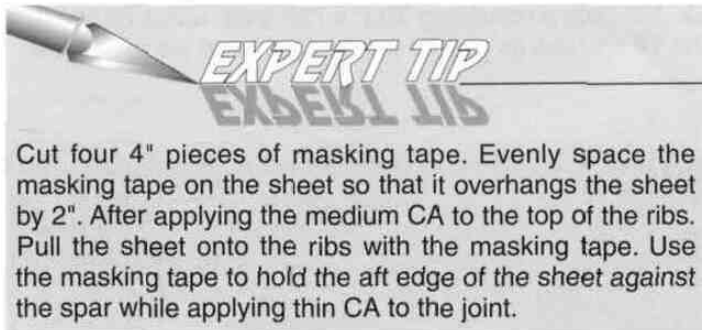


D D 10. Install 1/16" x 3" x 1-5/8" balsa **shear webs (W11)** on the aft side of the spars from T-1 to the wing tip. Install one extra shear web on the forward side of the spars between ribs T-1 and T-2. Use medium CA and be sure to get a secure bond. It's not necessary for the shear webs to **be** glued to the ribs.

Sheet The Bottom Leading And Trailing Edge

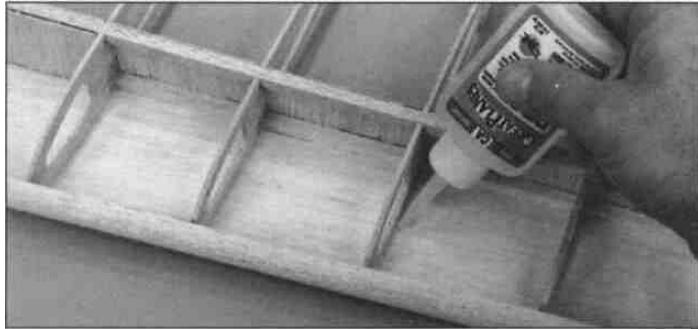


D D 11. Sight down the sub TE to check for straightness - shim the ribs as necessary. Lightly sand the sub TE to remove any bumps. Use medium CA to glue a remaining 3/32" x 7/8" x 20" balsa **TE sheet** to the sub TE. Refer to the cross-section on the plans. Hold a straightedge across the sheeting while the CA cures to keep the TE flat and straight.



D D 2. Cut a 20" long piece of sheeting from each of the four remaining 3/32" x 4" x 25-1/2" balsa LE sheets. Bevel

the front edge of the 3/32" x 4" x 20" balsa sheet. Press a balsa sheet tightly against the lip of the LE. Roll the sheet down against the spar. Trim the sheet 1/8" forward of the spar's aft edge. This will provide a lip on the spar to glue the cap strips to later. When satisfied with the fit, press 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.

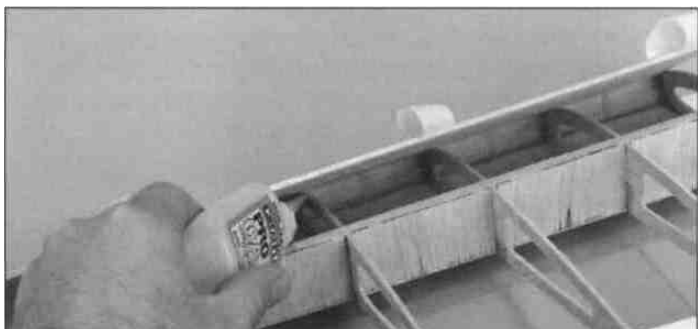


D D 3. Lift the wing off the building board. Then, while holding it flat on your work surface, wick thin CA between the ribs and the sheet from the inside of the wing. Add a fillet of medium or thick CA along the inside of the LE.

Sheet The Top Leading And Trailing Edge

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

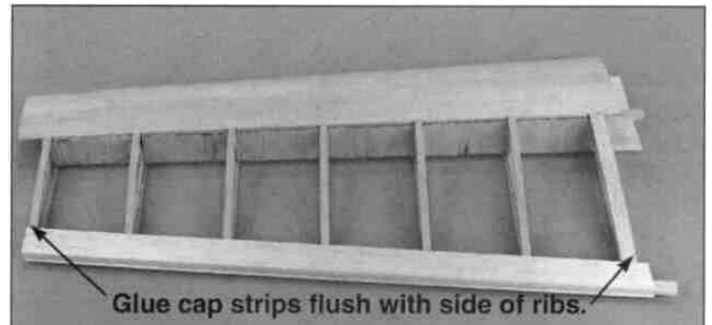
D D 2. Glue a remaining 3/32" x 7/8" x 20" balsa TE sheet to the TE and ribs as you did with the bottom of the wing panel.



D D 3. Bevel the forward edge of a 3/32" x 4" x 20" balsa LE sheet. Press the balsa LE sheet tightly against the lip of the LE. Roll the sheet down against the spar. Trim the sheet 1/8" forward of the spar's aft edge. This will provide a lip on the spar to glue the cap strips to later. When satisfied with the fit, press 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. 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 spar and the sheet.

D D 4. Remove the remaining jig tabs and sand the rib edges smooth.

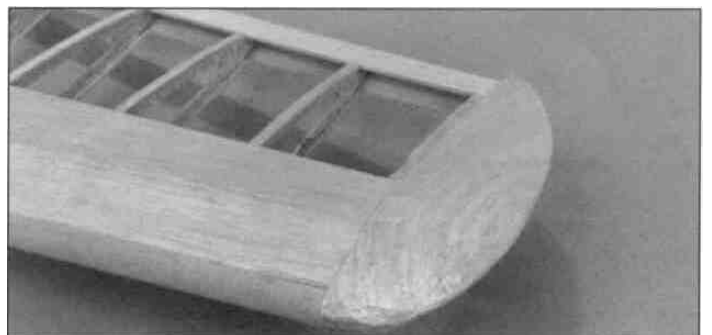


D D 5. From the 3/32" x 1/4" x 24" balsa **cap strip**, cut and install cap strips on the top and bottom of ribs **T-3 through T-7** cap only the **top** of T-2 between the LE and TE sheeting. The cap strip on rib T-7 is flush with the side of the rib. Glue a 3/32" x 1/2" balsa **cap strip** onto the **top** of rib **T-1** flush with the side of the rib.

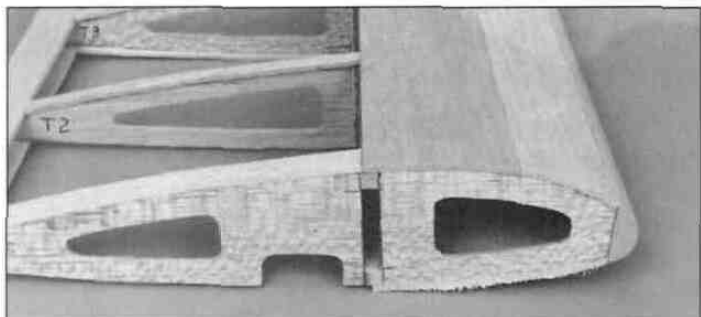
D D 6. Sand the sheeting, spar, sub TE and LE flush with ribs T-1 and T-7.



D D 7. Center and glue the 1-1/2" shaped balsa wing tip (W09) centered on rib T-7. The forward edge must be centered on the LE.



D D 8 Using a razor plane or hobby knife, rough out the wing tip as shown on the plan. Use progressively finer grades of sandpaper to finish off the shape.

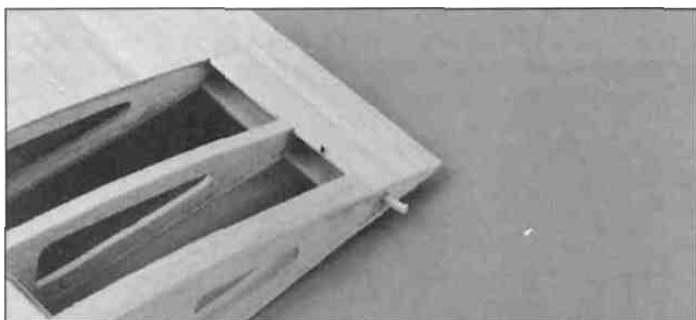


D D 9. Cut the access slot between the spars in T-1 for the wing center spar.

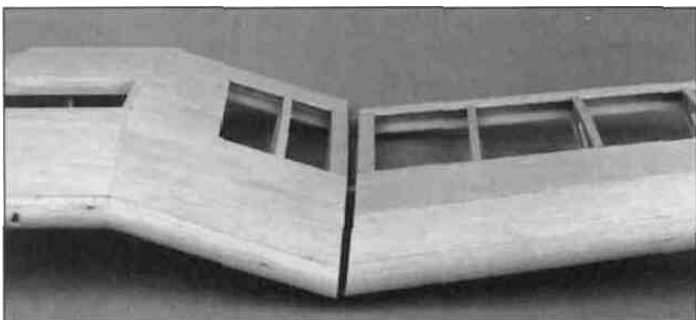
That's one wing panel down. Now, go back and build the other one. Remember to build a **right** and **left** outer wing panel.

Join The Wing Panels

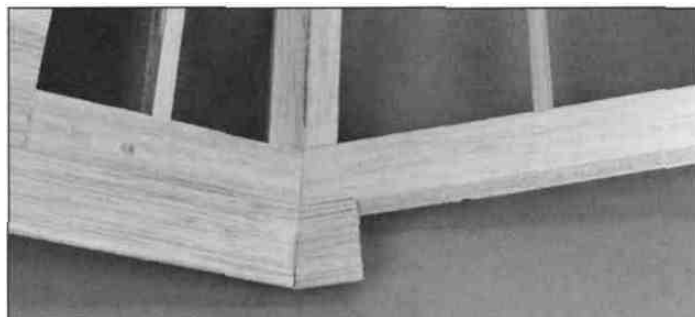
NOTE: Before actually using any glue, **test fit the entire assembly** together to make sure the wing panels fit properly.



D 1. Cut the 1/8" x 2" hardwood **alignment dowel (DOWEL049)** in half. Insert 1/2" of the 1/8" x 1" alignment dowel through the hole at the aft end of R-5. Glue it to the inside of the TE perpendicular to R-5.



D 2. Assemble only one wing panel to the center section at a time. Completely coat the spars and shear webs inside the access slot with 30-minute epoxy. Use a stick or brush to apply epoxy to rib T-1. Slide the wing panel on the wing center spar. Glue the 1/8" alignment dowel to the inside TE of the wing panel. Make sure the panel and center section are aligned from the LE to TE, then clamp or tape them together until the epoxy cures.



D 3. Sand one end of the remaining 1-1/8" x 1" tapered TE to match the angle of the wing center section. Use medium CA to glue both 1" TE'S in position.

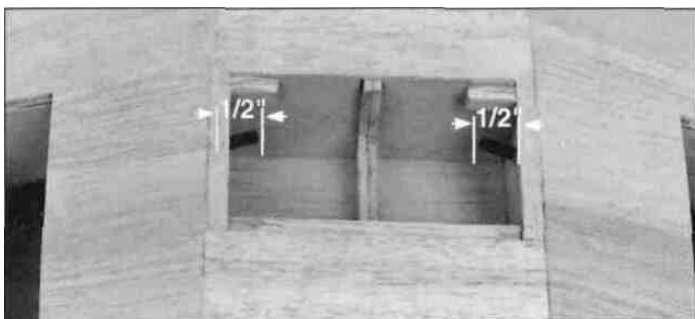


D 4. While holding an aileron against the inside edge of the wing panel sub TE, draw a line on it that matches the inside edge of the wing tip TE. Cut the aileron 1/8" shorter than the TE opening to allow for covering material.

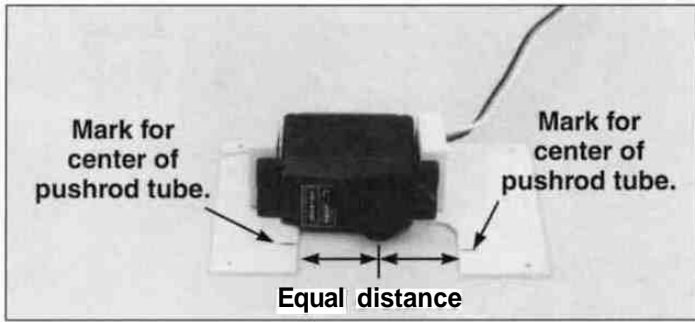
D 5. Draw a centerline on the forward edge of the aileron. Sand the forward edge of the aileron to a "V". Refer to the cross section of the wing on the plans for the desired angle.

Install The Aileron Linkage

D 1. Cut two 5" long pieces from one of the 24" **outer pushrod tubes (PLTB011)**. Sand the outside of the tubes with 80-grit sandpaper to roughen them for better glue adhesion.

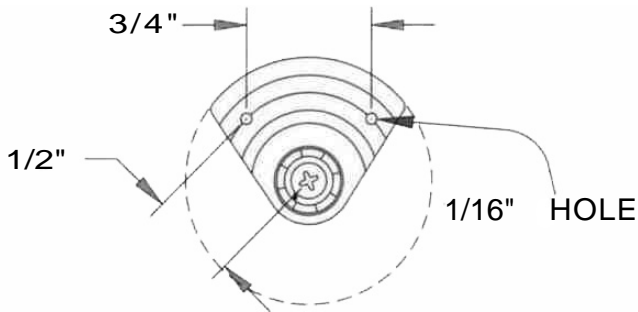


D 2. Slide the pushrod tubes through the holes in ribs R-2 through R-4. About 1/2" of the tubes should protrude into the aileron servo bay. Glue the pushrod tubes to the ribs with medium **CA**.



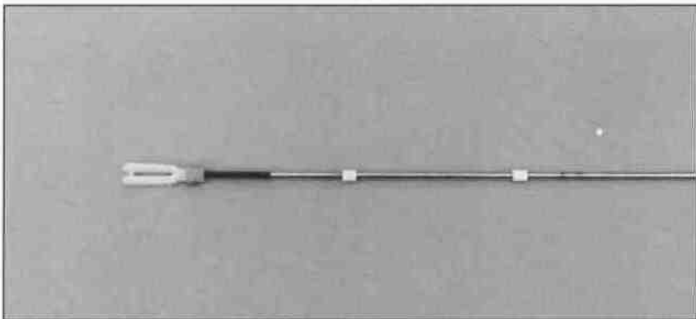
D 3. Position the 1/16" die-cut birch ply **aileron servo hatch (W01)** over the aileron servo bay and mark the location of the outer pushrod tubes. Position the aileron servo on the hatch positioned so that the servo wheel is centered in the opening of the hatch and aligned with the marks for the outer pushrod tubes. Use 30-minute epoxy to glue two 5/16" x 3/4" x 7/8" basswood **servo mount blocks (P516W28)** to the aileron servo hatch.

