RV-4

INSTRUCTION MANUAL

Park Flyers

Wingspan: 41-3/4 in [1060mm]
Wing Area: 368 sq in [23.7 dm²]
Airframe Weight: 11-1/2 oz [326 g]
Weight Ready to Fly: 18-1/2 to 22 oz [525–624g]
Wing Loading: 7.3–8.6 oz/sq ft [22.3–26.2 g/dm²]
Length: 38-1/4 in [972mm]
Radio: 4-channel with three micro servos
Motor: S-280 7.2 volt or 350 size, high power 7.2 volt

MADE IN USA

WARRANTY

Great Planes® Model Manufacturing Co. box 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 buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim send the defective part or item to Hobby Services at the address below:

Hobby Services
3002 N. Apollo Dr. Suite 1
Champaign IL 61822
USA

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

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

GREAT PLANES® MODEL MANUFACTURING COMPANY

Champaign, IL
(217) 398-8970, Ext. 5
airsupport@greatplanes.com

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INTRODUCTION

Congratulations and thank you for purchasing the Great Planes RV-4 Park Flyer. The RV-4 Park Flyer 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, fast-building models. Since Park Flyers are small and fly slowly, little space is required. A nearby park, schoolyard or vacant lot becomes an impromptu flying site *(see **"Find a Safe Place to Fly"** on page 36)*. 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 RV-4 Park Flyer is a slow flying, low-wing model that is relatively simple to build. It is a sport scale model of the full size RV-4. However, if you have never flown an R/C model before, learning to fly the RV-4 Park Flyer all by yourself is not recommended. As with any airplane, you should find an experienced modeler to help you with your first flights. Information about R/C clubs and instructors is provided later in this manual.

For the latest technical updates or manual corrections to the RV-4 Park Flyer, visit the Great Planes web site at ***www.greatplanes.com***. Open the "Airplanes" link, then select the RV-4 Park Flyer kit. If there is new technical information or changes to this model a "tech notice" box will appear in the upper left corner of the page.

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

1. Even though the **Great Planes RV-4 Park Flyer** 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 to property.

2. You must assemble the model **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 the written instructions should be considered as correct.

3. You must take time to **build straight, true** and **strong**.

4. You must 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 able to handle 5 amps.

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

6. You must check 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 any signs of wear or fatigue.

7. If you are not already an experienced R/C pilot, you should fly the model only with the help of a competent, experienced R/C pilot.

Note: We, as the kit manufacturer, 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.

Before starting to build, compare the parts in this kit with the Parts List, and note any missing parts. Also inspect all parts to make sure they are of acceptable quality. If any parts are missing, broken or defective, or if you have any questions about building or flying this airplane, please contact Great Planes at the address or telephone number below. If requesting replacement parts, please provide the full kit name, RV-4 Park Flyer, and the part numbers as listed in the Parts List.

Great Planes Product Support:
3002 N Apollo Drive Suite 1
Champaign, IL 61822
Telephone: (217) 398-8970
Fax: (217) 398-7721
E-mail: *productsupport@greatplanes.com*

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. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

In addition to joining an R/C club, we strongly recommend you join the AMA (Academy of Model Aeronautics). AMA membership is required to fly at AMA sanctioned clubs. There are over 2,500 AMA chartered clubs across the country. Among other benefits, the AMA provides insurance to its members who fly at sanctioned sites and events. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. Contact the AMA at the address or toll-free phone number below:

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

DECISIONS YOU MUST MAKE

This is a list of items required to finish the RV-4 Park Flyer that must be purchased separately. For some of these items there is more than one option which will require a bit of decision making ahead of time. Order numbers (in parentheses) are provided for your convenience.

For specific performance package options, see ***"Performance Options"*** later in this discussion.

Radio Equipment

The RV-4 Park Flyer requires a four-channel radio system with a micro receiver and three micro servos. Futaba® S3103 or S3107 (FUTM0037, FUTM0025) or Hobbico® CS-5 (HCAM0090) micro servos are suitable.

Speed Control

An electronic speed control with BEC (Battery Eliminator Circuitry) is required. 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). Depending on the motor selected, the Great Planes ElectriFly™ C-10 or C-20 High Frequency Electronic Speed Control (GPMM2010 or GPMM2020) are recommended for the RV-4 Park Flyer.

Motor System

There are several motor/gearbox/prop/battery combinations that give good performance with the RV-4 Park Flyer. Many modelers do not realize that each component in this combination is important. You can have a good motor/gearbox/prop combination, but without the proper battery, performance could be disappointing.

Standard, lower power 280 size motors, such as the Great Planes ElectriFly T-280, are not recommended for the RV-4 Park Flyer.

The RV-4 Park Flyer also flies well with the Great Planes ElectriFly T-400 Ferrite Motor (GPMG0325). This motor should be used with the Great Planes ElectriFly T-400 4.1:1 Gearbox (GPMG0226). The best prop is the APC 10 x 4.7 SloFlyer (APCQ5015). You will also need a 3mm prop adapter (GPMQ4600).This combination gives less spirited, but adequate performance, with much cooler motor temperatures and longer motor lifespan.

The RV-4 Park Flyer flies in a very spirited manner with the Great Planes ElectriFly S-280 Ferrite Motor (GPMG0305), Great Planes ElectriFly S-280 5.0:1 Gearbox (GPMG0200) and APC 10 x 4.7 SloFlyer Prop (APCQ5015). For this combination you will also need a 3mm prop adapter (GPMQ4600). With this motor you can also use the Great Planes ElectriFly S-280 4.5:1 Gearbox (GPMG0201) or the S-280 4.1:1 Gearbox (GPMG0202). An APC 9 x 6 SloFlyer Prop (APCQ5013) would be a better prop with these gearboxes. The Great Planes ElectriFly 8-cell 1050 mAh NiMH Battery (GPMP0251) is not recommended with this motor as the added run time could cause the motor to overheat. This is a high power motor and adequate cooling is important. Be sure to follow the cooling instructions on page 31, steps 11 & 12 of this manual. Allow 10 – 15 minutes of cooling time between flights.

An even more powerful motor for the RV-4 Park Flyer is the Great Planes ElectriFly S-370 Ferrite Motor (GPMG0310). This motor is nearly the same physical size as a 280-size motor and can be used with the same components recommended above for the S-280 motor. A 20-amp ESC should be used with this motor and adequate cooling is critical. It is best to limit this motor to a 7-cell 650 mAh battery. With an 8-cell 1050 mAh battery, motor temperatures can easily reach 240 degrees, which would greatly reduce the lifespan of the motor. Be sure to follow the cooling instructions on page 31, steps 11 & 12 of this manual. Allow 20 minutes of cooling time between flights.

The RV-4 Park Flyer can be powered with brushless motors as well. While these motors and their controllers are expensive, they give outstanding performance with longer flight times and cooler motor temperatures than the above ferrite motors.

Battery Recommendations

There are three kinds of battery packs used for electric R/C models: nickel-metal hydride (NiMH), nickel-cadmium (NiCd, pronounced ny-cad) and Lithium Polymer (Li-Po). NiMH and Li-Po batteries are recommended for the RV-4 Park Flyer because they provide from two to six times the capacity of a NiCd battery of the same size and weight. However, it should be noted that NiMH and Li-Po cannot be charged as fast as NiCds. Li-Po batteries also require a special charger.

For NiMH and NiCd batteries, each individual cell that makes up a battery is 1.2 volts. For a Li-Po battery each cell is 3.7 volts. Batteries are also rated by their capacity in mAh (milli-Amp-hours), or how much energy they store. A 650 mAh battery can supply 1 *Ampere* for .65 hours (about 39 minutes). At a typical average park flyer power requirement of 5 Amps, a 650 mAh battery will last about 7-1/2 minutes.

These are the battery packs recommended for the RV-4 Park Flyer:

GPMP0071 – 7-cell, 650 mAh NiMH pack
GPMP0072 –8-cell, 650 mAh NiMH pack
GPMP0250 –7-cell, 1050 mAh NiMH pack
GPMP0251 – 8-cell, 1050 mAh NiMH pack (for 400 size motor only)
KKMP9100 – Kokam 2-cell, 340 mAh Li-Po pack
KKMP7100 – Kokam 2-cell, 1500 mAh Li-Po pack
KKMP8100 – Kokam 3-cell, 1500 mAh Li-Po pack (for 400 size motor only)

Caution: Use extreme caution when using Li-Po batteries with the S-280 and S-370 motors. Due to the very long run times these batteries can provide, overheating of these motors will occur, resulting in VERY short motor life-spans.

At the time this manual was prepared, Lithium Polymer batteries were becoming popular but were not widely used. This model is ideally suited for these Li-Po batteries. In particular, a two or three cell (7.4 or 11.1 volt), 1200 mAh or 1500 mAh pack would be ideal for this model – providing much longer flight times and considerably lighter weight of the ready to fly model. The three cell pack will require careful power management as it could easily damage the S-280 or S-370 motors due to the higher than recommended voltage and capacity of the battery. Full power should be used only for a very limited time, with the majority of the flight at a reduced power setting. In addition, the longer run times could cause severe overheating of these motors. Therefore, only a two cell Li-Po battery is recommended for use with these motors.

Lithium Polymer batteries require a special charger. ***DO NOT*** *use a charger designed for other types of batteries.*

Performance Options

The following performance packages are recommended for the RV-4 Park Flyer. You may wish to experiment with other combinations to obtain the performance level you find most enjoyable.

Option 1, Good Performance
- T-400 Ferrite Motor (GPMG0325)
- T-400 4.1:1 Gearbox (GPMG0226)
- 10 x 4.7 SloFlyer Prop (APCQ5015)
- C-10 ESC (GPMM2010)
- 8-cell, 1050 mAh Battery (GPMP0251)
- 3mm Prop Adapter (GPMQ4600)

Option 2, Spirited Performance
- S-280 Ferrite Motor (GPMG0305)
- S-280 5.0:1 Gearbox (GPMG0200)
- 10 x 4.7 SloFlyer Prop (APCQ5015)
- C-10 ESC (GPMM2010)
- 8-cell, 650 mAh Battery (GPMP0072)
- 3mm Prop Adapter (GPMQ4600)

Option 3, Ballistic Performance
- S-370 Ferrite Motor (GPMG0310)
- S-280 5.0:1 Gearbox (GPMG0200)
- 9 x 6 SloFlyer Prop (APCQ5013)
- C-20 ESC (GPMM2020)
- 7-cell, 650 mAh Battery (GPMP0071)
- 3mm Prop Adapter (GPMQ4600)

Chargers

If you are using Li-Po batteries it is critical that you use a battery charger designed specifically for this type of battery. Other types of chargers will not work properly and could cause the battery to be overcharged, causing it to swell, overheat and rupture – possibly causing a fire if the battery is being charged near combustible material. If the battery becomes even warm, disconnect it immediately. NEVER charge a Li-Po pack unattended. The Great Planes Triton™ charger (GPMM3150) is a suitable charger for Li-Po batteries. ***Warning: Even with the proper charger, the risk of a fire is much higher with Li-Po batteries, so always charge these batteries away from combustible materials and carefully monitor the charge process.***

Proper charging of Lithium batteries is very important. Consult your charger for charge procedures and for precautions to observe. At a minimum these should include:
1. If the battery becomes damaged, as in a model crash, immediately remove the battery and place it in a remote area away from combustible materials. Monitor the battery for at least 20 minutes. If the battery remains cool, it is safe to transport. If the battery is physically damaged, it should be disposed of.
2. If a soft sided battery, such as a Li-Po, is dented even slightly it should be treated as a damaged battery and immediately isolated as above.
3. Wear safety glasses when handling damaged batteries.
4. When charging lithium batteries, use a Protective Charge Module that monitors individual cell voltage.
5. Whenever you charge a Lithium battery, ensure that the charger is set to the correct number of cells. Double check the setting, then triple check it!
6. Do not charge a Lithium battery while it is installed inside a model.
7. Charge batteries in a well ventilated area.
8. Charge batteries away from combustible materials.
9. Charge batteries in an area with smoke and fire detectors.
10. Do not charge a Lithium battery at a rate higher than 1C.
11. Use a charger specifically designed for the type of battery being charged.
12. Do not charge any battery inside a vehicle.
13. Do not wear jewelry or watches when working with batteries.
14. Do not put batteries in your pocket.
15. **Never charge batteries unattended.**

The best type of charger for NiMH and NiCd batteries is a peak charger, because it charges the batteries until they are fully charged, then automatically switches to a trickle charge mode. The Great Planes ElectriFly Peak Charger (GPMM3000) is suitable for NiMH and NiCd batteries as well as transmitter battery packs. The Great Planes Triton charger (GPMM3150) is also suitable.

The following applies to NiMH and NiCd batteries only: If you have another type of charger that is not a peak charger, you will have to calculate the length of time it takes to charge the batteries yourself, then turn the charger off when the batteries are fully charged. Overcharging the batteries may damage them. Before you can calculate the time it takes to charge a battery pack, you first have to know the charge rate you are going to use. Nickel-metal hydrides should be charged at a rate of no more than 1/10 of their capacity. For the 650 mAh batteries recommended for the RV-4 Park Flyer, this would be a charge rate of approximately 65 mAh. Divide the capacity of the battery pack by the charge rate to calculate the charge time. A discharged 650 mAh battery pack charged at 65 mAh will take 10 hours to charge.

Charge rate/time recommendations for a fully discharged pack:
- Charge a 650 mAh battery pack at 65 mAh for 10 hours.
- Charge a 1050 mAh battery pack at 100 mAh for 11 hours.

IMPORTANT: Monitor the temperature of the battery frequently. If the battery becomes warm, disconnect it from the charger.

Note: The period required to charge the batteries in the examples above is for discharged batteries. If the battery you are going to charge is not discharged (and you are not using a peak charger), connect it to the motor on your model. Run the motor until the propeller is turning slowly, thus discharging the battery.

Covering

There are several types of covering that may be used on the RV-4 Park Flyer, and a few that are not recommended. Use a covering suitable for lightweight models. Top Flite®

EconoKote® and Coverite® CoverLite™ are suitable for the RV-4 Park Flyer.

EconoKote is similar to MonoKote® (used on most regular-size sport models), except EconoKote is lighter and does not shrink as tightly, thus making it suitable for lightweight structures such as that of the RV-4 Park Flyer. EconoKote also has an adhesive on the back which is activated by the heat of a model airplane covering iron.

Coverite CoverLite is another covering suitable for lightweight structures (and is the covering that is on the model featured on the box label). CoverLite has fibers embedded in the film and is exceptionally strong, yet remains lightweight. It has no adhesive on the back, therefore, you must apply an adhesive to the structure before application. Use Coverite Balsarite™ Fabric formula (COVR2500) for CoverLite. Do not use Balsarite "film formula."

Transparent MonoKote film is also suitable for covering the RV-4 Park Flyer, because it is lighter and does not shrink as tightly as opaque MonoKote film.

Opaque MonoKote film is **not** recommended for the RV-4 Park Flyer because it is too heavy and shrinks too tightly for the structure to withstand.

Other lightweight covering materials for park flyer models are being developed. Check with your hobby dealer for the latest products.

Building Board

You will need a flat board to lay over your workbench that you can stick pins into. The back of a 2' x 4' ceiling tile or a section cut from a sheet of Celotex® insulation board is ideal.

ADDITIONAL ITEMS REQUIRED

Hardware & Accessories

In addition to the items listed in the ***"Decisions You Must Make"*** section, following is the list of hardware and accessories required to finish your RV-4 Park Flyer. Order numbers are provided in parentheses.

- ❏ (1) 1-3/4" Spinner, Red (GPMQ4507)
- ❏ Cellophane tape (for hinges)
- ❏ Double-sided foam tape (for mounting servos) (GPMQ4440)

Adhesives & Building Supplies

The following is a "short list" of the most important building supplies required to build the RV-4 Park Flyer. *We recommend **Great Planes Pro**™ CA and Epoxy glue.*

- ❏ 1 oz. Thin Pro CA (GPMR6002)
- ❏ 1 oz. Medium Pro CA+ (GPMR6008)
- ❏ CA glue tips (GPMR6033)
- ❏ Hobby knife (HCAR0105)
- ❏ #11 Blades (HCAR0211)
- ❏ Single-edge razor blades (HCAR0212)
- ❏ Small T-pins (HCAR5100)
- ❏ Builder's triangle (HCAR0480)
- ❏ Electric drill and #68 (1/32"), 1/16" [1.6mm], 1/8" [3.2mm] and 3/16" [4.8mm] drill bits
- ❏ Small Phillips and flat blade screwdrivers
- ❏ Pliers with wire cutter (HCAR0630)
- ❏ Great Planes Plan Protector™ (GPMR6167) or wax paper
- ❏ HobbyLite™ balsa-colored balsa filler (HCAR3401)
- ❏ Sanding tools and sandpaper assortment
- ❏ Sealing iron (TOPR2100)
- ❏ Razor saw

Optional Supplies & Tools

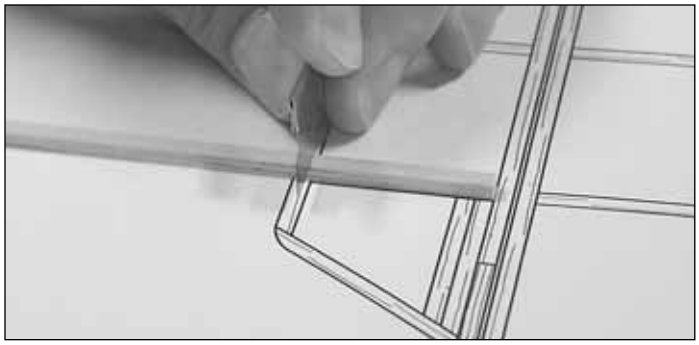
Here is a list of optional tools that will help you build the RV-4 Park Flyer.

- ❏ 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)
- ❏ Masking tape (TOPR8018)
- ❏ CA Debonder (GPMR6039)
- ❏ Great Planes 5-1/2" [140mm] Bar Sander™ (GPMR6169) and 150-grit adhesive back sandpaper (GPMR6183)
- ❏ Top Flite 320-grit sandpaper (TOPR8030) and 400-grit sandpaper (TOPR8032)

IMPORTANT BUILDING NOTES

For the best performance, the RV-4 Park Flyer must be built light. The model is designed for a light yet strong structure. Because the finished model is so light, it does not require the stronger structures you may be used to in other models. It is not recommended that you strengthen the model as doing so will add excess weight.

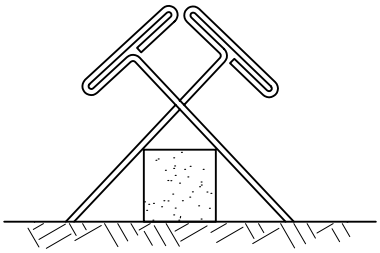
One of the best ways to insure light weight is to build neatly and make good-fitting glue joints that require less glue. Here are some tips to help you build neatly and light.



1. The easiest way to cut balsa sticks is with a single-edge razor blade. To do so, position the stick over the plan, then place the razor blade on the stick where you wish to cut it. Press down lightly on the razor blade to make a mark where the stick is to be cut.

2. Take the stick off the plan and cut it over a cutting mat or a scrap piece of wood *(Okay, if you're careful you could go ahead and cut the stick right over the plan, but if you do, you may cut through the plan protector, allowing the CA to soak through and glue the structure to the plan)*.

3. Because of the small balsa sticks used in the tail, small T-pins may be used to hold the sticks to your building board, but only where **necessary**. Use small T-pins (HCAR5100) or small straight pins found in craft stores. Do not stick pins into the sticks near the ends, or the wood may split.



4. If you have difficulty with the T-pins splitting the small sticks, an alternate method is to use the "crossed-pin" technique. Insert the T-pins into the building board in a crisscross fashion to hold the sticks to the plan.

5. Only a small amount of CA should be used to glue the parts together. 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. In addition to adding unnecessary weight, excess CA is difficult to sand. If you require additional CA tips, order number GPMR6033 (5).

