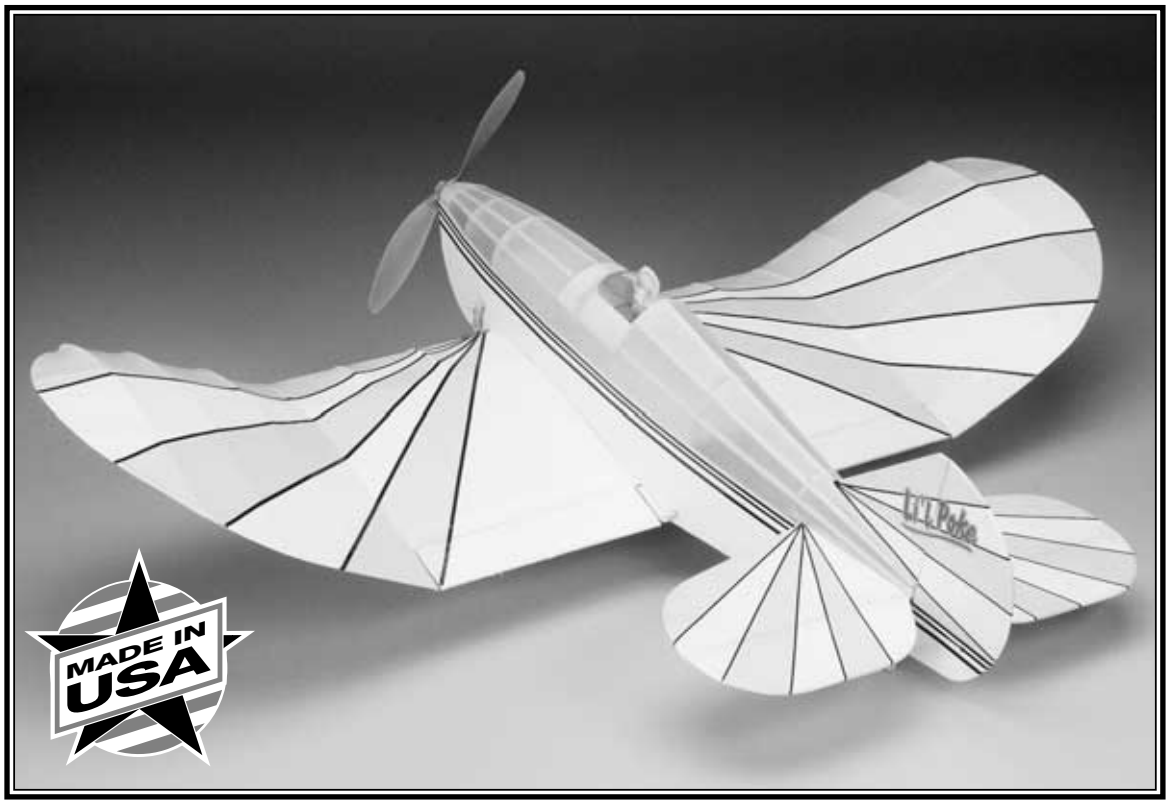
Li'l Poke™

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.

GREAT PLANES® MODEL MANUFACTURING COMPANY

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INTRODUCTION

Congratulations and thank you for purchasing the **Great Planes Li'l Poke**. The *Li'l Poke* is one in a series of Park Flyers from Great Planes designed to be flown in small areas. Park Flyers are a relatively new class of small, lightweight, slow-flying models. Because Park Flyers can fly in small areas, a nearby park, schoolyard or vacant lot becomes an impromptu flying site. Additionally, Park Flyers are perfect for those evenings at the field when everybody else is packing up their gear, the wind has died, and there is still enough light to fly a small, slow model that can be kept close-in.

The Li'l Poke may be built either with or without ailerons. It flies well on rudder only, but flying with ailerons increases its maneuverability.

The Li'l Poke is a slow flying model that is simple to build. It is ideal for modelers with moderate flight experience, or even experienced modelers who simply wish to try out a small, lightweight electric model. However, the Li'l Poke is not intended for beginners. If you have little flight experience or have not flown a model like this before, find an experienced modeler to help you with your first flights. Information about R/C clubs and instructors is provided later in this manual.

IMPORTANT!!! Although the Li'l Poke is a small, lightweight model that may be flown in parks, schoolyards, empty lots and fields, it is operated by the same radio controlled equipment used to fly larger, conventional R/C airplanes, and is therefore capable of generating radio interference that could cause one of these larger models to crash. Because of this, you must be aware of your proximity to R/C club sites if flying somewhere on your own. If there is an R/C site within five miles of where you are flying, and if you are operating your model on the same frequency and at the same time as somebody else, there is a **strong** possibility that one or both models will crash due to radio interference. Though the potential for the Li'l Poke to cause damage may be small, there is **great** potential for a larger model to cause property damage and/or severe personal injury if radio interference causes loss of control. We **strongly** urge you to fly at a R/C club site where frequency control is in effect, so you can be assured you will be the only one flying on your channel. If you insist on flying on your own and do not know where the R/C club sites are, contact the local hobby shop or the AMA to find out. When completed, you will have invested considerable time and expense in your Li'l Poke. It would be a shame to crash it simply due to unnecessary radio interference. The time and expense that goes into a larger model is even greater (as is the potential danger), so **make certain** you are not flying within five miles of a local R/C club where radio interference from your transmitter could cause a crash.

PROTECT YOUR MODEL, YOURSELF & OTHERS...FOLLOW THESE IMPORTANT SAFETY PRECAUTIONS

1. Even though the **Great Planes *Li'l Poke*** is small, lightweight and flies slowly, if it is not assembled and operated correctly it could possibly cause injury to yourself or spectators and damage property.

2. Build the plane according to the plans and 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 the plans and written instructions should be considered as correct.

3. Take time to build straight and true.

4. Use an R/C radio system that is in first-class condition. This Park Flyer requires micro servos, a micro receiver and a micro speed control that is able to handle 5 amps.

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

6. You must test the operation of the model before **every** flight to insure that all equipment is operating, and that the model has remained structurally sound. Be sure to check connectors often and replace them if they show signs of wear or fatigue.

NOTE: We, as the kit manufacturer, provide you with a top quality kit and great instructions, but ultimately the quality 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.

If you're an inexperienced modeler, we recommend that you get assistance from an experienced, knowledgeable modeler to help you with assembly and your first flights. You'll learn faster and avoid risking your model before you're truly ready to solo. Your local hobby shop has information about flying clubs in your area whose membership includes qualified instructors.

You can also contact the national Academy of Model Aeronautics (AMA), which has more than 2,500 chartered clubs across the country. Through any one of them, instructor training programs and insured newcomer training are available. Contact the AMA at the address or toll-free phone number below.

AMA
SINCE 1936

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9252
Tele. (800) 435-9262
Fax (765) 741-0057
or via the Internet at http://www.modelaircraft.org

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 airplane, please call us at:

(217) 398-8970
or e-mail us at:
productsupport@greatplanes.com.

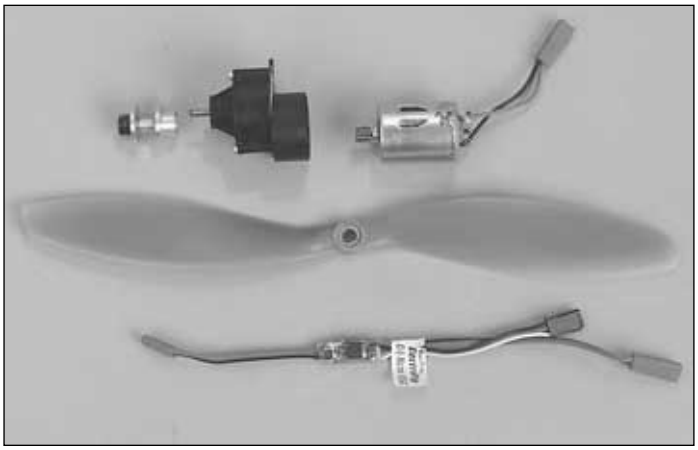
If you are calling for replacement parts, please reference the part numbers and the kit identification number (stamped on the end of the carton) and have them ready when calling.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the Li'l Poke that must be purchased separately. Order numbers are provided in parentheses.

Radio Equipment
The Li'l Poke requires a micro receiver and two or three micro servos (depending upon whether you will build the Li'l Poke with or without ailerons). Futaba® S3103 (FUTM0037) or Hobbico® CS-5 (HCAM0090) micro servos are suitable.

Speed Control
An electronic speed control with BEC (Battery Eliminator Circuitry) is required to fly the Li'l Poke. The BEC allows both the motor and the radio system to be powered by the same battery (thus eliminating an additional battery typically required to power the radio). The Great Planes ElectriFly™ C-5 *Nano*™ High Frequency Electronic Speed Control (GPMM2000) is recommended. If the complete motor and gear drive system is purchased, the speed control is included (refer to the **"Motor System"** section that follows).



Motor System
The Li'l Poke is designed to use the Great Planes ElectriFly T-280GD Motor System and gear drive for electric flight (GPMG0430). This system includes a T-280 Ferrite Motor, S-280 4.1:1 ratio gearbox, 3mm prop adapter, APC 10 x 4.7 propeller and the ElectriFly C-10 *Nano* High Frequency Electronic Speed Control w/BEC. The same components are also available without the speed control by ordering number GPMG0445.

Note: Though the C-5 speed control is recommended, the C-10 speed control included with the complete system is suitable.

Battery and Charger

The ElectriFly 9.6V 350mAh NiCd pack (GPMP0070) is recommended for the Li'l Poke.

The Great Planes ElectriFly Peak Charger (GPMM3000) is recommended for charging this battery. It is a *peak* charger and charges the batteries until they are fully charged, then automatically switches to trickle charge. This charger is also suitable for nickel-metal hydride batteries and transmitter battery packs.

Covering
There are several types of covering that may be used on the Li'l Poke. Select a covering recommended specifically for lightweight models. Coverite™ CoverLite,™ Coverite Micafilm and Top Flite® EconoKote® are suitable. CoverLite is highly recommended due to its light weight, with Micafilm being a good second choice. Both materials require the application of an adhesive such as Balsarite™ (COVR2500) to the structure. Top Flite EconoKote already has an adhesive on the back so it is easier to apply, but it is also slightly heavier. If using Coverlite, two 36" x 19.5" [915 x 495mm] packages will be required.

Building Board
A flat building board that you can stick pins into is required. A 12" x 24" [300 x 600mm] Great Planes Pro™ Building Board (GPMR6946) is recommended. The back of a 2' x 4' ceiling tile or a section cut from a sheet of Celotex insulation board is also suitable.

ADDITIONAL ITEMS REQUIRED

Building Supplies

In addition to the equipment listed in the **"Decisions You Must Make"** section, following is the "short list" of the most important building supplies required to build the Li'l Poke. *We recommend **Great Planes Pro™** CA and Epoxy glue.*

- ❏ 1/2 oz. Thin Pro CA (GPMR6001)
- ❏ 1/2 oz. Medium Pro CA+ (GPMR6007)
- ❏ Hobby knife (HCAR0105)
- ❏ #11 blades (HCAR0211)
- ❏ Single-edge razor blades (HCAR0212)
- ❏ Small T-pins (HCAR5100)
- ❏ Builder's triangle (HCAR0480)
- ❏ Power drill
- ❏ #68 (or 1/32" [.8mm]) drill bit, 1/16" [1.6mm] drill bit
- ❏ Small Phillips and flat blade screwdrivers
- ❏ Pliers with wire cutter (HCAR0630)
- ❏ Great Planes Plan protector (GPMR6167) or wax paper
- ❏ Sanding tools and sandpaper assortment
- ❏ Sealing Iron (TOPR2100)
- ❏ Double-sided foam tape (GPMQ4440) for mounting servos
- ❏ Hook and Loop Velcro® (GPMQ4480) for mounting the battery

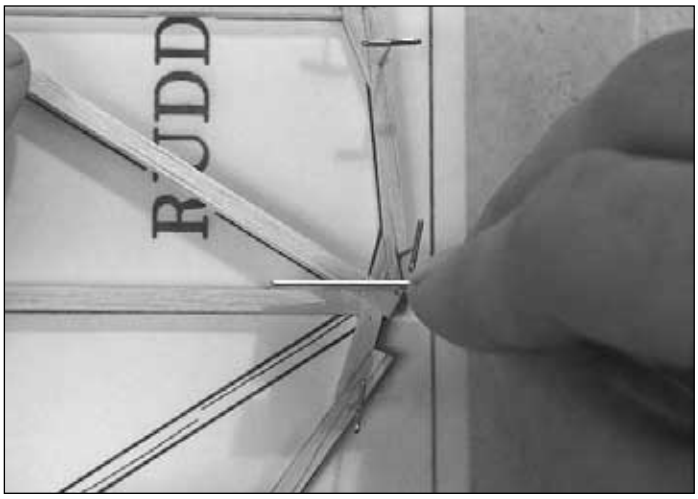
Optional Supplies and Tools

Here is a list of optional tools mentioned in the manual that will help you build the Li'l Poke.

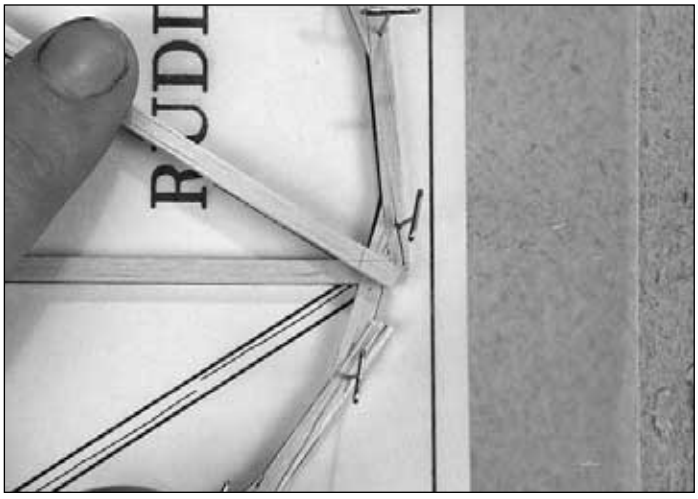
- ❏ Great Planes CG Machine™ (GPMR2400)
- ❏ Top Flite Precision Magnetic Prop Balancer™ (TOPQ5700)
- ❏ Top Flite Hot Sock™ iron cover (TOPR2175)
- ❏ Straightedge with scale (HCAR0475)
- ❏ Cutting mat (HCAR0456)
- ❏ CA Applicator tips (GPMR6033)
- ❏ Great Planes 5-1/2" [140mm] (GPMR6169) Bar Sander
- ❏ Great Planes 11" [280mm] (GPMR6170) Bar Sander
- ❏ 150-grit (GPMR6183) and 80-grit (GPMR6180) adhesive back sandpaper for Bar Sanders
- ❏ Top Flite 320-grit sandpaper (TOPR8030) and 400-grit sandpaper (TOPR8032)

IMPORTANT BUILDING NOTES

For the best performance, the Li'l Poke must be built light. One of the best ways to insure light weight is to build neatly and make good-fitting glue joints. Here are some tips to help you build neatly and light.

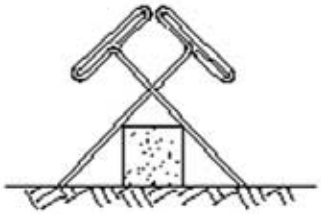


1. An accurate, easy way to cut balsa sticks is with a single-edge razor blade. To do so, position the stick over the plan or glue joint, then align the razor blade on the stick where it is to be cut.



2. Press down lightly on the razor blade to make a mark. Take the stick off the plan and cut it over a cutting mat or a scrap piece of wood. (*With care, the stick could be cut on the plan, but cutting through any protective covering on the plan may cause the assembly to stick to the building board*).

3. To avoid splitting the 1/8" x 1/8" [3.2 x 3.2mm] balsa sticks used in the Li'l Poke, only small T-pins (HCAR5100) or small pins found in craft stores should be used for building this model. Do not stick pins into the sticks near the ends, or the wood may split.



4. An alternate method to sticking pins directly through balsa sticks is to use the "crossed-pin" technique by inserting pins into the building board over the sticks in a criss-cross fashion.