D 4. When the epoxy has fully cured, fit a 1/32" to 1/16" temporary shim between the servo and the plywood hatch. Drill 1/16" pilot holes and mount the servo to the blocks. Then remove the shims.



D 5. Trim a servo wheel as shown. Then install it on the servo.

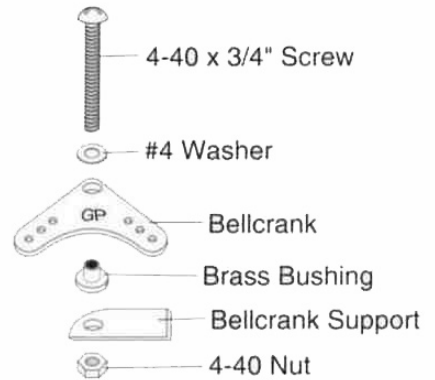
D 6. Position the aileron servo hatch on the servo bay. Drill 1/16" pilot holes through the hatch and hatch blocks at the embossed marks on the hatch. Remove the hatch and place a drop of thin CA in each hole in the hatch blocks. Wipe off the excess CA and reinstall the hatch. Secure the hatch to the wing with five #2 x 3/8" sheet metal screws (SCRW024).



D 7. Thread two nylon clevises (NYLON17) thirteen complete turns onto two 2-56 x 12" **threaded rods (WIRES16)**. Slide **silicone clevis retainers (PLTB021)** over the clevises. Cut four 3/16" long bushings from the 6-1/2" **inner pushrod tube (PLTB004)**. Slide two bushings

onto each pushrod, spacing them about 2" apart starting 2" from the threaded end. If the bushings are too loose, put a drop of thin CA on the pushrod at each bushing.

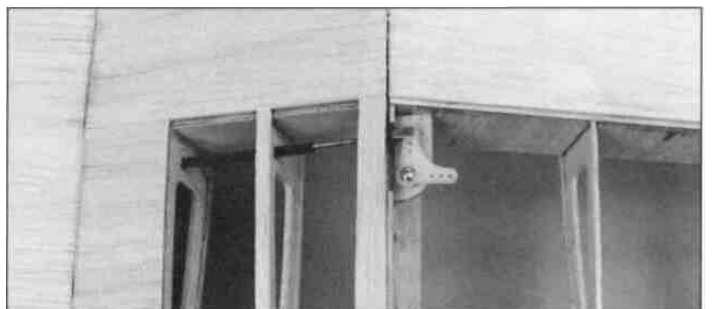
D 8. Attach the clevises to the aileron servo wheel. Insert the pushrod in the outer pushrod tube located in the aileron servo bay.



D 9. Locate the 1/8" die-cut ply bellcrank supports (F01). Assemble the bellcrank parts on the supports as shown above making a left and a right. Put a drop of medium CA on the nut and the threads of the 4-40 bolt to prevent the nut from vibrating loose.



D 10. Align the outermost hole in the bellcrank with the pushrod. Use medium CA to glue the bellcrank support to rib T-1 and the shear web. Then, apply a fillet of thick CA along the joint.

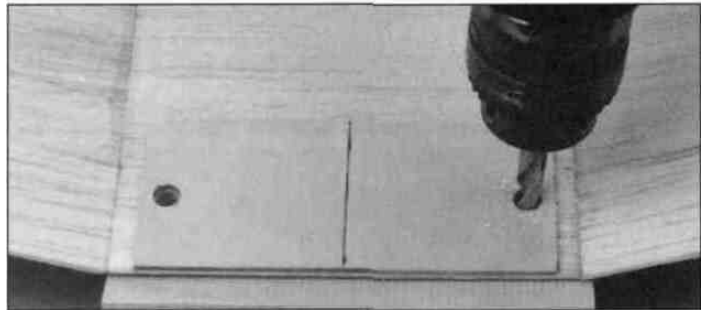


D 11. Attach a **solder clevis (METAL030)** to the outermost hole in the bellcrank. Align the bellcrank so that it is perpendicular to the pushrod. Cut the pushrod and solder the clevis on the end of it. Silver solder is highly recommended. Reinstall the control rod on the bellcrank.

EXPERT TIP
EXPERT TIP

How to silver solder.
 Use this process when soldering metal to metal such as brass tube to wire, or pushrod ends to a wire.

- Thoroughly clean the items to be soldered with alcohol or degreaser solvent. Pay special attention to the **inside** of the threaded brass couplers.
- Roughen the area to be soldered with fine sandpaper, then clean again.
- Assemble the items to be soldered.
- Apply a small amount of soldering flux. Acid based liquid flux works best when one or more of the items is steel.
- Heat the metal with a soldering gun or iron, and apply solder to the metal. The metal must get hot enough to melt the solder and the solder must flow freely into the joint.
- Do not move the parts until the solder has cooled.
- Test the joint by pulling hard.
- Clean off the excess flux with alcohol or solvent. Coat the parts with a fine film of oil to prevent corrosion.



D 15. Drill two 1/4" holes through the wing center TE using the holes in the wing plate for the locations.

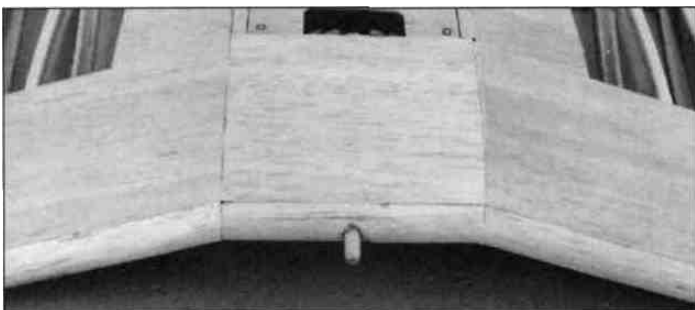
Well, that completes the wing construction for now, so clean up your work bench, grab a cup of coffee, and let's start building the fuse.

Building Notes:



D 12. Use the template on the wing plan to make two **bellcrank sheets** from the 3/32" scrap balsa LE sheeting. Glue the bellcrank sheet to the LE sheeting and ribs T-1 and T-2. Finish covering rib T-1 with a 1/2" cap strip and T-2 with a 1/4" cap strip.

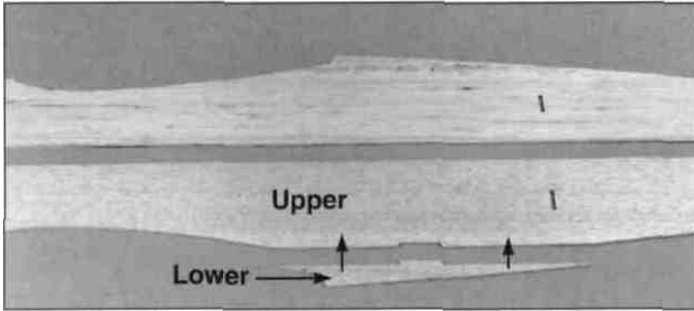
D 13. Inspect all the glue joints in the wing and apply CA where necessary. Using 220-grit sandpaper, blend the LE into the LE sheeting.



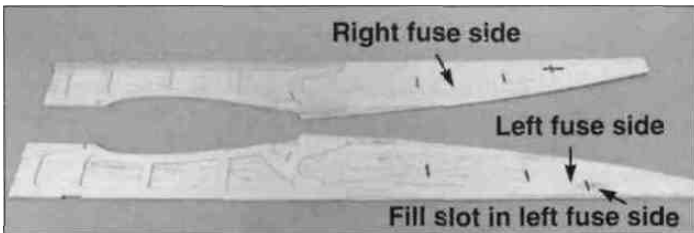
D 14. Use 6-minute epoxy to glue the wing dowel in perpendicular to the LE.

Build The Fuselage

Assemble The Fuse Sides



D 1. Locate both die-cut 3/32" balsa **upper fuse sides** and **lower fuse sides (F05)**. Glue the upper and lower fuse sides together with thin CA. Sand the fuse side smooth with 220-grit sandpaper.

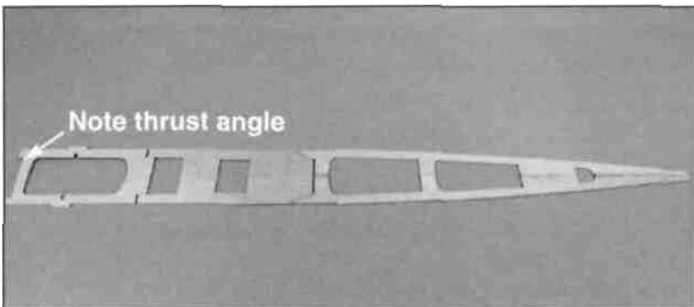


D 2. Place the fuse sides on a flat work surface with the wing saddles facing each other as shown in the photo. Use medium CA to glue the die-cut 1/8" ply **fuse doublers (F01)** in position. The edges must be flush, and the 1/8" x 1" notch at the forward end of each fuse side must **exactly match** the doublers' notch. **Note:** Make a right and a left fuse side. The right side has a slot for the outer pushrod tube exit. Use the pieces from the die-cutting to fill in the pushrod exit slot in the left fuse side.

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

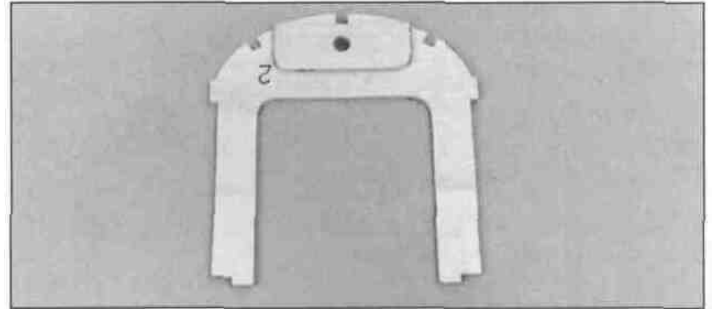
Note: The fuse is built **upside-down** over the plans. The plan sheet may be cut apart if space is a problem.

D 3. Cover the **bottom view** of the fuselage plans with waxed paper.

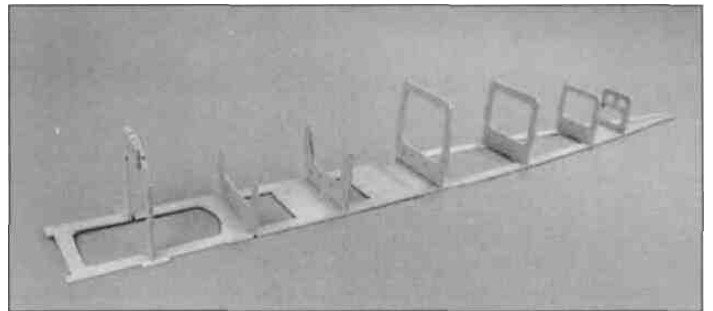


D 4. Position the two 1/8" die-cut balsa **aft fuse top halves (F06)** and the 1/8" die-cut ply **forward crutch (F04)** over the plans. Glue the two aft fuse top halves together with thin CA. Then, glue the aft fuse top and forward crutch together. **Warning:** When aligning the forward crutch over the plans, make sure the proper thrust angle is set at the front.

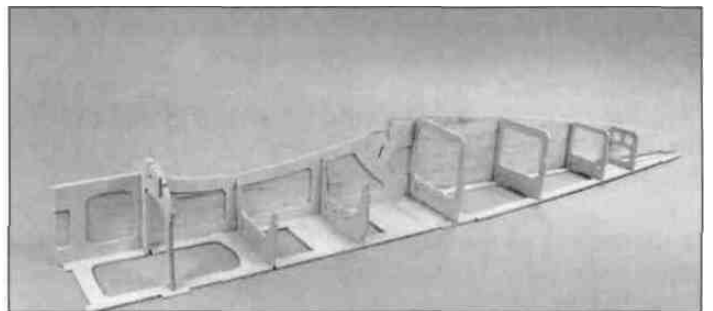
Note: All fuse formers must be installed with their die-stamped numbers facing forward. This is to ensure correct alignment of the pushrod holes and locking tabs.



D 5. Use 6-minute epoxy to glue the 1/8" die-cut ply **doubler C-2 (F02)** to the front of the 1/8" die-cut ply **former F-2 (F02)**. The hole through C-2 must be aligned with the hole through former F-2.

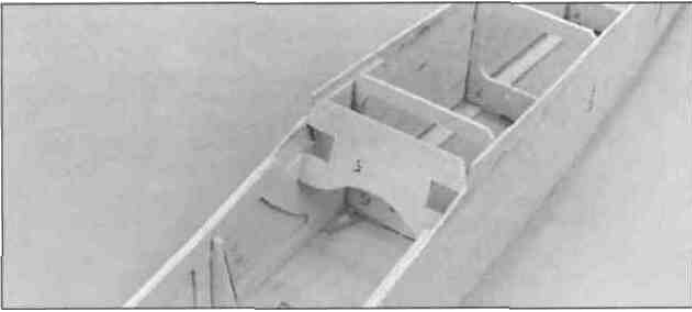


D 6. Draw a centerline on the side of **F-9 (F02)** opposite the stamped part name. Drill a 3/16" hole at each punch mark on formers **F-4, F-6, F-7 and F-8**. Glue **F-2, F-3, F-4, F-6, F-7, F-8 and F-9 (F03)** into the notches of the forward crutch and the aft fuse top as shown. Use a triangle to hold all the formers vertical while the CA cures. Make sure the embossed labels on the formers face forward.

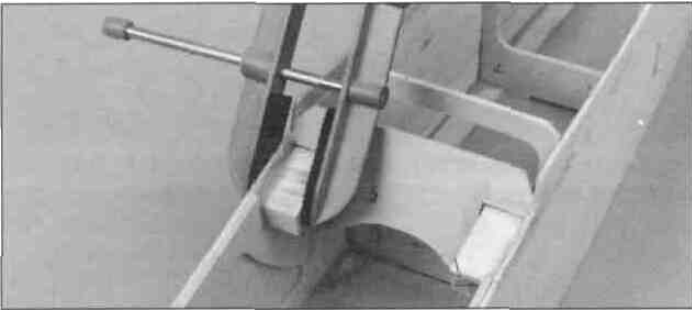


D 7. Fit a **fuse side** in position. Make sure all of the **tabs are fully seated in the notches**. Wick thin CA into all joints between the formers, the forward crutch and the aft fuse top. Add a fillet of medium CA to one side of each former where they touch the fuse sides. Repeat this operation for the other fuse side.