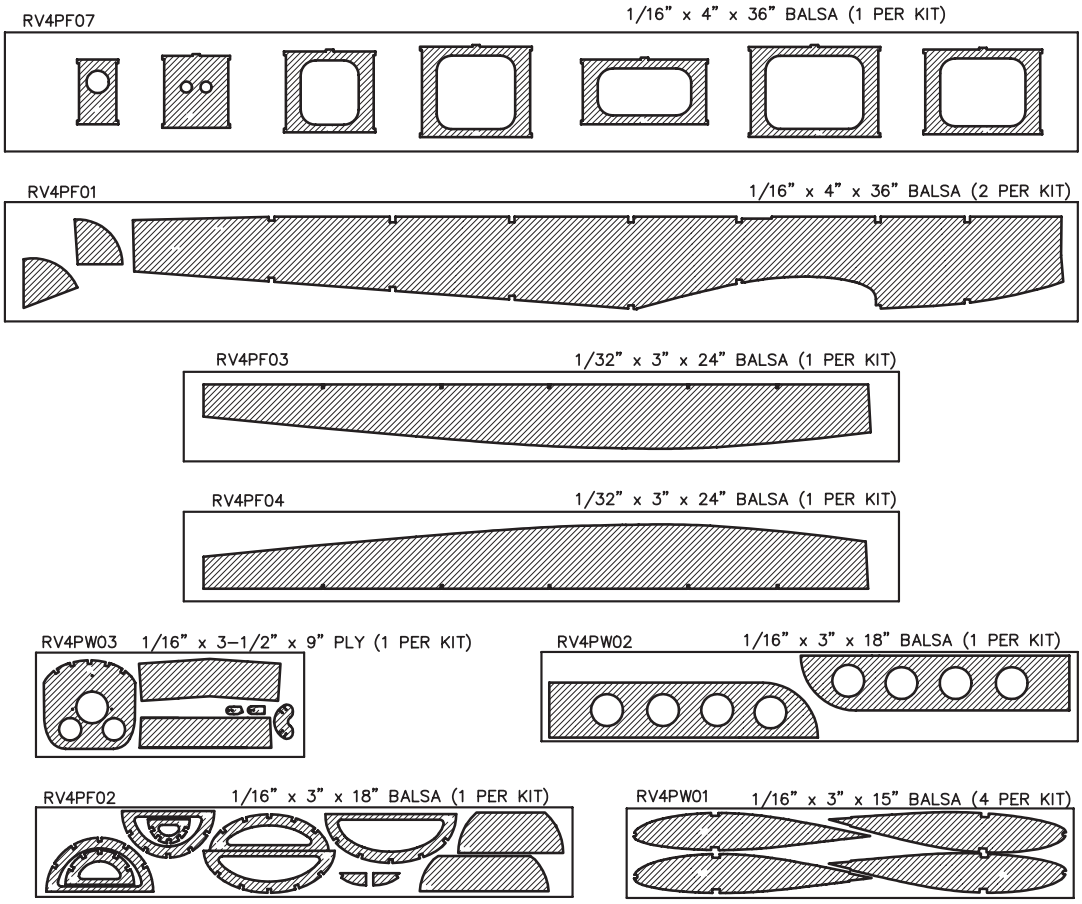
6. When applying CA, be careful not to glue your fingers to the structure. In the process of *un-sticking* your fingers you can inadvertently damage the structure, thus requiring repairs and adding weight *(not to mention the aggravation!)*.

7. Sanding requires a light touch to avoid damage. We found 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 will catch the structure, causing damage. Use medium-grit sandpaper such as 120 or 150-grit.

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

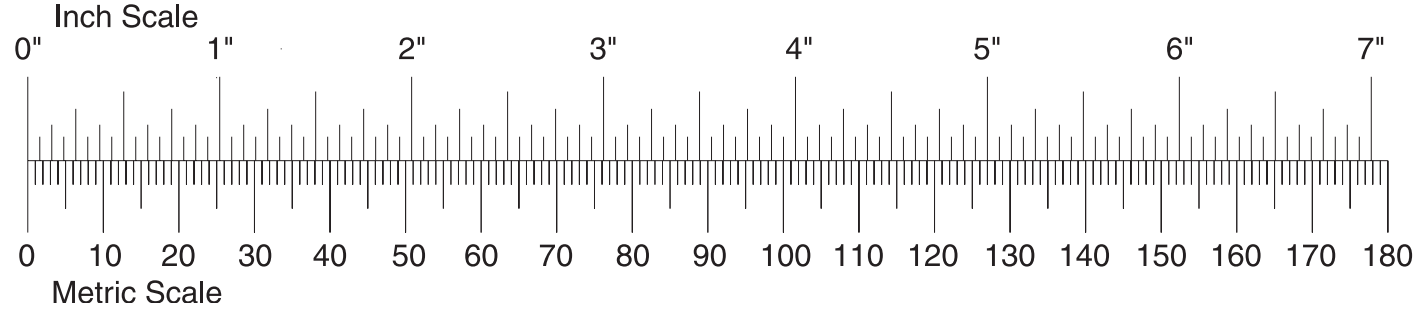
9. Work over a flat surface. Cover the plan with Great Planes Plan Protector™ (GPMR6167) or wax paper so the parts will not adhere to the plan.

DIE-CUT PATTERNS



METRIC CONVERSIONS

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



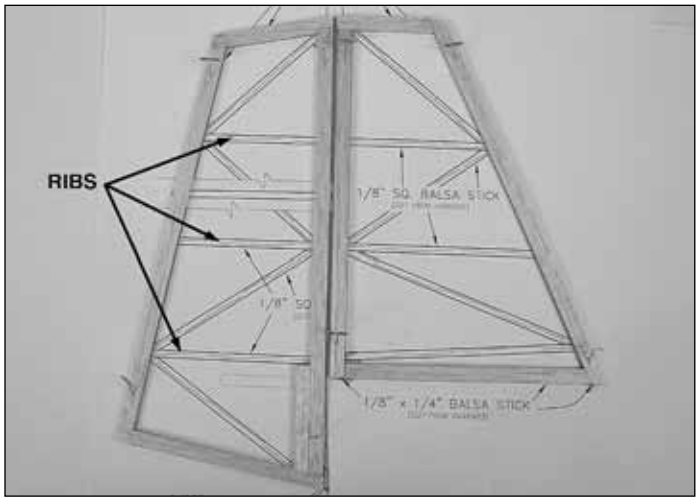
BUILDING INSTRUCTIONS

BUILD THE TAIL SURFACES

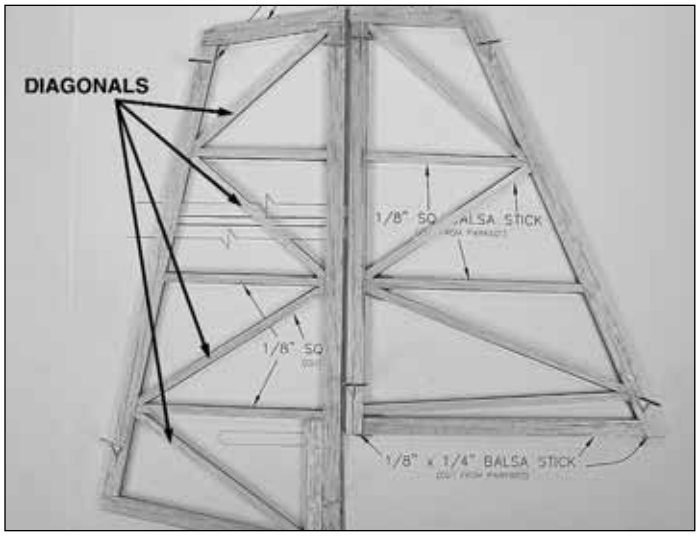
❏ 1. Unroll the plan sheets. Re-roll them inside-out so they will lie flat. Place the fin/rudder portion of the fuse plan over your flat building board, then cover it with Great Planes Plan Protector or wax paper so glue will not adhere to the plan.

Note: The bottom of the fin is difficult to see on the fuselage plan. A separate drawing of the fin is located on the wing plan and may be more useful for building the fin.

❏ 2. Find the four hardest 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa sticks and set them aside for use as the wing spars.



❏ 3. Build the **fin** and **rudder framework** from two 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa sticks. **Hint:** Start with the longest pieces first. If you accidentally cut one piece too short, use it for a shorter piece somewhere else, thus minimizing wasted material.



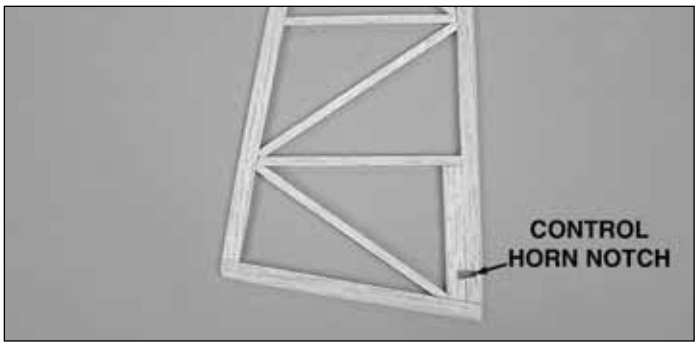
❏ 4. Add the **fin** and **rudder ribs** and **diagonal braces** from two 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks.

❏ 5. Remove the fin and rudder from the plan. Use a bar sander with 150-grit sandpaper to **carefully** sand both sides of the fin and rudder flat and even. Round the corners as shown on the plan. Refer to the Expert Tip that follows, then round the leading edge, top of the fin, trailing edge and top of the rudder.

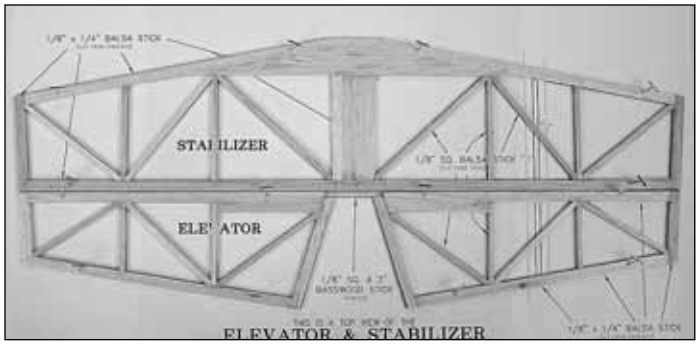
EXPERT TIP

To round the edges of the tail pieces, place one of them on your workbench so the edge you are rounding extends just beyond the edge of the bench. Use a bar sander to hold it down. Use another bar sander to do the sanding.

❏ 6. Sand a bevel on the leading edge of the rudder as shown in the cross-section on the plan.



❏ 7. Use a #11 blade to cut the notch in the rudder where shown on the plan for the laser-cut 1/16" [1.6mm] plywood **control horn**. The control horn will be installed into the notch on the **right** side of the rudder, but do not glue it into place until the pushrods are installed during ***"Hook Up the Controls."*** The rudder control horn has an "R" printed on it.

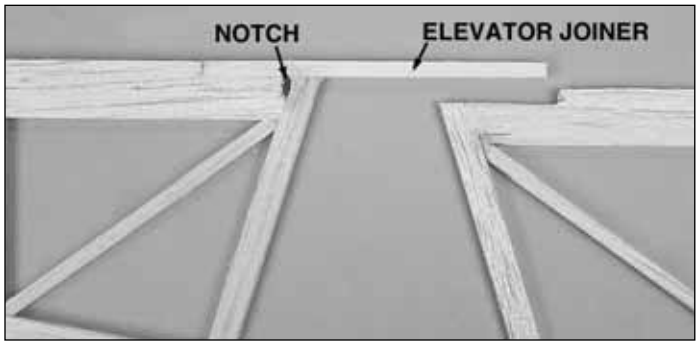


❏ 8. Build the **stab** and **elevators** from five 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] and two 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks. Be sure to notch the leading edge of both elevators where the basswood joiner stick goes. Do not join the elevators with the 1/8" x 1/8" x 3" [3.2 x 3.2 x 76mm] basswood stick until instructed to do so.

❏ 9. The same as you did the fin and rudder, remove the stab and elevators from the plans, sand the stab and elevators flat and even, then round the corners where shown on the plan. Round the tips of the stab and elevators. Round the leading edge of the stab and the trailing edge of the elevators. Bevel the leading edge of both elevators as shown in the cross-section on the plan.

❏ 10. Use a #11 blade to cut the notch in the left elevator where shown on the plan for the laser-cut 1/16" [1.6mm] plywood **control horn**. The control horn will be installed into the notch on the bottom of the **left** elevator, but do not glue it into place until the pushrods are installed during ***"Hook Up the Controls."***

❏ 11. Use a bar sander with 150-grit sandpaper to bevel the 1/8" x 1/8" x 3" [3.2 x 3.2 x 76mm] basswood **elevator joiner** to match the leading edge of the elevators.



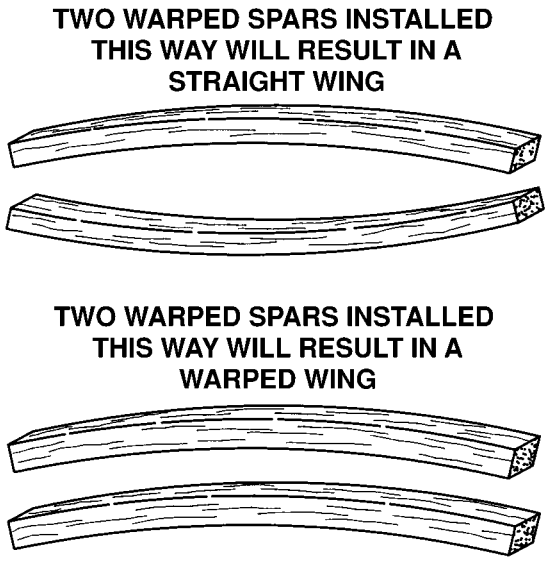
❏ 12. Pin both elevators to the plan upside-down. Check the fit of the elevator joiner and trim if necessary. Use medium CA to securely glue the elevator joiner to the left elevator only.

BUILD THE WING

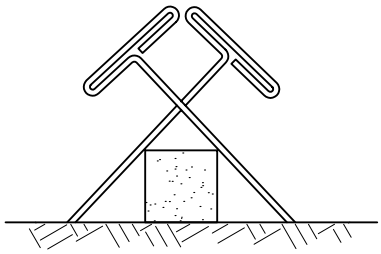
Build the Wing Panels

*Start by building the **left** wing panel first so your progress matches the photos.*

❏ ❏ 1. Cover the left wing panel plan with Great Planes Plan Protector or wax paper.

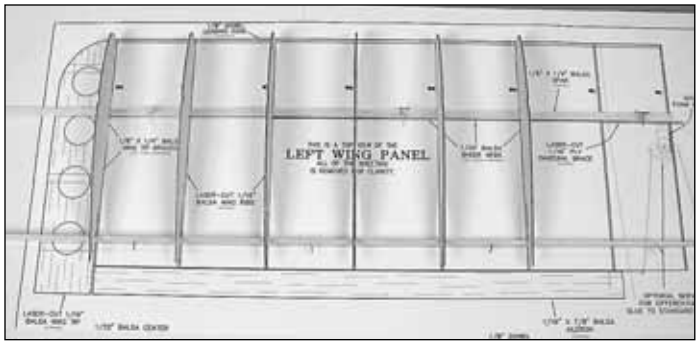


❏ ❏ 2. Find the four hardest 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa sticks you set aside earlier. Match the balsa **main spars** so any warps will counteract each other.

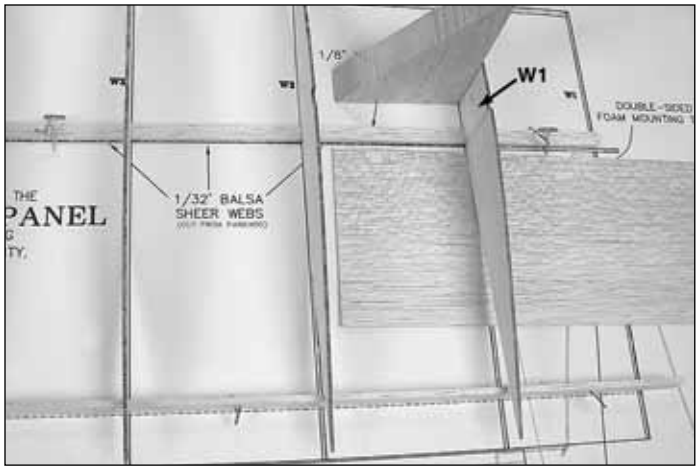


❏ ❏ 3. Pin one of the main spars in position over the plan, aligning one end of the main spar with the outside edge of the root rib W-1.

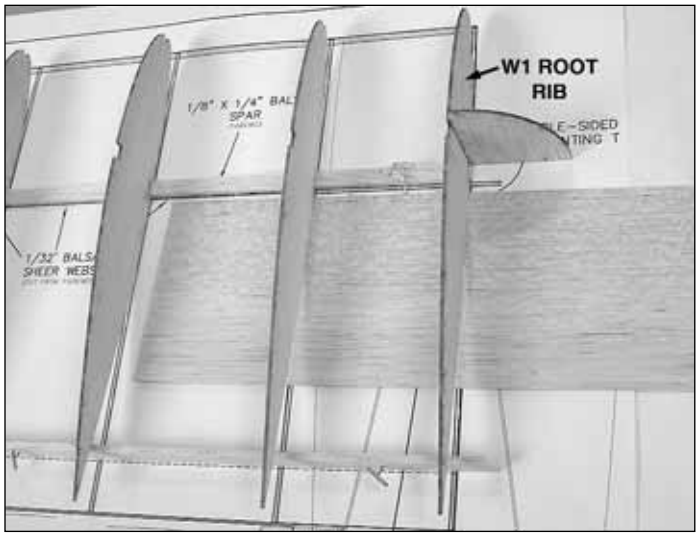
❏ ❏ 4. Pin the 1/8" x 3/8" x 24" [3.2 x 9.6 x 610mm] balsa **trailing edge shim** in position over the plan, aligning the aft edge of the stick on the dashed line. The shim should be standing up with the 1/8" [3.2mm] edge on the table.



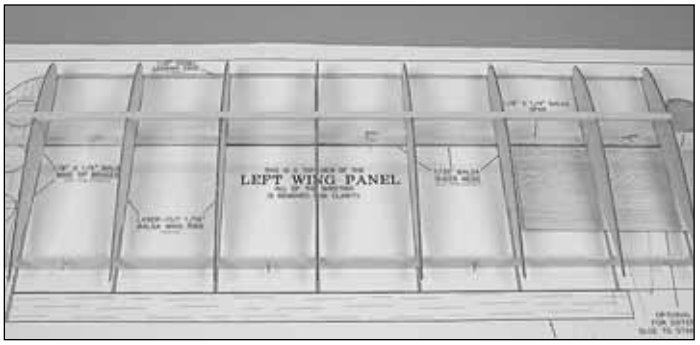
❏ ❏ 5. Starting at the wing tip, glue six laser-cut 1/16" [1.6mm] balsa **W2 ribs** over the main spar, perpendicular to the building board. **Important:** Pin the rear of the ribs firmly to the TE shim.



❏ ❏ 6. Temporarily place a sheet of 1/32" [0.8mm] balsa sheeting on the plan 1/4" [6.4mm] aft of the spar as shown in the above photo. This will space the W1 ribs properly on the spar. Glue a laser-cut 1/16" [1.6mm] balsa **W1 rib** in place over the main spar as shown in the photo.

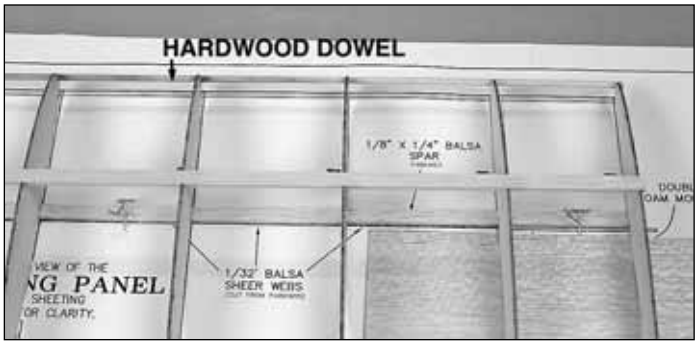


❏ ❏ 7. Position a **W1 root rib** in place over the main spar. Use the die-cut 1/16" [1.6mm] **dihedral gauge** to set the rib at the proper angle before gluing it to the main spar.

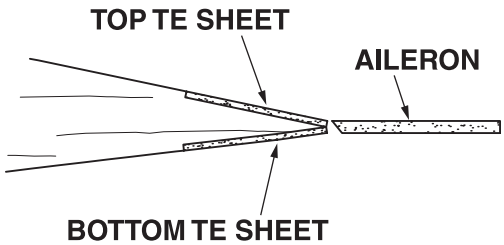


❏ ❏ 8. Position the top 1/8" x 1/4" x 24" [3.2 x 6.4 x 610mm] balsa main spar in the rib notches with one end flush with the outside edge of the W1 root rib. Glue the spar to all of the ribs except the W1 root rib. Make sure all ribs, except the root rib, are perpendicular to the table as you glue each rib to the top spar.

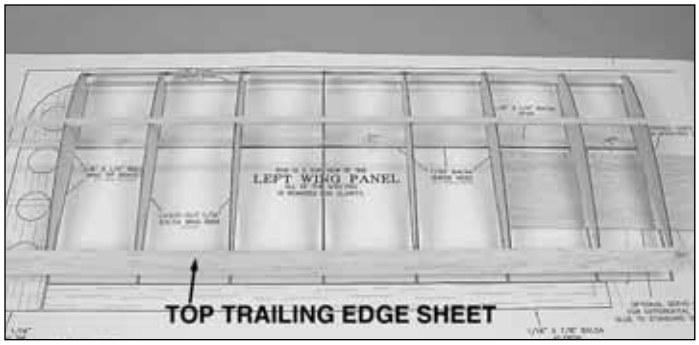
❏ ❏ 9. Using the dihedral gauge, check that the root rib is still at the correct angle. Glue the root rib to the top main spar. **Note:** Save the dihedral gauge to set the angle of F5A.