5. Only a small amount of CA should be used to glue the parts together. In addition to unnecessary weight, excess hardened CA is difficult to sand. Use the included CA applicator tips to control and pinpoint the amount of CA that comes from the bottle. When the tip becomes clogged, cut the tip off and continue. If additional CA tips are required, order number GPMR6033 (5).

6. When applying CA, be careful to not glue your fingers to the structure. In the process of *unsticking* fingers you can inadvertently damage the structure, thus requiring repairs and adding additional weight *(not to mention the aggravation!)*.

7. Sanding requires a light touch to avoid damage. The best method for sanding is to use light strokes in the direction of the longest sticks. Be certain the sandpaper is **thoroughly** bonded to the bar sander. Lifted edges may catch the structure. Use medium-grit sandpaper such as 120 or 150.

8. One of the best ways to insure a lightweight model is to proceed slowly and **build neatly**. Good glue joints are stronger, lighter and have a better appearance than poor-fitting joints with too much CA. Of course, this approach should be taken with **all** of your projects!

9. Work over a flat surface. Cover the plans with Great Planes Plan Protector (GPMR6167) or wax paper so the parts will not adhere to the plan.

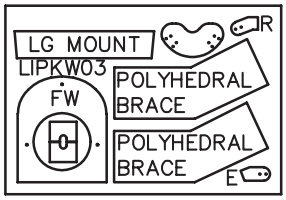
Metric Conversions

1" = 25.4mm (conversion factor)

1/64" = .4mm	1" = 25.4mm
1/32" = .8mm	2" = 50.8mm
1/16" = 1.6mm	3" = 76.2mm
3/32" = 2.4mm	6" = 152.4mm
1/8" = 3.2mm	12" = 304.8mm
5/32" = 4mm	15" = 381mm
3/16" = 4.8mm	18" = 457.2mm
1/4" = 6.4mm	21" = 533.4mm
3/8" = 9.5mm	24" = 609.6mm
1/2" = 12.7mm	30" = 762mm
5/8" = 15.9mm	36" = 914.4mm
3/4" = 19mm	

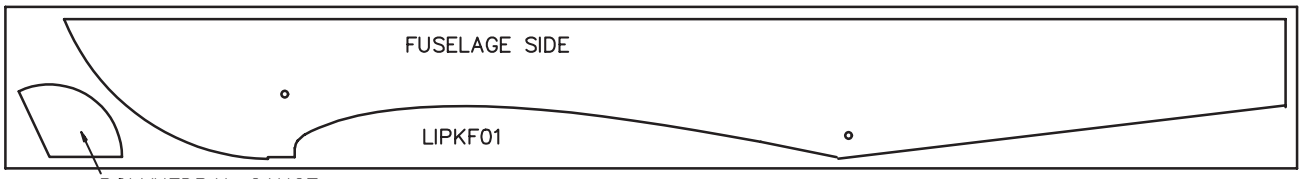
LASER-CUT PATTERNS

LIPKW03 1 PER KIT



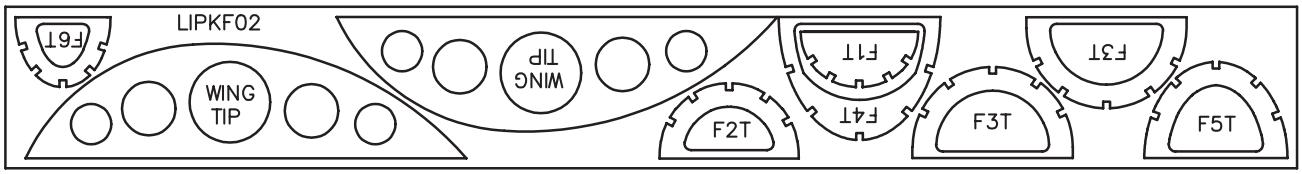
1/16" X 3-1/2" X 5-1/8" PLY

LIPKF01 2 PER KIT



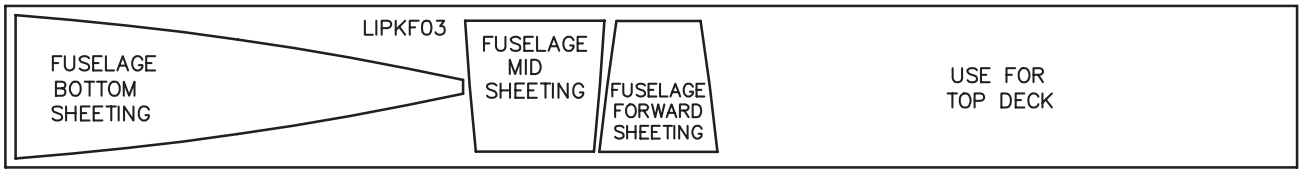
1/16" X 3" X 24" BALSA

LIPKF02 1 PER KIT



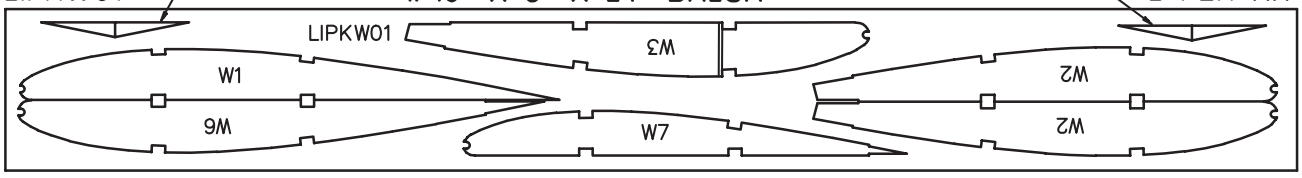
1/16" X 3" X 24" BALSA

LIPKF03 1 PER KIT



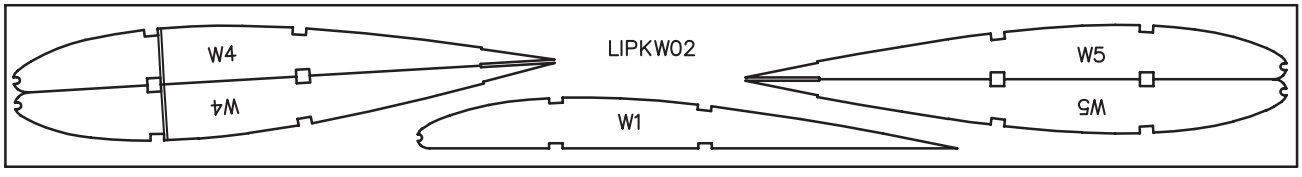
1/32" X 3" X 24" BALSA

LIPKW01 AILERON RIBS 1/16" X 3" X 24" BALSA AILERON RIBS 2 PER KIT



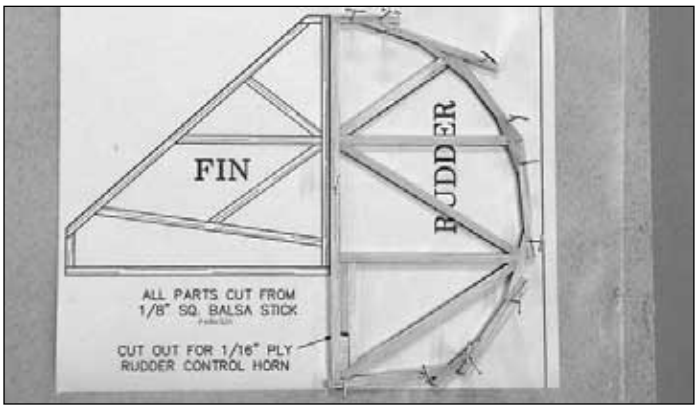
1/16" X 3" X 24" BALSA

LIPKW02 1 PER KIT

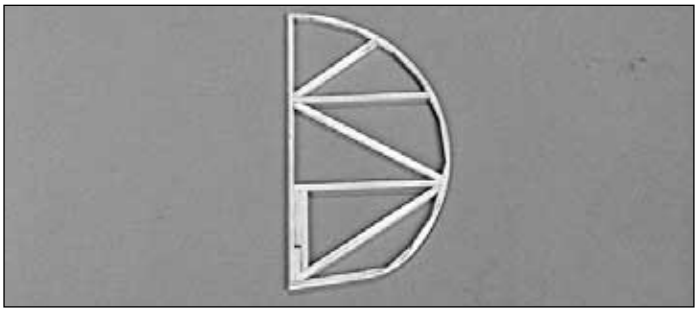


BUILD THE TAIL SURFACES

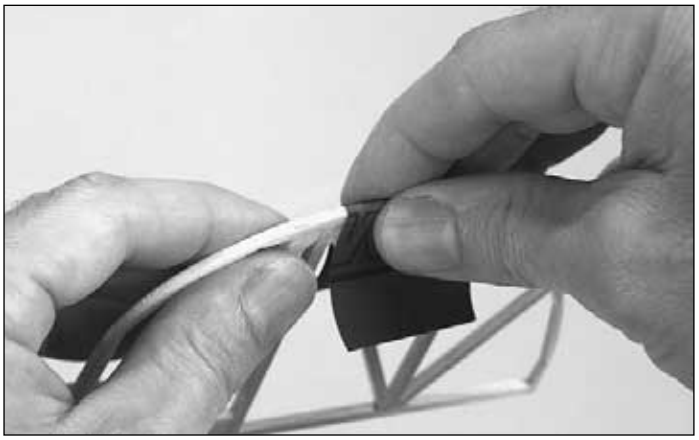
❏ 1. Unroll the plan sheets and re-roll them inside-out so they will lie flat. Position the fuse plan so the fin and rudder are over your flat building board (or cut the fin and rudder from the plan and place it over the building board). Cover the plan with Great Planes Plan Protector or waxed paper so glue will not adhere to it.



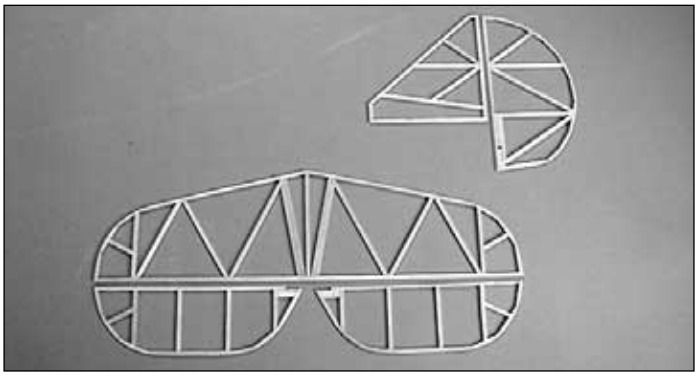
❏ 2. Build the **rudder** using two 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks. As shown in the photo, most of the sticks don't have to be cut to exact length until after the rudder is removed from the building board.



❏ 3. Remove the rudder from the building board. Cut and sand the balsa sticks on the trailing edge to form a curved contour. Use a bar sander with 150-grit sandpaper to bevel the leading edge as shown in the cross section on the plan. **Carefully** sand both sides of the rudder flat, even and smooth.

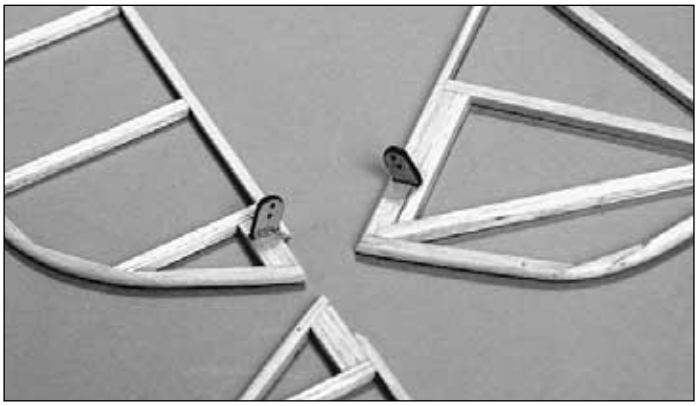


❏ 4. Holding a small sheet of 320-grit sandpaper by hand, carefully round the trailing edge.

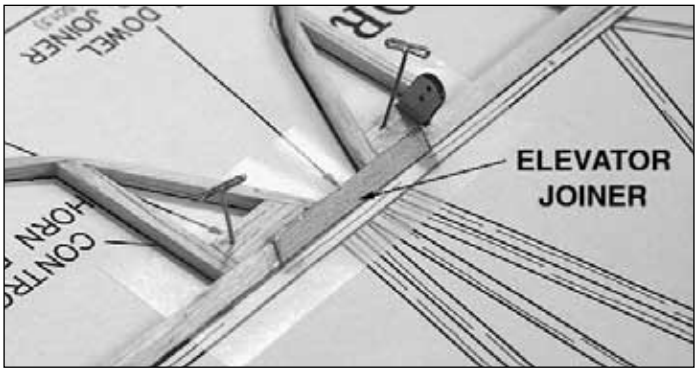


❏ 5. Build the fin, stab and elevators the same as the rudder. When building the elevators, bevel the leading edges and round the trailing edges, but do not permanently join them to each other with the joiner until instructed to do so.

❏ 6. Test fit a .030" [.76mm] pushrod wire in the holes of the laser-cut 1/16" [1.6mm] plywood **elevator** and **rudder control horns** (marked "E" and "R"). If necessary, carefully enlarge the holes with a #68 (or 1/32" [.8mm]) drill or a hobby knife.



❏ 7. Cut the slots in the elevator and rudder to accommodate the control horns, then glue the horns into position. Be certain the elevator horn is in the **bottom** of the **right** elevator and that the rudder horn is on the **left** side of the rudder.



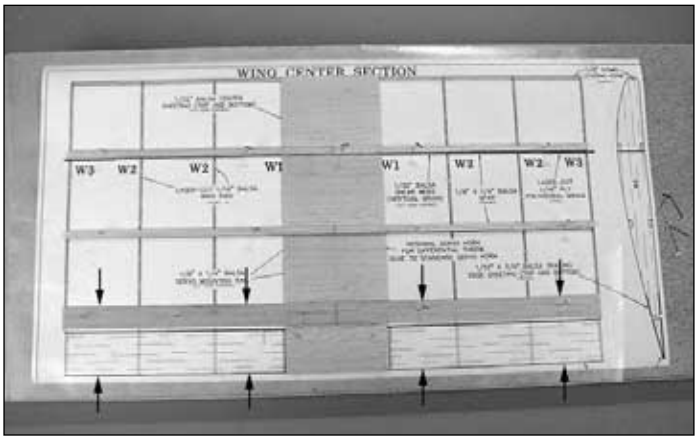
❏ 8. Pin both elevators, upside-down, over their location on the plan. Sand a bevel to one edge of the 1/8" x 1/8" x 1-1/2" [3.2 x 3.2 x 38mm] basswood **elevator joiner** to match the bevel on the leading edge of the elevators. Securely glue the elevator joiner to both elevators.

Now it's time to build the wing.

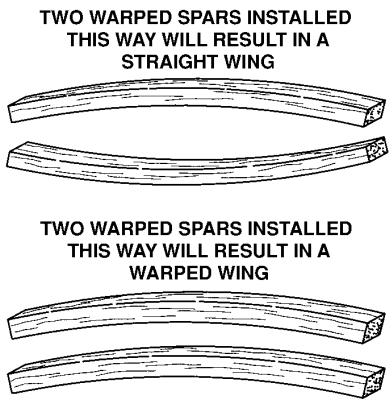
BUILD THE WING

Build the Center Section

Refer to this photo for the following four steps.



❏ 1. Position the wing plan so the center section is over your flat building board (or cut the center section from the wing plan). Cover the plan with Plan Protector.



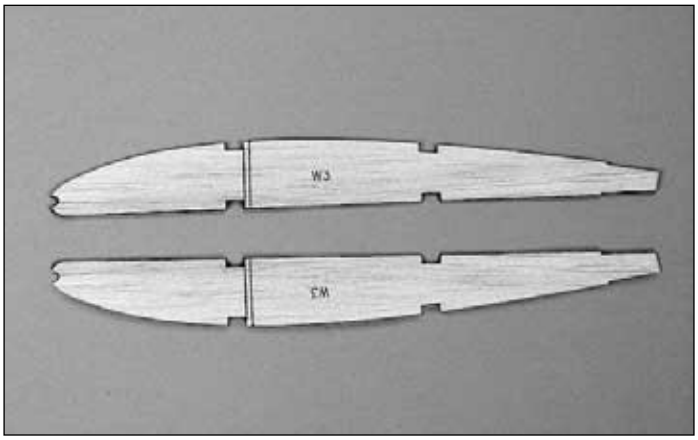
❏ 2. Examine the 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa sticks included in this kit (which will be used for the spars). If any of the spars are bowed, pair them together and install them in the wing so any bows present will cancel-out.