D 8. Glue the 1/8" die-cut ply former **F-10 (F02)** 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 F-10.



D 9. Glue the 1/8" die-cut ply former **F-5 (F03)** into the notches of the fuse doubler.

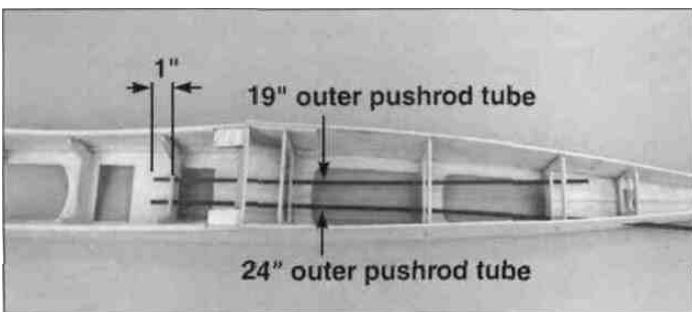


D 10. Use 30-minute epoxy to glue the 1/2" x 3/4" x 1-3/8" hardwood **wing bolt blocks (F12)** into the notches at F-5. Add fillets of epoxy all around these blocks, for a secure bond.

D 11. 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

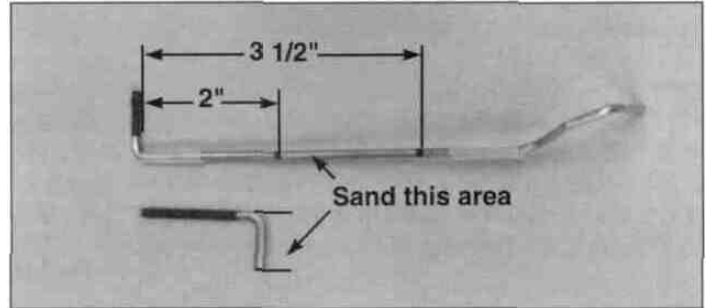
D 1. From the two remaining 24" long **outer pushrod tubes (PLTB011)**, cut one 19" long. Sand the outside of both tubes with 80-grit sandpaper to roughen them.



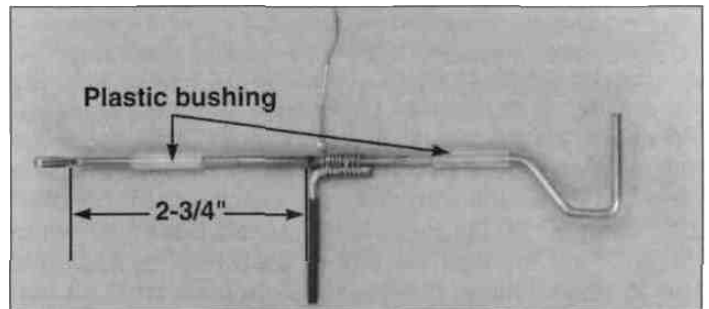
D 2. Slide the **19" outer pushrod tube** through the holes in the **left** side (as viewed from the tip of the fuse) of formers F-4, F-6, F-7 and F-8. Slide the 24" tube through the holes on the right side and out the slot in the fuse side. About 1" of the tubes should protrude forward of F-4. Glue the pushrod tubes to all of the formers and to the **inside** of the fuse sides with medium CA.

D 3. Trim and sand the outer pushrod tube that protrudes from the fuse, flush with the fuse side.

Build The Tail Gear

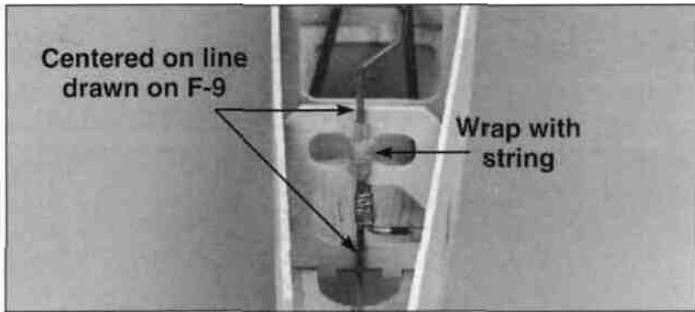


D 1. Using 220-grit sandpaper, sand the area 2" to 3-1/2" from the top of the **tail gear wire (WBNT233)** and the **unthreaded** end of the **tail gear arm (WBNT234)**. Wipe the wires clean with rubbing alcohol.

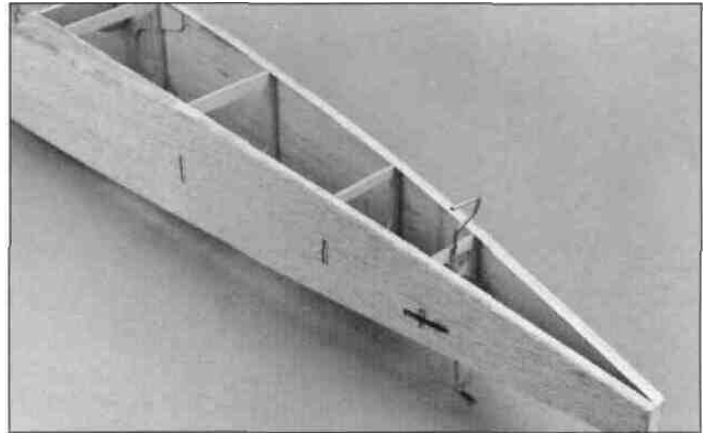


DD 1. Place a mark 2-3/4" from the top of the tail gear wire. Using the 8" piece of **wrapping wire (WIREF14)**, attach the tail gear arm to the tail gear wire so that the threaded portion of the tail gear arm is aligned with the mark and parallel to the tail wheel shaft. **Note:** Make sure that one plastic bushing is above the tail gear arm and one is below.

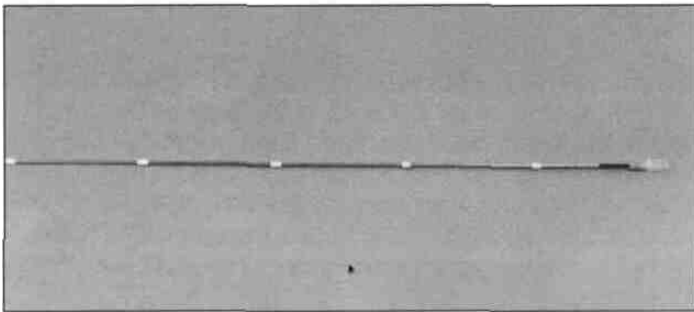
D 3. Apply soldering flux to the wrapped area. Using a hot soldering iron, solder the tail gear arm to the tail gear wire. Be careful not to melt the plastic bushings. After the tail gear wire has cooled, trim off the excess wrapping wire. Clean the area with rubbing alcohol to remove any flux.



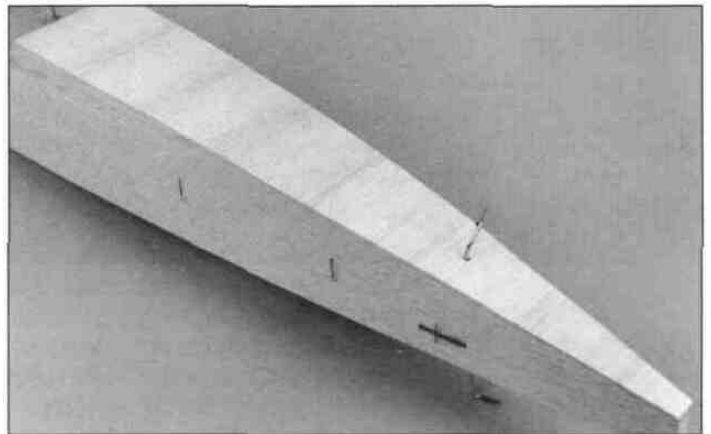
D 4. Trial fit the tail gear in the fuse. With the plastic bushings aligned with the centerline on the back of F-9, trim the tail gear arm to allow it to rotate through F-9. Roughen the bushing with 80-grit sandpaper. Thread a swivel (NYLON20) onto the arm until 1/16" of thread protrudes from the swivel. To attach the tail gear to F-9, wrap the lower plastic bushing and F-9 together with a piece of string. Make sure the bushing is aligned with the centerline on F-9. Glue the bushing to F-9 with 6-minute epoxy.



D 7. Use medium CA to glue the 1/4" x 24" balsa **triangle sticks (F10)** flush to the fuse sides and the bottom of the formers from F-5 through F-10. Sand the triangle sticks and fuse sides flush with F-5 through F-10.



D 5. Screw a **swivel clevis (NYLON21)** 13 turns onto the end of a **36" wire pushrod (WIRES17)**. Cut the unthreaded end to shorten the wire to **23-1/2"**. Cut six **3/16" 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 secure them in place. **Locate the bushings on both ends so that they will not exit or snag on the outer pushrod tubes.**

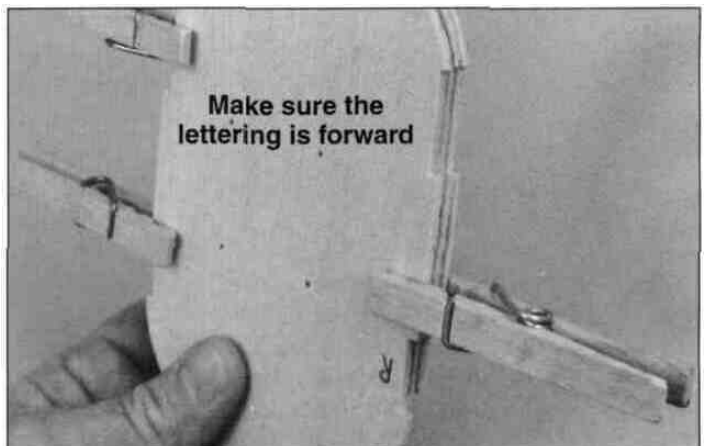


D 8. Sheet the bottom of the fuse with a 1/16" x 3" x 30" balsa **sheet (F18)**. The sheeting is applied cross-grain. After the sheeting has been applied, trim and sand the sheeting flush with the fuse sides.



D 6. Slide the wire pushrod into the outer pushrod tube and connect the clevis swivel to the swivel. Check that the tail gear moves smoothly and that the swivel clevis does not bind on F-9.

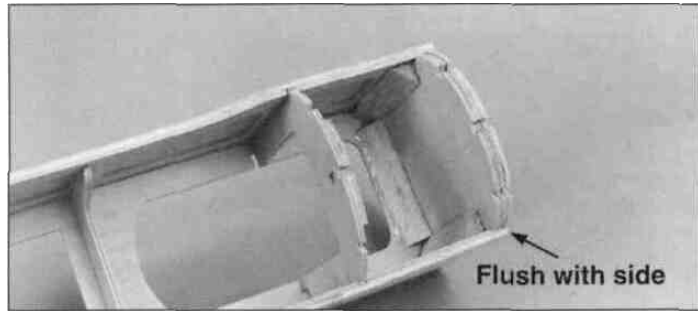
Install The Firewall



D 1. Use 30-minute epoxy to glue the 1/8" die-cut ply **F-1A firewall (F04)** and two 1/8" die-cut ply **F-1B firewalls (F01)** together. Make sure the die-cut punch marks on F-1A are to the **outside**.

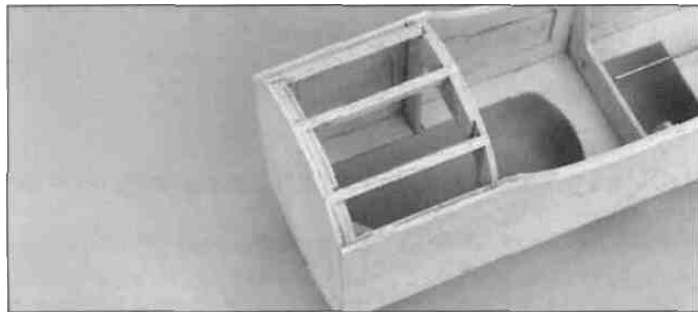
EXPERT TIP
EXPERT TIP

From this point on, the model will need to be supported. 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 hanger rash.

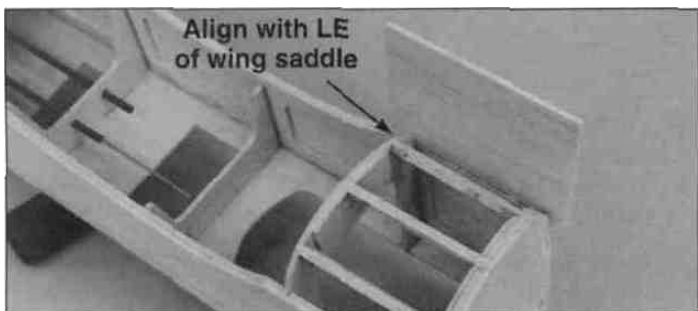


D 2. Test fit the firewall in the fuse. Remove any cured epoxy that may prevent the firewall from seating tight against the fuse sides and fuse doubler. The firewall angles slightly to the right to compensate for torque. The left side of the firewall is flush with the front of the fuse side. There is a slight gap between the firewall and the fuse doubler. Cut three pieces from the 1/2" x 12" **triangle stick (F08)** to fit between the firewall, fuse sides and forward crutch. After you are satisfied with the fit, epoxy the firewall and triangle sticks to the fuse with 30-minute epoxy.

D 3. After the epoxy has cured, sand the fuse sides flush with the front of the firewall..

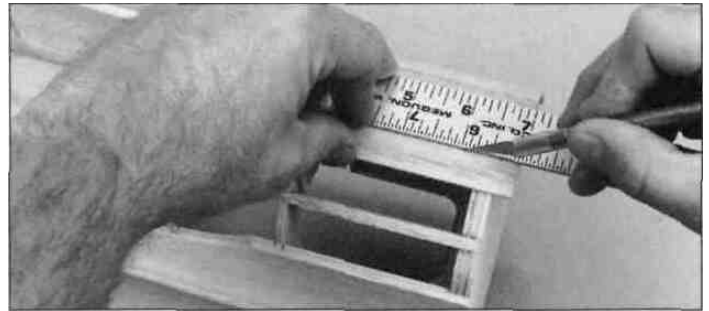


D 4. From a 3/16" x 3/16" x 30" balsa **stringer (F07)**, cut and glue a stringer into each notch from the firewall to former F-2. Sand the stringers flush with the firewall and former F-2.