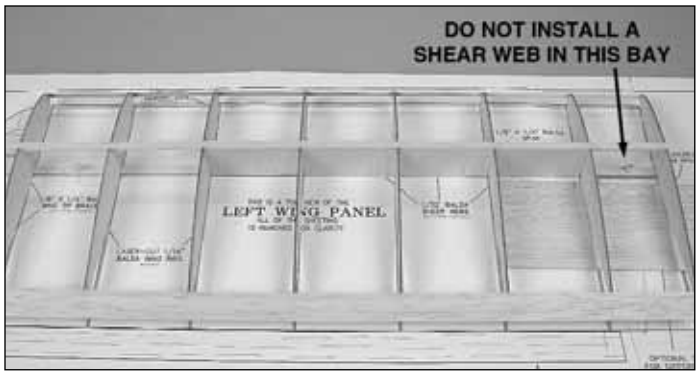
❏ ❏ 10. Cut one of the 1/8" x 24" [3.2 x 610mm] hardwood dowels to length so that it fits in the notches at the front of the wing ribs, from the root to the tip rib. Glue the dowel to the ribs.



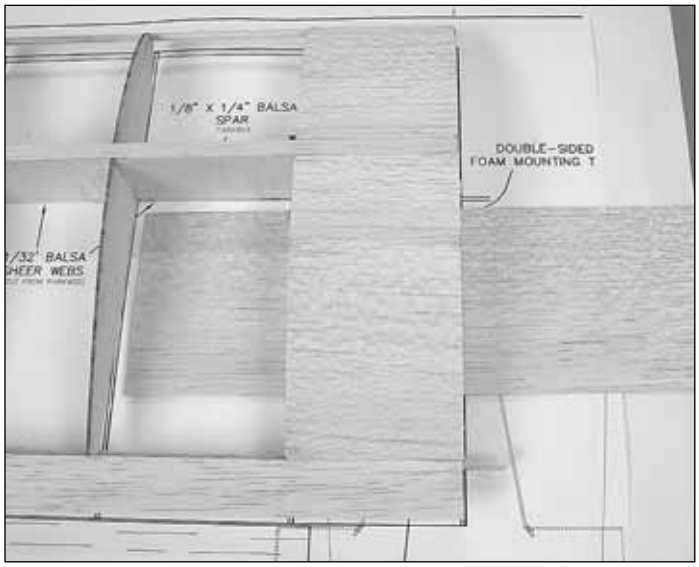
❏ ❏ 11. Locate a 1/32" x 3/4" x 24" [.8 x 19 x 610mm] balsa sheet. The sheet should fit in the notches at the trailing edge of the wing ribs. When the wing is complete, it will blend with the bottom trailing edge sheet when it is installed later. The above sketch shows how the completed assembly will look.



❏ ❏ 12. Glue the **top trailing edge sheet** to the top of the wing ribs.



❏ ❏ 13. From a 1/32" x 3" x 15" [0.8 x 76 x 380mm] balsa sheet, cut and glue **shear webs**, with the grain running vertically, to the top and bottom spars in the locations shown on the plan. It is not necessary for the shear webs to be glued to the ribs at this time, but make sure they are glued securely to the wing spars. **Do not install shear webs in the rib bay between the W1 ribs.**



❏ ❏ 14. From a 1/32" x 3" x 15" [0.8 x 76 x 380mm] balsa sheet, cut pieces to make the **top center sheeting** to fit between the wing spar and trailing edge sheet and between the wing spar and the leading edge dowel. Remove any pins that may be under the area to be sheeted. When satisfied with the fit, apply medium CA to the top of the W1 ribs and press the sheeting in place.

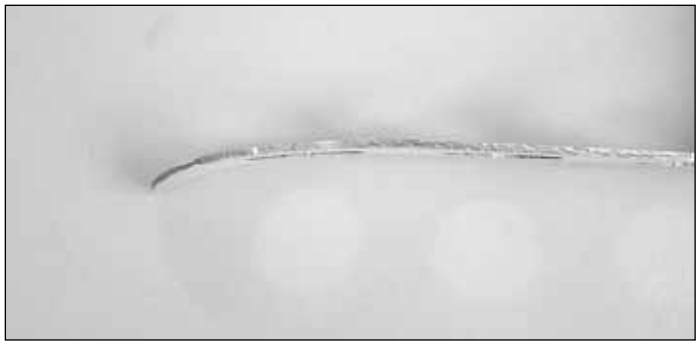
❏ ❏ 15. Carefully sand the top center sheeting flush with the wing spar, leading edge dowel and trailing edge sheet.

❏ ❏ 16. Remove the wing from your building board and carefully sand off any glue blobs. Cut and sand the wing spars, leading edge and trailing edge sheeting flush with the wing tip rib and root rib.

❏ ❏ 17. Reinforce any glue joints that look weak. Glue the shear webs to each rib. Remember, use glue sparingly to minimize weight gain.

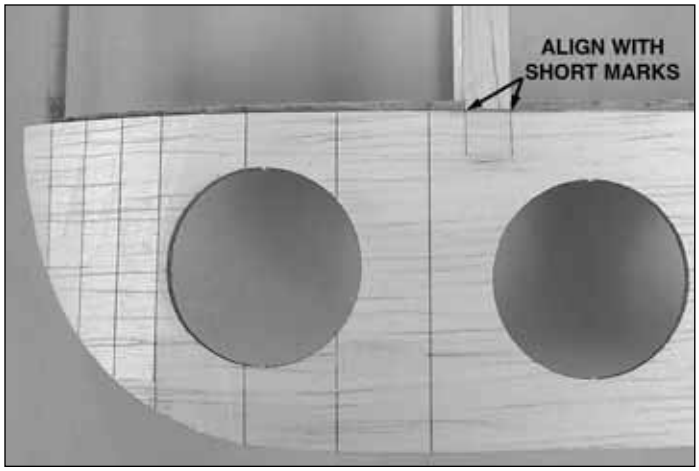
❏ ❏ 18. Glue a 1/32" x 3/4" x 24" [.8 x 19 x 610mm] balsa **bottom trailing edge sheet** to the bottom of the wing ribs and to the top trailing edge sheet. Trim the sheet even with the tip and root ribs.

Before proceeding, read steps 19 through 25 to become familiar with how the wing tip will be installed.

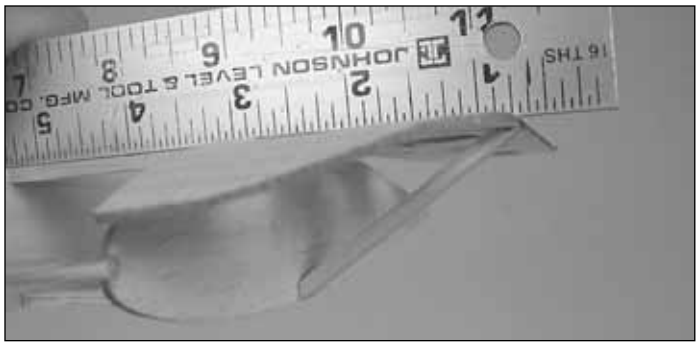


❏ ❏ 19. Prepare the laser-cut 1/16" [1.6mm] balsa **wing tip** by carefully bending the forward part of the tip along the embossed lines. You must do this gently to avoid breaking part of the tip off. Do not bend along the two short lines that are used to align the tip with the top wing spar.

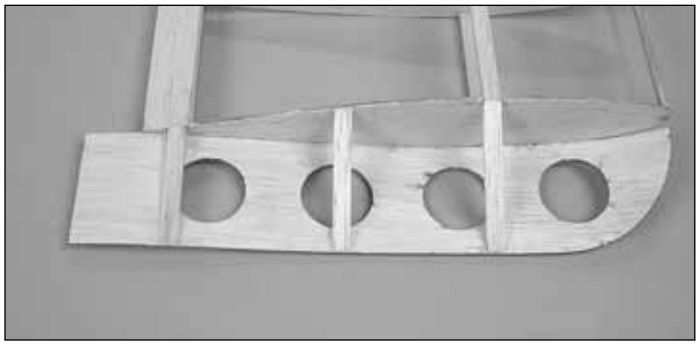
Caution: On the left wing tip the embossed lines should be on top of the wing tip. On the right wing tip the embossed lines should be on the bottom of the wing tip. Hold the tip against the wing to determine which way to bend for the wing tip you are doing!



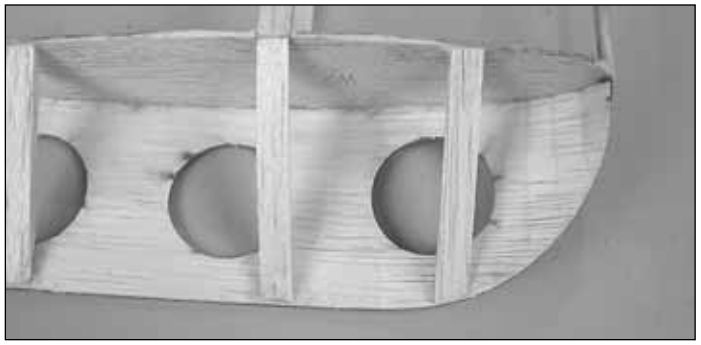
❑ ❑ 20. Align the two short embossed lines on the wing tip with the top main spar. Spot glue the wing tip to the end of the wing spar with a small drop of thin CA.



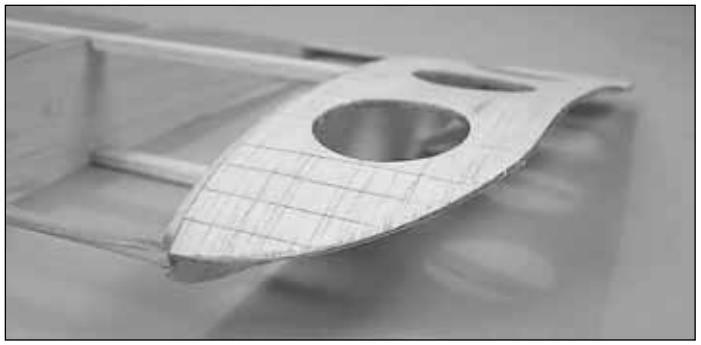
❑ ❑ 21. From a leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa stick, cut a **wing tip brace** 2-1/4" [57mm] long. Bevel the ends of the brace to fit the wing tip as shown in the photo above. A straightedge can be used along the top spar to hold the wing tip even and level with the top of the wing. When satisfied with the fit, glue the brace in place. **Hint:** First spot glue the brace to the W2 rib, then glue the end of the brace to the wing tip while using the straightedge to hold the wing tip level.



❑ ❑ 22. Glue the rear of the wing tip to the top edge of rib W2. Make two more wing tip braces and glue them in place where shown on the plan.



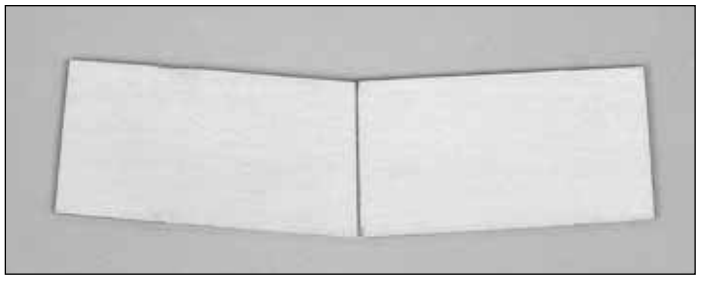
❑ ❑ 23. Glue the front of the wing tip to the top edge of rib W2. Make one more wing tip brace and glue it in place where shown on the plan.



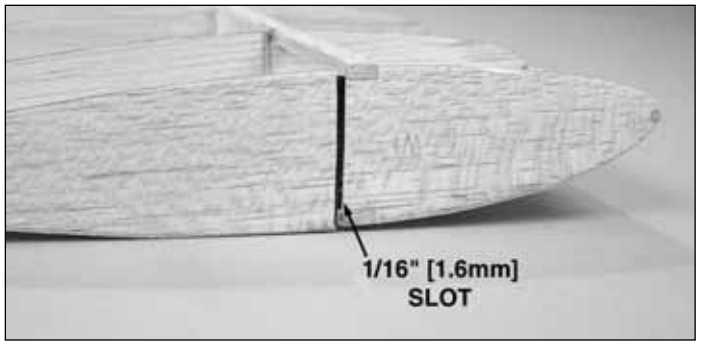
❑ ❑ 24. Use a sanding block and 150-grit sandpaper to blend the wing tip, wing tip braces and the W2 rib together smoothly.

❑ 25. Return to step 1 and build the right wing panel. **Remember!** Build it over the right wing plan.

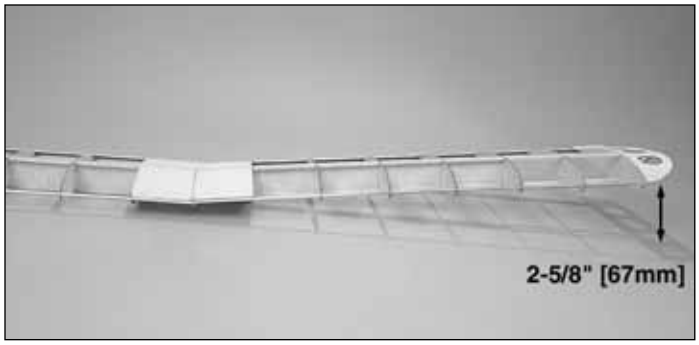
Join the Wing Panels



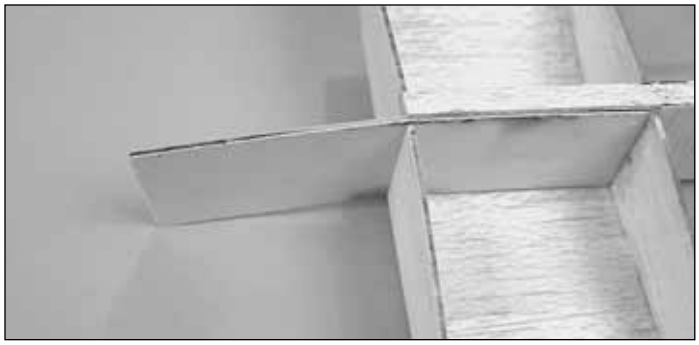
❑ 1. Draw a centerline on the laser-cut 1/16" [1.6mm] ply **dihedral brace**.



❑ 2. Using a razor saw and hobby knife, carefully cut a 1/16" [1.6mm] slot in root rib W1, just behind the main spar, on both wing panels. Test fit the dihedral brace in each slot.



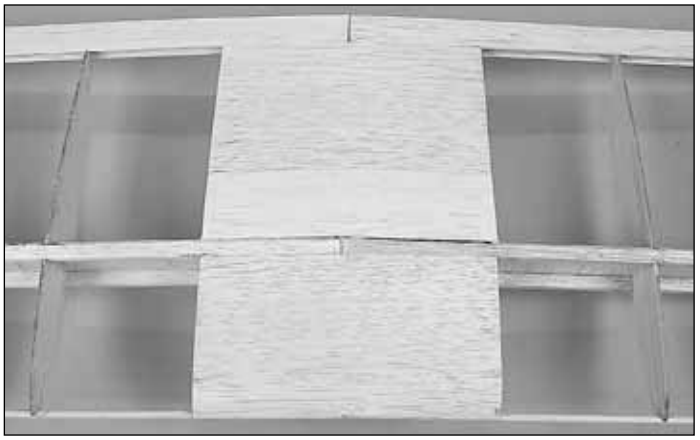
❏ 3. Test fit the wing halves together. With one wing half flat on your building board, block-up the wing tip of the other wing half so that it is 2-5/8" [67mm] off of your building board. Use a bar sander to sand the center joint as necessary until the wing halves fit together without any gap. **Note:** Do not be concerned if your wing does not have exactly 2-5/8" [67mm] dihedral. No adjustment is needed if it is within 1/4" [6.4mm].



❏ 4. When satisfied with the fit, glue the ply dihedral brace into the left wing panel with **medium CA**. Be sure the dihedral brace is securely glued to the two main spars. After the CA has hardened, tack-glue the right wing panel to the ply dihedral brace with a small drop of thin CA. Do not glue the root ribs together yet. With one wing panel flat on your building board and the wing tip of the other wing half blocked up as before, check that you have the same measurement as in the above step. When satisfied with the fit, wick more thin CA along the dihedral brace, securely gluing it to both main spars in the right wing panel.

❏ 5. Align the trailing edges and glue them together with thin CA. Glue the root ribs together from the spar to the trailing edge by wicking thin CA between them. Glue the leading edges and the rest of the root ribs together with thin CA.

❏ 6. Sand the leading and trailing edges of the wing joint flush.

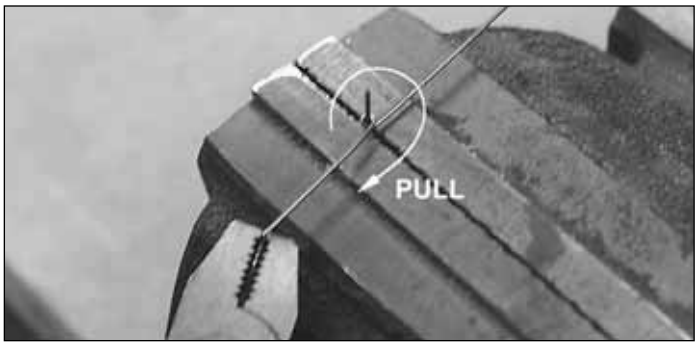


❏ 7. Sheet the bottom of the center-section with a 1/32" x 3" x 15" [0.8 x 76 x 380mm] balsa sheet. If you are careful, this can be done as a continuous strip across the full width of the center-section, as shown in the above photo.

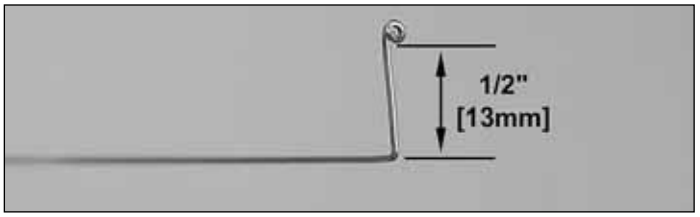
❏ 8. Fill any dings and uneven areas on the wing with light weight balsa filler. Sand the wing smooth in preparation for covering.

Build the Ailerons

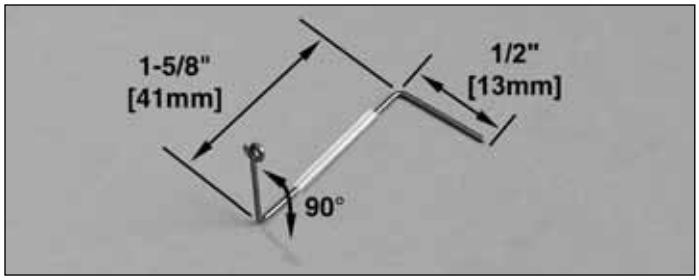
❏ ❏ 1. Using the drawings on the wing plan, follow the procedure below to make a **right aileron torque rod** from one of the .030" x 20" [.76 x 508mm] wires.



❏ ❏ A. Cut 1" [25mm] from one end of the .030" x 20" [.76 x 508mm] wire and clamp it in a vise. Make a loop near one end of the remaining wire by pulling it around the wire clamped in the vise.



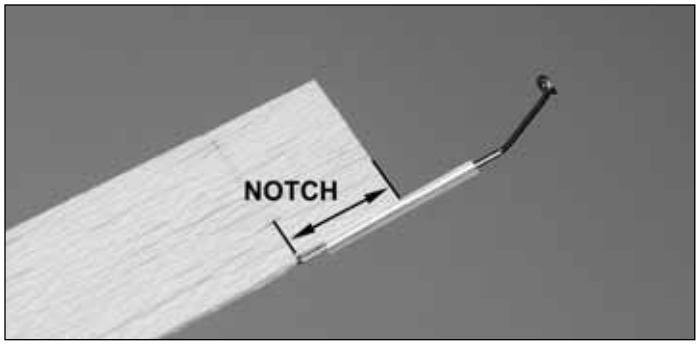
❏ ❏ B. Cut the excess wire from the loop, then use the drawing on the plan to make the next bend as shown in the photo.



❏ ❏ C. Locate one of the 1/16" x 12" [1.6 x 305mm] aluminum tubes. Cut two 9/16" [14mm] **aileron torque rod bearings** from the tube. De-burr the holes in the tube with a #11 knife blade. Install one of these pieces on the wire. Make the final bend, then cut the wire to the length shown on the plan. Be certain the horizontal portion of the torque rod, that goes into the aileron, is perpendicular to the vertical portion of the rod.