❏ 3. Cut both **bottom spars** to the length shown on the plan from two 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa sticks. Pin the spars into position over the plan.

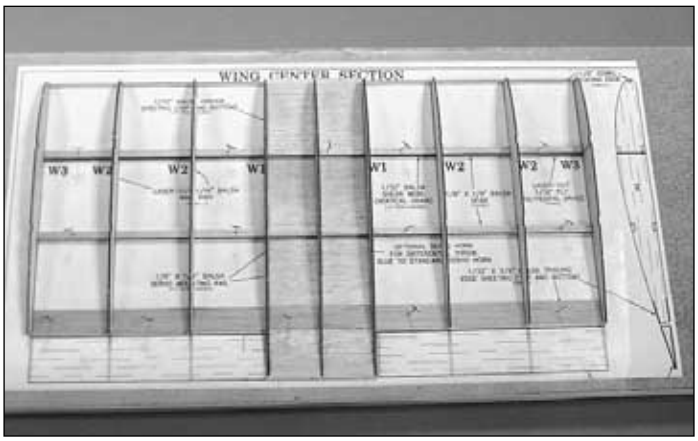
❏ 4. If building the wing with ailerons, cut a 3/4" [19.1mm] wide **bottom trailing edge sheet** from a 1/32" x 3" x 24" [.8 x 76 x 610mm] balsa sheet and pin it into position over the plan. If **not** building the wing with ailerons, cut the bottom trailing edge sheet to extend all the way to the trailing edge of the wing (as indicated by the arrows in the photo).

❏ 5. Mark the location of the center rib W1 on the spars and trailing edge sheet.

❏ 6. Cut the four pieces of the bottom center section sheeting from a 1/32" x 3" x 15" [.8 x 76 x 380mm] balsa sheet. The forward sheet should be cut approximately 1/8" [3.2mm] oversize, so it can extend to the leading edge dowel. Glue the sheeting to the spars and trailing edge sheet as shown.



❏ 7. Note the vertical lines aft of the spar notches on both laser-cut 1/16" [1.6mm] balsa ribs **W3**. These lines indicate where a section of balsa is to be removed to accommodate the 1/16" [1.6mm] polyhedral braces when it's time to join the wing panels. Use a straightedge and a ballpoint pen to mark the same lines on the other side of one of the W3's, so the lines will be on the outside of both ribs when positioned on the outer panels.



❏ 8. Glue the laser cut ribs **W1** through **W3** to the spars and bottom center sheeting using a small builder's square to be certain they are vertical. Be certain the W3's are positioned so the lines are on the outside.

❏ 9. Cut the **leading edge** from the 1/8" x 24" [3.2 x 610mm] dowel, then glue it into position.

❏ 10. If building the wing **without** ailerons, glue the laser-cut 1/16" [1.6mm] balsa **aileron ribs** to the bottom trailing edge sheeting in alignment with the wing ribs.
Note: The aileron ribs can be seen in step 2 on page 11 where they are being glued to the bottom aileron sheeting.

Refer to this photo for the following four steps.

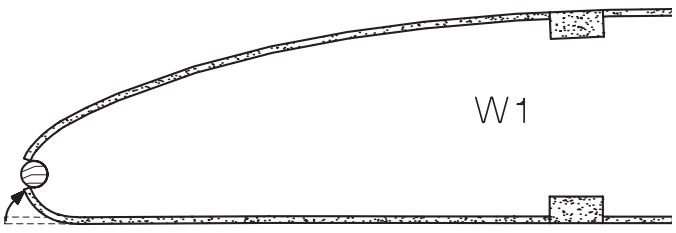
❏ 11. Cut the top spars from two more 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa sticks and glue them into the notches in the top of the ribs.

❏ 12. If building the wing with ailerons, cut a 3/4" [19.1mm] wide **top trailing edge sheet** from a 1/32" x 3" x 24" [.8 x 76 x 610mm] balsa sheet and glue it into position as shown in the photo. If **not** building the wing with ailerons, cut the top trailing edge sheet to extend all the way to the trailing edge of the wing, then glue it into position over the aileron ribs.

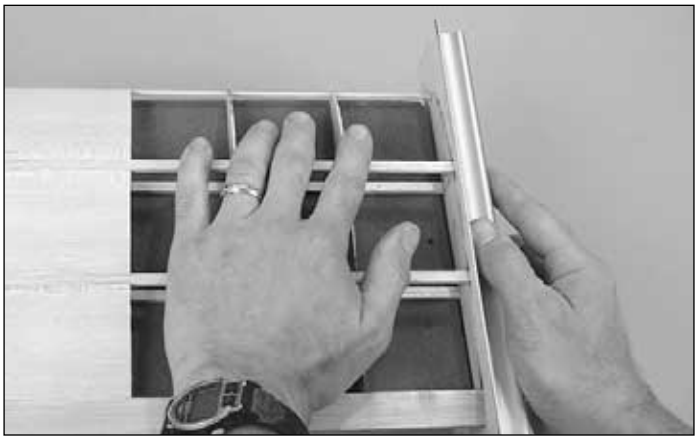
❏ 13. Use a 1/32" x 3" x 15" [.8 x 76 x 380mm] balsa sheet to sheet the top of the center section between the leading edge dowel and the forward spar and between the aft spar and the trailing edge sheet.

❏ 14. Cut the **shear webs** that go between the ribs on the back of the top and bottom main spars from a 1/32" x 3" x 15" [.8 x 76 x 380mm] balsa sheet (if building ailerons, save the remainder of this sheet for making the bottom aileron sheeting). Note that the grain of the shear webs is vertical. Glue the shear webs into position. Do not glue the section of webbing that goes between the polyhedral joiner and rib W2 until after the outer panels are joined to the inner panels. Also be certain the shear webbing between the W1 ribs extends to 1/32" [.8mm] below the top surface of the top spar to accommodate the top sheeting.

❏ 15. Sheet the top of the center section between the two spars.



❏ 16. Remove the center section from the building board. Trim the forward bottom center section sheeting to fit the leading edge dowel. Lightly wet the front of the sheet to bend it up, then glue it to the dowel.



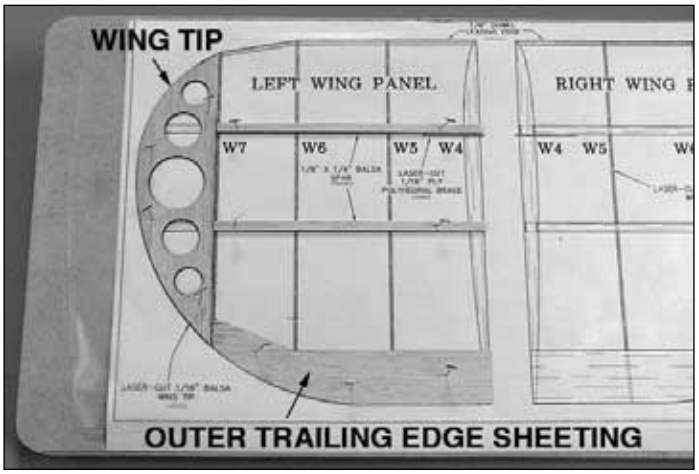
❏ 17. Lightly and carefully sand the sheeting on the top and bottom of the center section smooth and even with the spars. Lightly sand the tops and bottoms of the ribs just enough to remove any irregularities or rough edges. Use an 11" [280mm] bar sander with 150-grit sandpaper to sand any protruding spars or sheeting even with the W3 ribs on both ends of the center section.

Build the Outer Panels

*Build the **left** panel first so yours will look like the photos the first time through.*

❏ 1. Position the outer panel plans over your flat building board and cover them with Plan Protector.

Refer to this photo for the following three steps.

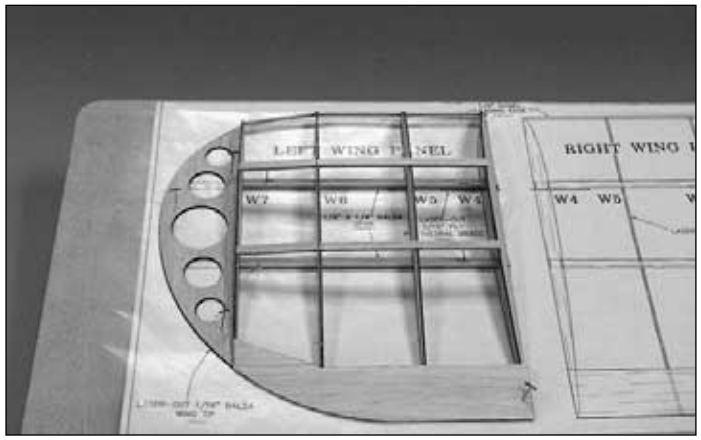


❏ ❏ 2. Pin one of the laser-cut 1/16" [1.6mm] balsa **wing tips** over its location on the plan.

❏ ❏ 3. Use the pattern on the wing plan to make the **top** and **bottom outer trailing edge sheeting** from a 1/32" x 3" x 15" [.8 x 76 x 380mm] balsa sheet. Pin one of the sheets over its location on the plan, but do not glue it to the wing tip yet.

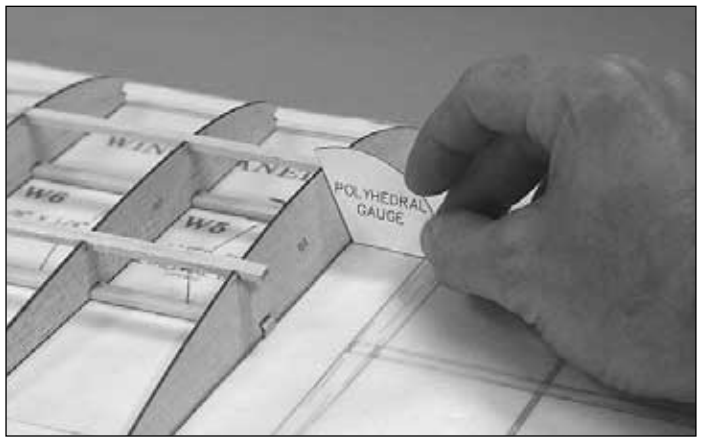
❏ ❏ 4. Cut the bottom spars from a 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa stick and pin them to the plan.

Refer to this photo for the following four steps.



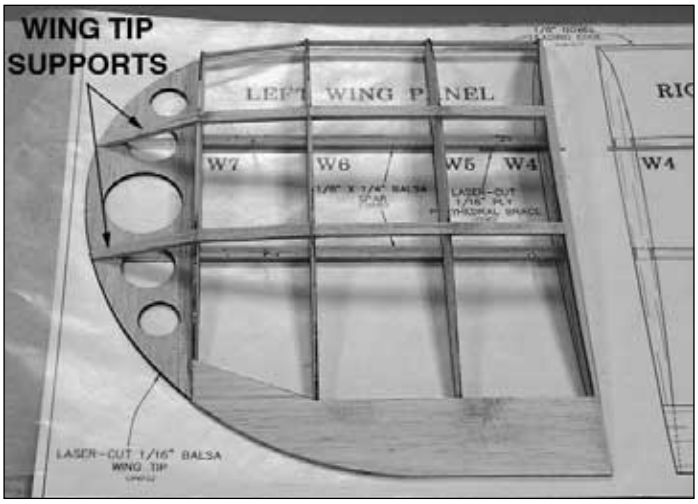
❏ ❏ 5. Glue the laser-cut 1/16" [1.6mm] balsa ribs **W5** through **W7** to the bottom spars and trailing edge sheeting. Also glue rib W7 and the trailing edge sheeting to the tip.

❏ ❏ 6. Cut one of the top spars from the remainder of the 1/8" x 1/4" [3.2 x 6.4mm] balsa sticks used for the bottom spars. Cut the other top spar from another 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa stick. Use a small razor saw or a single-edge razor blade to cut partway through both top spars at rib W6 so they can make the bend downward. Glue the top spars to ribs W5 through W7.
Note: The spars extend to W4.



❏ ❏ 7. Position, but do not glue one of the laser-cut 1/16" [1.6mm] balsa **W4** ribs on the panel so the vertical cutlines for the polyhedral braces are facing the outside (toward the fuse). Using the laser-cut 1/16" balsa **polyhedral gauge,** set rib W4 at the correct angle and glue it into position.

❏ ❏ 8. Glue the top trailing edge sheet into position. Cut the leading edge dowel to the correct length from the 1/8" x 24" [3.2 x 610mm] hardwood dowel (after building the second outer panel, save the remainder of the dowel for the wing and landing gear dowels on the fuse). Cut partway through the dowel at rib W6 allowing it to bend toward rib W7, then glue the dowel into position.

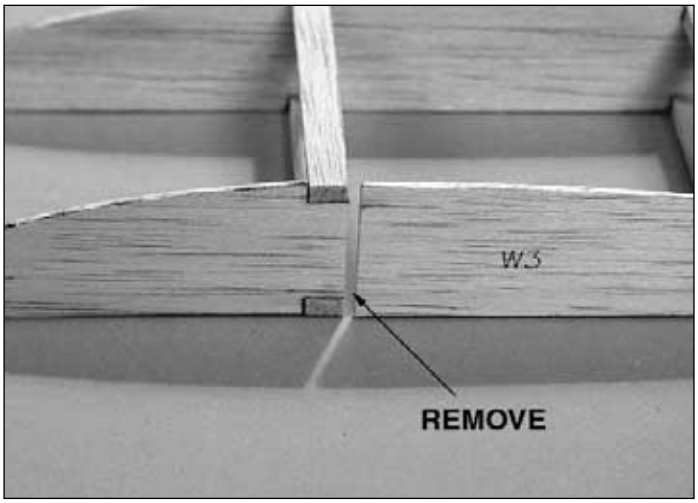


❏ ❏ 9. Make the wing tip supports from leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa and glue them into position.

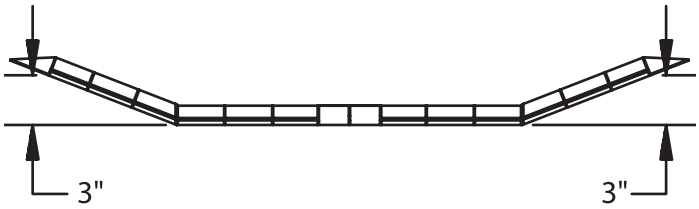
❏ ❏ 10. Remove the left wing panel from the plan. Sand the leading edge dowel, spars and trailing edge sheeting flat and even with rib W4. Sand the spars even with the tops and bottoms of the ribs.

❏ 11. Return to step 2 and build the **right** wing panel the same way.

Join the Outer Panels to the Center Section



❏ 1. Cut through the lines on ribs W3 and W4 on both ends of the center section and on the ends of both outer panels. Remove the section of balsa to accommodate the laser-cut 1/16" [1.6mm] plywood **polyhedral braces**.



❏ 2. Test join both outer panels to the center section with the polyhedral braces. Use small clamps to temporarily hold everything together. Both wing tips under rib W7 should be 3" [76mm] above the workbench. If the distance is not exactly 3" [76mm] it's okay, as long as it's close and both tips are **the same**. **Hint:** Cut a leftover balsa stick to the correct length and use it as a gauge for both wing tips.

❏ 3. Once satisfied with the fit, separate the panels. Cover your workbench with a sheet of Plan Protector. Mix up a batch of 30-minute epoxy, then coat all joining surfaces. Rejoin the panels with the polyhedral braces and place the wing on your protected workbench. Position the clamps and wipe away excess epoxy before it hardens. Do not disturb the wing until after the epoxy hardens. **Hint:** If more working time is required, join one wing panel at a time with separate batches of epoxy.

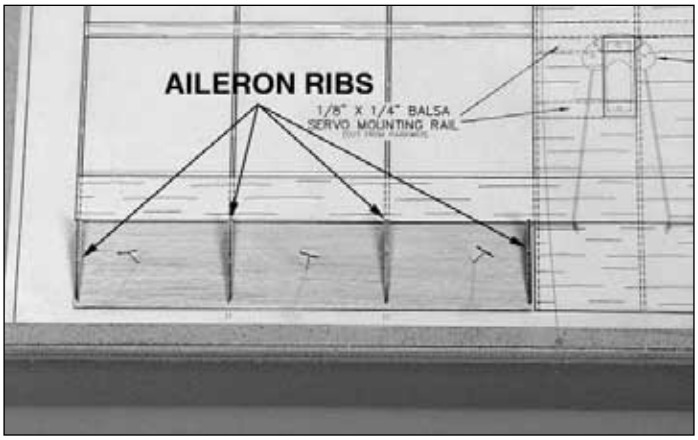
❏ 4. Glue in the rest of the 1/32" [.8mm] shear webbing between the ends of the polyhedral braces and ribs W2.