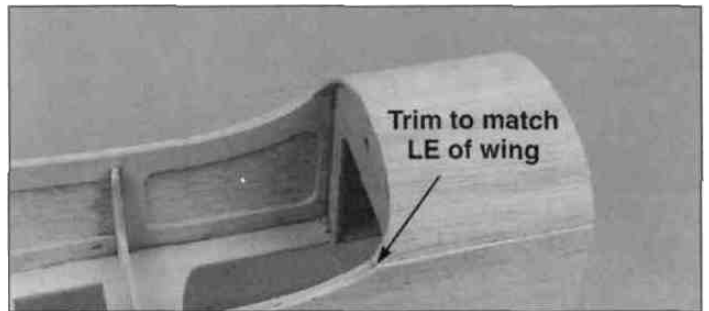
D 5. Cut Two 4" long pieces from the 3/32" x 3" x 8-7/8" balsa **front lower sheet (F17)**. Fit the lower sheet so that the rear corner is aligned with the LE of the wing saddle.

With the sheet pressed against the firewall and former F-2 use medium CA to glue one piece to the right fuse side only. The joint between the fuse side and the sheeting will be slightly offset.



D 6. Wet the outside of the sheet with water and let it soak in for a few minutes. Firmly, yet carefully, pull the sheet around the firewall and mark where it crosses the centerline of the 3/16" square center stringer. Cut the sheet on the line you marked.

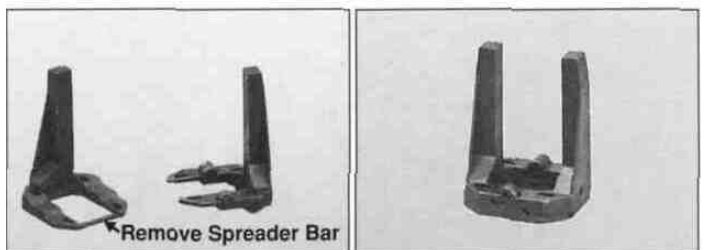
D 7. Pull the sheet into position and glue it in place.



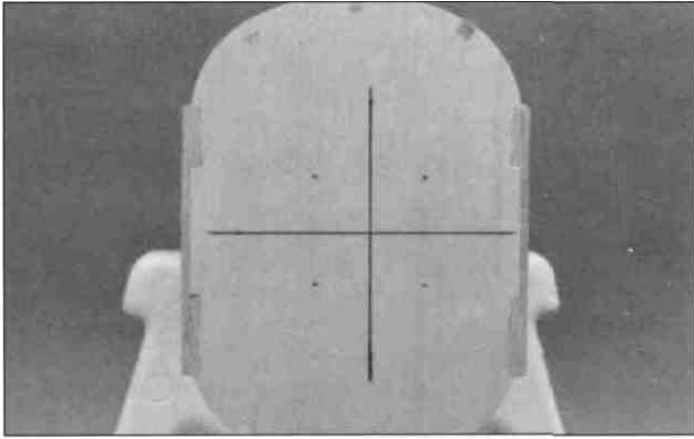
D 8. Apply the sheet to the other side in the same manner as described above. Sand the sheeting flush with the firewall and trim it to match the LE of the wing at the wing saddle.

Install The Engine And Tank

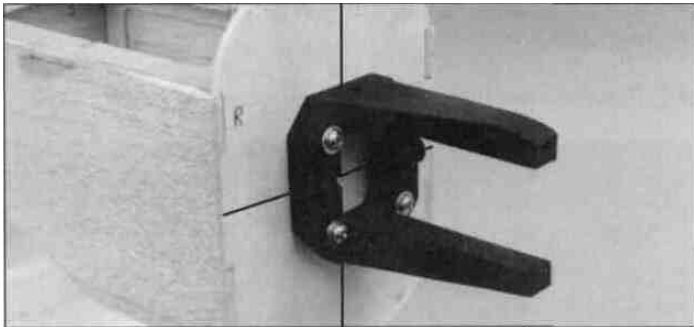
The Great Planes adjustable engine mount is simple and convenient to use. It may be used to mount most .40 - .60 two-stroke and .40 - .70 four-stroke engines.



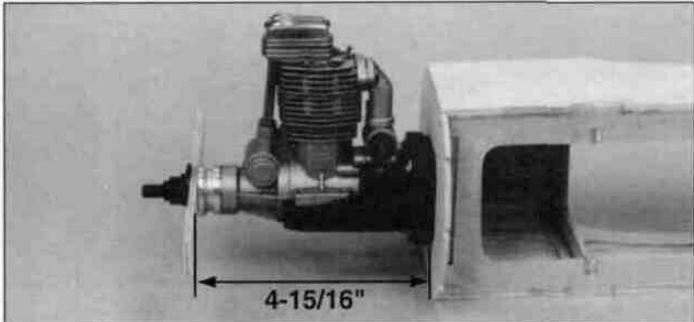
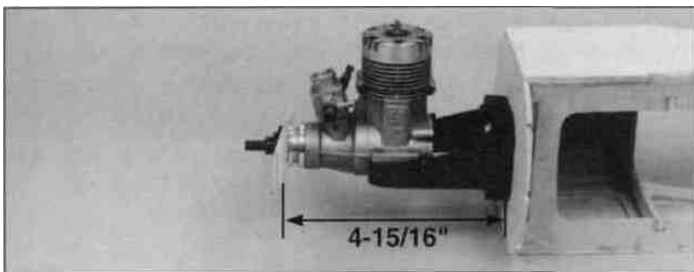
D 1. Cut or break the "spreader bar" from each mount half. Carefully trim any extra material left by the spreader bar from each mount half. The surface where the spreader bars were attached must be smooth to allow the mount halves to fit together. Trim the flashing off any rough edges if necessary. Assemble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



D 2. Draw a centerline on F-1A by connecting the punch marks on the firewall.



D 3. Drill a $11/64$ " diameter hole at each of the four die-punch marks on F-1A. Then install the mount sideways using **four 6-32 x 1" machine screws (SCRW008), #6 flat washers (WSHR004) and 6-32 blind nuts (NUTS003)**. 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 front of the drive washer 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 (SCRW018)** that have been provided with this kit.



How to accurately pinpoint the location of the engine mounting bolt holes on a plastic engine mount.

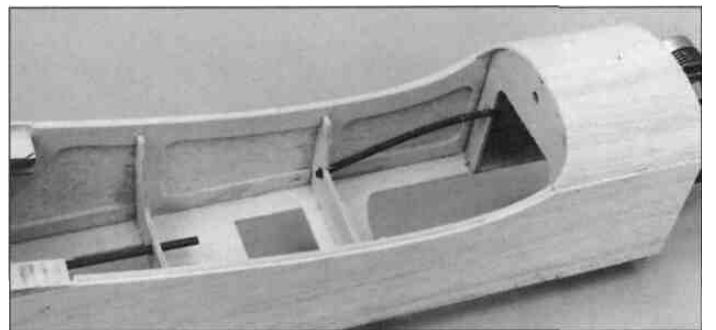
A. Before positioning the engine on the engine mount, apply a light coat of petroleum jelly on the mounting lugs of the engine mount.

B. After the engine is in position, sprinkle talcum powder or micro balloons down the mounting holes in the flanges of the engine.

C. Carefully remove the engine. The hole locations should have powder on them. Heat the point of a small nail with a match or lighter, Quickly press the point into the center of the hole locations marked with powder. Mark all four holes with the hot point of the nail.

Note: When installing an O.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.

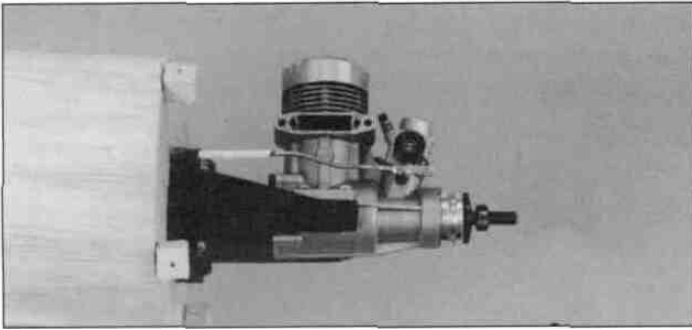
D 5. Mark the location for the throttle pushrod hole on F-1A.



DI 6. Use a $3/16$ " drill bit to drill a hole through the firewall at the throttle hole location you marked in step 5. Cut and insert an 8" length of **remaining outer pushrod tube** through the firewall. Mark formers F-2 and F-3 where the tube needs to pass through. Drill a $3/16$ " hole through the formers or cut notches at the marks. Adjust the outer pushrod tube so that it extends $1/4$ " past the firewall. Glue the tube in place.

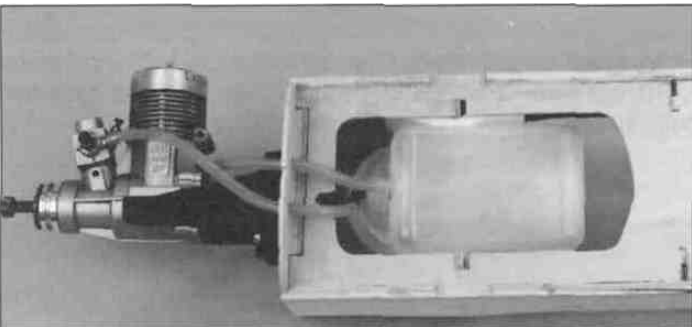
Complete The Fuse Top

We strongly recommend that the engine be removed from the engine mount and stored back in its box to prevent dust from entering the engine.

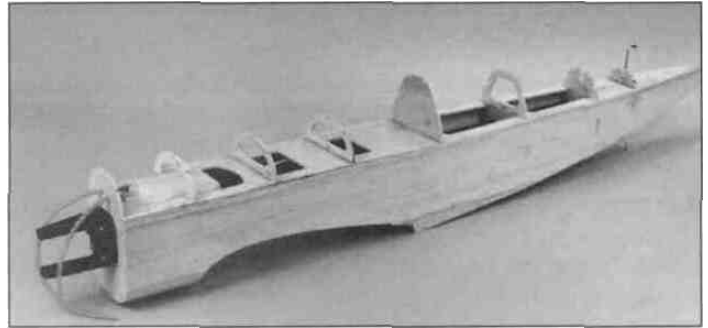


D 7. Cut off approximately 1/2" of threads on the 4" **threaded rod (WIRES72)**. Completely screw the threaded rod into one end of the 12" **inner pushrod tube (PLTB012)**. Attach a **solder clevis** to the throttle arm and insert the inner pushrod tube into the outer pushrod tube in the firewall. With 3/4" of inner pushrod tube protruding from the outer pushrod tube, bend the threaded rod to clear the muffler. Rotate the throttle arm toward the firewall and mark the location where the threaded rod passes through the solder clevis. Cut the threaded rod at the mark and solder the clevis onto it.

Note: We used a 10 oz. Great Planes Tank (#GPMQ4104) in our prototypes. By using the supplied right angle fuel supply tube, the fuel tubing 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.

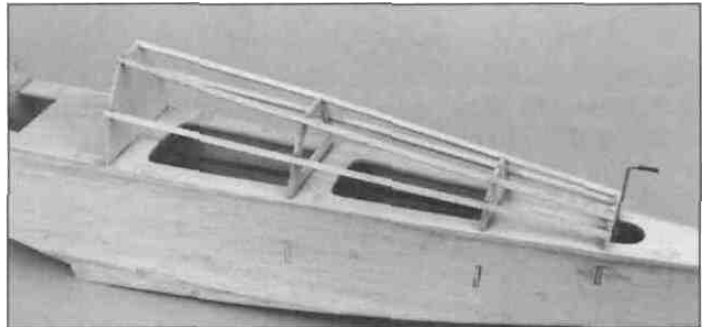


D 8. Temporarily install the fuel tank. *It's much easier to see what is happening at this stage of construction.* Decide where you want the fuel and vent tubes to exit the firewall and mark the locations. Remove the tank and drill two 15/64" (or 7/32") fuel tube exit holes through the firewall at the locations you marked. Before reinstalling the fuel tank, fuelproof the fuel tank compartment. Wrap the fuel tank in foam to prevent fuel foaming from vibration. Reinstall the tank and connect the fuel tubes. Check for kinks and rectify any problems before proceeding.

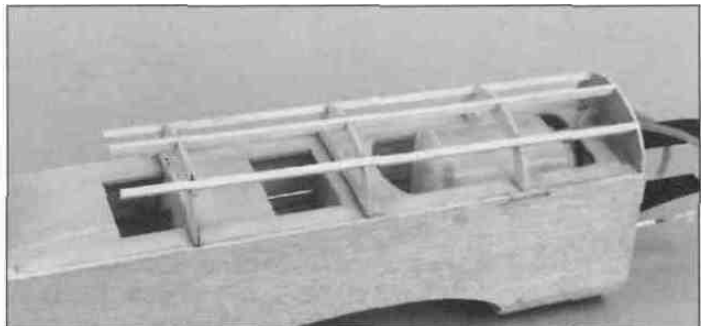


D 1. Glue the die-cut ply formers **F-2B, F-3B, F-4B, F-6B, F-7B, F-8B** and **F-9B (F02, F03 and F04)** into their notches on the fuse top. Use a triangle to maintain the vertical alignment of the formers.

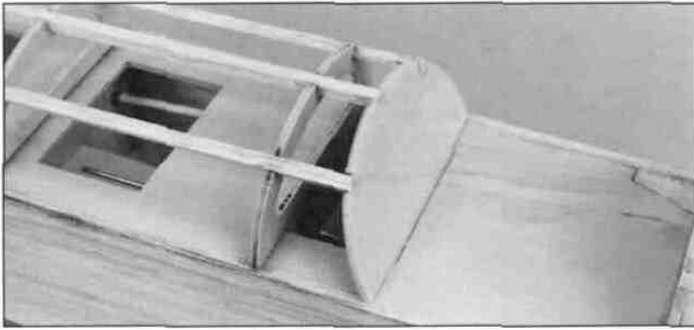
D 2. From a piece of 1/8" scrap ply, cut two 1/2" x 3-1/2" **servo tray doublers**. Glue the doublers on the forward and aft edges of the servo cutout in the forward crutch.