Remember: *When you make the left torque rod, the bends are in different directions and the length will be 1-1/8 [28.5mm].*

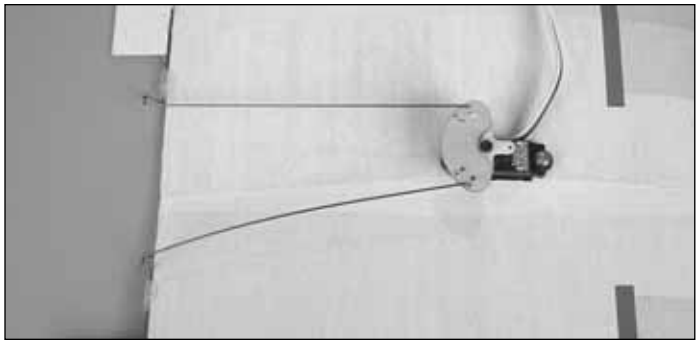
❏ ❏ 2. Cut one of the 1/16" x 7/8" x 17" [1.6 x 22 x 430mm] balsa ailerons to the length shown on the wing plan. Drill a #68 (or 1/32") [0.8mm] hole into the leading edge of the aileron where shown on the plan for the aileron torque rod.

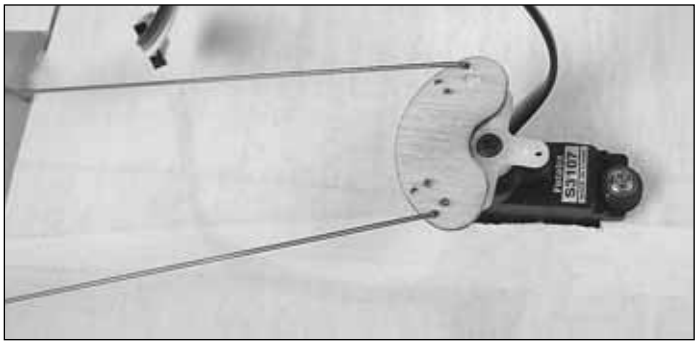


❏ ❏ 3. Cut a notch in the leading edge of the aileron between the hole you drilled and the end to accommodate the torque rod. Glue the torque rod to the aileron with medium CA.

❏ 4. Return to step 1 and make the left aileron torque rod and aileron the same way.

Refer to these photos for the following five steps. Note: You may want to delay the following steps until after the model is covered.





❏ 5. Temporarily tape both ailerons to the wing.

❏ 6. Glue the laser-cut 1/16" [1.6mm] ply servo horn to the plastic servo horn included with your servo. With this servo horn, the ailerons will travel up more than down, reducing adverse yaw, which is the tendency for the nose of the model to turn away from the direction of banked turns.

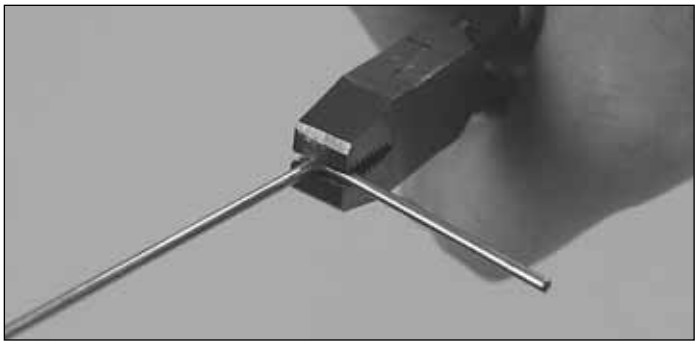
❏ 7. Cut the top sheeting for the aileron servo, so that the servo can be mounted to the left side of the center rib, aft of the wing joiner and spar.

❏ 8. Clean the aileron servo case with a tissue dampened with alcohol or other suitable solvent. Mount the aileron servo to the side of the center rib with double-sided foam mounting tape (GPMQ4440, not included).

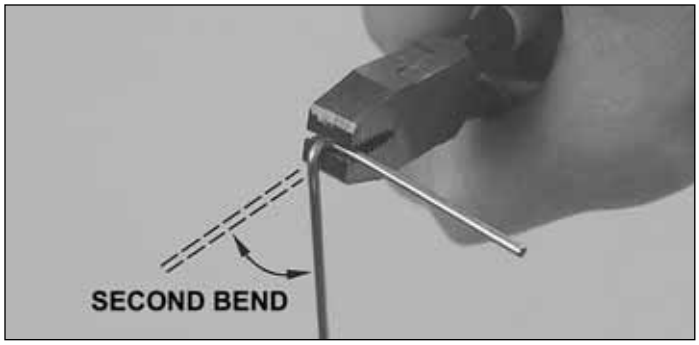
Note: For a more secure bond to the wing rib, first coat the rib with a thin layer of medium CA where the tape will be applied. Sand the hardened CA to remove any irregularities.

❏ 9. Use the remainder of the .030" [.76mm] wire you used for the torque rods to make the **aileron pushrods**. Note that the pushrods are connected to the torque rods with a "Z-bend" on both ends. If you do not have Z-bend pliers, or do not know how to make a Z-bend with regular pliers, follow the procedure below. (For clarity, larger wire than was supplied with this kit was used in the photos.)

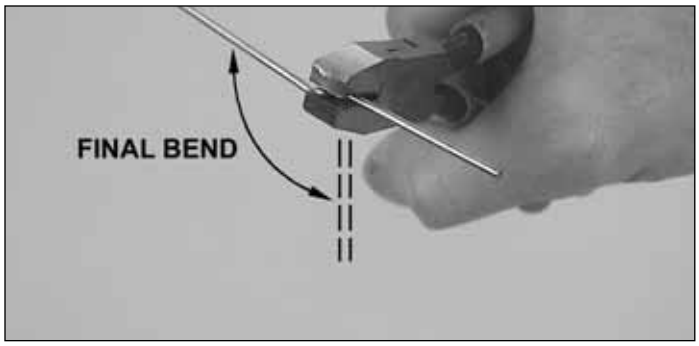
❏ A. Make the first 90° bend near one end of the wire.



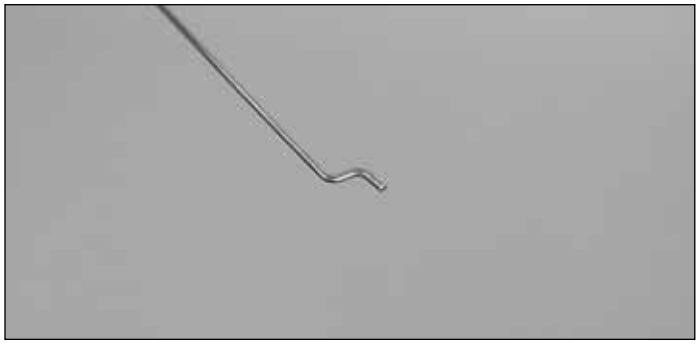
❏ B. Hold the wire in the pliers as shown.



❏ C. Make the second 90° bend downward.

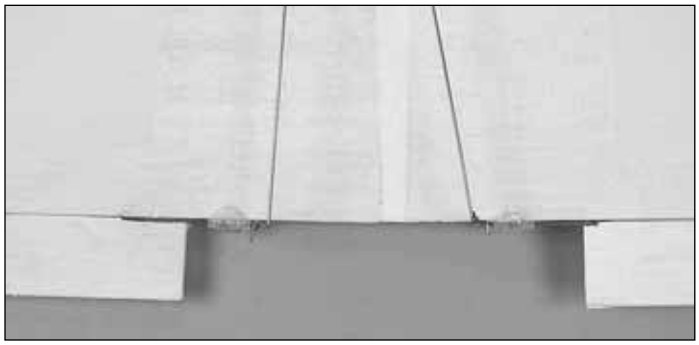


❏ D. Make the final 90° bend (twist) upward to form the "Z."

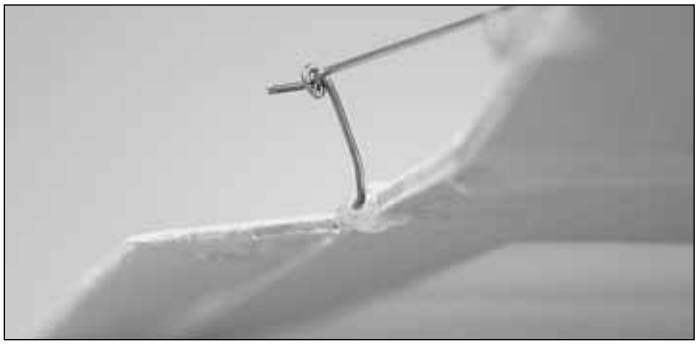


❏ E. Cut the excess wire near the end.

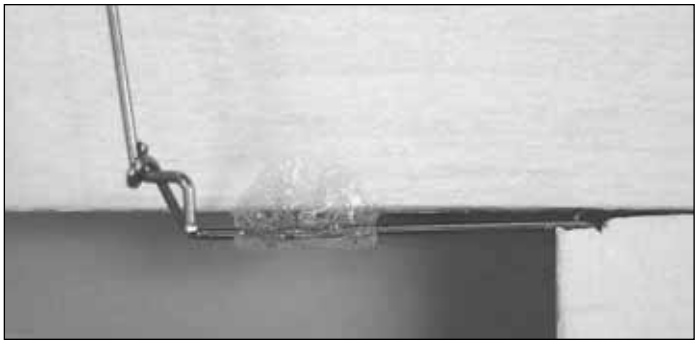
Note: This procedure does not work for all types of wire, but will work on the thin music wire supplied with this kit.



❏ 10. Connect the aileron servo to the aileron torque rods with the pushrods you just made.



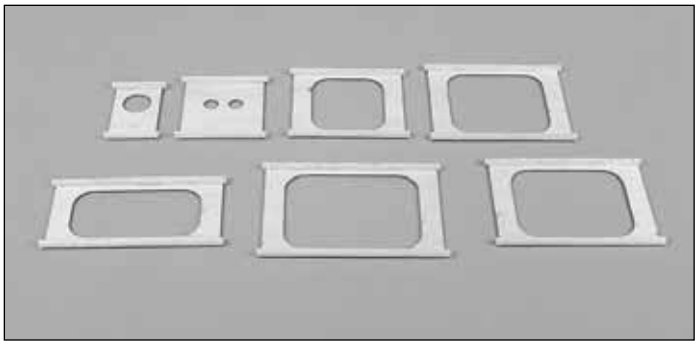
❏ 11. If you need to tweak the linkage slightly to center the ailerons, you can make a slight bend in the aileron torque rod.



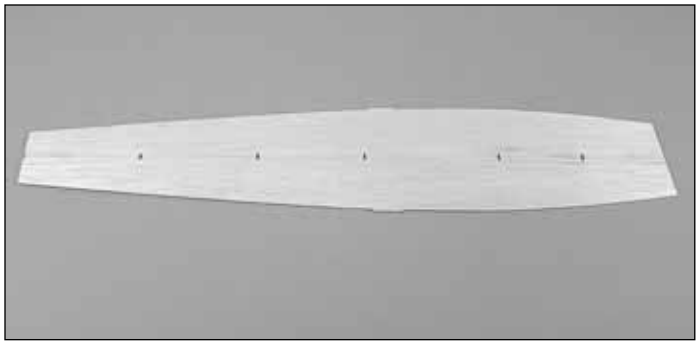
❏ 12. After the model is covered, glue the **aileron torque rod bearings** to the trailing edge of the wing with medium CA. Coat the torque rod with a film of oil or Vaseline® to prevent CA from adhering to the torque rod.

BUILD THE FUSELAGE

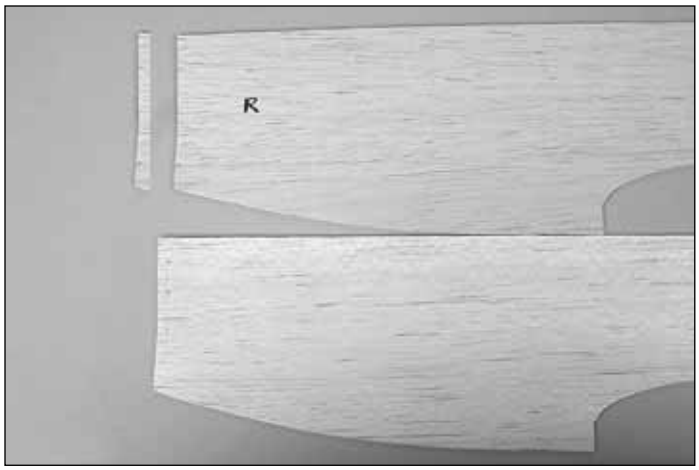
Frame the Sides



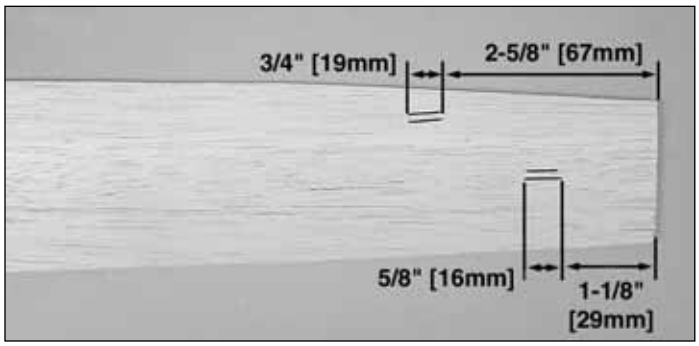
❏ 1. Glue a 1/8" x 1/8" [3.2 x 3.2mm] balsa stick to the top and bottom on one side of formers F2 to F8. **Note:** The side with the sticks on it is now the front.



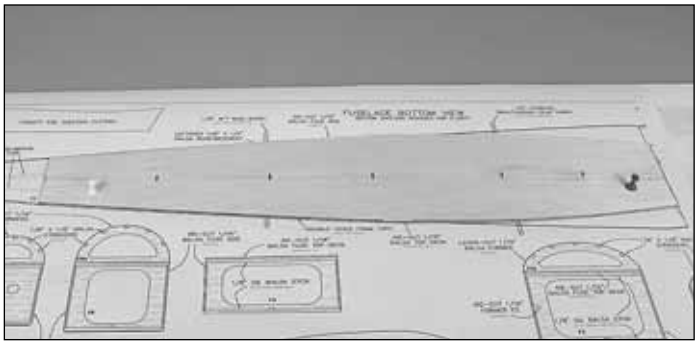
❑ 2. Use thin CA to glue the die-cut 1/16" [1.6mm] **left** and **right fuselage top deck** pieces together. Hold the pieces together tightly while applying CA glue to the joint a couple of inches at a time, wiping excess CA from the joint before it hardens. Lightly sand the top deck smooth.



❑ 3. Use a straightedge and a hobby knife to trim the front edge of **one** of the die-cut 1/16" [1.6mm] balsa **fuselage sides** along the cut line. Mark the inside of that fuse side with an "R," designating it as the **right** side. **Note:** The cut line is not straight and angles about halfway down the side.

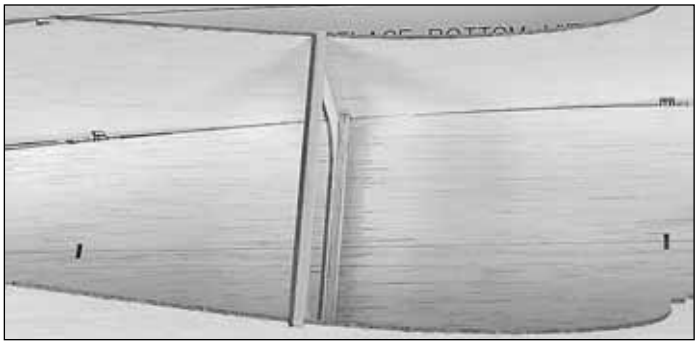


❑ 4. There are die-cut markings for the pushrod exit slots on the rear of the fuselage sides. Cut out the **lower rear slot** on the **right** fuselage side. Cut out the **upper forward slot** on the other fuselage side, which now becomes the **left** side. **Note:** The marked slots can be difficult to see. Cut the slots according to the dimensions shown in the above photo.

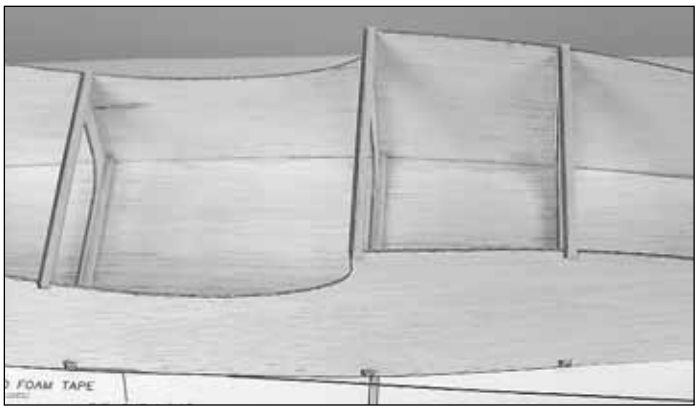


❑ 5. Cover the bottom view of the fuse plan with Plan Protector or wax paper. Pin the die-cut 1/16" [1.6mm] balsa **fuselage top deck** over the bottom view of the fuselage plan.

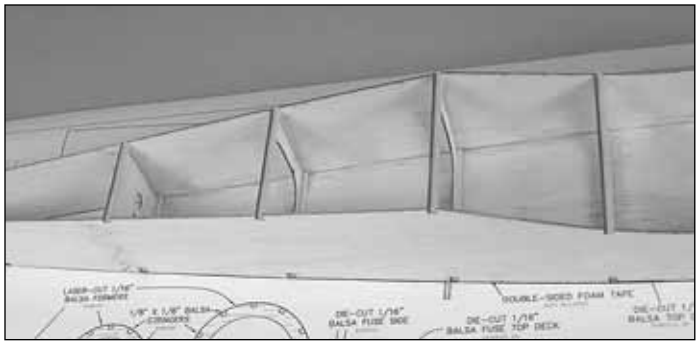
Important: The front of the top deck should be aligned with the rear of F1. The fuselage sides will extend 1/16" [1.6mm] forward of the top deck.



❑ 6. Fit former F4 and the fuse sides to the fuse top. When satisfied with the fit, glue F4 to the fuse top and sides. **Note:** Make certain the right fuse side is on the right, and the left fuse side is on the left (Remember, you are building the fuselage upside-down.)

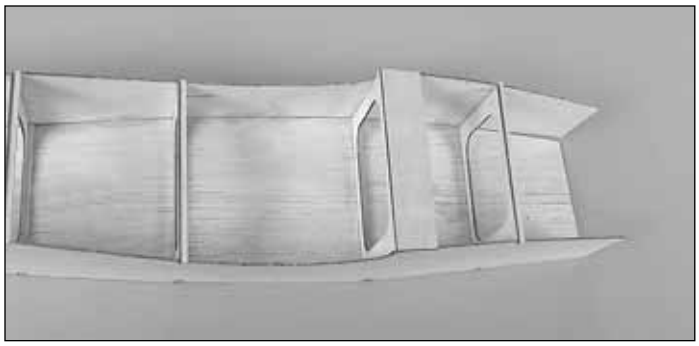


❑ 7. Working forward one former at a time, glue formers F3 and F2 to the fuse top and sides.

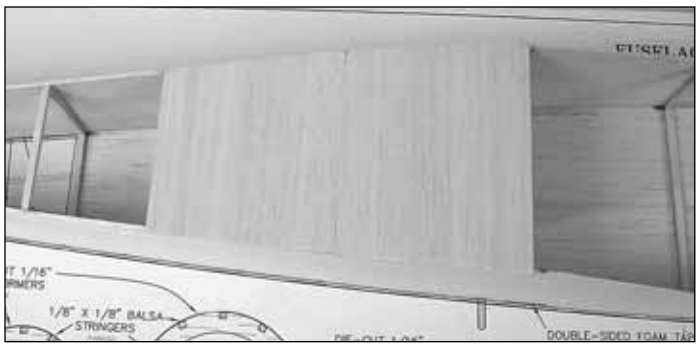


❑ 8. Working aft one former at a time, glue formers F5, F6 and F7 to the fuse top and sides. Glue the fuse sides to the fuse top.

❑ 9. Glue former F8 into position between the fuselage sides.

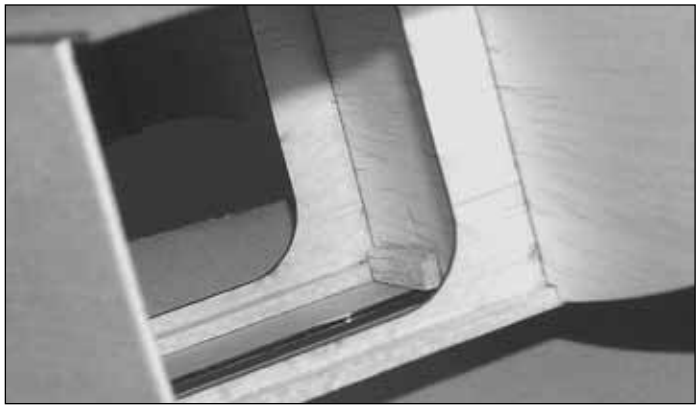


❑ 10. Glue the laser-cut 1/16" [1.6mm] ply **landing gear mount** to the fuselage where shown on the side view of the plan.