Build the Ailerons

Skip this section if not building ailerons.

Only the left aileron is shown in the photos, but both ailerons are built at the same time.

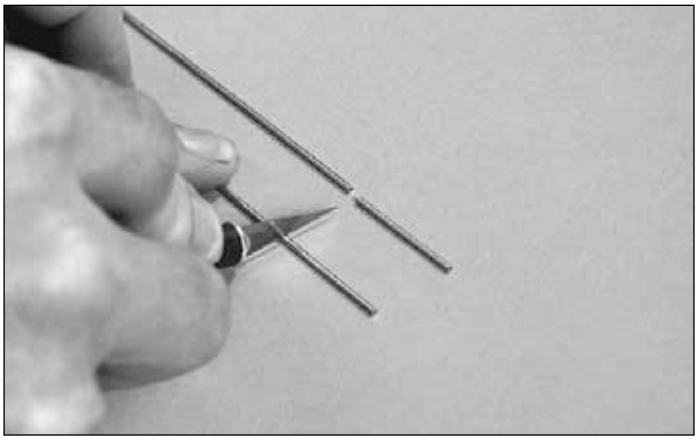
❏ 1. Cut two **bottom aileron sheets** to the size shown on the plan from the 1/32" x 3" [.8 x 76mm] balsa sheets leftover from making the shear webs. Pin the sheets over their location on the plan.



❏ 2. Glue the laser-cut 1/16" [1.6mm] balsa **aileron ribs** to the sheet where indicated on the plan.

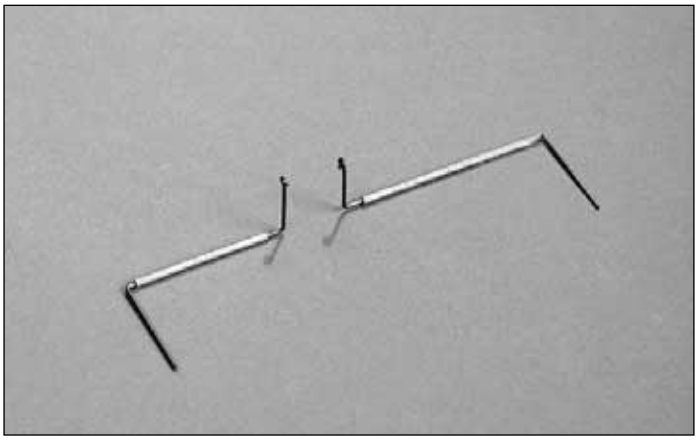
❏ 3. Cut the **top aileron sheets** from a 1/32" x 3" x 15" [.8 x 76 x 380mm] balsa sheet. Note that the top sheets should be 1/16" [1.6mm] wider than the bottom sheets. Glue the top aileron sheets to the bottom aileron sheets and the ribs.

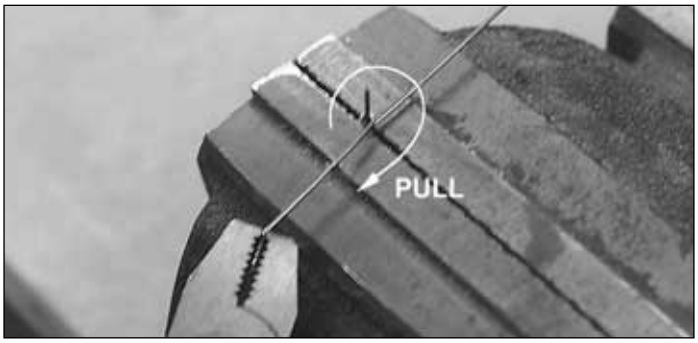
❏ 4. Remove the ailerons from the plan. True all edges with a bar sander and 150-grit sandpaper.



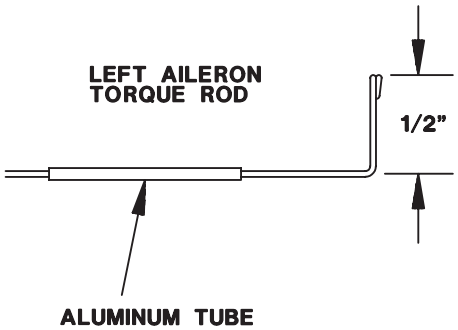
❏ 5. Cut a 1-1/8" [29mm] **torque rod tube** from both 1/16" x 12" [1.6 x 305mm] aluminum tubes. This is best done by rolling the tubing under a #11 blade on the workbench to cut the tubing without burring the end.

Refer to this photo to make the aileron torque rods. Make the left one first.





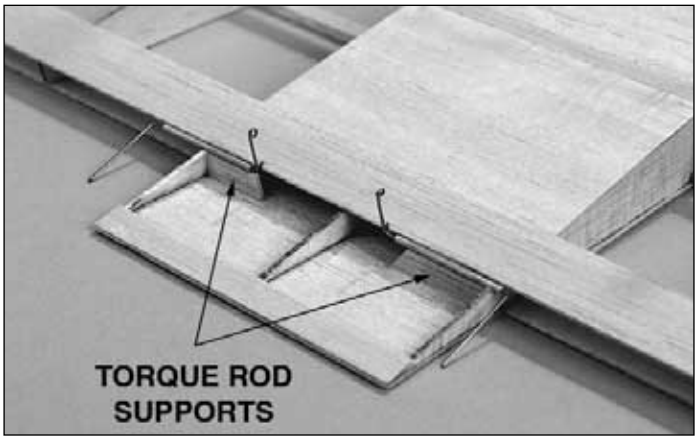
❏ 6. Cut 1" [25mm] from one end of the .030" x 20-1/2" [.76 x 520mm] wire and clamp it in a vice. Cut another 5" [130mm] from the wire and make a loop near one end by pulling it around the wire clamped in the vice.



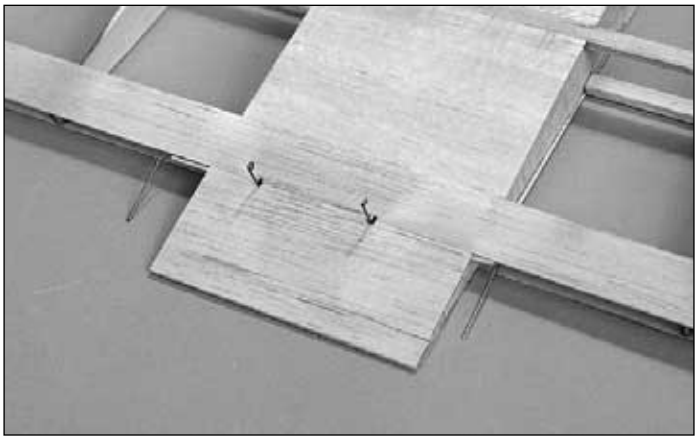
❏ 7. Cut the excess wire from the loop. Make the first 90-degree outward bend 1/2" [13mm] below the loop. Slide the 1-1/8" [29mm] aluminum torque rod tube onto the wire.

❏ 8. Make the final bend in the wire, then cut the wire to length shown on the plan.

❏ 9. Cut another 5" [130mm] from the wire and make the **right aileron torque rod** the same way. Note that the right torque rod is a little longer than the left.

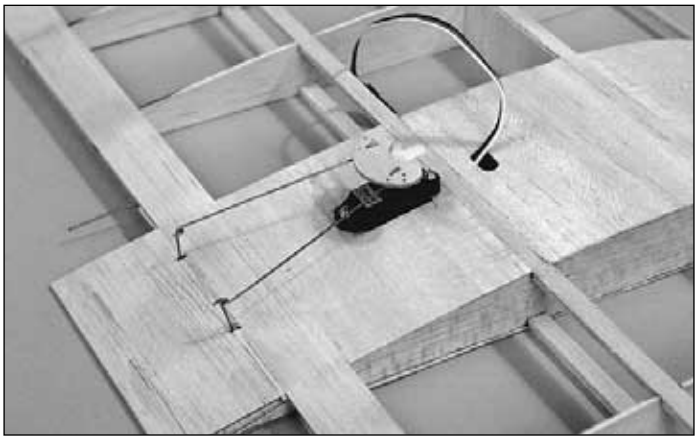


❏ 10. Make two **torque rod supports** from leftover 1/16" [1.6mm] balsa. When resting on the supports, the torque rods should align with the bottom surface of the trailing edge sheeting. Glue the supports into position, then glue the torque rod bearing tubes to the supports.



❏ 11. Sheet the remainder of the top of the center section. Fill any gaps with balsa filler and sand when dry.

Refer to this photo for the following three steps.



❏ 12. Cut holes in the top sheeting for the aileron servo and the servo wire. Glue pieces of leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa to the inside of the top sheeting for the aileron servo mounting screws. Drill 1/16" [1.6mm] holes for the screws and add a few drops of thin CA to the holes. Allow the CA to fully dry, then mount the servo in the wing.

❏ 13. Drill #68 (or 1/32" [.8mm]) holes through the marks in the laser-cut 1/16" [1.6mm] plywood **servo wheel**. Roughen the top of the plastic servo arm that came with the servo so glue will adhere. Glue the plywood servo wheel to the top of the servo arm.

❏ 14. Make the **aileron pushrods** from the remaining piece of .030" [.76mm] wire you used to make the torque rods. Use needle-nose pliers to make Z-bends on the ends of the pushrods and connect them to the servo wheel and the torque rods.

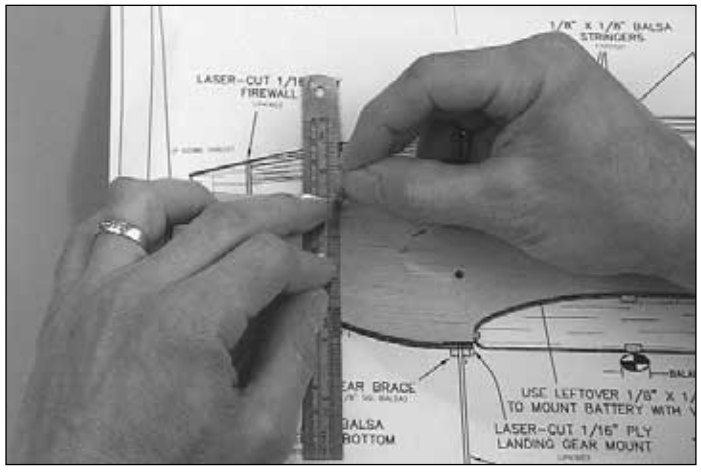
Set the wing aside and get started on the fuse.

BUILD THE FUSELAGE

Frame the Sides

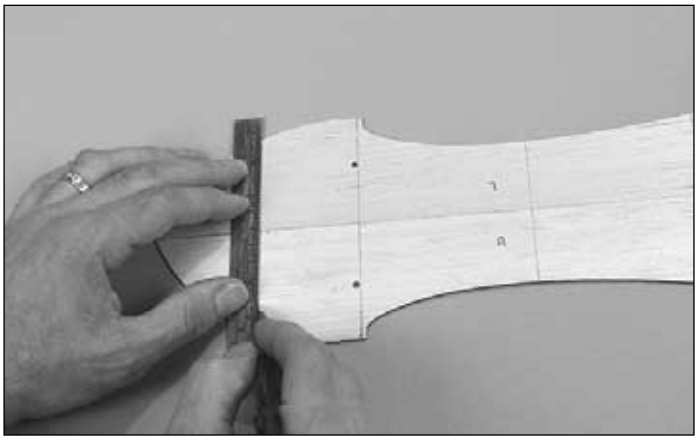
❏ 1. Cover the front view of the fuselage formers on the plan with Great Planes Plan Protector.

❏ 2. Just the same as the tail surfaces were built, build formers **F1** through **F6** over the plan using three 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks. After the glue hardens remove the formers from the plan and lightly sand them flat and even. **Note:** Most of the formers are different enough to easily identify, except for formers F2 and F5, so label both formers so they don't get switched later.

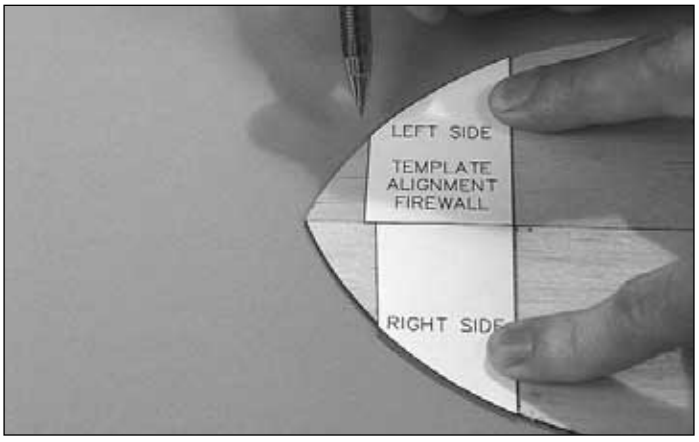


❏ 3. Pin both laser-cut 1/16" [1.6mm] balsa **fuselage sides** to the side-view of the plan making certain they are accurately aligned with each other and the plan. Align a small straightedge with the front of former F1 where indicated by the tick-marks on the plan. Stick a T-pin through both fuse sides near the top and bottom along the straightedge.

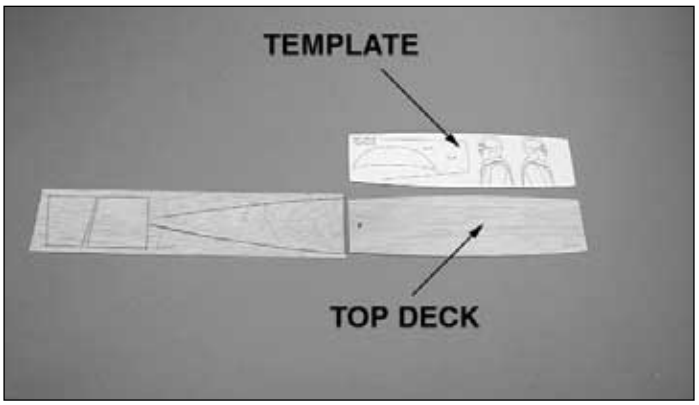
❏ 4. Mark the location of the rest of the formers the same way. When the fuse sides are separated, the pinholes will mark the location of the formers.



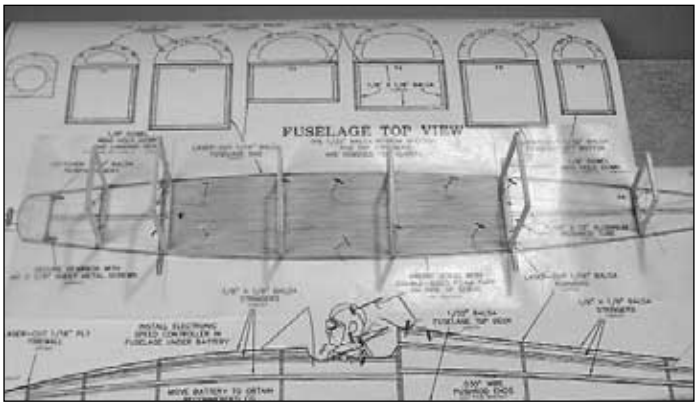
❏ 5. Remove the fuse sides from the plan. Place them together on your workbench so the top edges are contacting each other. Label the bottom side as "R" and the other as "L". Mark the locations of the front edge of the formers by drawing a line across the pinholes with a straightedge and a ballpoint pen.