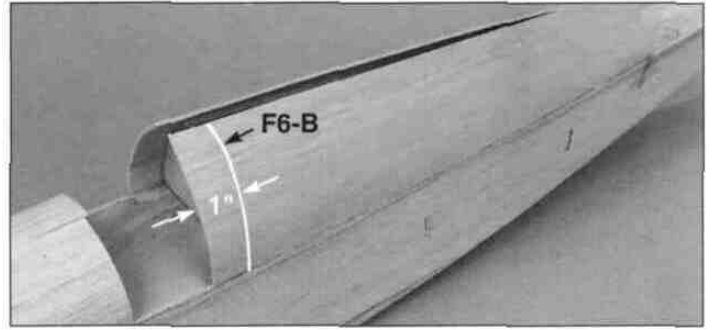
D 3. Cut two of the 3/16" x 3/16" x 30" balsa **stringers** in half. Fit the stringers from former F-6B to F-9B and glue them in place with thin CA. Sand the end of the stringers flush with F-6B and F-9B.



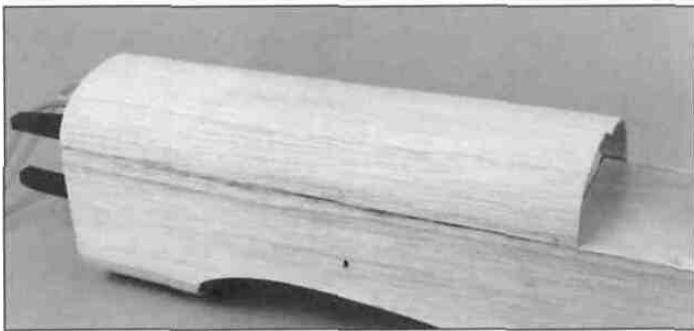
D 4. Cut three 13" long pieces from the remaining 3/16" x 3/16" balsa. Install the stringers flush with the front of the firewall, allowing them to overhang former F-4B.



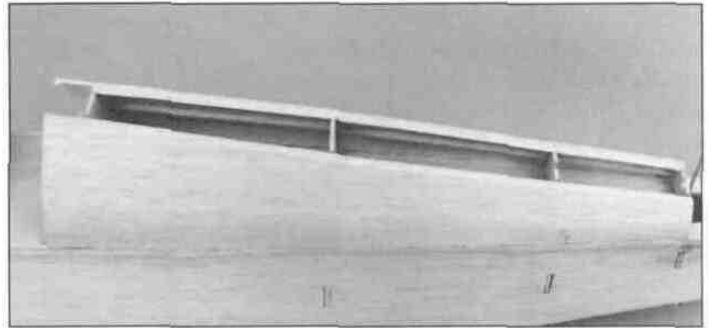
D 5. Slide the 1/8" die-cut ply **instrument panel (F03)** under the stringers. The top of the instrument panel angles toward the front of the fuse. Adjust the panel so that it's tight against the stringers but **does not bend** them. Sand the bottom of the panel to match the angle of the forward crutch. Glue the instrument panel to the stringers and forward crutch. Then, sand the stringers flush with the instrument panel.



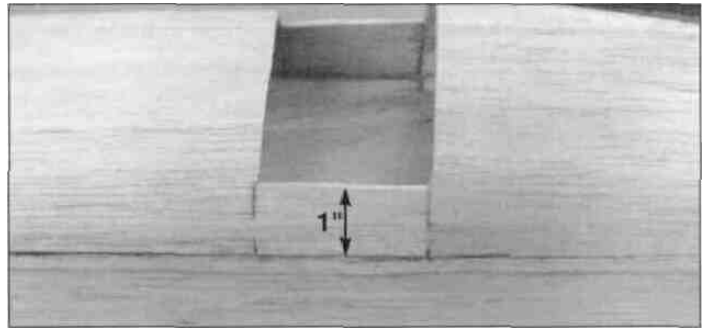
D 8. Trim the turtle deck sheet so that it overhangs former F-6B by 1" and F-9B by 1/8". Glue the sheet to the fuse sides, formers F-6B through F-9B and the stringers. Repeat the process on the other side.



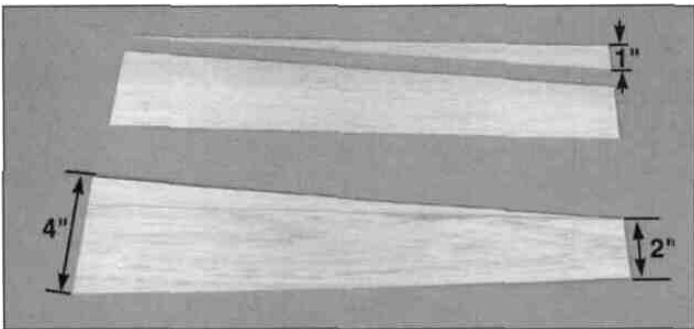
D 6. Glue the 3/32" x 3-1/4" x 15" balsa **front deck sheeting (F15)** to the front upper deck following the same procedure used for sheeting the forward bottom. Allow the sheeting to overhang the instrument panel into the cockpit by 1/2".



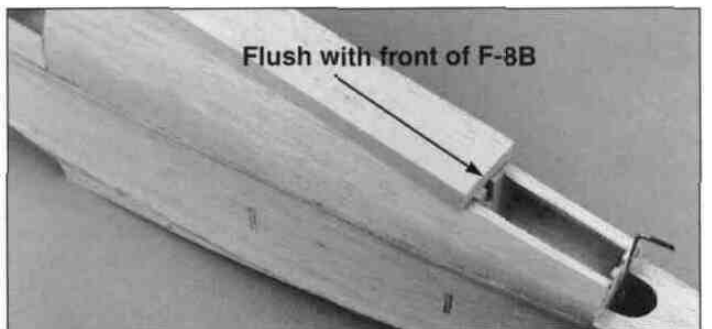
D 9. Trim and sand the turtle deck sheeting and stringers flush with the top of formers. Sand the aft edge of the sheeting flush with F-9B.



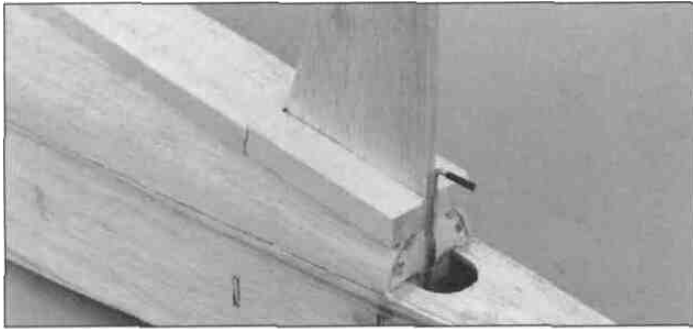
D 10. From a 3/32" piece of scrap balsa cut a 1" wide piece to fit between the turtle deck sheet and the forward deck sheet.



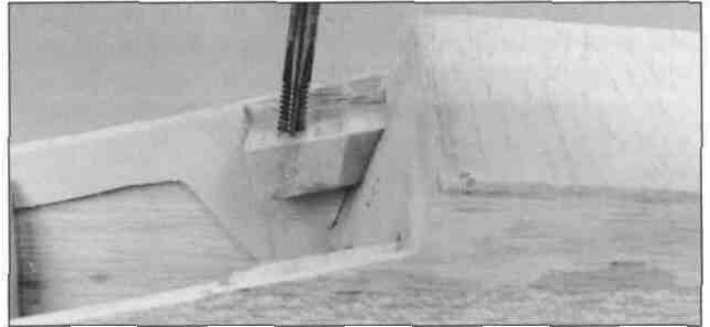
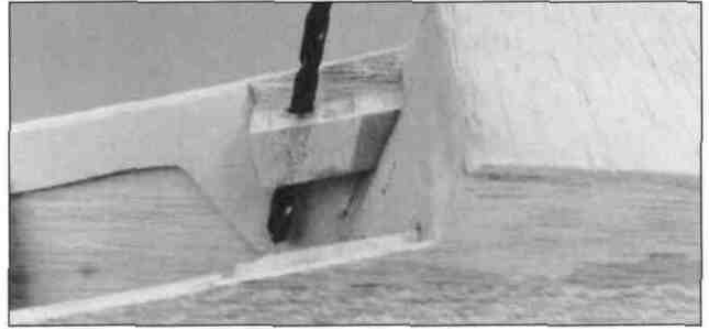
D 7 Cut the two 3/32" x 3" x 18" balsa **sheets (F14)** as shown in the photo above. Glue the small piece to the other end to make a turtle deck sheet 4" wide at one end **and 2"** wide at the other. Sand the joint smooth **with 220-grit sandpaper**.



D 11. Glue the 1/2" x 2" x 12" balsa **turtle deck block (F19)** centered on top of formers F-6B and F-7B and **flush with the front of former F-8B**.



D 12. Insert the fin in the slots in formers F-8B and F-9B. Glue the 1/2" x 7/8" x 3-7/16" balsa **filler block (F20)** on each side of the fin. **Do not** glue the blocks to the fin. After gluing the blocks in position, remove the fin and sand the aft ends of the blocks flush with F-9B.



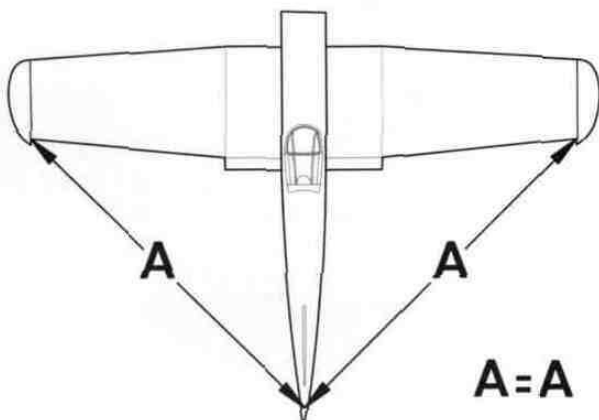
D 3. Tape the wing in position. Run a 1/4" drill bit through the holes in the aft end of the wing to **lightly mark** the wing bolt blocks. Do **not** drill the hole with the 1/4" bit. Remove the wing and drill a 13/64" (or use a #10 drill bit) through each of the wing mounting blocks. Angle the holes as shown on the side view of the fuse plan. 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.



D 13. Use epoxy to glue the top plastic tail gear bushing, centered on former F-9B just below the slot for the fin.

Mount The Wing To The Fuselage

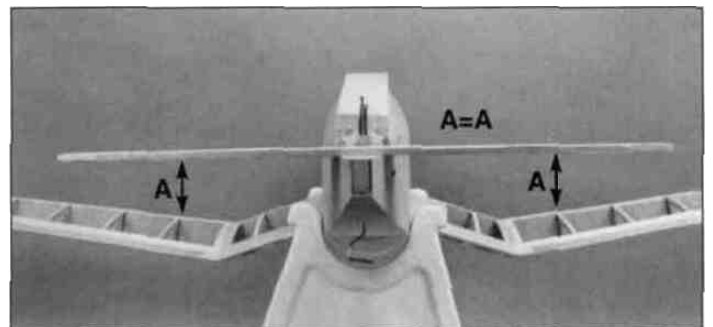
D 1. Clean out the wing dowel hole in F-2 with a 1/4" drill bit. Test fit the wing and adjust the dowel hole in F-2, if needed, with a round file.



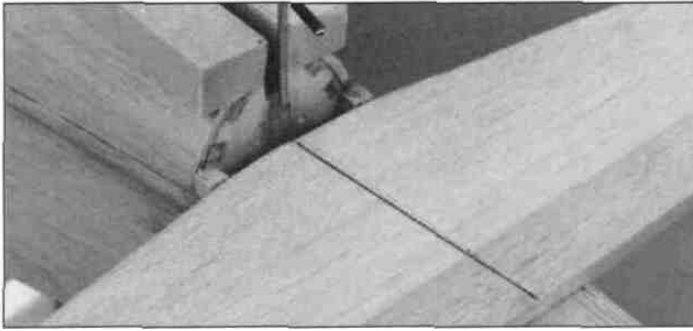
D 2. Seat the wing in the wing saddle and visually align it with the fuse. Pin a string to the center of former F-10, then extend it out to a wing tip. Put a piece of tape on the string to mark the intersection of the string and the wing tip. Swing the string over to the other tip and see if the distance is the same (see diagram). Make slight adjustments to the angle of the wing until the distance from the tail to the wing tips is equal.

Attach The Stabilizer Blocks

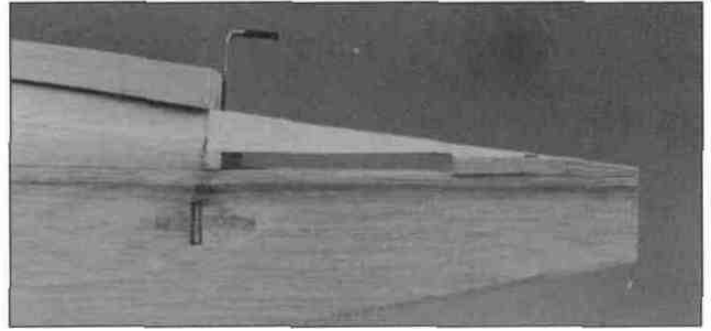
D 1. Draw an accurate centerline on the top of the stab, perpendicular to the stabs TE.



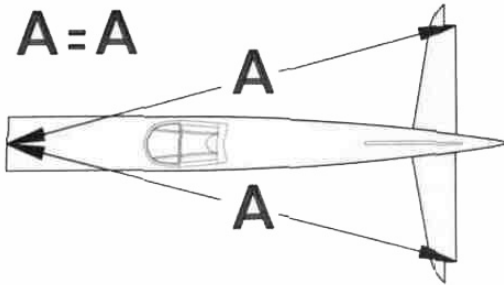
D1 2. Center the stab on the stab saddle and pin it in position. Study the aft end of the structure from 6-10 feet back. If the stab tips are not equidistant above the wing, carefully sand the **high** side of the stab saddle until the stab is aligned.



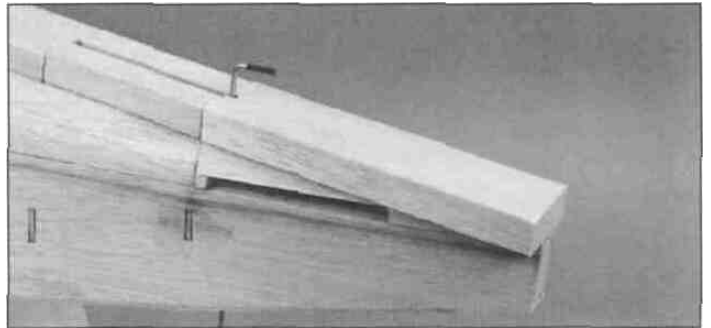
D 3. Cut two 1/4" **long** pieces from the 1/4" x 1/4" x 7" balsa stick (F11). Glue each 1/4" piece in front of the stab, slightly overhanging the fuse side.