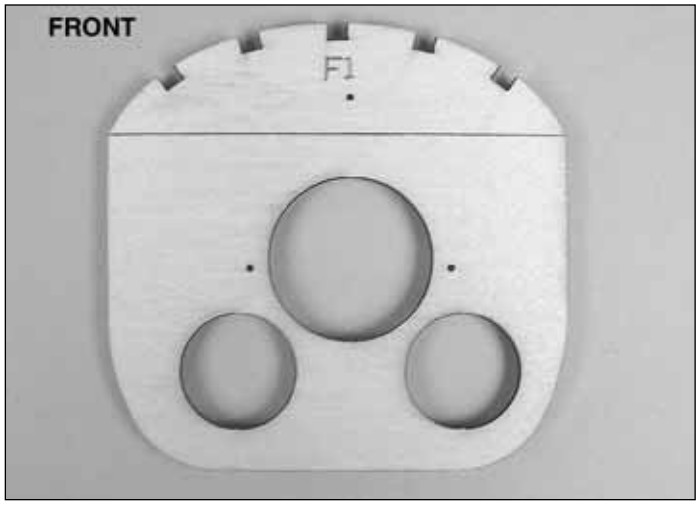
❑ 11. Use a sheet of 1/32" x 3" x 15" [0.8 x 76 x 380mm] balsa to sheet the bottom rear of the fuselage. Start at former F5 and cut and glue **only** the first two pieces. The remainder of the sheeting will be installed after the servos are installed.

❑ 12. Remove the fuselage from the plan. Reinforce any glue joints that look weak. Lightly sand the fuselage smooth.

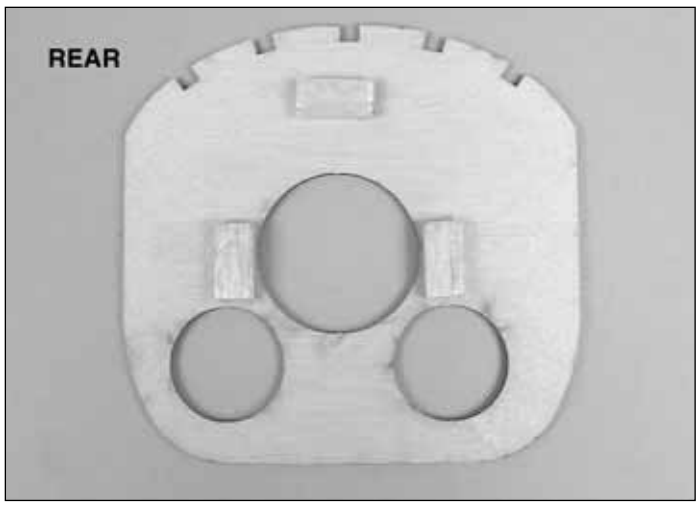


❑ 13. Cut two 1" [25.4mm] pieces from a leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa stick. Glue a piece to each side of the fuselage on top of the ply landing gear mount.

Finish the Fuselage



❑ 1. Locate the laser-cut 1/16" [1.6mm] ply **former F1**. Draw a line across the top of the former on the front, as shown in the photo. Note that the hole for the gearbox is offset to the right as seen in the above photo.

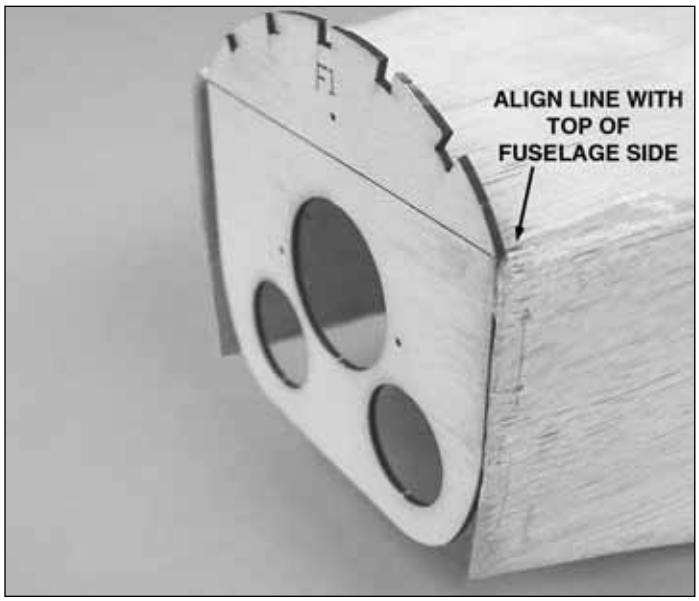


❑ 2. Cut three 1/2" [13mm] pieces from a leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa stick. Glue a piece over each of the screw holes on the rear of F1. Position them as shown in the photo.

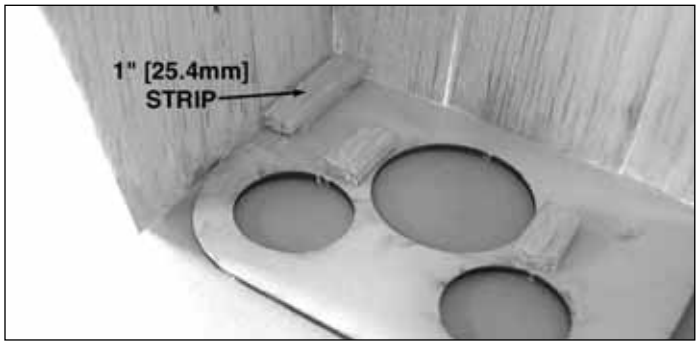
❏ 3. Cut four 1" [25.4mm] pieces from a leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa stick.

Before proceeding, read steps 4 thru 9. This will give you a better understanding of how to proceed.

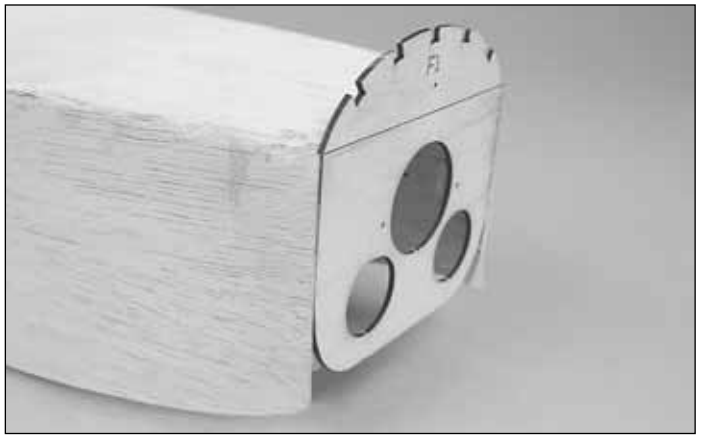
❏ 4. Check the fit of former F1 to the front of the fuselage. The top deck should end 1/16" [1.6mm] aft of the front edges of the fuselage sides. With F1 in place, the top deck should be against the rear of F1. **Note:** It may be necessary to trim the fuse sides to match the width of the firewall.



❏ 5. Glue F1 to the upper part of the left fuselage side. The line drawn across the top of F1 should be aligned with the top of the fuselage side. Align F1 accurately with the slope on the upper part of the fuselage side. The lower part of the fuselage side angles forward slightly. Do not glue F1 to the lower part of the fuselage side. Glue the top deck to the fuselage side as well.



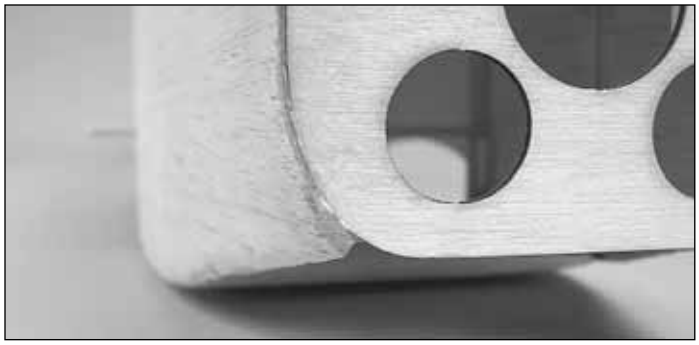
❏ 6. Glue one of the 1" [25.4mm] strips that you cut earlier to the fuselage side and the rear of F1.

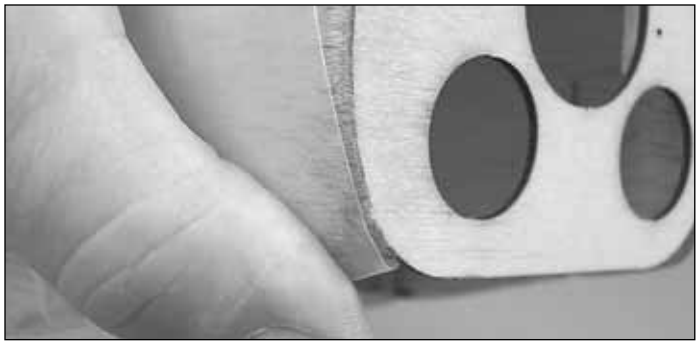


❏ 7. Glue F1 to the upper part of the right fuselage side. The line drawn across the top of F1 should be aligned with the top of the fuselage side. Make sure F1 is aligned accurately with the slope on the upper part of the fuselage side. Do not glue F1 to the lower part of the fuselage side. Glue another 1" [25.4mm] strip to the right fuselage side and the rear of F1.

❏ 8. Prepare two of the 1" [25.4mm] balsa strips as shown in the photo. Sand a curve along one side to match the curve of the lower part of F1. Sand an angle along the side of this curve. Study steps 9 and 10 to get a better idea of how the strip should be shaped. This piece is fitted into place in step 10, but it will help to have the part sanded to shape first.

The lower front of the **right** fuselage side will now be glued to the curved part of F1. The fuselage side must first be wetted for it to bend around this curve. We have found the best solution for this is 70% isopropyl alcohol (rubbing alcohol), which will soak in rapidly and dry quickly. This looks difficult, but if you proceed as instructed it works well.

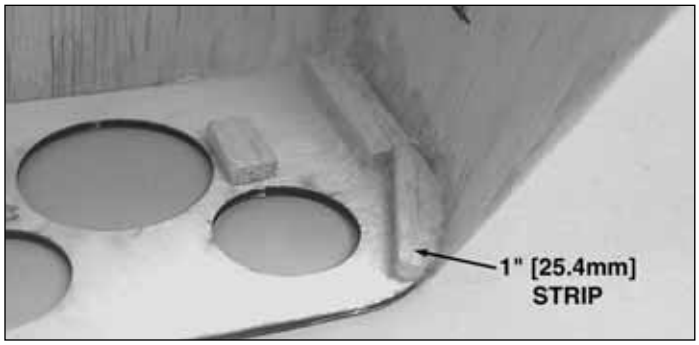




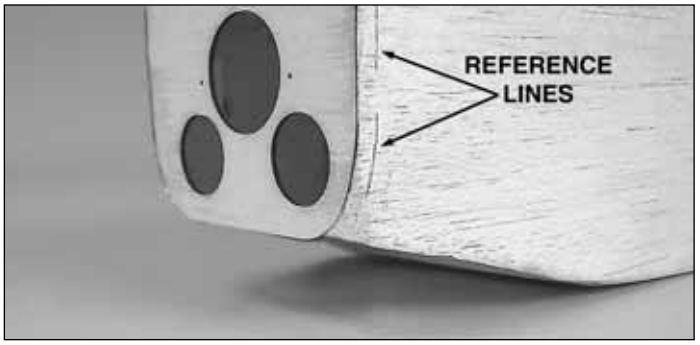
❏ 9. Wet the outside of the sheeting where it curves around the bottom of F1. Slowly bend the fuselage side along the curve. If it begins to crack, moisten the area with more alcohol. Once you get the wood to bend along the curve, soak some thin CA into the joint between the right fuselage side and F1. Continue to hold pressure on the joint, even after the CA has hardened.

Note: Put some wax paper or plan protector between your thumb and the fuselage side so you don't glue yourself to the model.

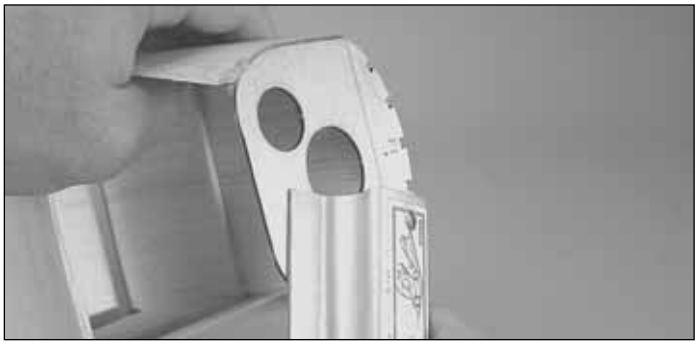
Caution: Do not squeeze the joint too tightly or you will break the fuselage side.



❏ 10. While still holding the joint tightly, fit and glue the strip you prepared in step 8 to the back of F1, along the side of the fuselage. It does not have to fit tightly. Soak some thin CA onto the area, keeping the strip in place. After the thin CA hardens, fill any gaps with medium CA. Do not release pressure on the joint until after the medium CA has fully hardened. CA accelerator will speed the process.



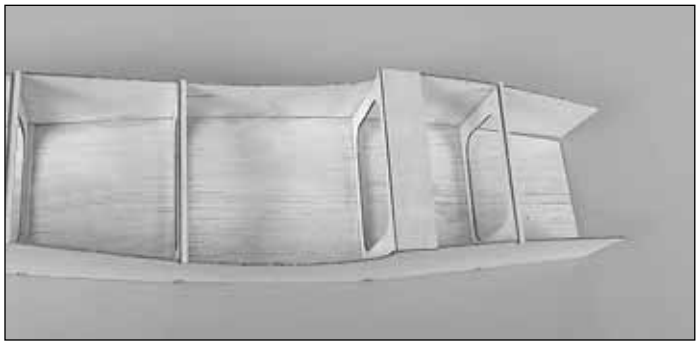
❏ 11. In the same way, glue the left fuselage side to former F1. Before doing so, glue the die-cut reference cut lines with some thin CA. As you glue the side in place, it may crack at the bottom of the cut line. Once the side is glued in place any cracks can be sanded smooth and filled with lightweight balsa filler.



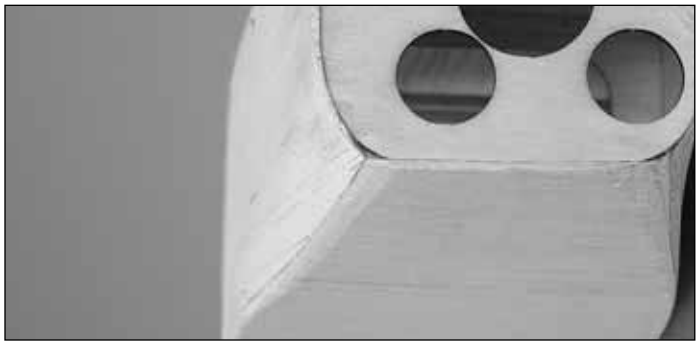
❏ 12. Carefully sand the fuselage sides even with the front of former F1. Do not push the sandpaper back and forth across the joint. Rather, push the sandpaper across the joint towards the center of the former. Be careful not to snag the opposite fuselage side.

❏ 13. Cut six 2" [51mm] sticks from the 1/8" x 3/8" [3.2 x 9.6mm] balsa stick. Working one at a time, glue three sticks to the inside of each fuse side to create a gluing surface for the bottom sheeting.

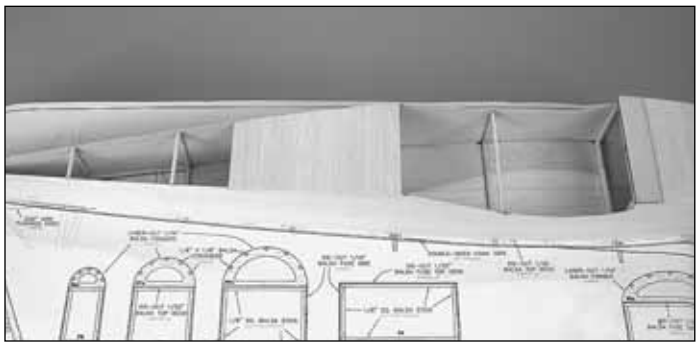
❏ 14. Sand the sticks flat so that the bottom sheeting can be glued in place.



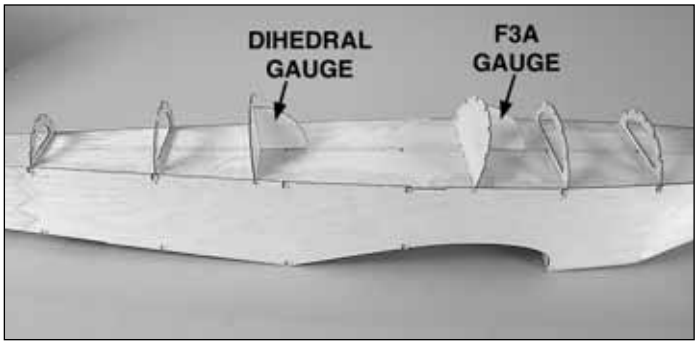
❏ 15. Using the 1/16" x 3" [1.6 x 76mm] balsa sheet, sheet the bottom front of the fuselage. Start by gluing a sheet beginning at the ply landing gear mount.



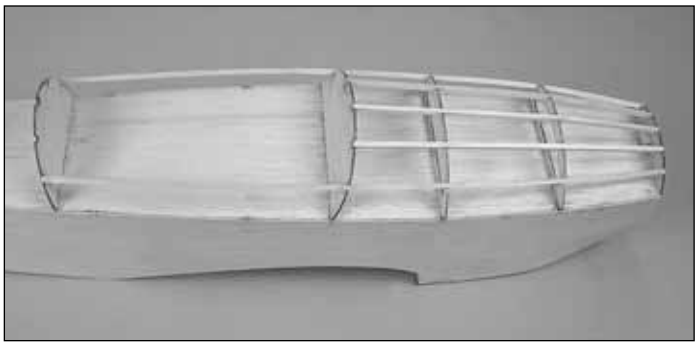
❏ 16. Sand the contour of the fuselage front to blend into former F1. Fill any gaps with lightweight balsa filler.



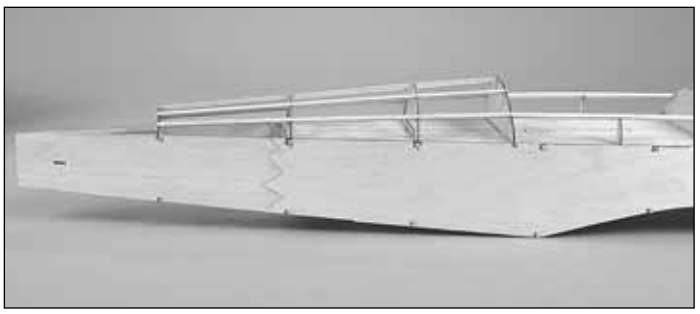
❏ 17. Place the fuselage upside-down over the bottom view of the plan. Mark the location of formers F2A, F3A, F4A, F5A, F6A and F7A on the left and right fuselage sides. Transfer the marks to the top deck of the fuselage. Note on the side view that formers F4A and F5A are not located over F4 and F5.



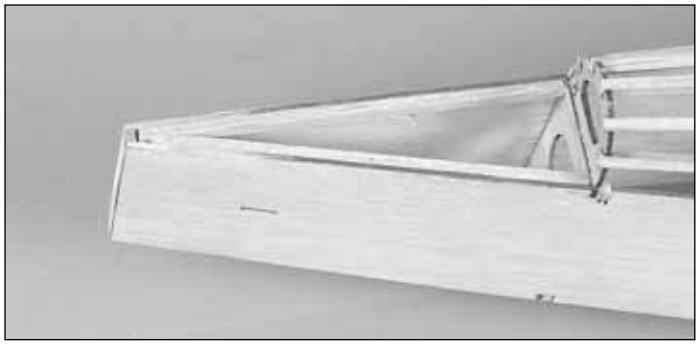
❏ 18. Glue the die-cut 1/16" [1.6mm] balsa **formers F2A** thru **F8A** to the fuselage top deck. Formers F2A, F3A, F6A, F7A and F8A are glued perpendicular to the top deck. Use the die-cut 1/16" [1.6mm] balsa **F3A gauge** to establish the correct angle of F4A. Use the die-cut 1/16" [1.6mm] **dihedral gauge** to set the angle of F5A.



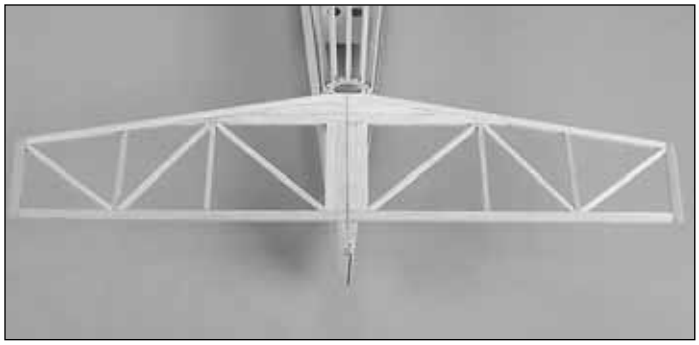
❏ 19. Using three 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks, cut, fit and glue the stringers to the forward part of the fuselage. Start with the bottom stringer, which goes from F1 to F5A. Use the remainder of this stick to do the stringer above it. Use the third stick to do the top center stringer, saving the remainder of the stick for the top stringer on the aft part of the fuselage.