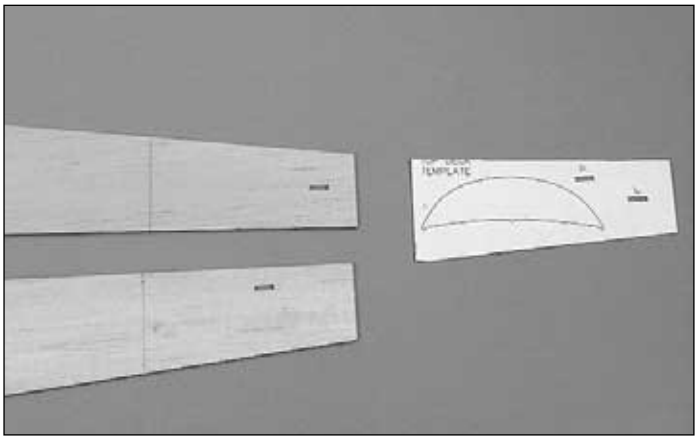
❏ 6. Cut the **firewall alignment template** from the plan. Align the aft edge of the template with the line noting former F1. Use a ballpoint pen to mark the front edge of the firewall using the template as a guide.



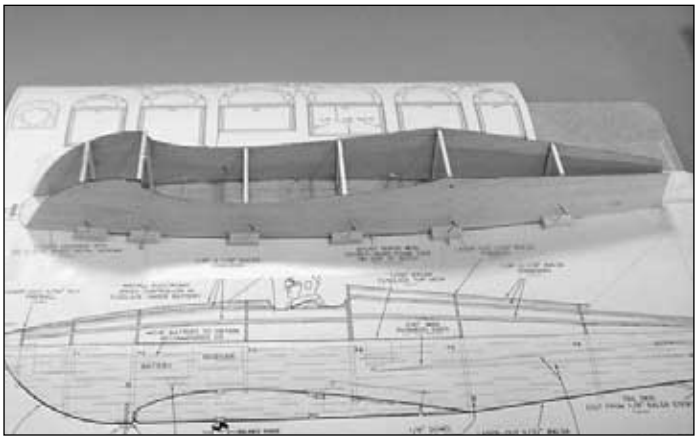
❏ 7. Accurately cut the **top deck template** from the plan. Use the template to make the **top deck** from the excess 1/32" [.8mm] sheeting on the end of the die sheet that the forward and aft fuse bottom come from.



❏ 8. Cover the top view of the fuse plan with Great Planes Plan Protector. Pin the top deck to the building board over its location on the plan. Pin formers F1 through F6 to the building board and the top deck, accurately aligned over their locations on the plan.



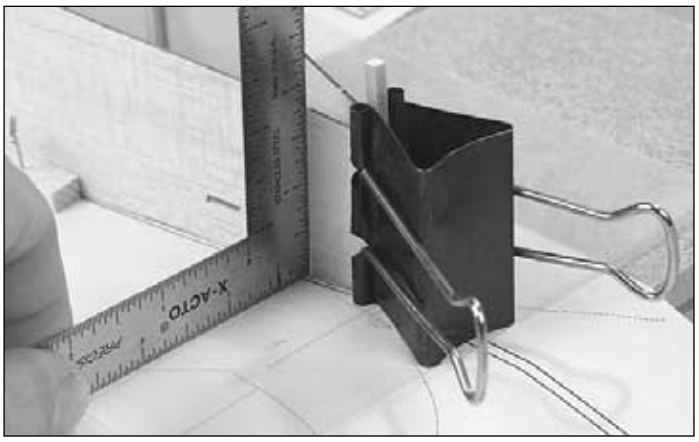
❏ 9. Cut the **pushrod exit template** from inside the top deck template. Use the pushrod exit template as a guide to cut the **rudder** pushrod exit slot in the **right** fuselage side and the **elevator** pushrod exit slot in the **left** fuselage side.



❏ 10. Test fit the fuse sides to the formers and the top deck on the plan. Use T-pins to hold the fuse sides in position. Make certain the lines you drew on the inside of the fuse sides align with the formers and make certain the top edges of the fuse sides are **fully** contacting the plan.
Hint: Use blocks cut from a 1/4" x 1/2" [6 x 13mm] (or similar size, not included) balsa stick, held to the plan with T-pins, to tightly hold the fuse sides to the formers and top deck.

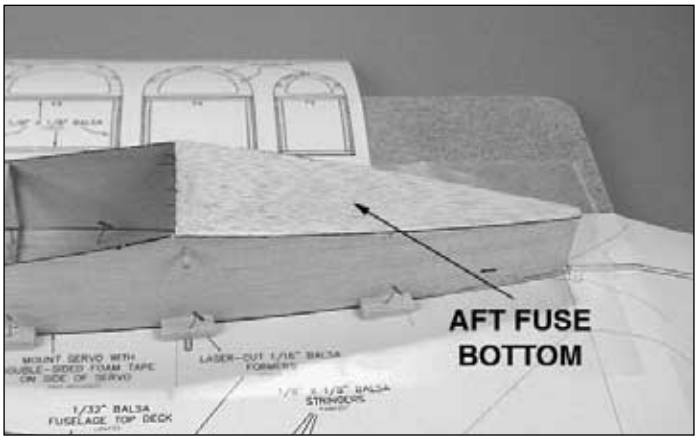
❏ 11. Cut the **forward wing/landing gear dowel** and the **aft wing dowel** to a length of 3-1/2" [90mm] from the remainder of the 1/8" dowel used for the leading edge of the outer panels.

❏ 12. Round both ends of the dowels and fit them into the holes in the fuselage. Do not glue the dowels into position until after the model has been covered.

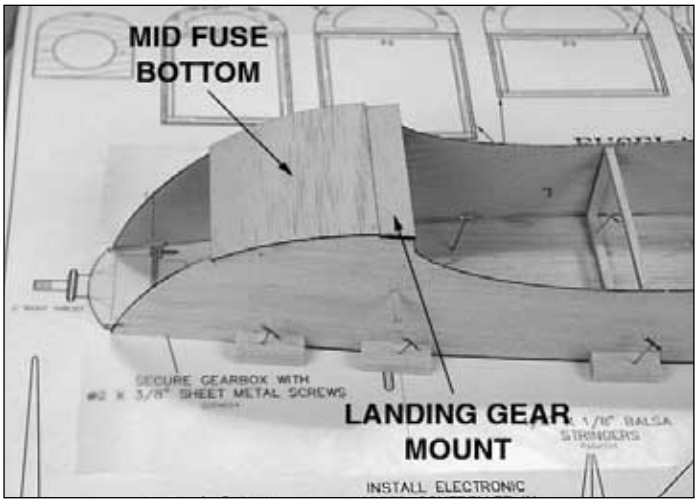


❏ 13. Cut 2-1/2" from the 1/8" x 1/8" x 24" [3.2 x 3.2mm] balsa stick leftover from building the formers. Place the stick between the aft edge of the fuse sides and hold it in position with a small clamp or masking tape. Be certain the aft end of the fuse is centered over the plan. Use a small builder's square to make certain the fuse sides are perpendicular to the building board. Once alignment has been confirmed, glue the stick into position.

❏ 14. Trim the 1/8" x 1/8" x 24" [3.2 x 3.2mm] balsa stick glued between the aft fuse sides even with the bottom of the fuse. Sand the bottoms of any protruding formers even with the bottom edges of the fuse sides to accommodate the bottom sheeting.

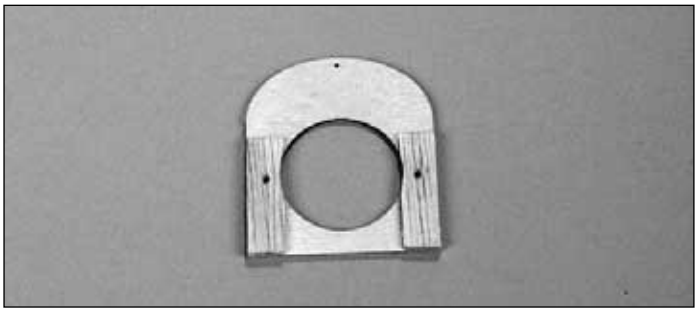


❏ 15. Glue the laser-cut 1/32" [.8mm] balsa **aft fuse bottom** to the fuse sides and formers.

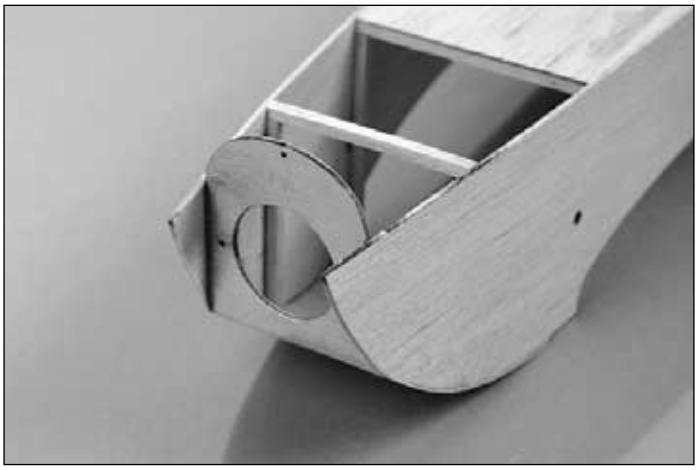


❏ 16. Glue the laser-cut 1/16" [1.6mm] plywood **landing gear mount** into position, followed by the laser-cut 1/32" [.8mm] balsa **mid fuse bottom**.

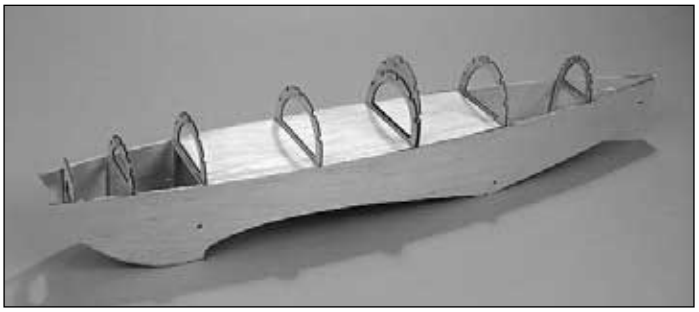
❏ 17. Remove the fuse from the plan. Sand the bottom sheeting even with the fuse sides.



❏ 18. Glue strips of leftover 1/16" [1.6mm] balsa to one side of the laser-cut 1/16" [1.6mm] plywood **firewall** across the holes for the motor mount screws. Drill 1/16" [1.6mm] holes through the laser-cut marks in the firewall for the gearbox mounting screws.



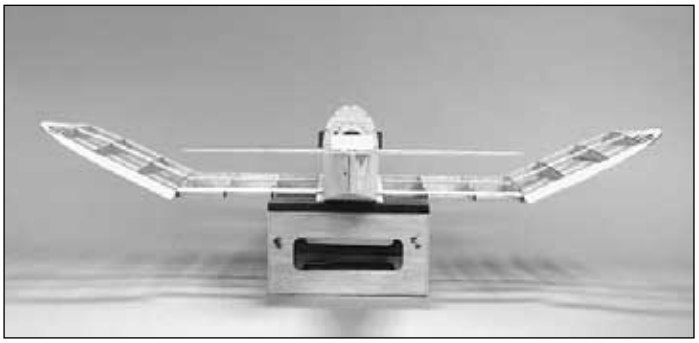
❏ 19. Glue the firewall between the fuse sides using the lines marked earlier as a guide. Glue the laser-cut 1/32" [.8mm] balsa **forward fuse bottom** into position.
Note: The forward fuse bottom is supplied oversize. Trim it so that it butts against the rear of the firewall as shown on the plan.



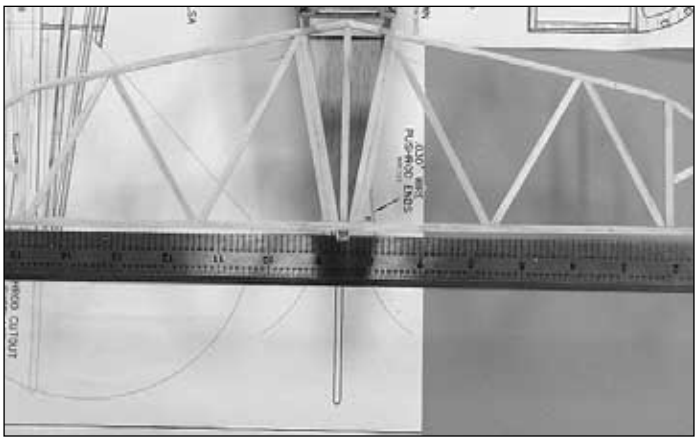
❏ 20. Glue the laser-cut 1/16" [1.6mm] balsa former tops F1T through F6T to the top of the fuselage where shown on the plan.

Mount the Stabilizer and Fin

❏ 1. If you've built the wing with ailerons, remove the bottom horizontal brace from former F4 to accommodate the aileron servo.



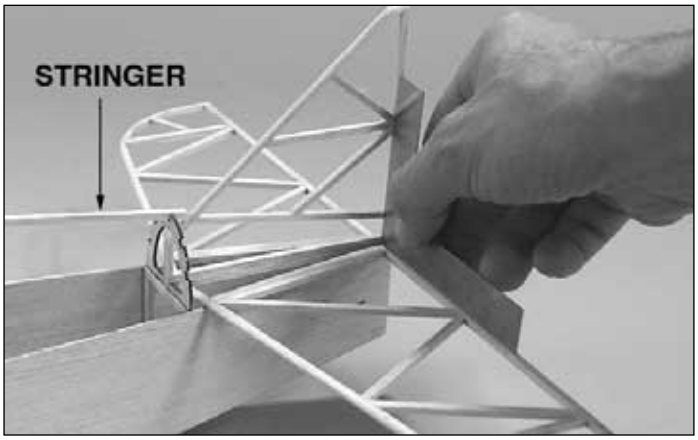
❏ 2. Lay the wing on your workbench or a sturdy platform and place the fuselage on the wing. Place a weight on top of the fuse to hold it down and keep it from moving. Position the stab on the fuse and place a small weight on top of it to hold it down. Stand a few feet behind the model and view the horizontal alignment of the stab and wing. If the stab and wing are parallel, proceed to the next step. If the stab and wing are not parallel, carefully sand the high fuse side to bring the stab into alignment with the wing.



❏ 3. Take the fuse off the wing and place it on the plan, accurately aligning it over the top view. Place a straightedge on the plan, accurately aligning it with the dashed line

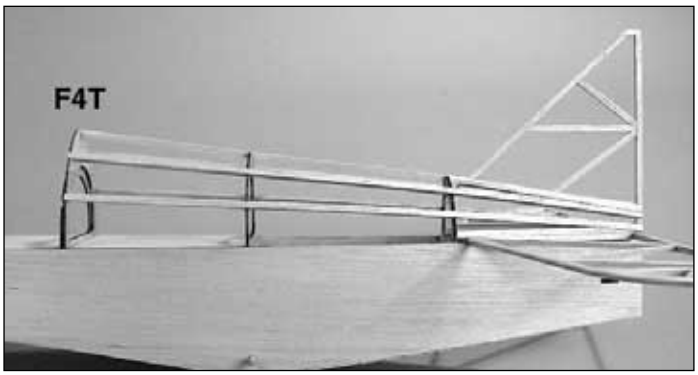
indicating the trailing edge of the stab. Mark the center of the trailing edge of the stab. Using the mark as a reference, center the stab laterally on the fuse. View the model from above. Align the trailing edge of the stab so it is parallel with the straightedge on the plan. Now you know how to center the stab.

❏ 4. Glue the stab to the fuse with 30-minute epoxy. Be certain the trailing edge of the stab is 1/8" [3.2mm] ahead of the aft end of the fuse to accommodate the elevator joiner. Be certain the fuse and the straightedge remain aligned on the plan. Align the trailing edge of the stab with the straightedge. Wipe away excess epoxy, then recheck alignment.
Note: CA could be used to glue the stab to the fuse, but epoxy is recommended to provide working time for accurate alignment.

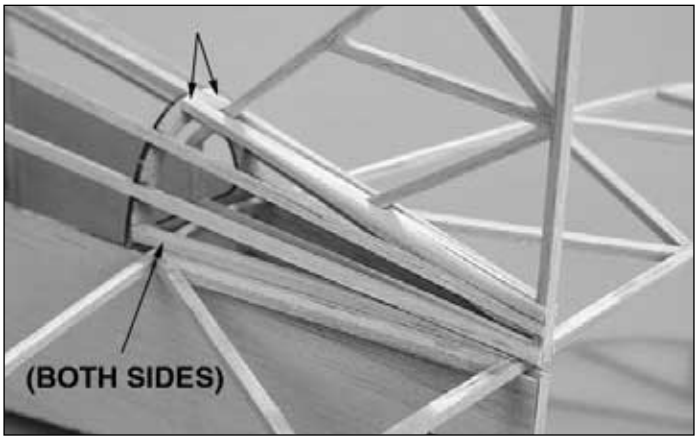


❏ 5. Temporarily place a 1/8" x 1/8" x 24" [3.2 x 3.2mm] stringer in the top, middle notch of the formers. Position the fin on the stab and fuse. Align the trailing edge of the fin with the aft end of the fuselage. Center the leading edge of the fin on the stringer in the top of the formers. Holding the fin in position, use a small builder's square to make certain it is perpendicular to the stab. When the fin is in alignment, glue it into position with CA.