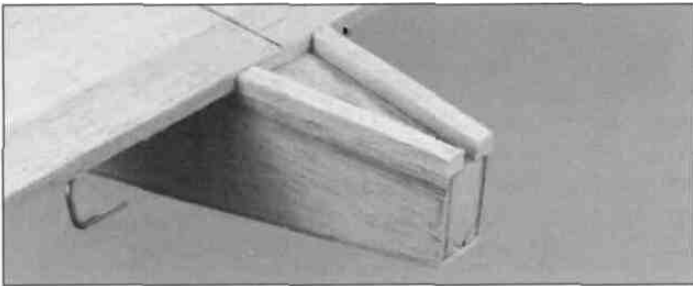
D 7. Sand the front and bottom of the stab blocks to match the angle of the turtle deck. Glue the stab blocks to the 1/4" x 1/4" sticks on the stab saddle. Sand the stab blocks and 1/4" x 1/4" sticks so that the 1/2" x 2" x 6-1/2" balsa **stab top block (F22)** can be aligned with the turtle deck block.



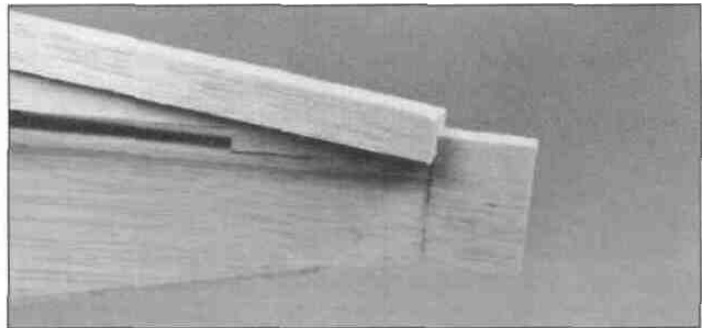
C1 4. Center the stabilizer using the centerline you drew in step #1. Measure the distance from each stab tip to a pin centered at the nose.



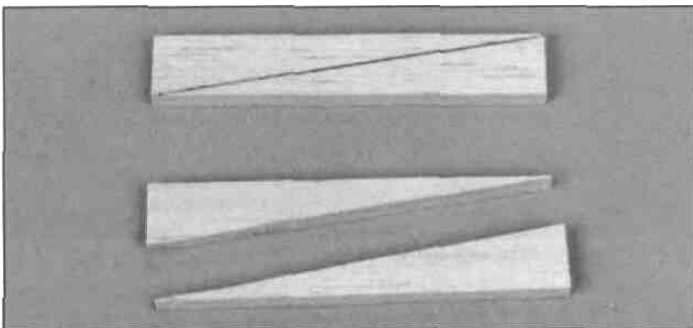
D 8. Cut a 1/8" groove on the forward end of the stab top block for the tail gear. Glue the stab top block onto the stab blocks and to the aft end of the turtle deck block. Sand the aft end of the stab top block flush with former F-10.



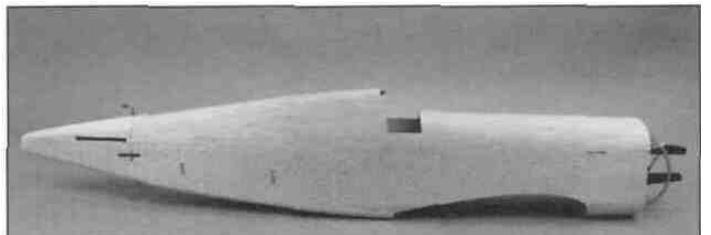
D 5. Cut the remaining 1/4" balsa stick in half and glue each piece to the fuse at the aft edge of the stab, slightly overhanging the fuse side. Be careful not to glue the stab to the stab saddle. Remove the stab and sand the 1/4" balsa sticks flush with former F-10.



D 9. Glue the 3/4" x 1-1/4" x 1-3/4" balsa **tail block (F23)** flush with the bottom of former F-10.



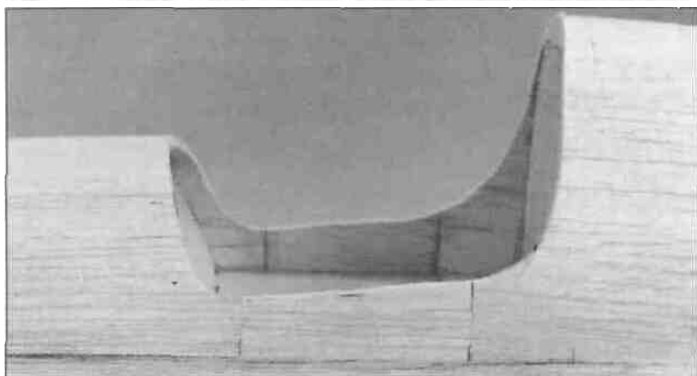
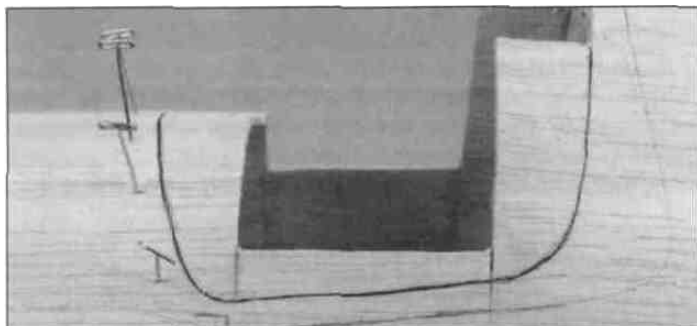
D 6. Draw a line connecting two corners of the 1/4" x 7/8" x 5" balsa **stab fairing block (F21)**. Cut the block in half diagonally.



D 10. It's time to get out your carving knife or razor plane and Easy-Touch Sander with 80-grit sandpaper. Carve and sand the turtle deck and tail block to shape as shown on the plans. Blend the fuse sides and the top and bottom sheeting together.

D 11. Now is a good time to apply balsa filler to any gaps in joints. This will allow you to finish sand most of the fuse before installing the fin and stab.

D 12. Trim the canopy with a scissors using the embossed cut lines for reference.



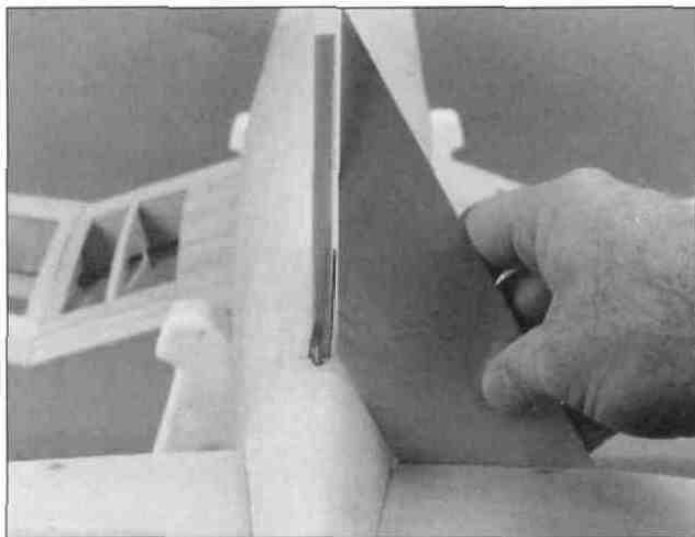
D 13. The top deck sheeting overlaps the instrument panel by 1/4". Use T-pins to locate the instrument panel and draw a line 1/4" behind them. Cut the 1/2" turtle deck block flush with former F-6B. Center the canopy over the cockpit and mark the outline. Now, move the canopy approximately 1/4" in the direction of where the cut will be made and mark the outline again. By cutting the balsa on the inside line, a 1/4" border will be left to mount the canopy.

D 14. Now that the balsa filler has had a chance to dry, finish sand the tail section area. Check all the joints around the balsa blocks and sheeting. If any have come loose or were missed during the building process, glue them before finish sanding with 320-grit sandpaper.

Install The Stab And Fin

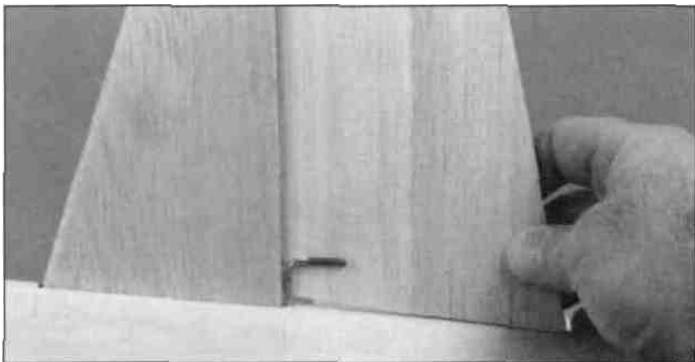
Note: We recommend that the stab and fin be installed at this point in the construction process. By installing them now, a small fillet can be made at the joint between the fuse, stab and fin. However, to make covering the fuse easier, the stab and fin can be installed after everything is covered.

D 1. Reinstall the wing on the fuse. Cut a notch for the elevator joiner wire at the aft end of the slot for the stab. Install the joiner wire in the notch. Then slide the stab into the stab cradle. Check that the stab is still parallel to the wing and that the stab tips are an equal distance from the nose of the fuse. Lightly draw lines on the top and the bottom of the stab at the joint between the stab and fuse. Remove the stab and apply **30-minute** epoxy to both sides of the stab between the lines. Slide the stab into position and check its alignment. Wipe off the excess epoxy with alcohol and a paper towel and allow the epoxy to cure.

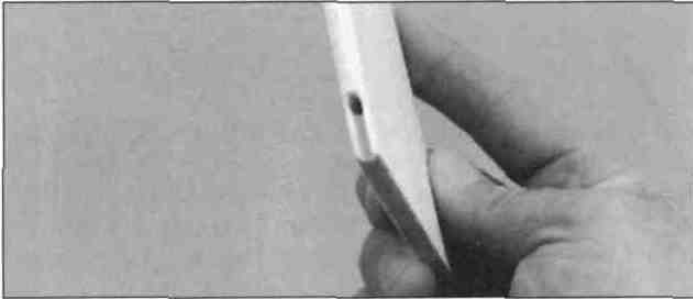


D 2. Position the fin in the slot in the turtle deck. Hold a triangle on the stab and close to the fin. Check that the fin is perpendicular to the stab. Glue the fin in the slot with 6-minute epoxy.

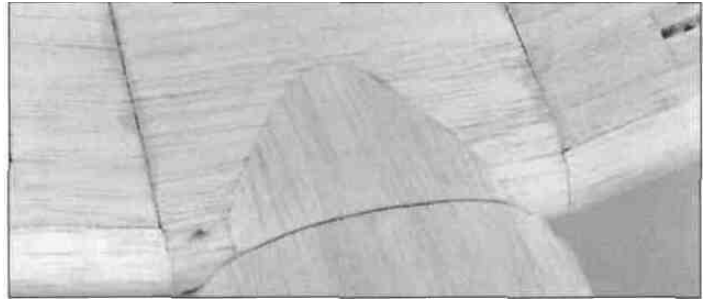
D 3. Test fit the elevators on the stabilizer and sand as necessary to clear the fuse sides.



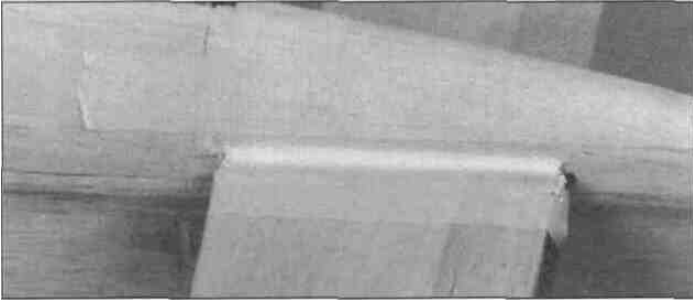
D 4. Make sure that the tail gear moves freely while applying upward pressure. Hold the rudder up to the fin and mark the tail gear "arm" location on the rudder LE. Drill a 7/64" hole 7/8" deep at this spot.



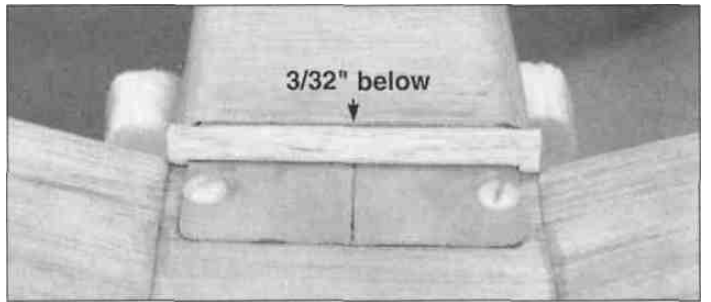
D 5. Cut a groove from the tail gear hole to the bottom end of the rudder to allow the rudder to fit tightly against the fin.



D 2. Use the template on the plans as a guide to cut the **belly fairing sheet** from 1/16" x 3" x 18" balsa (F16). Sand the edges of the sheet so that it blends into the bottom sheeting on the wing. Glue the belly fairing sheet to the wing, then use balsa filler to finish blending it into the wing.



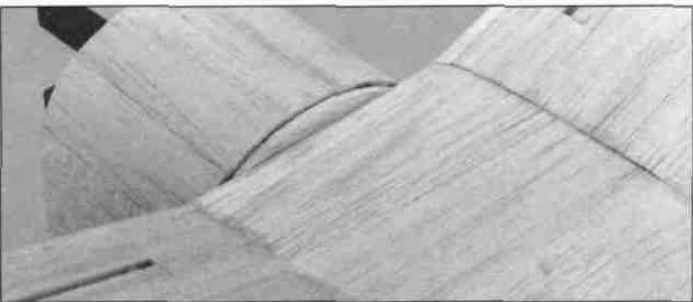
D 6. To easily make a fillet along the stab and fin, place a piece of masking tape 1/4" on both sides of the joint. Apply balsa filler to the joint using your finger. Remove the masking tape. Then wet your finger and wipe across the fillet to smooth it out. After the filler has dried lightly, sand the fillet with 320-grit sandpaper.