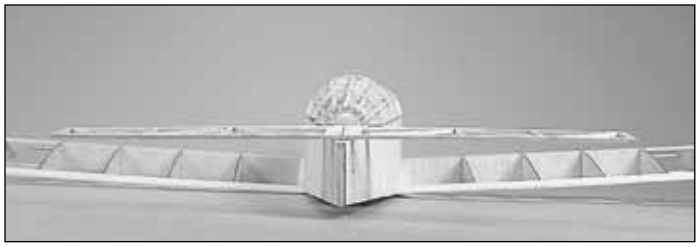
❏ 20. Using five 1/8" x 1/8" x 24" [3.2 x 3.2 x 610mm] balsa sticks, cut, fit and glue the stringers to the aft part of the fuselage. Start with the two bottom stringers on each side, which go from F5 to the rear of F8.



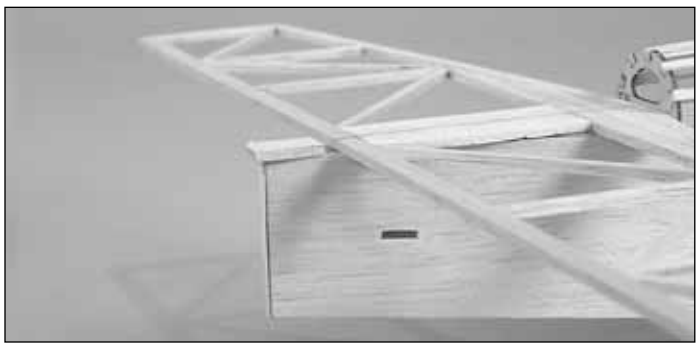
❏ 21. Use a leftover 1/8" x 1/8" [3.2 x 3.2mm] balsa stick to reinforce the trailing edge of the fuse sides and where the horizontal stab will be mounted. This will provide additional gluing area.



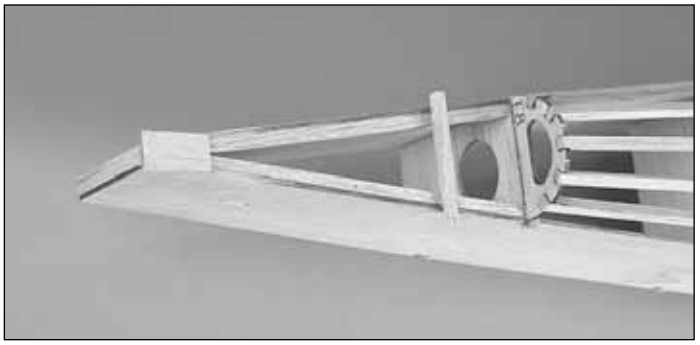
❏ 22. Temporarily pin the horizontal stab to the fuselage, making sure it is centered.



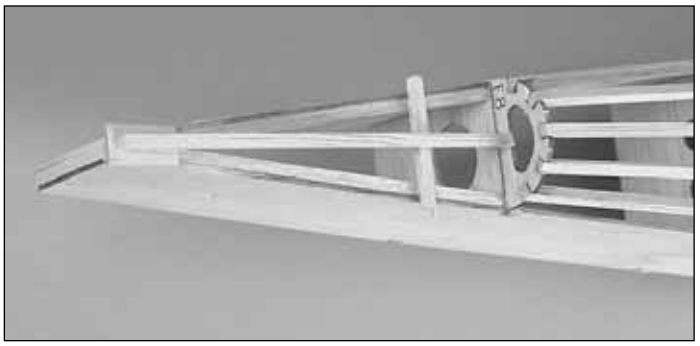
❏ 23. Hold the fuselage on the wing and check that the stab is level with the wing. Lightly sand the stab mount as needed to make it level with the wing.



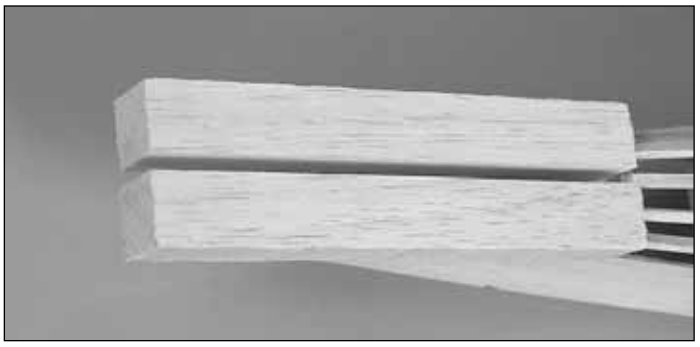
❏ 24. Glue a filler stick cut from leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa to the top of the fuselage, 3/16" [5mm] behind the stab. Be careful not to glue the stab to the fuselage.



❏ 25. Tack glue a leftover 1/8" x 1/8" [3.2 x 3.2mm] balsa stick across the front of the stab saddle area of the fuse.

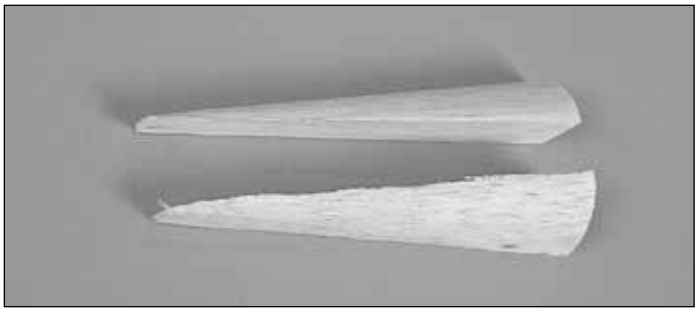


❏ 26. Tack glue a 1/8" x 1/8" [3.2 x 3.2mm] balsa stick centered on top of the sticks glued in the last two steps.

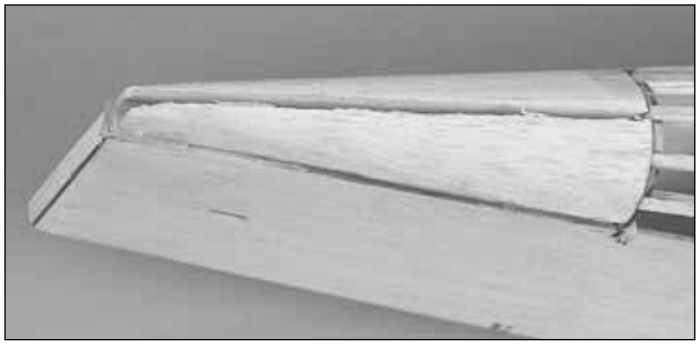


❏ 27. Cut the 3/4" x 3/4" x 12" [19 x 19 x 305mm] balsa stick in half, making two 6" [152.5mm] pieces. Tack glue these to the sticks as shown.

❏ 28. Using a razor plane and progressively finer grades of sandpaper, shape the fillet blocks until they blend into and follow the contour of the fuselage.

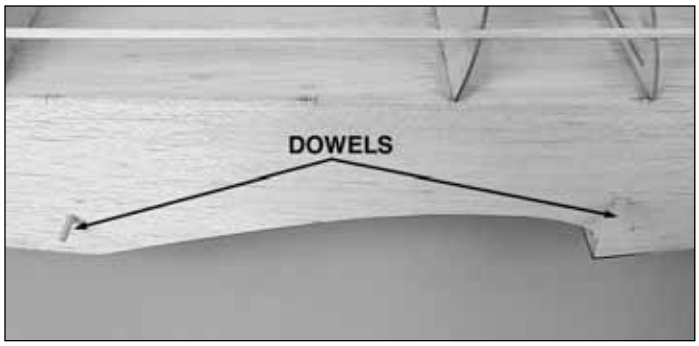


❏ 29. Cut the fillet blocks and false stab/fin off the aircraft. Remove the sticks used to represent the stab and fin.



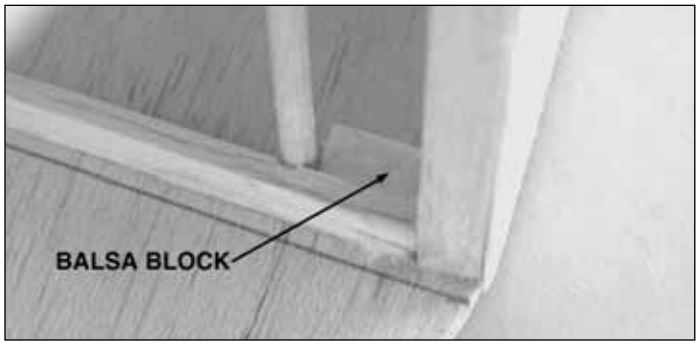
❏ 30. Being careful not to glue the stab or fin, glue the stab fillets to the fuse using the fin and stab spacers. **Note:** The stab and fin will be installed after the model is covered.

❏ 31. From a 1/8" [3.2mm] dowel, cut a 4-3/4" [120mm] **rear wing hold-down dowel** and a 5-3/4" [146mm] **front wing hold-down dowel**. Round the ends for a neat appearance.



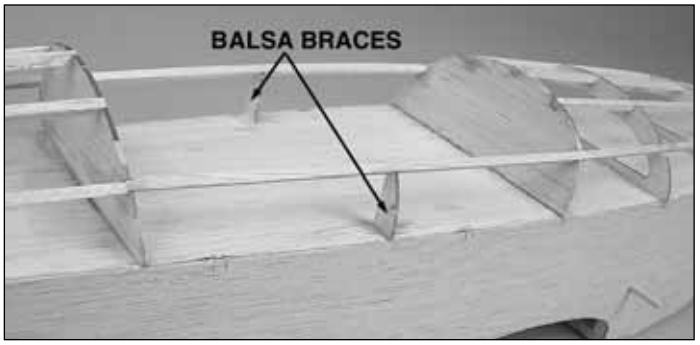
❏ 32. Drill 1/8" [3.2mm] holes in the sides of the fuselage for each dowel where shown on the plan and insert each dowel into the fuselage.

Caution: If the rear dowel is too low, it will interfere with the aileron pushrods. If the front dowel is too low, it will not provide proper shock absorption for the landing gear.



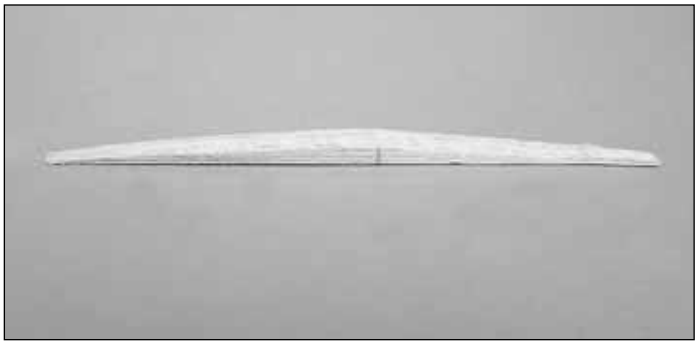
❏ 33. Cut four 5/8" [16mm] long blocks from a leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa stick. Glue a block to the inside of the fuselage side under each dowel end to reinforce the area.

Note: Remove the dowel first so you don't glue the dowel in place.

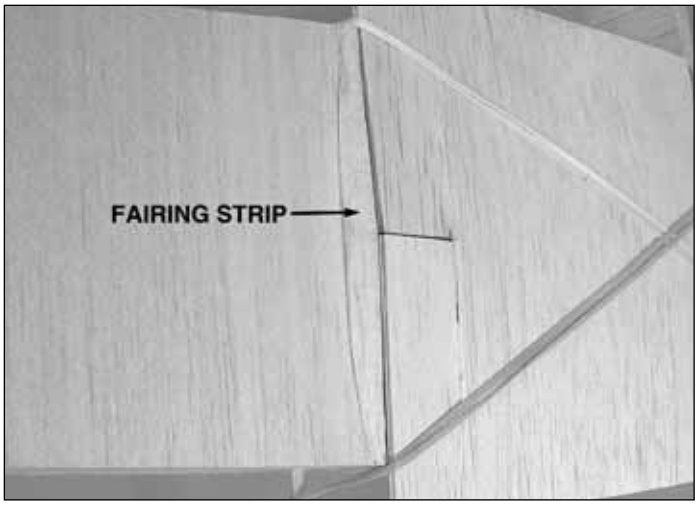


❏ 34. Glue the small laser-cut 1/16" [1.6mm] balsa **braces** to the fuselage top deck midway between formers F4A and F5A. These braces are used only to provide additional support for the canopy and do not need to be even with the fuselage sides or the stringer.

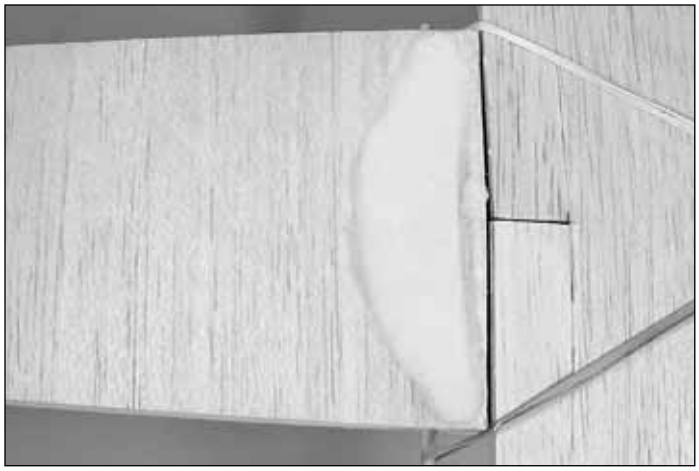
If you would like to blend the leading and trailing edge of the wing with the bottom of the fuselage, continue with step 36. Otherwise, go to ***"Install the Pushrods"*** on page 24. Adding these fairings will only add a slight amount of weight to the model.



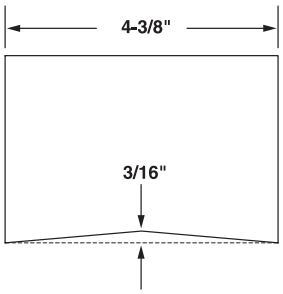
❏ 35. Cut a 3-3/4" [95mm] **fairing strip** from a leftover 1/8" x 1/4" [3.2 x 6.4mm] balsa stick. Sand a taper on the ends of the stick as shown in the above photo.



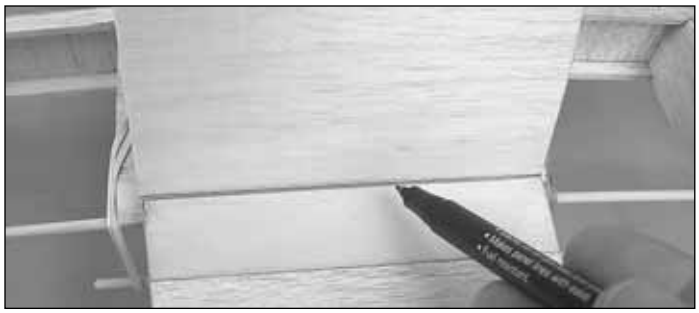
❏ 36. Glue the fairing strip to the bottom of the fuselage behind the trailing edge of the wing.



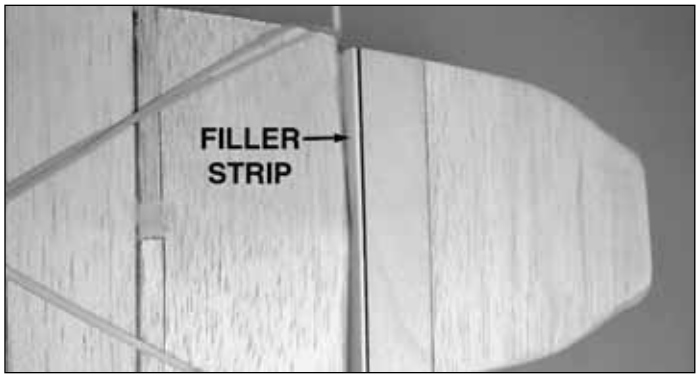
❏ 37. Blend the fairing strip to the fuselage bottom with some lightweight balsa filler.



❏ 38. Using a leftover piece of 1/16" [1.6mm] balsa sheeting, cut a piece 4-3/8" [111mm] long. Notch one side of this piece as shown in the above sketch.

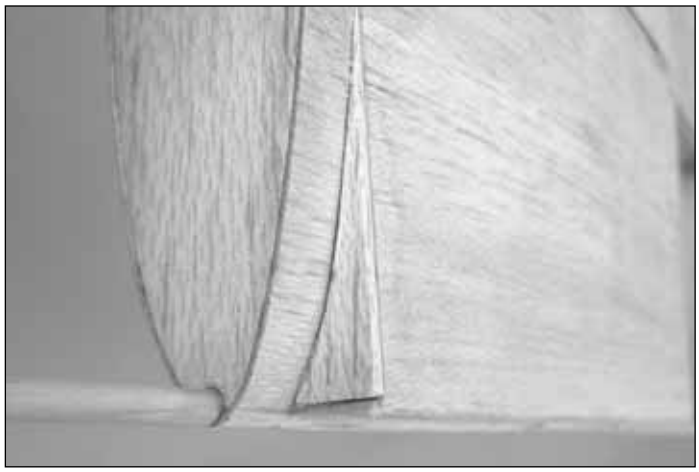


❏ 39. Place the piece on the leading edge of the wing, against the fuselage. Mark the sheet where it needs to be cut flush with the bottom of the fuselage.



❏ 40. Tack glue this filler strip to the leading edge of the wing, being careful not to glue it or the wing to the fuselage. Remove the wing and reinforce the glue joint.

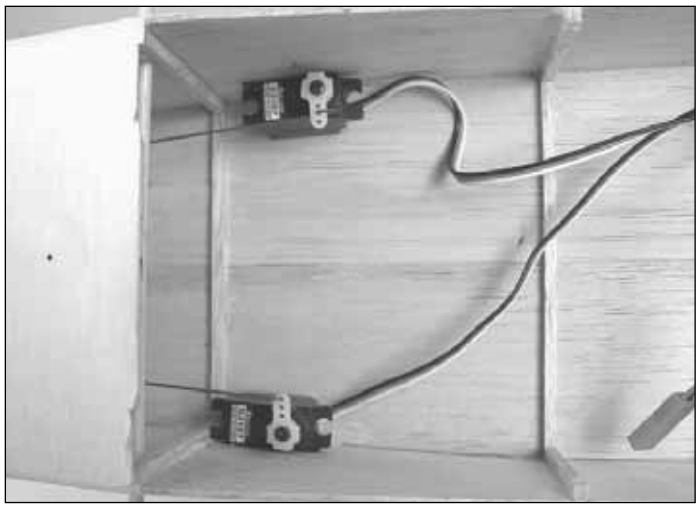
❏ 41. Using a leftover piece of 1/32" [0.8mm] balsa sheet, cut a piece 4-3/8" x 1-1/2" [111 x 38mm]. Glue this piece to the filler strip and the bottom wing sheeting.



❏ 42. Use leftover 1/32" [0.8mm] balsa to cut, fit and glue filler strips to the end of the sheeting.

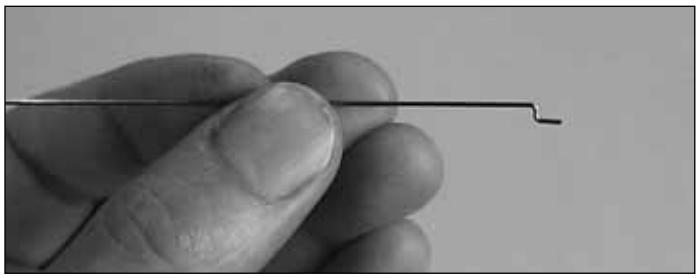
Install the Pushrods

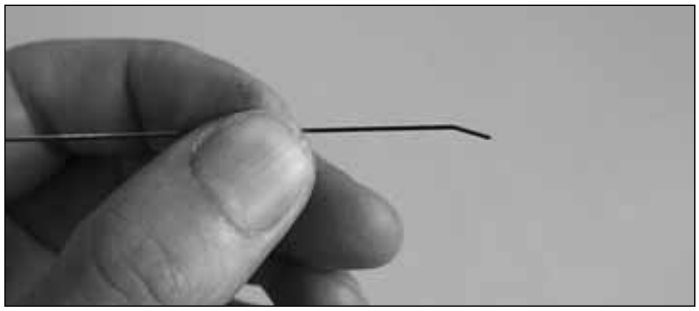
For the following steps make sure the horizontal stab and vertical fin are pinned in place on the fuselage.



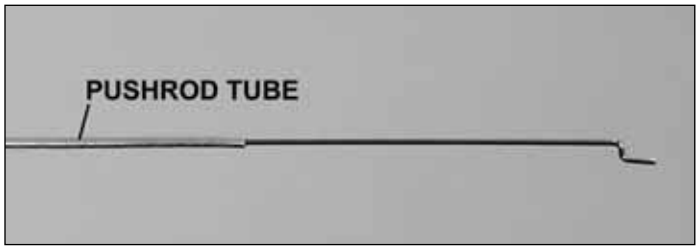
❏ 1. Use a tissue dampened with denatured alcohol or other suitable solvent to clean the servo cases so the mounting tape will adhere. Use double-sided foam mounting tape (GPMQ4440, not included) to mount the elevator and rudder servos to the fuse sides where shown on the plan.