Finish the Fuse

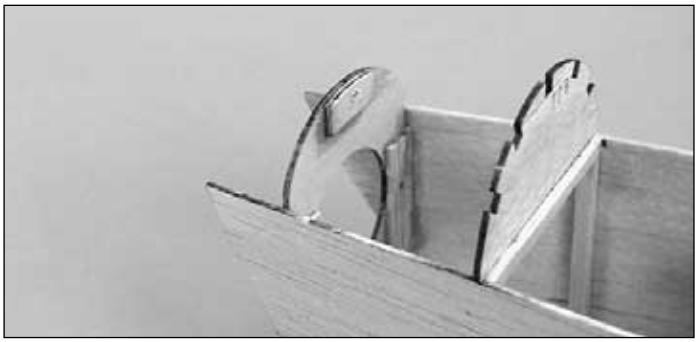


❏ 1. Cut the stringers that extend from F4T to the leading and trailing edges of the fin from 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks. Cut an angle at the aft end of the stringers where they contact the trailing edge of the fin. Glue the stringers into position.

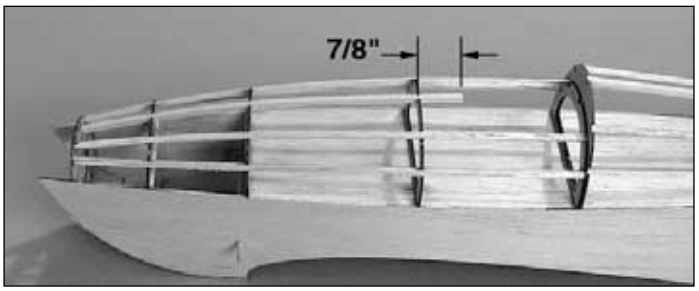


❏ 2. Cut the 1/8" x 1/8" stringers used for bonding the covering (indicated by the arrows in the photo) to both sides of the fin and the top of the stab. Glue the stringers into position.

❏ 3. Glue both laser-cut 1/16" [1.6mm] plywood **dowel doublers** to the inside of the fuse sides around the forward dowel. This can be most accurately done with the dowels in position, but do not inadvertently glue the dowels in.

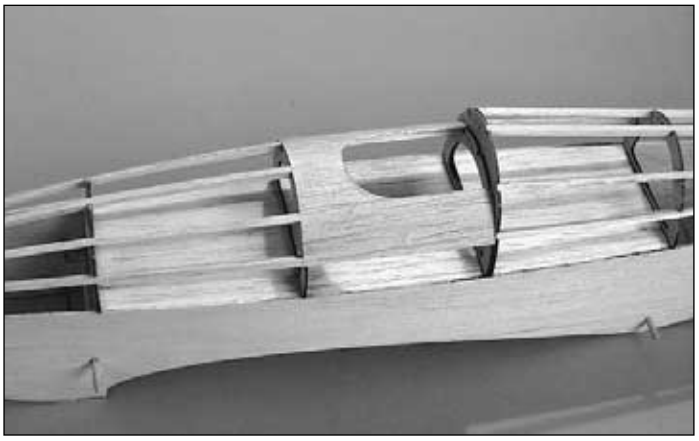


❏ 4. Glue a strip of leftover 1/16" [1.6mm] plywood to the back of the firewall centered over the top mark for the motor mount screw. Drill a 1/16" [1.6mm] hole through the firewall and the piece of plywood at the mark.

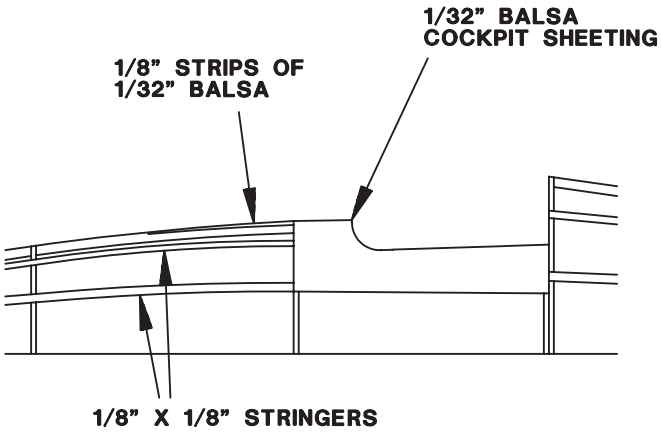


❏ 5. Use the remaining 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks to make the stringers for the top of the fuse that

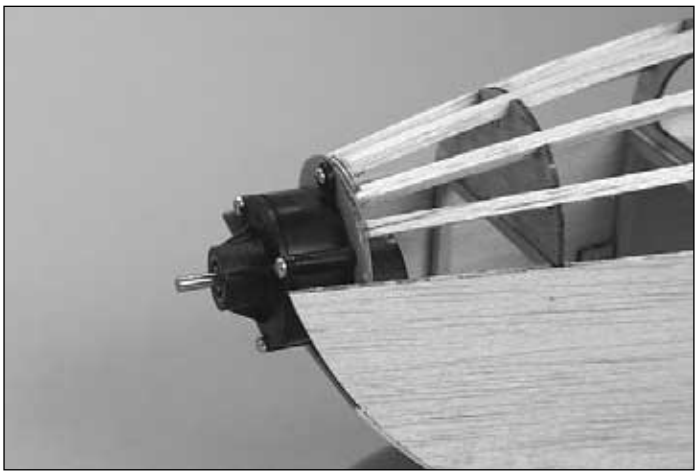
extend from former F4T to the firewall. Note that the top, middle stringer extends to 7/8" [22mm] aft of the forward former F3T. Note that the stringers butt-glue to the back of the firewall.



❏ 6. Use the **cockpit sheeting pattern** on the plan to make the cockpit sheets from leftover 1/32" [.8mm] balsa. Glue the sheets into position.

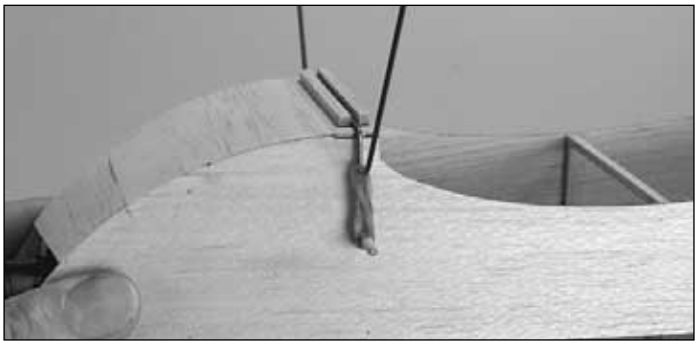


❏ 7. Glue 1/8" x 2-1/4" [3.2 x 57mm] strips of leftover 1/32" [.8mm] balsa to the top of the stringers in front of the cockpit sheeting. Sand the front of the strips until they feather smoothly to the stringers, thus blending the cockpit sheeting to the stringers.



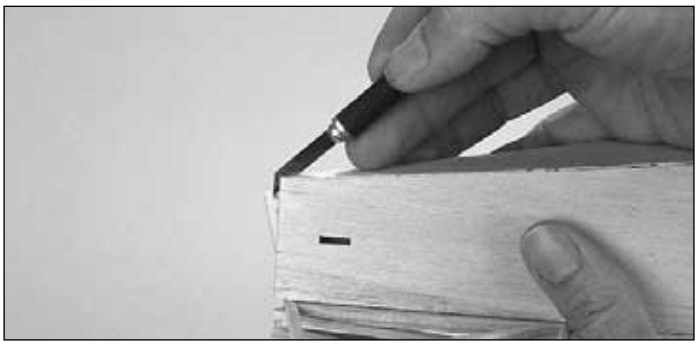
❏ 8. Temporarily mount the gearbox to the firewall with three #2 x 3/8" [9.5mm] screws.

❏ 9. Cut and test fit a piece of 1/32" [.8mm] balsa **nose sheeting** to fit over the gearbox. Trim the sheet as necessary for a good fit. Be certain the sheeting is positioned so you will be able to access the top gearbox mounting screw with your screwdriver. Glue the nose sheeting into position. The same as the cockpit sheeting, feather the nose sheeting to the stringers with strips of 1/32" x 1/8" [.8 x 3.2mm] balsa.



❏ 10. Glue two strips of leftover 1/8" x 1/8" x 24" [3.2 x 3.2mm] balsa across the bottom of the landing gear mount as shown on the plan. Temporarily mount the landing gear using the small rubber bands included with this kit. Mount the wheels to the gear by press-fitting the nylon retainers onto the ends of the wire.

❏ 11. Apply a light coat of epoxy to the inside of both fuselage sides in the area where the elevator and rudder servos are to be mounted. Lightly sand the area smooth after the epoxy hardens. This will provide a solid surface for mounting the servos with double-sided foam mounting tape.



❏ 12. Use a thin razor saw to cut a slot in the aft end of the fuse bottom to accommodate the small hinge that will be used to join the bottom of the rudder to the fuse as shown on the plan. Cut a matching slot in the middle of the bottom of the rudder.

COVER THE MODEL

Final Preparations

❏ 1. If you haven't done so already, sand all parts of the model smooth with 320, then 400-grit sandpaper.

❏ 2. Handling the model with care, use compressed air, a dust brush or a tack cloth to remove balsa dust from the model.

❏ 3. If using a covering that requires adhesive, apply the adhesive according to the instructions that came with it.

❏ 4. Follow the suggested sequence to cover the model.

Suggested Covering Sequence

Important: When covering the wing and tail surfaces, do not tighten the covering until both sides of each part are covered. This will reduce the tendency for the surfaces to twist. If the surfaces do twist, they can be straightened by re-tightening the covering while twisting the structure in the opposite direction.

Tail surfaces:

1. The bottom, then the top of the stabilizer
2. Fin
3. Bottom, then top of elevators
4. Rudder

Fuselage:

1. The bottom of the fuse
2. Sides
3. Top

Wing:

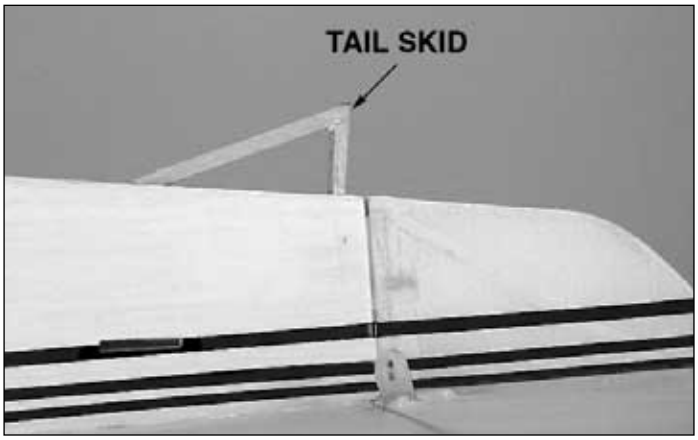
1. The bottom of the center panel
2. The bottom of both outer panels and bottom of wing tips
3. Top of the center panel
4. Top of wing tips
5. Top of outer panels
6. Ailerons

FINAL ASSEMBLY

Hook Up the Controls

❏ 1. Before proceeding, charge the motor battery (and your transmitter if needed). When it's time to set up the radio, there will be no waiting for the batteries to charge.

❏ 2. Install and permanently glue in the aft wing dowel and the forward landing gear dowel.



❏ 3. Make the **tail skid** as shown on the plan from leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa. Remove the covering from the bottom of the fuse where the tail skid is to be glued into position. Glue the tail skid to the bottom of the fuse with CA.

❏ 4. Hold the elevator to the stab and move it up and down to make sure there is no interference with the fuse. If necessary, trim the bottom of the fin trailing edge or the top of the aft end of the fuse to allow the elevator to move up and down.

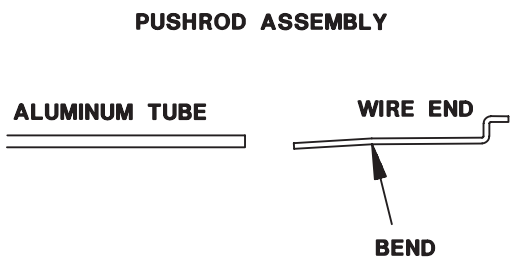
❏ 5. Cut the covering from the elevator and rudder pushrod exit slots near the aft end of the fuse.

Note: Refer to elevator and rudder pushrods on the fuse plan. Note that the pushrods are made from aluminum tubes connected to wire rods at both ends. The following steps describe how to make the pushrods.

❏ 6. Cut the two 1/16" [1.6mm] aluminum pushrod tubes to the length shown on the plan for the **elevator** and **rudder pushrods**.

❏ 7. Thoroughly clean the remaining .030" x 20-1/2" [.76 x 520mm] wire with alcohol or other solvent, then scuff with 320-grit sandpaper so glue will adhere.

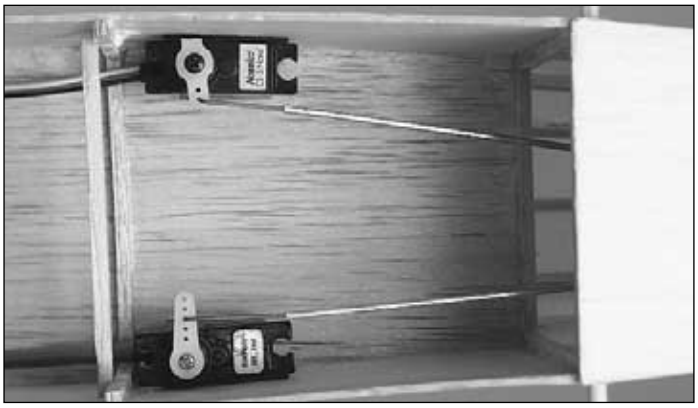
❏ 8. Make all four **pushrod ends** as shown on the plan from the wire. The ends should be cut to a length so that they can be inserted 1-1/4" [32mm] into the aluminum pushrod tubes.



❏ 9. Make a slight bend about 1/2" [13mm] from the end of the wires, then assemble the pushrods by inserting the wires into the aluminum tubes. For now, the bends in the wires should have a tight friction fit, but the wires will be permanently glued into the tubes after the pushrods are connected and the controls are centered.

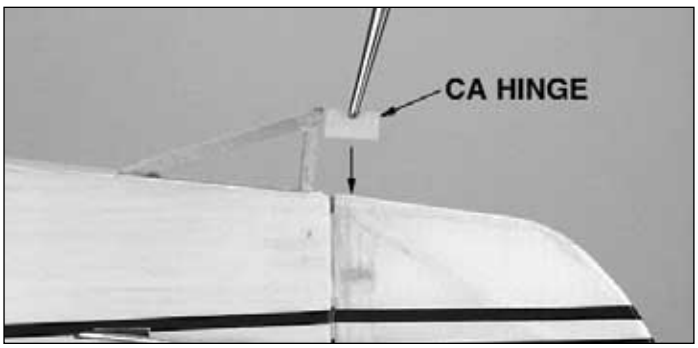
❏ 10. Connect the elevator pushrod to the outer hole on the elevator control arm. Insert the pushrod into the fuse through the slot in the fuse side.

❏ 11. Hinge the top of both elevators to the stab with a few strips of cellophane tape where shown on the plan.



❏ 12. Connect the other end of the pushrod to the servo arm on the servo you will be using for the elevator. Using double-sided foam mounting tape (GPMQ4440, not included), mount the elevator servo to the fuse side where shown on the plan. Be certain to position the servo so the elevator will be neutral when the servo arm is centered.

❏ 13. Connect the rudder pushrod, hinge the rudder and mount the rudder servo the same way.



❏ 14. Insert the small **CA hinge** into the slots cut earlier in the bottom of the fuse and rudder. Add a few drops of thin CA to both sides of the hinge and allow to soak in and dry.