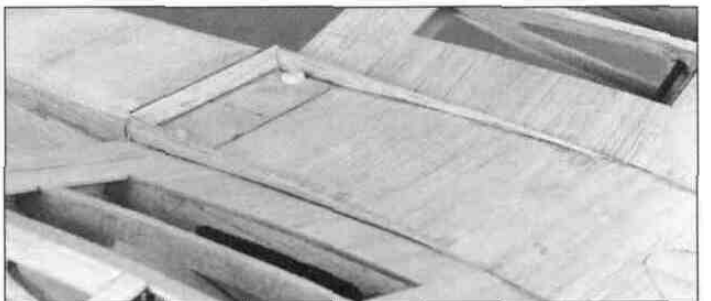
L 3. Cut a 4-1/4" long piece from the 3/32" x 1/2" balsa cap strip balsa to make an **aft belly fairing end**. Cut a notch in the center so that the belly fairing end fits over the wing plate. Glue the aft belly fairing end to the top of the wing plate and wing, flush with the TE. Leave approximately 1/16" between the belly fairing end and former F-5. Sand the top of the belly fairing end so that when a 3/32" sheet is applied, it will be flush with the fuse bottom sheeting.

Build The Wing Belly Fairing

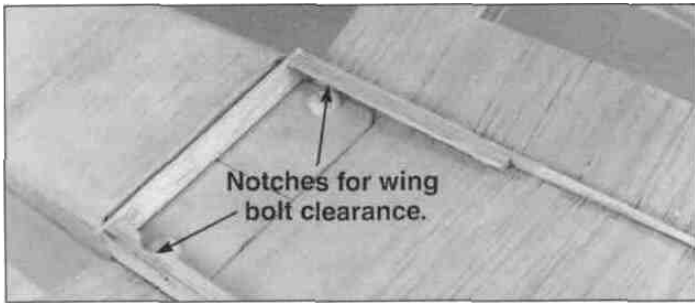
Note: Before working on the belly fairing, we suggest that you remove the wing from the fuse and insert a layer of waxed paper between former F-2 / LE joint and F-5 / TE joint of the wing. This will help prevent the wing from being accidentally glued to the fuse.



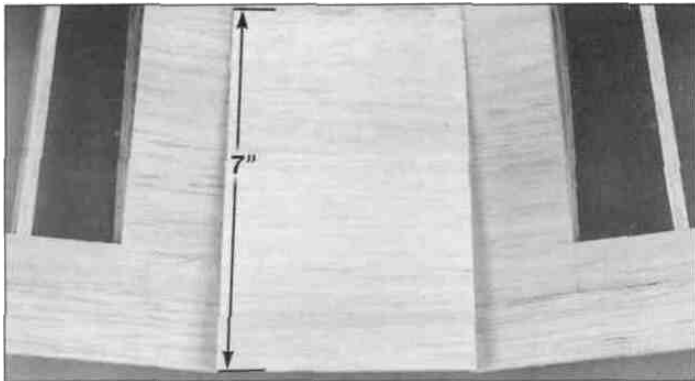
D 1. Fit the 1/8" die-cut balsa **belly fairing front (FO6)** on the LE of the wing. Leave a gap of 1/16" between the BF and F-2. Align the belly fairing front with former F-2 and glue it in place.



D 4. Cut two 7" long pieces from the 3/32" x 1/2" balsa cap strips to make **aft belly fairing sides**. From the plans, use the template as a guide to cut the **belly fairing sides**. Sand the belly fairing sides to achieve a close fit to the wing bottom. Glue the sides to the wing and aft belly fairing end.

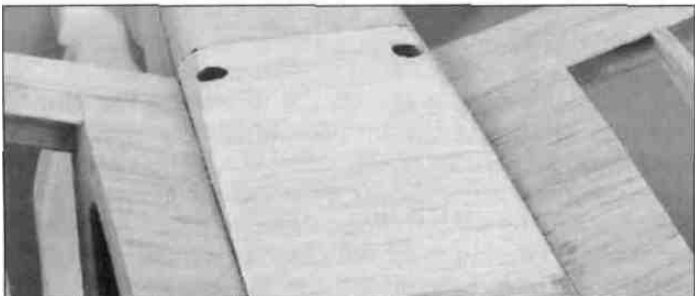


D 5. Glue two 1/4" x 1/4" x 4" **triangle sticks** from 1/4" x 1/4" x 12" tri-stock (F10) to both sides of the belly fairing sides, flush with the top of the sides. Trim the triangle sticks to allow the wing bolts to be removed.



D 6. Remove the wing from the fuse and remove the wing bolts. Cut three 4-1/4" long pieces of 1/16" x 3" sheeting. Edge glue the three pieces together. Place a mark 7" forward from the belly fairing end. Set the sheeting on the aft belly fairing sides with the forward edge flush with the line. Sand the forward end to blend into the wing. Glue the sheeting to the belly fairing sides, end and the wing. Trim and sand the sheeting flush with the aft belly fairing end.

D 7. Using a 1/4" drill bit, insert the drill bit through the wing bolt holes from the top of the wing and drill through the belly fairing sheeting. Enlarge the holes in the sheeting to allow the head of the wing bolt to seat against the wing plate.

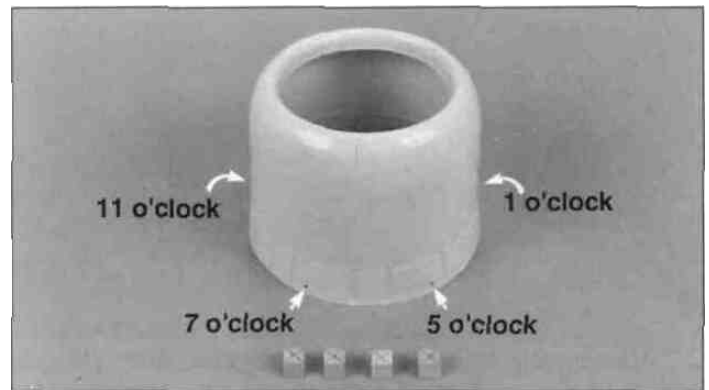


D 8. Reinstall the wing on the fuse and sand the aft belly fairing to blend with the fuse and the wing. Remove the wing and clean up the LE and TE of the belly fairing.

Install The Cowl

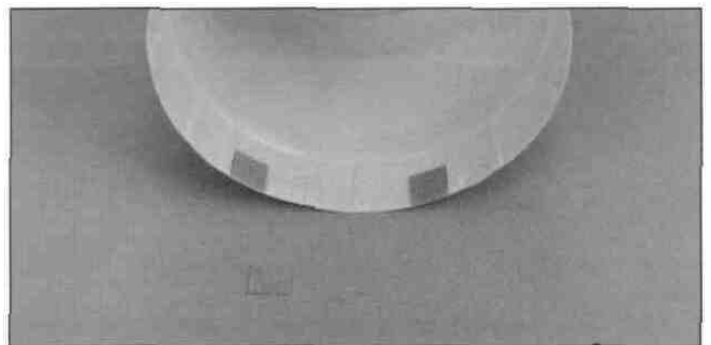


D 1. Trim the **cowl ring (COWL028)** and the **cowl flap (COWL029)** with a scissors using the embossed cut lines for reference. Use medium CA to glue the lip on the cowl flap inside the cowl ring. Sand the joint on the inside with 220-grit sandpaper and clean it with rubbing alcohol. Use thin CA or 30-minute epoxy to glue the 1" fiberglass strip over the joint inside the cowl.

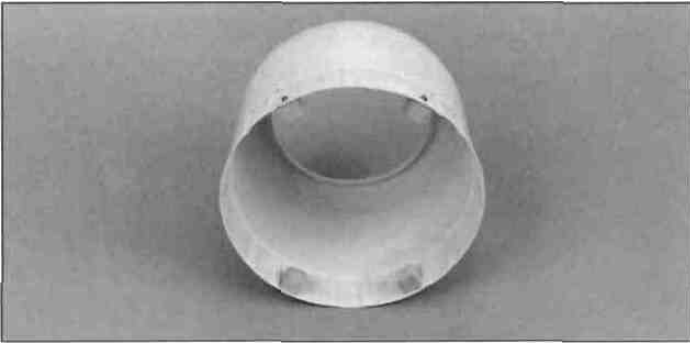


D 2. On the cowl ring, place marks 1/4" forward from the aft edge at the 1 o'clock, 5 o'clock, 7 o'clock and 11 o'clock positions, in the larger cowl flap area, as shown on the plans. Use a 3/32" drill bit to drill a hole through the cowl at each mark. Place a mark in the center of each 1/2" x 1/2" x 1/2" hardwood **cowl block (F13)** and drill a 1/32" hole through each block at the mark.

D 3. Sand the drilled end of the cowl blocks to match the curvature of the cowl.

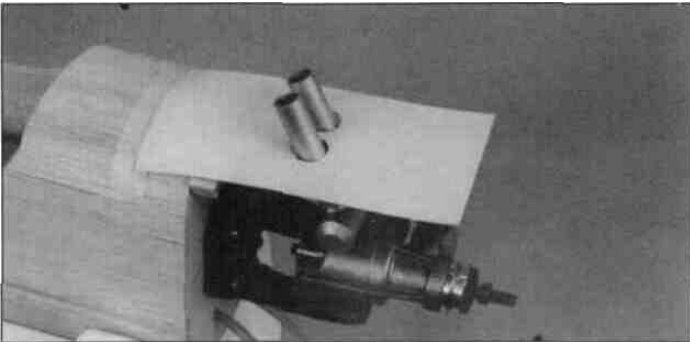


D 4. Cut four 5/8" square cowl mount pads (F24) from the 1/32" x 5/8" x 3-1/2" birch ply sheet. Sand the area around the screw holes in the cowl. Glue the cowl mount pads to the cowl with 6-minute epoxy. After the epoxy cures, drill through the pads with a 3/32" drill bit.



D 5. Attach the cowl blocks to inside of the cowl using #2 x 3/8" **sheet metal screws**.

D 6. Stand the fuse up on its tail. Center the cowl on the fuse and mark the cowl block locations on the firewall. Use the marks to help locate the cowl blocks on the firewall and glue the cowl blocks to the firewall with 6-minute epoxy.



D 7. Remove the cowl and install Hie muffler. Cut a piece of clear butyrate or thin card stock to use as a template (not included) long enough to cover the engine. Tape the template to the fuse and with a marker draw the outline of any part that will protrude out of the cowl (for example, the needle valve, glow plug and muffler). Trim the area from inside the lines on the template. Test fit the template over the engine and trim as needed. Carefully remove the engine without disturbing the template and reinstall the cowl. With the template still taped to the fuse, lay the template on the cowl and mark the location where holes will need to be cut. Remove the cowl and trim out the openings.



D 8. Reinstall the engine on the engine mount and trial fit the cowl over the engine. Allow approximately 1/16" of clearance around the muffler for cooling.

FINISHING



EXPERT TIP

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 slot with balsa filler. After the filler has hardened, 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. Top Flite LustreKote paint or 30-minute epoxy is recommended.

D 2. Fuelproof any external exposed wood.

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 Film

The Corsair 40 does not require much painting to obtain the scheme shown, on the box, as most of the finish is done with **Top Flite MonoKote Film**. The only painting required is for the cowl and canopy frame.

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 following sequence. 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 Film.

COVERING TECHNIQUE

You can practically eliminate covering 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 Flite Hot Sock and turn the heat about 3/4 of the way to the high setting.

B Cut a piece of MonoKote film about 2" larger all around than the surface you are covering. Strip off the backing and position the film. Tack the film down **smack dab in the middle of the surface**.

C Pull (as in stretch) the film toward one end, 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 to the surface.

F Use a heat gun to heat and to 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 **prestretch the MonoKote** film as it's applied, and remove the air pockets that can expand later to cause the sags and wrinkles.

When covering areas that involve sharp junctions, like the tail section, cut narrow strips (1/4" to 3/8") and apply them in the corners **before** covering the major surfaces. The larger pieces of MonoKote Film will overlap and capture these smaller pieces. This technique also bypasses the need to cut the MonoKote Film 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
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 (May require three pieces one on each side and a small triangular piece on the top)
11. Ends of ailerons
12. Bottom of ailerons
13. Top of ailerons
14. TE surfaces of wing and belly fairing
15. Junction strips between wing **panels**
16. Bottom of left outer wing panel
17. Bottom of right outer wing panel
18. Bottom of Left and Right inner wing panels
19. Sides and bottom of belly fairing
20. Top of left outer wing panel
21. Top of right outer wing panel
22. Top of left and right inner wing panels.
23. Top of center section
24. Front and back of landing gear **doors**

Painting The Cowling

Paint used on the prototype: We used Top Flite LustreKote Insignia Blue to paint the cowl and canopy frame.

First wet sand the cowl with 400-grit sandpaper to provide a rough surface for the paint to adhere to. Wash and dry the cowl thoroughly. On the canopy, mask the area not to be painted. Roughen the area to be painted with 000 steel wool or 400-grit sandpaper. Clean the area thoroughly with alcohol and a paper towel.

To spray the cowl with LustreKote paint. First spray a light coat on the inside and outside. Let the paint flash off (dry) for about two minutes. Then, spray a wet coat on (a wet coat will look slightly rough when first sprayed, but will smooth out after a couple of seconds). Be careful not to get the paint on so heavy that it runs. For best results, allow the paint to dry for two or more hours. Then spray another wet coat. Allow the paint to dry overnight before installing the cowl on the fuse.

To spray the canopy with LustreKote Paint. Make sure the masking is down around the edges. Spray light coats of paint. Allow the paint to dry for 5 minutes between coats. After the desired coverage is obtained, remove the mask and allow the paint to dry overnight.

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.

D 1. Cut the hinge slots in the stab and elevators using the technique described in the Expert Tip section following these four steps. Test fit the elevators to the stab with the joiner wire in position. When satisfied with the fit, remove the elevators. Pack the joiner wire holes in the elevators with 30-minute epoxy. Then install the elevators on the stab. Make sure that both elevators are parallel with each other. Use a paper towel dampened with rubbing alcohol to remove any excess epoxy that squeezes out.

D 2. Install the rudder following the same procedure used to install the elevators.