❑ 2. Thoroughly clean the remaining .030" x 20" [.76 x 508mm] wire with alcohol or similar solvent, then scuff it with 320-grit sandpaper so glue will adhere.





❑ 3. Cut 5" [127mm] from the wire. Make a “Z” bend on one end and a slight bend on the other end. See the drawing on the fuselage plan. This is a **control horn pushrod end**.



❑ 4. Use pliers to insert this pushrod end 1" [25.4mm] into a 1/16" x 12" [1.6 x 305mm] aluminum **pushrod tube**. Use thin CA to glue the pushrod end into the pushrod tube.

❑ 5. Make another pushrod end from a 4-1/4" [108mm] wire just the same as the first and insert it into the other end of the pushrod tube, but **do not** glue it in. See the drawing on the fuselage plan. This will be the **elevator pushrod**.

❑ 6. Make sure the pushrod end that is not glued into the tube fits tightly and will not easily slide in and out. It will be permanently glued in after the model has been set up and the exact length of the pushrod has been determined.

Refer to this photo for the following four steps. Note: The photo shows how the completed installation will look.

❑ 7. Cut a slot in the fuselage at the rear of the horizontal stab for the 1/8" [3.2mm] elevator joiner, installed in the left elevator. Insert the joiner in the slot and check that the elevator will move freely once installed. Temporarily hinge the left elevator to the stab using clear cellophane tape.

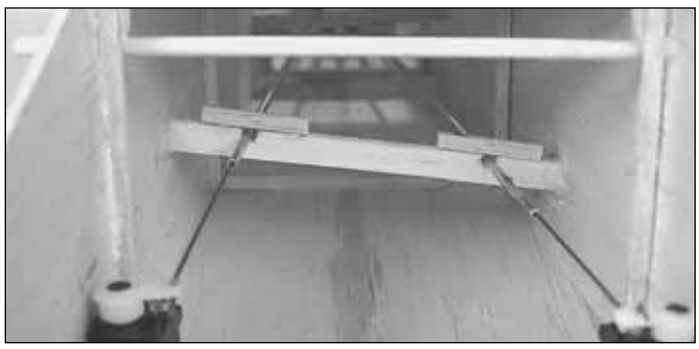
❑ 8. Insert the elevator pushrod into the fuse through the slot in the left side. The pushrod end that is not glued into the tube should be at the servo end.

❑ 9. Connect the front of the pushrod to the servo arm, then mount the servo arm to the elevator servo. Connect the other end of the pushrod to the outer hole in the elevator control horn, then insert the control horn into the slot in the elevator.

❑ 10. Slide the pushrod end in or out of the pushrod tube until the elevator is centered when the servo is centered.

❑ 11. Make the rudder pushrod and join the rudder to the fin the same way. The rudder pushrod should be inserted into the inner hole of the rudder control horn.

Note: The photo shows how the completed installation will look.



❑ 12. The pushrods should be braced at the locations shown on the plan. This photo shows the bracing installed

just forward of F6. Use a leftover piece of 1/8" x 1/4" [3.2 x 6.4mm] balsa for the main brace. Cut notches in the brace where the pushrods cross it. Hold the pushrods in the notches with leftover 1/8" x 1/8" [3.2 x 3.2mm] balsa. Be careful not to glue the pushrods to the braces.

❑ 13. In a similar manner, install pushrod bracing where shown on the plan at the rear of the fuselage. This photo shows the bracing between F7 and F8.

❑ 14. Sheet the bottom rear of the fuselage with the remaining 1/32" [0.8mm] balsa sheeting.

❑ 15. Remove the servo arms from the top of the servos. Pull the pushrods into the fuselage so that the rear ends do not extend out of the fuselage.

❑ 16. Remove the stab and fin from the fuselage. Reinforce the glue joints of stringers that were tack glued into place. Sand the stringers even with F4 and F5. Sand all stringers to a smooth contoured shape. Sand the sheeting even with the fuselage sides.

COVER THE MODEL

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

❑ 2. Use compressed air (be careful!), a dust brush or a tack cloth to remove balsa dust from the model.

❑ 3. Determine what material you will be covering the model with. If using Top Flite EconoKote, the model is ready to cover. If using Coverite CoverLite, coat the areas to be covered with Coverite Balsarite Fabric Formula (COVR2500). Be certain you use the fabric formula for CoverLite, and not the formula for regular film covering.

❑ 4. Follow the suggested covering sequence to cover the model.

Suggested Covering Sequence

Important: Do not shrink the covering until both sides of each part are covered. This will reduce the tendency for the surfaces to twist.

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

Fuselage:
❑ 1. Bottom
❑ 2. Sides and top

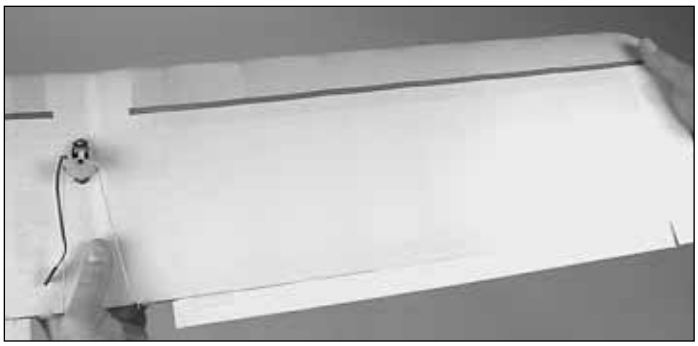
Wing:
❑ 1. The bottom of the wing
❑ 2. Top of the wing
❑ 3. Ailerons

Note: It may be easier to cover the wing tips separately, after the rest of the wing has been covered.

❑ 1. After all the tail pieces are covered, inspect the stab and fin for twists. If necessary, lightly twist the part in the opposite direction and apply heat to the covering until you can get it flat.

Add "Washout"

An important characteristic of most airplanes is their ability to resist stalling, or to stall gently. Simply stated, a stall is when the wing no longer produces lift–basically the model quits flying until it regains airspeed. A stall can occur when attempting to climb too rapidly, or when the model runs out of airspeed (such as when trying to land too slowly). One way to prevent or delay a stall is to add "washout" to the wing. Washout is an upward twist at both wing tips, so that the trailing edge is higher than the leading edge. If the trailing edges are raised slightly, or are at a lower angle then the rest of the wing, the outer portion of the wing will continue to produce lift (fly) even though the rest of the wing has quit flying, thus resisting a stall. Because the RV-4 Park Flyer is designed to be light, it would be difficult to build this required twist into the wing during construction. The following procedure explains how to add washout, which is common for lightweight structures such as this.



❑ 1. Start with the right wing panel. Holding the middle of the wing in one hand, twist the trailing edge of the right wing tip upward. The amount of washout to shoot for is 1/8" [3.2mm], so begin by twisting about 1/2" [13mm] (because the wing will "spring" partway back to its original position after re-shrinking the covering in the next step).

❏ 2. Note the wrinkles in the covering while holding the wing. Have an assistant heat the covering on the top and the bottom until the wrinkles disappear. Allow the covering to fully cool before letting go.

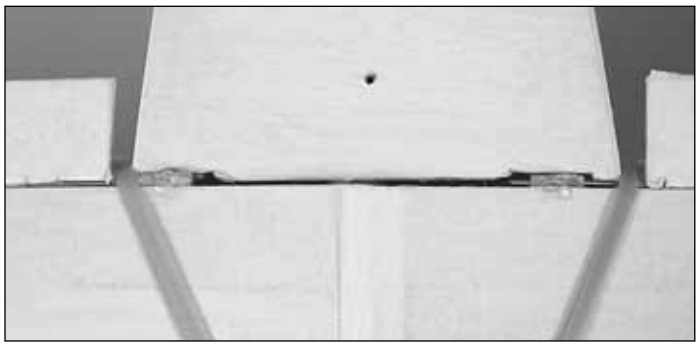
❏ 3. Add washout to the left wing panel the same way.

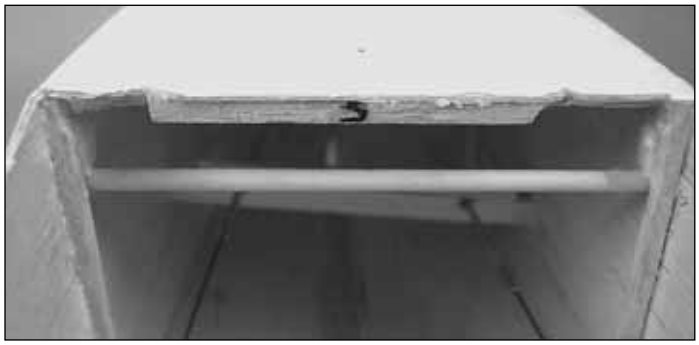
Note: For a small, lightweight model such as the RV-4 Park Flyer, it is not critical to get **exactly** 1/8" [3.3mm] of washout. However, it is important that ***some*** washout be present in **both** wing tips. Do your best to achieve the washout recommended, but don't spend hours trying to do so. A slight variance in both wing tips is acceptable, as long as neither of the wing tips have any "wash-in."

❏ 4. Check the wing periodically to be sure the washout remains. Twist and shrink the covering as necessary to retain the washout.

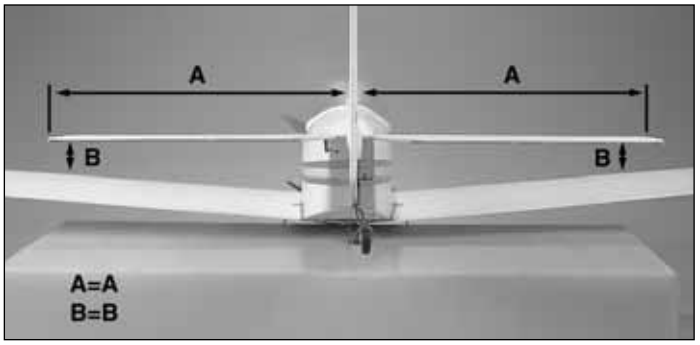
FINAL ASSEMBLY

Join the Tail Surfaces





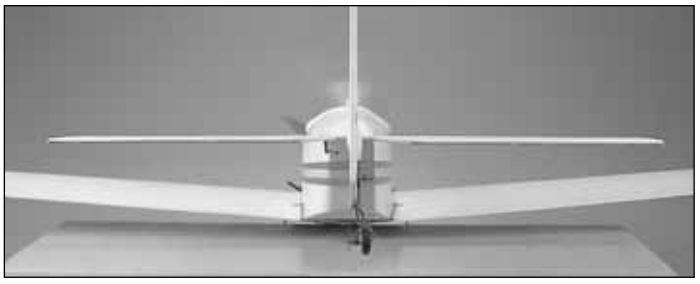
❏ 1. Mount the wing to the fuse with two #64 rubber bands (when it's time to fly the RV-4 Park Flyer, use four #64 rubber bands). Trim the front edge of the aft fuse bottom sheeting and cut notches in former F5 to accommodate the aileron torque rods. If you have to cut much of the former, use a leftover 1/8" x 1/8" [3.2 x 3.2mm] balsa stick to cut and glue a reinforcing piece behind F5.



❏ 2. Use a small pin to poke several holes through the covering in the top and bottom of the stab where it will be glued to the fuselage. These holes will absorb the CA that will be used to glue the fin to the stab and will make for a stronger glue joint.

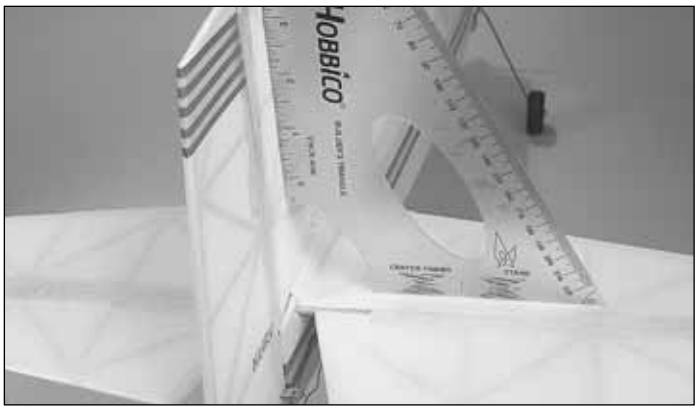
❏ 3. Place the stab in the fuse, making sure it is centered as shown in "A" = "A" in the photo above. **Hint:** If the covering on the stab is transparent, align the sticks on both sides of the center stick with the fuse.

❏ 4. View the model from the rear and see if the stab is level with the wing as shown in "B" = "B." If the stab is not level with the wing, carefully sand the "high side" of the fuse until you can get the stab to align.



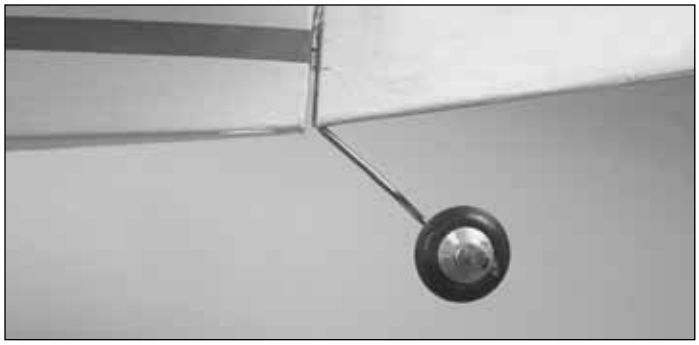
❏ 5. Use a string or tape measure to align the stab. Put a pin in the center of the top of former F1. Tie a loop in one end of the string and place it over the pin. Put some tape over the string with a mark on it. Swing the string from side to side and adjust the stab as required until the stab is aligned properly.

❏ 6. When satisfied with the alignment, glue the stab in place with thin CA.



❏ 7. Insert the vertical fin in the fuselage. Use a builders square to get the fin perpendicular to the stab. Make sure

the fin is aligned with the rear of the fuselage. Glue the stab to the fuse with thin CA. The photo shows the rudder installed on the fin, but your model will not have the rudder installed yet.



❑ 8. Place the rudder over the plans and mark the location of the tail wheel wire where it mounts on the rudder. Drill a 1/16" [1.6mm] hole in the leading edge of the rudder for the wire. Notch the leading edge of the rudder for the wire to fit into. Insert the tail wheel wire in the rudder and make sure it is aligned correctly. Make sure the model will track correctly on the ground with the rudder centered. Glue the tail wheel wire into the rudder with thin CA.

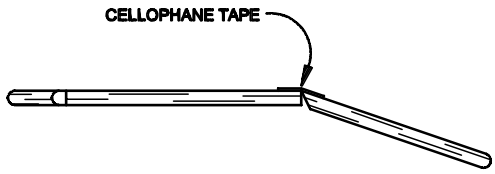
Hook Up the Controls

❑ 1. Before proceeding, charge the motor battery (and your transmitter if needed). When it's time to set up the radio you won't have to stand by while the batteries are charging.

❑ 2. Cut the covering from the elevator and rudder pushrod exit slots near the aft end of the fuse. Push the rear ends of the pushrods out the slots in the rear of the fuselage.

Refer to this photo for the following four steps.

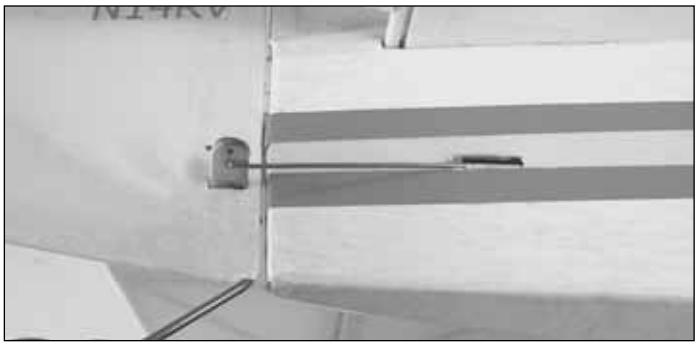
❑ 3. Install the left elevator on the fuselage. Insert the elevator joiner in the slot behind the stab and check that the elevator will move freely once installed. Hinge the left elevator to the stab using clear cellophane tape as shown in the sketch that follows.



❑ 4. Connect the front of the elevator pushrod to the servo arm, then mount the servo arm to the elevator servo. Connect the other end of the pushrod to the outer hole in the elevator control horn, then insert the control horn into the slot in the elevator. Glue the control horn into place with thin CA.

❑ 5. Slide the pushrod end in or out of the pushrod tube until the elevator is centered when the servo is centered.

❑ 6. Hinge the right elevator to the stab using clear cellophane tape. Glue the 1/8" [3.2mm] elevator joiner to the right elevator with thin CA. Make sure the left and right elevators are aligned before gluing the joiner into place. Be careful not to glue the joiner or the elevator to the stab or fuselage.



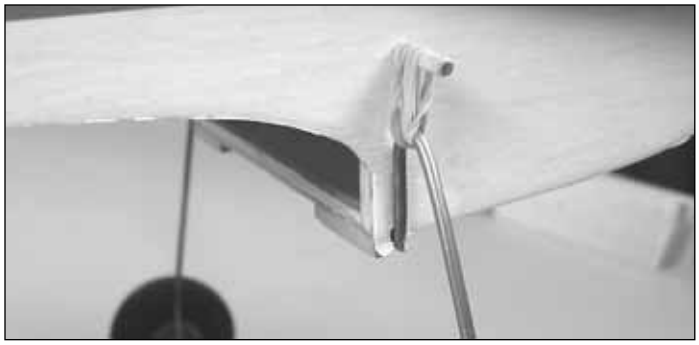
❑ 7. Install the rudder to the fin with clear cellophane tape. The rudder pushrod should be inserted into the inner hole of the rudder control horn.

❑ 8. If you have not done so already, attach the ailerons to the wing with cellophane tape the same as you did the elevators and rudder. Follow the instructions on page 14, ***"Build the Ailerons"*** for pushrod installation.

Mount the Landing Gear

❑ 1. Install the supplied 3/4" [19mm] tail wheel on the tail wheel wire. Hold it in place with a white nylon retainer.

❑ 2. Install the supplied 2" [51mm] wheels on the 3/32" [1.6mm] wire **landing gear**. Secure the wheels with the supplied wheel collars and set screws.

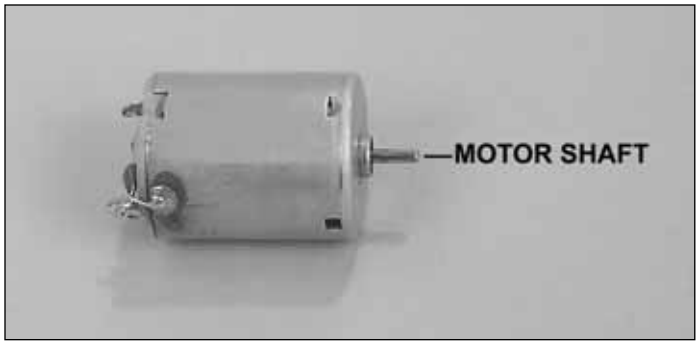


❏ 3. Mount the landing gear to the fuse with a #14 rubber band on each side. Both rubber bands must be stretched enough to wrap around the gear and dowel at least two times.

❏ 4. Cut four 1" [25.4mm] pieces from a leftover 1/8" x 1/8" [32. x 3.2mm] balsa stick. Glue the pieces in front of and behind the landing gear as shown in the photo.

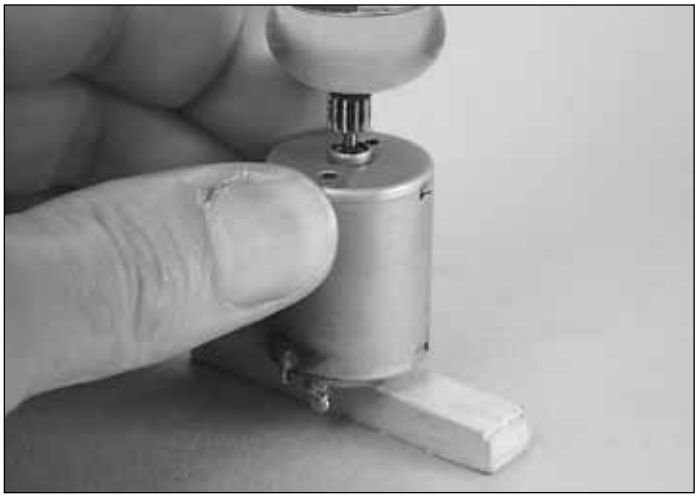
Assemble the Gear Drive

Follow these assembly instructions for the Great Planes ElectriFly motor and S-280 gear drive. If you are using another type of gear drive and motor, follow the instructions that came with the unit.