❏ 15. Hinge the ailerons to the wing with strips of cellophane tape while simultaneously using epoxy to glue the aileron torque rods inside the top surface of the ailerons. Flip the wing upside-down while the epoxy is hardening.

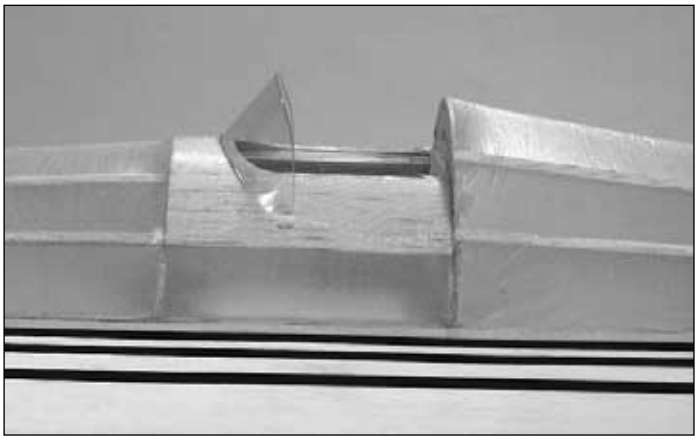
❏ 16. Assemble the gearbox and motor according to the instructions that came with it. Mount the gearbox and motor to the firewall. Mount the propeller adapter and propeller to the gearbox.

❏ 17. Mount the landing gear to the fuse with two #14 rubber bands on each side.

❏ 18. Connect the servos and receiver to the speed control following the instructions that came with the speed control. Temporarily position the receiver inside the fuse and lay the antenna along the outside of the fuse over the stab.

Finish the Cockpit

❏ 1. Use the windscreen template on the plan to cut out the windscreen from the supplied 2" x 4" [50 x 100mm] clear plastic sheet.



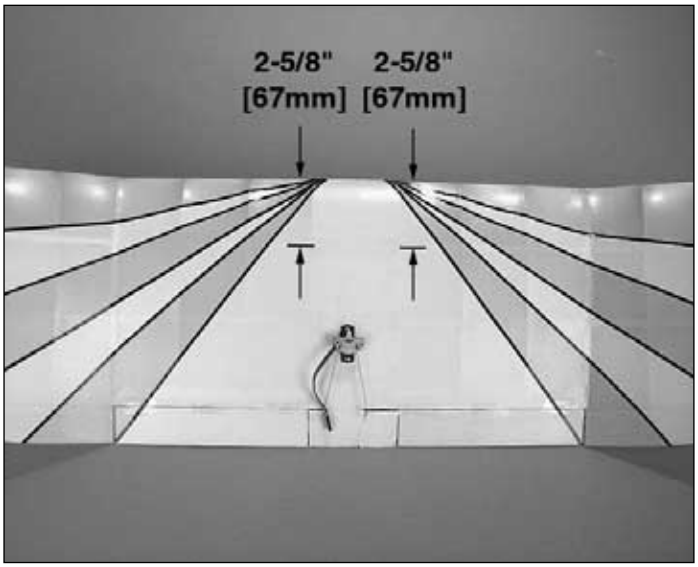
❏ 2. Test fit the windscreen to the fuse making small slits in the balsa with a hobby knife for the tabs. Use CA or canopy glue to glue the windscreen into position.

❏ 3. Install a molded plastic pilot of choice, or cut out one of the paper templates provided and glue it to a sheet of 1/8" [3.2mm] balsa. Cut out the balsa sheeting to the outline of the pilot, then cut out and glue the other side of the template to the balsa sheet. Use felt-tip markers to color the pilot, then glue him into position inside the cockpit.

PREPARE THE MODEL FOR FLYING

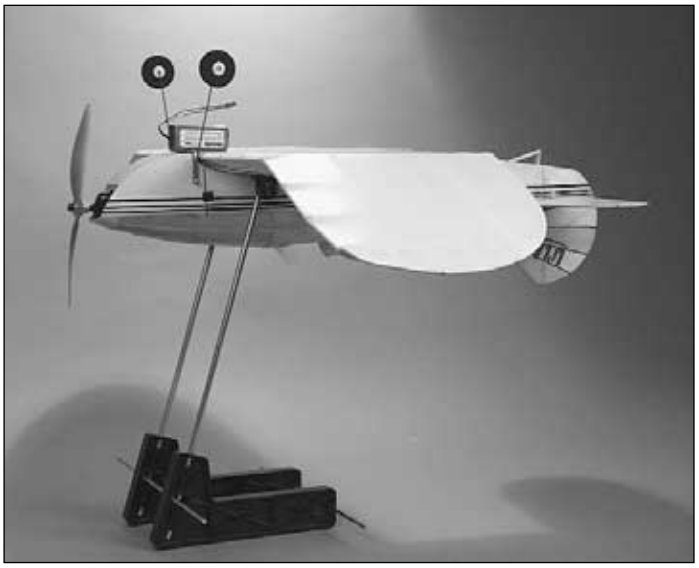
Balance the Model

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



❏ 1. If using a Great Planes C.G. Machine to balance the Li'l Poke, adjust the rulers to balance the model 2-5/8" [67mm] back from the leading edge of the wing. If not using a C.G. Machine, mark the balance point on the top of the wing on both sides of the fuselage with 1/8" [3mm] wide striping tape as shown in the photo. This is the balance point at which the model should balance for the first flights. After initial trim flights and when you become more acquainted with the Li'l Poke, you may experiment by shifting the balance up to 1/4" [6mm] forward or backward to change its flying characteristics. Moving the balance point forward may improve the smoothness and stability, but the model may then require more speed for takeoff and may become more difficult to slow down for landing. Moving the balance aft makes the model more agile with a lighter "feel". In any case, start at the recommended location. Do not at any time balance the model outside the recommended range.

❏ 2. Hook two #32 rubber bands together to double the length. Hook two more #32 rubber bands together the same way. Mount the wing to the fuse with the rubber bands.



❏ 3. With the model ready to fly and all parts installed **except** for the battery, place the model on a Great Planes C.G. Machine or lift it at the balance point marked on top of the wing. Place the battery on the bottom of the model where required to get it to balance. This is where the battery pack must be installed in the fuse.

❏ 4. Noting where the battery must be mounted inside the fuselage to achieve the correct C.G., remove the wing and decide how to mount the battery. If the battery pack crosses the forward dowel, it should fit between the dowel and the top deck with a little room to spare. Use your own mounting method or make a 1-1/4" x 2-1/2" [30 x 65mm] **battery mount** from leftover 1/16" [1.6mm] balsa to reinforce the top deck. Glue the battery mount to the top deck. Apply Great Planes Velcro (GPMQ4480, not included), to the battery and the battery mount, then mount the battery. Keep in mind that the battery should be readily removable and should also be repositionable for C.G. adjustments. **Note:** Only a couple of 1/4" [6mm] wide strips of Velcro are required to secure the battery—do not use a whole sheet. Otherwise, the battery may be difficult to remove.

❏ 5. Mount the receiver and the speed control to one of the fuse sides or the top deck with Velcro or double-sided foam mounting tape.

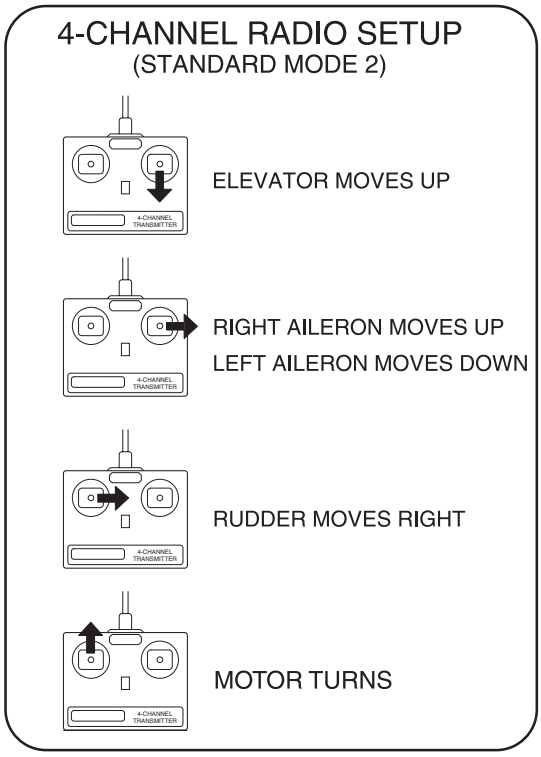
❏ 6. Drill a 1/16" [1.6mm] hole through the bottom of the fuselage and route the receiver antenna through it. Extend the antenna and tape it to the bottom of the aft end of the fuse. Be certain the antenna will not be able to come into contact with the propeller! Never coil-up the antenna inside the fuselage, nor cut it. The antenna is tuned to a certain length.

❏ 7. Recheck the C.G. to make certain the model balances. Shift the battery as necessary to achieve the correct C.G.

Set Up the Radio

❏ 1. For safety, remove the propeller from the motor. Move the throttle stick to the off position, or towards the bottom of the transmitter. Turn on the transmitter. Connect the charged battery to the speed control then, follow the instructions that came with the speed control to turn on the receiver.

Warning: When not flying or working on the model, the battery should be disconnected.

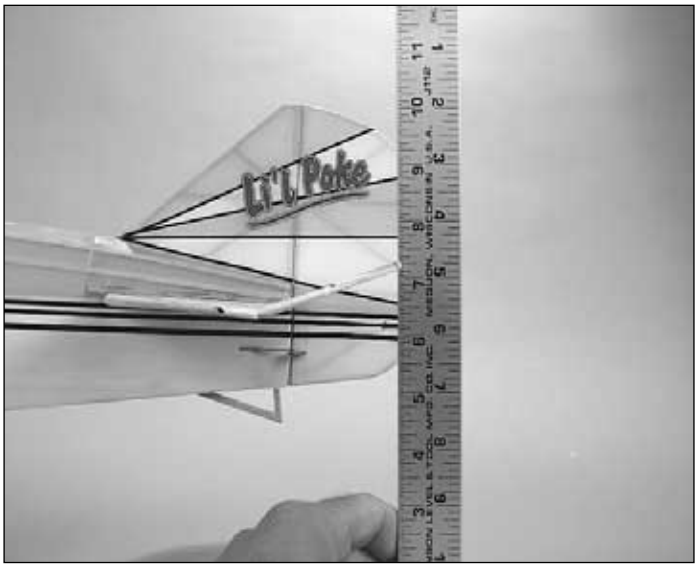


❏ 2. Center the trims on the transmitter. Operate the servos by moving the control sticks. Check that the servos respond in the correct direction as shown in the diagram. If necessary, use the servo reversing function on your transmitter to get the controls to respond correctly.

❏ 3. If necessary, remove the servo arms from the servos, then remount them so they are centered.

❏ 4. Now that the servos and the servo arms are centered, center the rudder and elevator by adjusting the position of the wire pushrod ends in the pushrod tubes. Once the controls are centered, permanently glue the pushrod ends into the pushrod tubes with thin CA. If the ailerons require adjustment, carefully bend the aileron torque rods or the pushrods until both ailerons are centered.

Set the Control Throws



❏ Operating the controls with the transmitter, use a ruler to measure the throws at the widest part of the surface. If necessary, reposition the pushrods on the servo arms (farther out for more throw, closer in for less throw), or use the ATV function on the transmitter to set the control throws according to the chart that follows.

These are the recommended control throws:

Elevator: 5/8" [16mm] up 5/8" [16mm] down

Rudder: 1" [25mm] right 1" [25mm] left

Ailerons: 5/8" [16mm] up 1/8" [3mm] down

IMPORTANT: The Li'l Poke has been extensively tested. These are the control throws at which it flies best. If, after you become comfortable with the way the Li'l Poke flies, you would like to adjust the throws to suit your taste, that is fine. However, remember that too much throw can make the plane more difficult to control and force it into a stall or a snap roll, so remember, "more is not always better."

PREFLIGHT

Charge the Transmitter Batteries

Follow the instructions that came with your radio to charge the batteries the evening before you plan to fly. You should always charge the transmitter batteries before flying and at other times as recommended by the radio manufacturer.

Identify Your Model

No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on the back cover and place it on or inside your model.

Ground Inspection

Before flying you should perform one last overall inspection to make sure the model is truly ready to fly and that you haven't overlooked anything. If you are not thoroughly familiar with the operation of R/C models, ask an experienced modeler to perform this inspection. Check to see that the radio is installed correctly and that all the controls are connected properly. The motor must also be checked by confirming that the prop is rotating in the correct direction and the motor sounds like it is reaching full power. Make certain all control surfaces (elevators, rudder, ailerons-if used) are secure, the pushrods are connected, the controls respond in the correct direction, radio components are securely mounted, and the C.G. is correct.

Range Check

Ground check the operational range of the radio before the first flight of the day. 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 an assistant stand by the model and while you work the controls, tell you what the control surfaces are doing. Repeat this test **with the motor running** at various speeds. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

PERFORMANCE TIPS

Cycle the Batteries

For the longest flight duration, and to get the most from a new battery, the battery should be cycled. "Cycling" a battery means to fully charge ("peak" charge) the battery, then to discharge it. Many battery chargers have peak charging and automatic discharging capabilities. If you do not have a charger that is able to discharge batteries, you can discharge the battery yourself by running the motor with the propeller attached until the propeller barely continues to turn. Charge and discharge the battery 3 or 4 more times on the ground before flying. Be sure to remove the battery from the airplane between each cycle and allow it to cool before recharging.

Examine the Propeller

Use fine sandpaper to remove imperfections along the edges of the propeller. For the best performance, use a Top Flite Precision Magnetic Prop Balancer™ (TOPQ5700) to balance the propellers (this is a necessity on glow-powered engines, but is less critical on small electric models).

Mount the Wing

Make two more long rubber bands by connecting two sets of two #32 rubber bands. Mount the wing with all four rubber bands criss-crossing the last two.

Motor Care

1. Using multiple battery packs for successive flights may cause the motor to become excessively hot, thus causing damage. Allow the motor to cool for at least 10 minutes between flights.

2. The ideal power source for the Li'l Poke system is a 7 or 8-cell (8.4 - 9.6volt) battery pack. The use of a higher voltage battery may reduce motor life.

Oil the Wheels

If taking off from the ground, the wheels must spin freely. Put a drop of oil on each axle and check the wheels for binding when moved from side to side.

MOTOR SAFETY PRECAUTIONS

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

Get help from an experienced pilot when learning to operate the motor.

Use safety glasses when running the motor.

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

Keep your face and body as well as all spectators away from the path of the propeller as you start and run the motor.

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.

The electric motor and motor battery used in your Li'l Poke are very powerful and the spinning propeller has a lot of momentum; therefore, if you touch the propeller while it is spinning it may inflict severe injury. Respect the motor and propeller for the damage it is capable of and take whatever precautions are necessary to avoid injury. Always disconnect and remove the motor battery until you are ready to fly again and always make sure the switches are turned off before connecting the battery.

AMA SAFETY CODE (excerpts)

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

GENERAL

1. I will not fly my model aircraft in competition or in the presence of spectators 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 utilized 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.

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

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 flyer, unless assisted by an experienced helper.

3. I will perform my initial turn after takeoff away from the pit, spectator and parking areas and I will not thereafter perform maneuvers, flights of any sort or landing approaches over a pit, spectator or parking area.

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

FIND A SAFE PLACE TO FLY

Though the Li'l Poke is a "Park Flyer" that may be flown in small areas, the **best** place to fly **any** R/C model is at an AMA chartered club field. Club fields are set up for R/C flying making your outing safer and more enjoyable. We recommend that you join the AMA and a local club so you can have a safe place to fly and have insurance coverage in case of a flying accident. The AMA address and telephone number are in the front of this manual. **Remember, if you insist on flying on your own, do not fly the Li'l Poke within five miles of any R/C club field, or interference from your transmitter could cause a crash.**

If there is no club or R/C flying field in your area, find a suitable site that is clear of trees, telephone poles, buildings, towers, busy streets and other obstacles. Since you are not flying at a sanctioned AMA site, beware of others like yourself who could be flying nearby on your frequency.

FLYING

IMPORTANT: Although the Li'l Poke is a slow-flying model, it does not have the self-righting characteristics of a primary trainer. If you have not mastered basic flight with a trainer model, we strongly urge you to seek the assistance of an experienced R/C pilot to check the model for airworthiness AND to teach you how to fly. Attempting to learn to fly on your own is dangerous and may result in destruction of your model or even injury to yourself and others. Therefore, find an instructor and fly only under his or her guidance until you have acquired the skills necessary for safe and fully controlled operation.