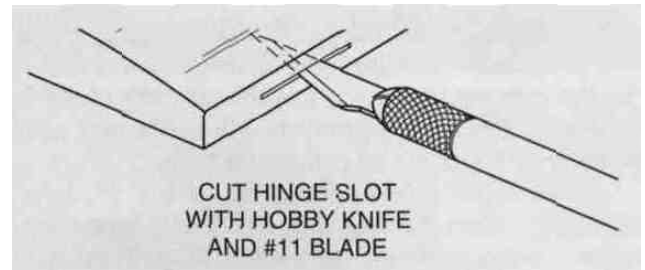
D 3. Install the ailerons on the wing, using four hinges each.

D 4. After the epoxy has cured, CA the hinges in the control surfaces.

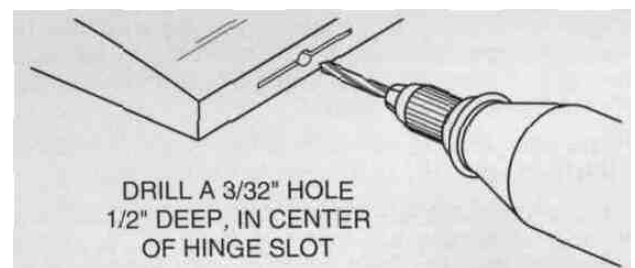
Note: Refer to the fuse plan for the hinge making instructions. Cut 16 hinges from the 2" x 9" supplied material.

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.

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.



D 1. 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).



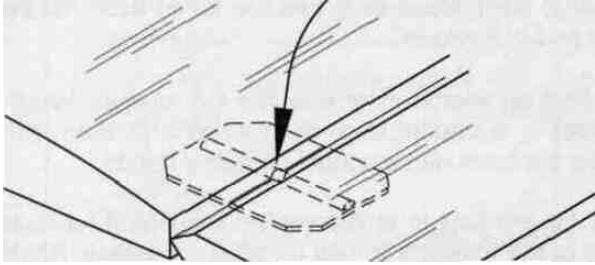
D Drill a 3/32" hole, 1/2" deep, in the center of the hinge slot. If you use a Dremel Moto-Tool for this task, it will result in a cleaner hole than if you use a slower speed power or hand drill. Drilling the hole will twist some of the wood fibers into the slot, making it difficult to insert the hinge, so you should reinsert 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.

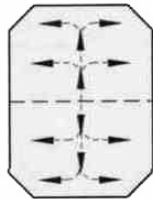
E. Insert the hinges and install the control surface. Verify the left-right positioning of the control surface, and close up the hinge gap to 1/32" or less. It is best to leave a very slight hinge gap, rather than closing it up tight, to help prevent the CA from wicking along the hinge line. Make sure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

ASSEMBLE, THEN APPLY 6 DROPS OF THIN CA TO CENTER OF HINGE, ON BOTH SIDES



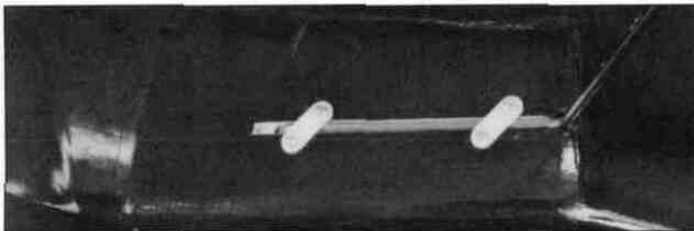
F. Apply 6 drops of thin CA adhesive to both sides of each hinge, allowing a few seconds between drops for the CA to wick into the slot. Note that the small "tunnels" you created by drilling the 3/32" holes allow the CA to freely travel in to the entire surface of the hinge, producing an extremely secure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

THE CA WICKS ALONG THE •TUNNELS" TO THE ENTIRE HINGE SURFACE

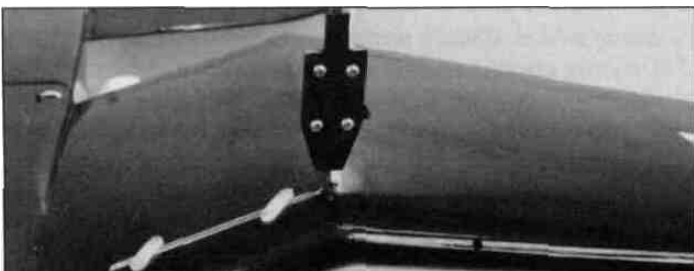


Install The Landing Gear and Canopy

D 1. Secure the tail wheel to the tail gear with two 3/32" wheel collars.

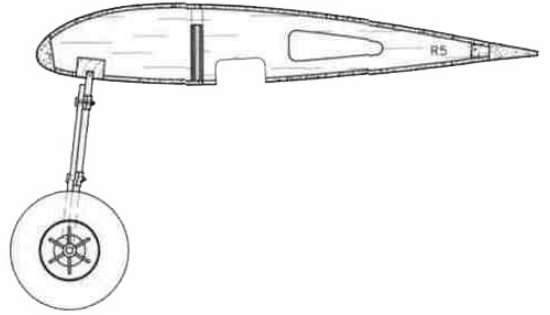


D 2. Seat the landing gear in the groove on the bottom of the wing. Secure it with two nylon straps (NYLON36) and four #2 x 3/8" sheet metal screws per gear.



D 3. Center the landing gear doors on the landing gear. Hold a nylon hump strap (NYLON30) on the back of the gear door and mark the location of the holes in the hump

strap. Attach the gear door to the hump strap with two #4 x 3/8" sheet metal screws (SCRW043) inserted from the front of the door into the strap. Repeat the process for the other hump strap.



D 4. The landing gear should be positioned as shown in the sketch above, with the wheel under the L.E.

D 5. Paint the inside of the cockpit light gray (your option). Trim and install the instrument panel decal.

D 6. Position the canopy on the fuse as shown on the plans, then lightly trace its edges on the covering with a ballpoint 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.

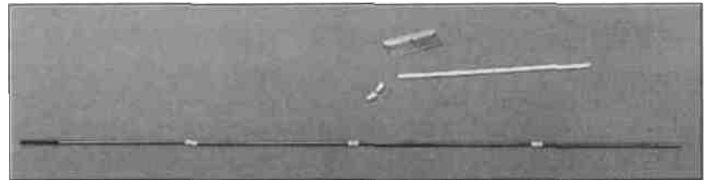
D 7. Before installing the canopy you may wish to add a pilot figure. We added a block of balsa to the bottom of a 2-1/2" Williams Bros. Pilot to give the pilot the proper height.

D 8. 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.

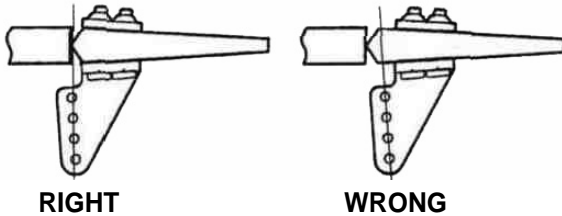
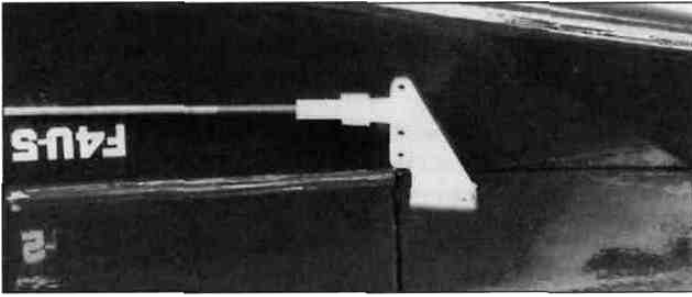
Radio Installation

Note: You should wrap a flat battery pack with 1/4" foam rubber (HCAQ1000) and install the battery under the fuel tank.

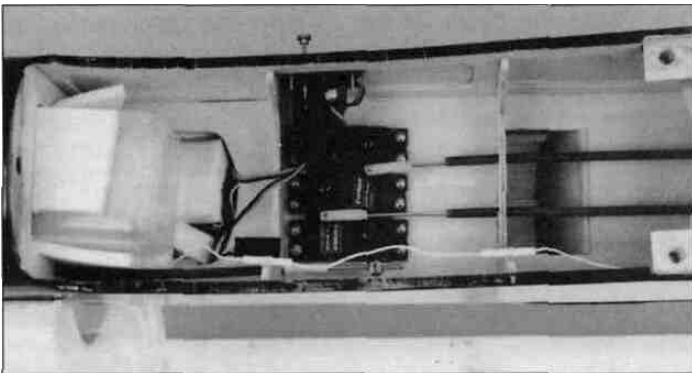
D 1. Mount three servos in the servo tray following the manufacturer's recommendations. Install "cross" style horns on all servos, cutting off the unused arms.



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 28". Cut five 3/16" 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.



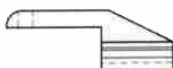
D 3. Insert the pushrods into the tubes in the fuse, then hold a **Nylon Control Horn (NYLON002)** in position on the elevator (see sketch above for correct alignment). The pushrod should not be bent and should slide easily in the tube. Mark the location for the control horn screws on the control surface. Drill the 3/32" 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 control horn in place with two 2-56 machine screws and the backing plate. Repeat for the other control surface.



The photo shows a 2-Stroke setup
(Refer to this photo when performing steps 5 thru 11)

D 4. 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 5. 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 6. 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™ Pushrod Connector**.

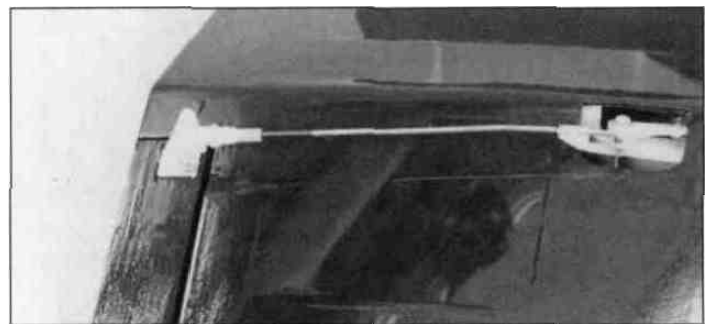
D 7. Repeat steps 5 and 6 for the rudder.

D 8. 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 9. Plug an aileron extension into the receiver. Wrap your receiver in a plastic bag, then wrap with foam rubber. Secure the foam with a couple of rubber bands.

D 10. Glue a couple of leftover inner pushrod tubes to the inside of the fuselage to use as antenna guides. Route the antenna to the back of the radio compartment and out the side of the fuselage. 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 11. Mount the receiver switch and charging jack through the fuselage on the right side of the fuse. We suggest using a Great Planes **Switch/Charging jack mount (GPMM1000)** because of its ease of installation and tidy appearance.



D 12. Plug the aileron servo into the receiver and center the servo wheel. Slide a silicone retainer over the "hex" end of a nylon clevis. Screw the clevis 14 turns onto the threaded end of a 12" threaded wire. Trim the backing plate from a nylon control horn, then clip the clevis to the third hole from the top. Attach the control horn following the same procedure used for installing the control horn on the elevator. Center the aileron, then mark the pushrod where it crosses the outside hole on the bellcrank. Make a 90° bend in the pushrod on your mark. Then insert it through the hole in the bellcrank. Secure it in place with a nylon Faslink Pushrod Connector.

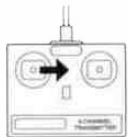
4-CHANNEL RADIO SETUP (STANDARD MODE 2)



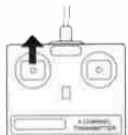
ELEVATOR MOVES UP



RIGHT AILERON MOVES UP
LEFT AILERON MOVES DOWN



RUDDER MOVES RIGHT



CARBURETOR WIDE OPEN

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.

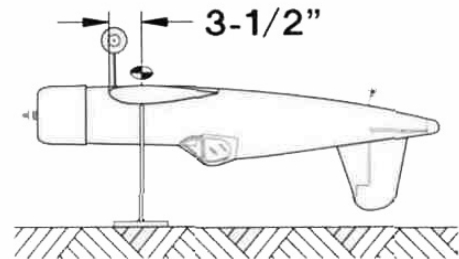
	High Rate	Low Rate
ELEVATOR:	1/2" up 5/8" down	5/16" up 3/8" down
RUDDER:	1-3/4" right 1-3/4" left	Same Same
AILERONS:	1/4" up 3/8" down	3/16" up 1/4" down

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 Corsair 40 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 3-1/2" **back from the leading edge** as shown in the sketch and on the plans. **Hint:** Use the full-size fuse plan to help you accurately locate the proper balance point. 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 it. If the nose drops, it is "nose heavy" and you must add weight* to the tail to balance it. **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 3 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. If 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

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.

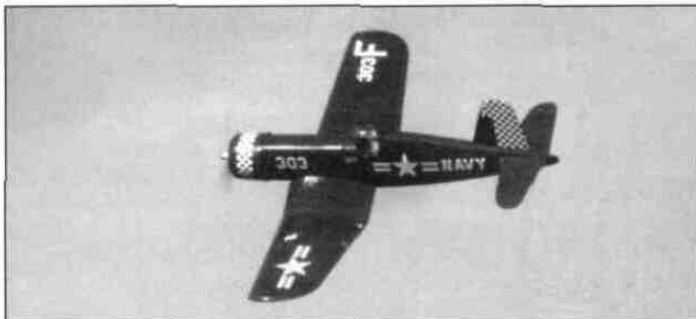
5 I will not operate models with pyrotechnics (any device that explodes, burns or propels a projectile of any kind).

Radio control

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

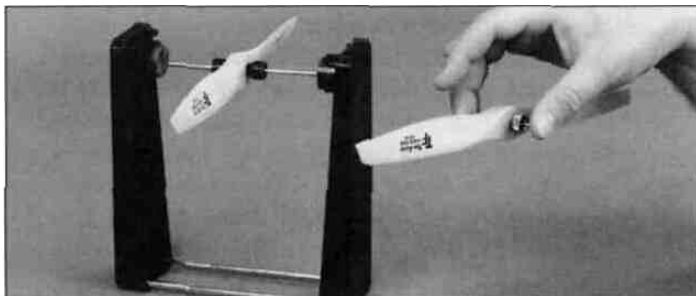
2. I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
3. I will perform my initial turn after takeoff away from the pit or spectator areas, and I will not thereafter fly over pit or spectator areas, unless beyond 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 Corsair 40 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 Corsair 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'), 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 Corsair 40 for the first several flights, gradually "getting acquainted" with this great sport model 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 Corsair. 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.

2-View Drawing

Use this two-view drawing to design your trim scheme for your Corsair 40.