Takeoff

We recommend flying the Li'l Poke when the wind is no greater than five miles per hour. Less experienced flyers should fly the Li'l Poke only in calm (less than one mile per hour) conditions. Often, winds are calm in the early morning and early evening. These are usually the most enjoyable times to fly anyway!

Until you have the Li'l Poke properly trimmed for level flight, we recommend having an assistant hand-launch the model instead of taking off from the ground.

Turn on the transmitter and plug the battery into the speed control.

IMPORTANT: Confirm that the transmitter operates the controls by moving the sticks to turn on the motor and move the control surfaces. If you forget to do this you could accidentally launch the model without having control!

Rubber band the wing to the fuse. When ready, the assistant should hold the model by the bottom of the fuselage behind the wing, then raise the model high above his head and point it **into the wind**. With the pilot standing behind the plane, fully advance the throttle to start the motor. As soon as the motor is at full power, the assistant should gently toss the plane into the air at a **level** or **slightly** nose-up attitude. Be certain the model is being launched **into** the wind. Be immediately ready to make corrections to keep the airplane flying straight, level and into the wind.

When the model has gained adequate flying speed under its own power, **gently** pull the elevator stick back until the airplane starts a gradual climb. Many beginners tend to pull too hard causing the model to stall, so be gentle on the elevator and don't panic. If you do pull too hard and notice the model losing speed, release the elevator stick and allow the model to regain airspeed.

Continue a **gradual** climb and establish a gentle turn (away from yourself or spectators) until the airplane reaches an altitude of 75 to 100 feet.

Flight

The main purpose of the first few flights is to learn how the model behaves and to adjust the trims for level flight. After the model has climbed to a safe altitude reduce the throttle slightly to slow the model, yet maintain altitude. The Li'l Poke should fly well and maintain adequate airspeed at about 1/2 to 3/4 throttle.

Adjust the elevator trim so the model flies level at the throttle setting you are using. Adjust the aileron trim (if used) and rudder trim to level the wings. It may take a few passes to get the trims adjusted, but this should be your first priority once at a comfortable altitude. Continue to fly around, executing turns and making mental notes (or having your assistant take notes for you) of what additional adjustments or C.G. changes may be required to fine tune the model so it flies the way you like.
If the Li'l Poke reaches a high enough altitude, you may periodically cut off the motor power and glide. This may extend the flight time by several minutes, especially if the model flies into a rising air current.

This model belongs to:

_____
Name

_____
Address

_____
City, State Zip

_____
Phone number

_____
AMA number

Landing

Because the Li'l Poke flies slowly, it requires little room to land. Begin the landing approach by flying downwind at an altitude of approximately 20 feet [6 meters]. When the airplane is approximately 50 to 100 feet [15 to 30 meters] past you, reduce motor power and make the "final" 180-degree turn into the wind aligning the airplane with the runway or landing area. Do not dive the airplane, as it will pick up too much speed. Instead, when you reduce power, allow the airplane to establish a gradual descent. Concentrate on keeping it heading into the wind toward the runway. When the plane reaches an altitude of about 4 feet [1 meter], gently apply a little "up elevator" to level the plane, but be careful as too much up elevator will cause it to stall. While holding a slight amount of up elevator the airplane will slow and descend as it loses flying speed, thus touching-down on the runway. **Note:** Lightweight models such as the Li'l Poke slow rapidly when motor power is cut. You will have better control on landings if slight motor power is maintained rather than fully cutting-off the motor.

Until you are able to accurately judge how far the Li'l Poke can glide, it will be helpful to reserve some battery power to run the motor so the plane can be flown back to the runway.

ROG (Rise Off Ground) Takeoff

When speaking of small models, frequently a takeoff from the ground is called an "ROG" (*rise off ground*) takeoff. Landings on grass will be a little rough, but doing a ROG takeoff from grass will probably not be possible with the Li'l Poke. If planning an ROG takeoff, find a paved surface.

After you have trimmed the Li'l Poke for flight and have become familiar with its flight characteristics, you may execute ROG takeoffs. With the model on the runway and pointing into the wind, gently apply power. Initially, the plane may turn to the left or right because it has not gained enough speed for the controls to become effective. Do your best to get through this brief moment and maintain a heading down the runway and into the wind. Make corrections with the rudder to keep it rolling straight into the wind. If the model veers too far off, cut the throttle and try again. As the model gains speed the controls will become effective.

After the airplane has gained adequate speed (this requires experience to gauge), gently pull back on the elevator stick allowing the airplane to become airborne. Establish a gentle climb the same as when you were hand-launching.

Best of luck and happy flying!

LEFT SIDE

FIREWALL ALIGNMENT TEMPLATE

RIGHT SIDE

1/8" X 1/8" BALSA STRINGERS
PARKS01

LASER-CUT 1/16" BALSA FORMERS
LIPKF02

1/32" BALSA FUSELAGE TOP DECK
LIPKF03

F1T F2T F3T F4T F5T F6T

F1 F2 F3 F4 F5 F6

1/8" X 1/8" BALSA STRINGERS
PARKS01

1/8" X 1/8" BALSA
PARKS01

FUSELAGE TOP VIEW

THE 1/32" BALSA BOTTOM SHEETING AND TOP STRINGERS ARE REMOVED FOR CLARITY.

LASER-CUT 1/32" BALSA FUSELAGE AFT BOTTOM
LIPKF03

FIN

RUDDER

ALL PARTS CUT FROM 1/8" SQ. BALSA STICK
PARKS01

CELLOPHANE TAPE HINGES

CUT OUT FOR 1/16" PLY RUDDER CONTROL HORN

3/16" x 3/8" CA HINGE
(CUT FROM 3/4" X 1" CA HINGE)

.030" WIRE PUSHROD ENDS
WIRES22

1/8" FORWARD WING/LANDING GEAR DOWEL
(CUT FROM LEFT OVER LE - DOWLS013)

LASER-CUT 1/16" BALSA FUSELAGE SIDE
LIPKF01

LEFTOVER 1/16" BALSA REINFORCEMENT

1/8" AFT WING DOWEL
(CUT FROM LEFT OVER LE - DOWLS013)

1/8" X 1/8" BALSA TOP STRINGER
PARKS01

F1 F2 F3 F4 F5 F6 F7

2° RIGHT THRUST

REMOVE THIS SECTION OF STRINGER WHEN ADDING COCKPIT SHEETING.

.030" WIRE PUSHROD ENDS
WIRES22

1/16" X 12" ALUMINUM PUSHROD TUBE
TUBE010

SECURE GEARBOX WITH #2 X 3/8" SHEET METAL SCREWS
SCRW024

1/32 BALSA TOP DECK
(CUT FROM LIPKF03)

DOUBLE-SIDED FOAM TAPE
(NOT INCLUDED)

LASER-CUT 1/16" PLY DOWEL DOUBLER
LIPKW03

LASER-CUT 1/16" BALSA FORMERS
LIPKF02

ALIGN STAB WITH THIS LINE

TOP STRINGER ENDS AT FIN LE

COCKPIT SHEETING
(USE LEFTOVER 1/32" BALSA)

1/8" X 1/8" BALSA STRINGERS
PARKS01

1/32" BALSA TOP DECK
LIPKF03

1/8" X 1/8" BALSA STRINGERS
PARKS01

1/32" BALSA NOSE SHEETING

INSTALL ELECTRONIC SPEED CONTROLLER IN FUSELAGE UNDER BATTERY

LASER-CUT 1/16" PLY FIREWALL
LIPKW03

AFT END OF STAB TE GOES HERE

2° DOWN THRUST

F1T F2T F3T F3T F4T F5T F6T

F1 F2 F3 F4 F5 F6

VELCRO

1/16" BALSA BATTERY MOUNT

.030" WIRE PUSHROD ENDS
(CUT FROM WIRES22)

BATTERY

RECEIVER

PUSHROD CUTOUT RIGHT FUSELAGE SIDE

.030" WIRE PUSHROD ENDS
(CUT FROM WIRES22)

LEFTOVER 1/16" BALSA REINFORCEMENT

BALANCE RANGE

TAIL SKID
(CUT FROM 1/8" X 1/4" BALSA STICK)

PUSHROD CUTOUT LEFT FUSELAGE SIDE

LANDING GEAR BRACE
(USE LEFTOVER 1/8" SQ. BALSA)

POSITION BATTERY TO ACHIEVE CORRECT CG.

1/8" AFT WING DOWEL
(CUT FROM DOWLS013)

LASER-CUT 1/32" BALSA AFT FUSELAGE BOTTOM
LIPKF03

LASER-CUT 1/32" BALSA FUSELAGE BOTTOM SHEETING
LIPKF03

LASER-CUT 1/16" PLY LANDING GEAR MOUNT
LIPKW03

1/16" X 12" ALUMINUM PUSHROD TUBE
TUBE010

FUSELAGE SIDE VIEW

1/16" WIRE LANDING GEAR
WBNT???

NYLON WHEEL RETAINER
NYLON85C

1-1/2" FOAM WHEEL
WHEEL040

TOP DECK TEMPLATE

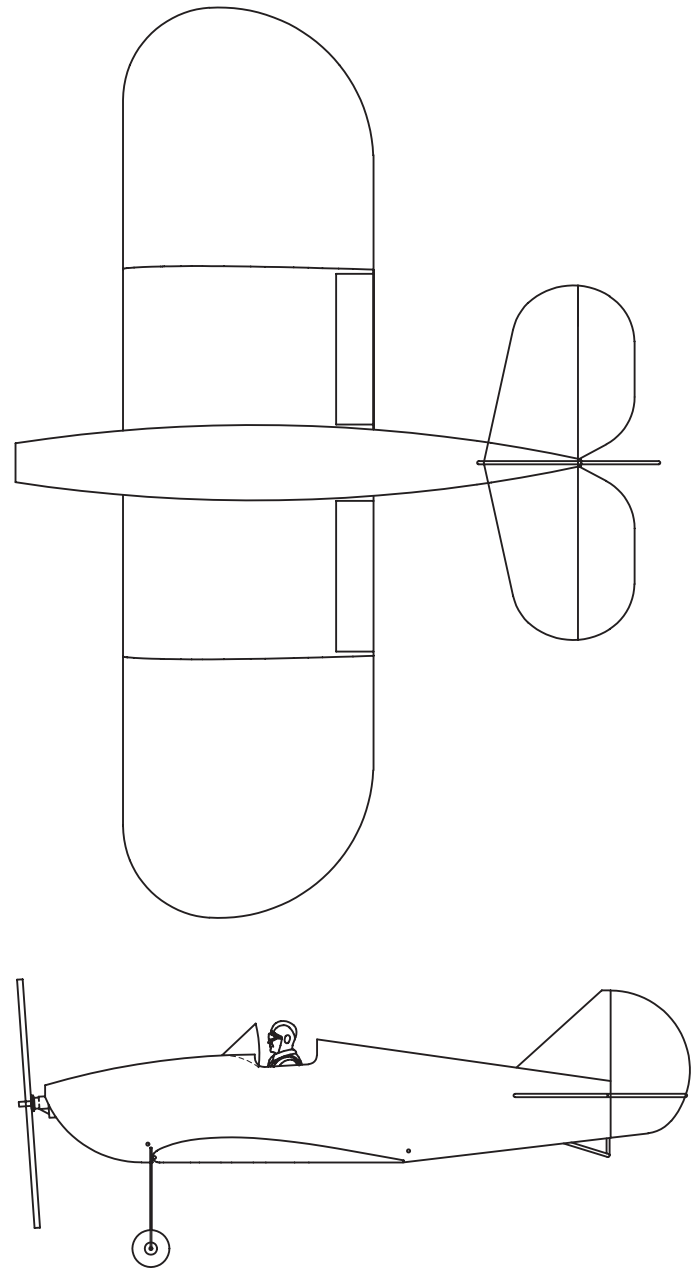
PUSHROD EXIT TEMPLATE

RUDDER (RIGHT)

ELEVATOR (LEFT)

WINDSHIELD TEMPLATE

FORWARD



QUESTIONS??

e-mail us at productsupport@greatplanes.com or call (217)398-8970

Visit our Web Site at www.greatplanes.com

 FUSE PLAN NO: LIPKP02

Li'l Pokie

DESIGNED AND DRAWN BY: Ernest LeClair

INSTRUCTIONS BY: Tim Lampe

GREAT PLANES® MODEL MANUFACTURING COMPANY

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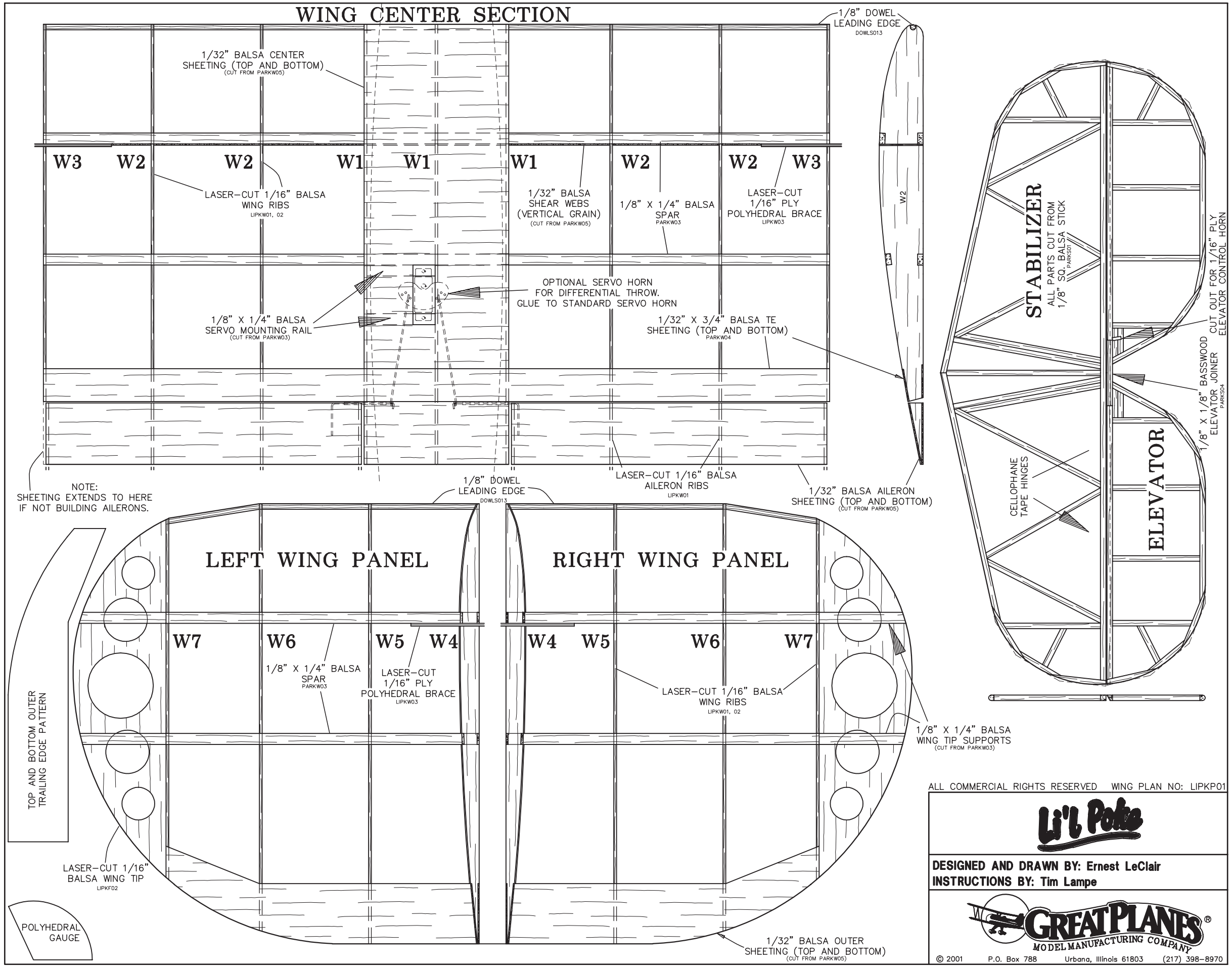
WING CENTER SECTION



 WING PLAN NO: LIPKP01

Li'l Poke

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