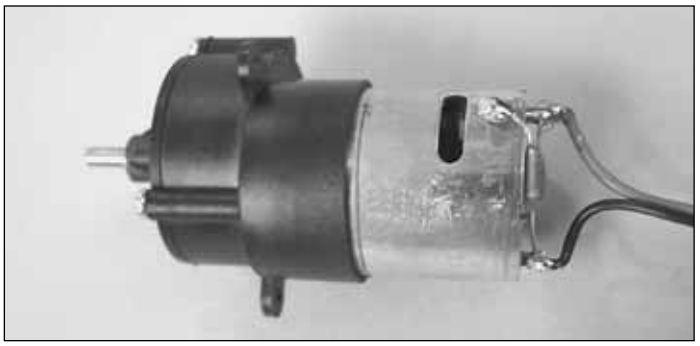
❏ 1. Use denatured alcohol or other solvent to clean the motor shaft. Roughen the shaft with 320-grit sandpaper so glue will adhere.

Note: If you are using the Great Planes ElectriFly S-370 motor, you should lightly file the knurling on the motor shaft to make installation of the pinion gear easier. Wrap the motor in a plastic bag to prevent metal filings from entering the motor.



❏ 2. Apply a small amount of the green locking glue to the motor shaft. Press the pinion gear onto the motor shaft using a small hammer, base of a large screwdriver or something similar. Depending on how tight the fit is, you may have to tap the gear into place. While doing this, do not rest the base of the motor on your workbench, but support the motor shaft with a piece of hardwood. This way, the pressure applied to the gear will not displace the armature in the motor.

Note: If you are using the Great Planes ElectriFly S-370 motor, it is easier to press the gear into place between the jaws of a vise. Be careful not to damage the capacitors installed on the back of the motor. Follow the instructions supplied with the motor.



❏ 3. Press the motor by hand as far as it will go into the gear drive unit. Draw a pencil line around the motor where it aligns with the rear of the gear drive unit. Back the motor out about 1/16" [1.6mm]. Spin the gear drive output shaft with your fingers to insure that the gear drive and motor move freely. If the fit of the motor in the gear drive is loose, use a drop of CA to hold the motor in place.

Note: If you are using the Great Planes ElectriFly S-370 motor the fit of the motor in the gear drive will be very tight. Carefully use a slip joint pliers to install the motor in the gear drive.

❏ 4. Connect the motor to the speed control. Guide the speed control and wiring through the hole in F1. Mount the gearbox to F1 with screws supplied with the gearbox.

Note: If you are installing a speed 400 size motor you will need to enlarge the hole in F1 slightly. This can be easily done with a rotary tool and a sanding drum.

MOUNT THE CANOPY, COWL & WHEEL PANTS

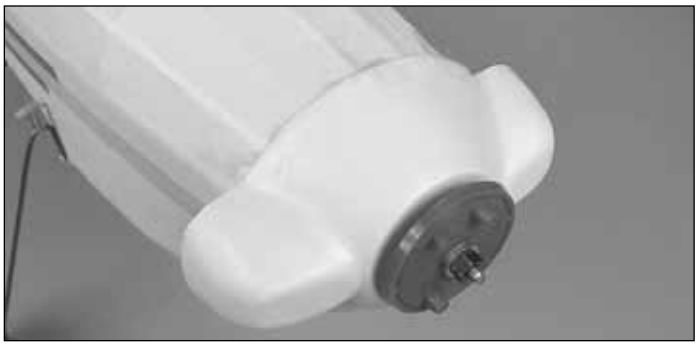
❏ 1. Paint the cockpit area to suit your color scheme. We used black, water-based paint.

2. Trim the pilot outlines from the fuselage plan and glue them to a flat piece of foam, such as from a foam dinner plate. Trim the assembly and paint the pilot as desired. Mount the pilot to the cockpit floor with clear tape.

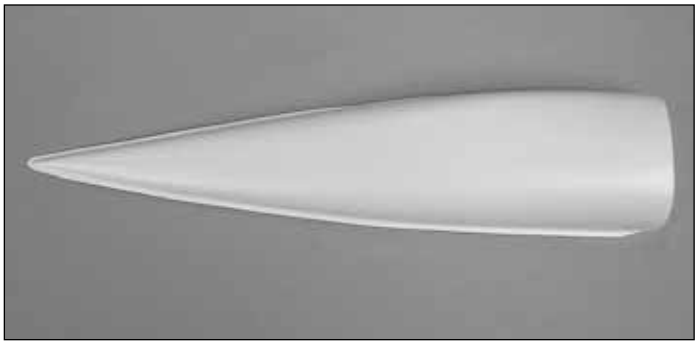
❏ 3. Trim the canopy to fit the cockpit area. We trimmed ours even with the bottom edge of the canopy as close to the base as possible, but you may want to leave a small lip around the base.

❏ 4. Mount the canopy to the fuselage. This can be done by taping the canopy to the fuselage with clear tape or by using the supplied #2 x 3/8" [9.6mm] screws.

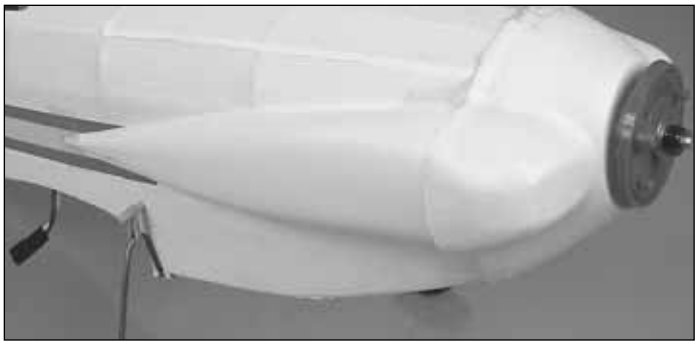
❏ 5. On our model, we used a screw at the front and rear of the canopy and tape on the sides.



❏ 6. Cut the cowl from its plastic sheet as close to the base as possible. Fit the cowl to the front of the fuselage. Mount the prop adapter and the spinner back plate to the gearbox output shaft. Position the cowl so it is centered on the spinner back plate and tape it into place on the fuselage.



❏ 7. Cut the cowl cheeks from their plastic sheet, leaving a small lip at the edges.



❏ 8. Fit the cowl cheeks to the model and tape them into place.

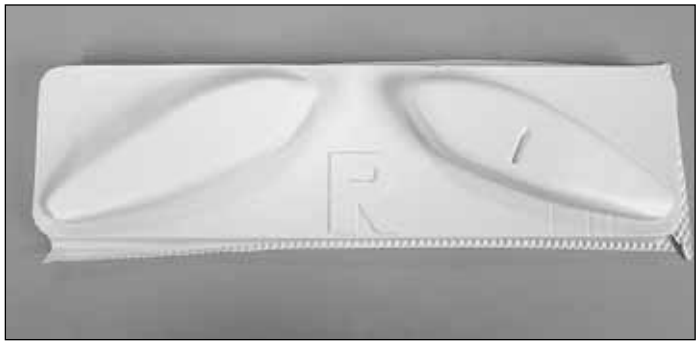
❏ 9. Use four #2 x 3/16" [4.8mm] screws to hold the cowl in place, two on each side of the cowl cheek. Use a 1/16" [1.6mm] drill bit to drill the screw holes into the F1.

❏ 10. Mark the cowl cheeks and cowl to suit your trim scheme. Remove them from the model and paint them as desired. When you mount the parts back on the model, the cowl cheeks can be glued into place with thin CA, being careful not to glue the cowl.

The next two steps are very important for adequate cooling of the motor.

❏ 11. Trim the bottom of the cowl to allow cooling air to enter the cooling holes in former F1. This is especially important if you are using the Great Planes S-280 or S-370 motor. Without adequate cooling, these motors can easily overheat, greatly reducing their life span.

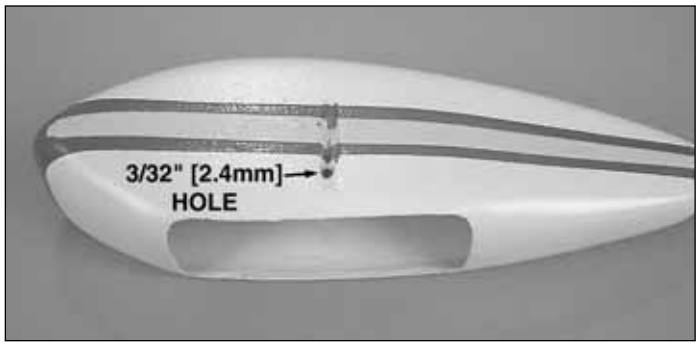
❏ 12. Cut an opening in the bottom of the fuselage for heated air to escape. This hole should be at least 1-1/4" x 2" [32 x 51mm].



❏ ❏ 13. Cut the right wheel pant parts from their plastic sheet, trimming them as close to the sheet as possible.

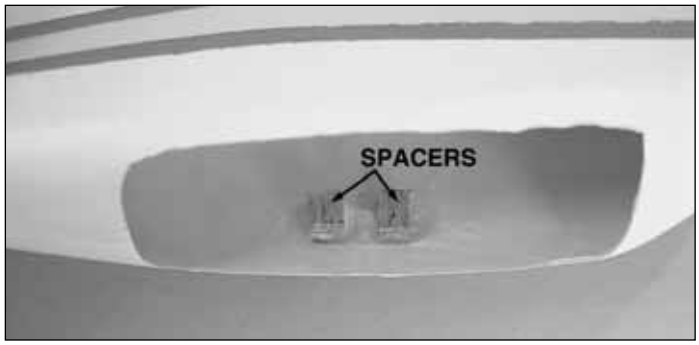
❏ ❏ 14. Remove the right wheel from the model. Fit the wheel pant parts together and trim an opening in the bottom for the wheel. Trim the wheel pant sides so that the wheel fits neatly inside, without being too tight or loose.

Use this photo for the next two steps.

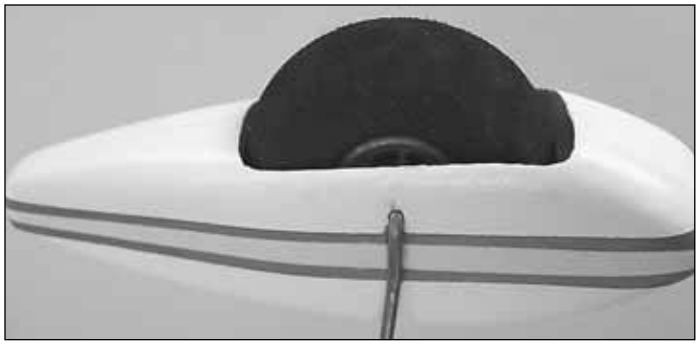


❏ ❏ 15. Glue the wheel pant sides together with thin CA. Cut some thin strips from leftover plastic and use them inside the wheel pant to reinforce the seams where the sides join. Fill the seams with filler. Bondo® automotive filler works well. Sand the filler and then paint the wheel pant as desired.

❏ ❏ 16. Drill a 3/32" [2.4mm] hole at the bottom of the groove for the landing gear wire.

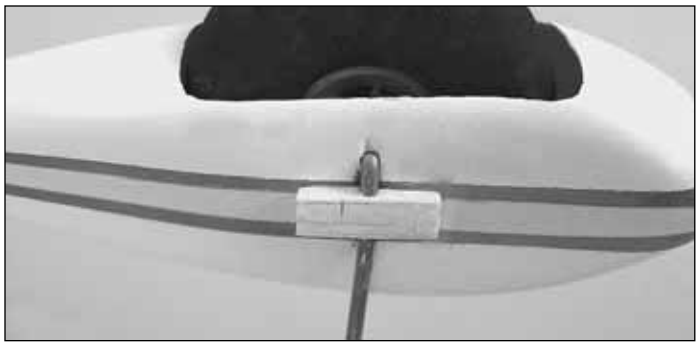


❏ ❏ 17. Cut two 1/4" [6.4mm] pieces from a leftover 1/8" x 1/8" [32. x 3.2mm] balsa stick. Glue these pieces on each side of the hole. These pieces will act as spacers to hold the wheel pant away from the wheel. Depending on the size of your wheel and how you cut the opening in the wheel pant, you may need to glue a shim piece to these spacers. The wheel should not rub against the side of the wheel pant.



❏ ❏ 18. Insert a wheel into the wheel pant and slide the wheel pant and wheel onto the landing gear wire. Secure the wheel to the landing gear wire with a 3/32" [2.4mm] wheel collar and 4-40 x 1/8" [3.2mm] set screw. Tighten the set screw so that it will mark the landing gear wire.

❏ ❏ 19. Remove the wheel collar, wheel and wheel pant from the landing gear wire. File a flat spot on the landing gear wire where the set screw mark is.



❏ ❏ 20. Install the wheel pant, wheel and wheel collar back on the landing gear wire and tighten the set screw. Check that the wheel spins freely on the wire. With the wheel pant aligned so that the wheel is centered in the opening, glue the wheel pant to the landing gear wire with CA. **DO NOT** use accelerator as it can weaken the plastic. For a more secure attachment you can glue a 3/4" [19mm] piece of 1/8" x 1/4" [3.2 x 6.4mm] balsa to the side of the wheel pant over the landing gear wire.

❏ 21. Return to step 13 and install the left wheel pant.

PREPARE THE MODEL FOR FLYING

Balance the Model

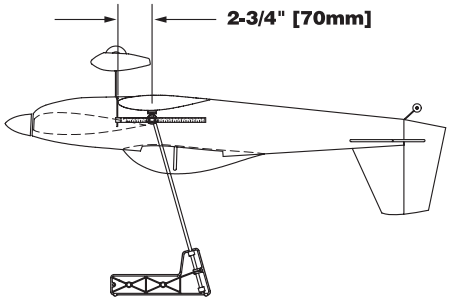
Note: This section is VERY important and must NOT be omitted! A model that is not properly balanced will be unstable and possibly unflyable.

❏ 1. Use a fine-point felt-tip pen or 1/8" [3mm] wide striping tape to accurately mark the balance point on the top of the wing on both sides of the fuselage. The balance point (C.G.) is shown on the fuse plan and is located 2-3/4" [70mm] back from the leading edge of the wing. This is the balance point at which your model should balance for your first flights. After the initial trim flights and when you become more acquainted with the RV-4 Park Flyer, you may wish to experiment by shifting the balance up to 1/4" [6mm] forward or 1/2" [12.7mm] 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 point aft makes the model more agile with a lighter "feel." In any case, start at the location we recommend. Do not at any time balance your model outside the recommended range.

❏ 2. Follow the instructions that came with your speed control to connect the speed control and servos to the receiver. Temporarily position the receiver inside the fuse and lay the antenna along the outside of the fuse over the stab.

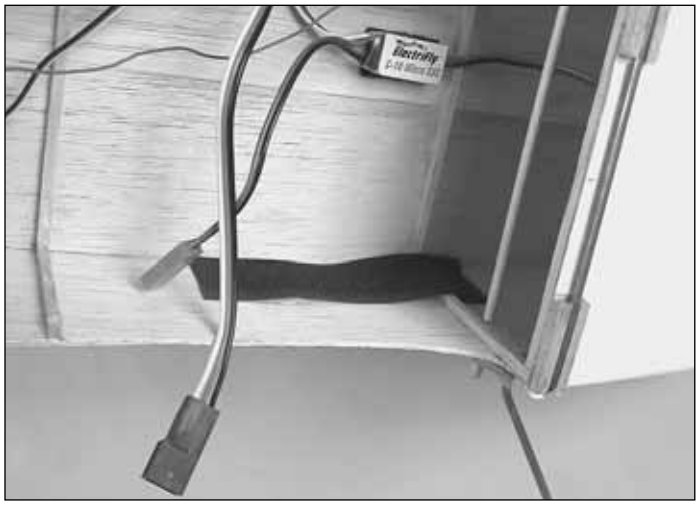
❏ 3. Mount the propeller and spinner to the gear drive using the prop adapter. If necessary, enlarge the spacer in the prop with a 3/16" [4.8mm] drill bit or a hobby knife with a #11 blade.

❏ 4. Mount the wing to the fuse with two #64 rubber bands (when it's time to fly the RV-4 Park Flyer, the wing will be mounted to the fuse with four #64 rubber bands, crisscrossing the last two.

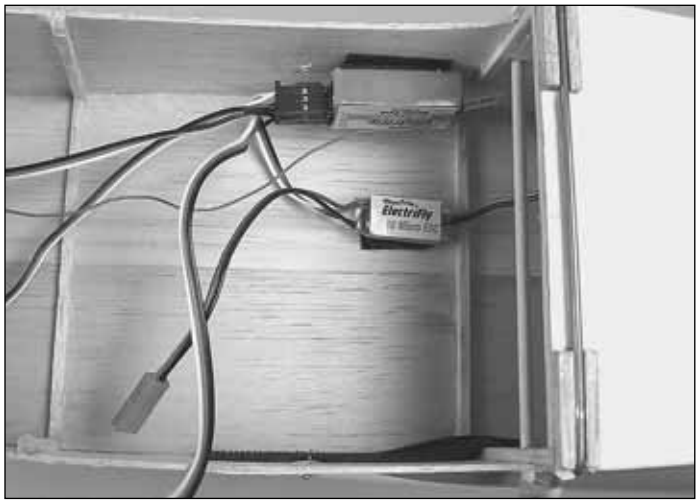


❏ 5. With the model ready to fly and all parts installed **except** for the battery, position the battery pack on the bottom of the wing. Lift the model at the balance point or place it on a Great Planes C.G. Machine. If the tail drops, the model is "tail heavy." If the nose drops, it is "nose heavy." Position the battery on the bottom of the wing so the model will balance. This is the location where the battery must be mounted inside the fuselage to balance the model, thus eliminating additional ballast (nose or tail weight). Because weight is critical to the flight performance of Park Flyers, it is best to balance the plane by mounting the battery in the optimum location. Minor C.G. changes can be made by changing the location of the receiver as well.

❑ 6. Mark the location of the battery on the outside of the fuselage.



❑ 7. Use Great Planes Hook and Loop Velcro® (GPMQ4480, not included), or another suitable method to mount the battery. Keep in mind that the battery should be readily removable to allow it to cool, and in case you have additional battery packs. **Note:** If using Velcro to mount the battery, reinforce the fuselage with two 3/4" [19mm] wide strips of leftover 1/16" [1.6mm] balsa. Additionally, only a couple of 1/4" [6mm] wide strips of Velcro are required to secure the battery–do not use a whole sheet as we did in the photo. Otherwise, you may damage the model while removing the battery!



❑ 8. Mount the receiver and speed control to one of the fuse sides or to the fuse top deck with Velcro or double-sided foam mounting tape. If the speed control has a switch, install it on the fuselage side.

❑ 9. Determine your method for extending the receiver antenna and routing it through the fuselage. Something as simple as drilling a 1/16" [1.6mm] hole through the bottom of the fuselage, guiding the antenna through, and taping it to the rear of the fuselage is acceptable. Be certain there is no way that the antenna can reach the propeller! Never coil-up the antenna inside the fuselage, nor cut it. The antenna is tuned to a certain length.

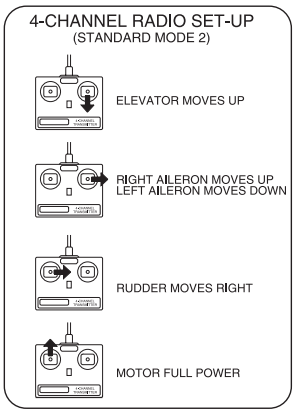
❑ 10. Recheck the C.G. to make certain the model balances correctly. If the battery is held in place with Velcro, you will be able to shift it slightly to fine tune the C.G.

❑ 11. Check the lateral balance of the model. With the wing level, carefully lift the model by the motor propeller shaft and the fin. Do this several times. If one wing always drops when you lift the model, that side is heavy. Balance the airplane by adding weight to the other wing tip. An airplane that has been laterally balanced will track better in loops and other maneuvers.

Set the Control Throws

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

Warning: Whenever the model is not being flown or set up, the battery should be disconnected.



❑ 2. Center the trims on the transmitter. If necessary, remove the servo arms from the servos, and then remount them so they are centered.

❏ 3. 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 in your transmitter to get the controls to respond correctly.

❏ 4. Now that the servos and the servo arms are centered, center the rudder and elevator by adjusting the position of the forward wire pushrod ends inside the pushrod tubes. Permanently glue the pushrod ends in the pushrod tubes with thin CA. Carefully bend the aileron torque rods or the pushrods until both ailerons are centered.

❏ 5. Operate the controls with the transmitter and use a ruler to measure the throws. 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 surface throws:

	High Rate	Low Rate
ELEVATOR:	5/8" [16mm] up	7/16" [11mm] up
	5/8" [16mm] down	7/16" [11mm] down
RUDDER:	1-1/2" [38mm] right	1" [25.4mm] right
	1-1/2" [38mm] left	1" [25.4mm] left
AILERONS:	7/16" [11mm] up	5/16" [8mm] up
	5/16" [8mm] down	1/4" [6.4mm] down

IMPORTANT: The RV-4 Park Flyer has been extensively tested. These are the control throws at which it flies best. If, after you become comfortable with the way the RV-4 Park Flyer 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."

❏ 6. Disconnect the receiver battery and switch off the transmitter.

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 page 37 and place it on or inside your model.

Ground Inspection

Before you fly 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 the inspection. Check to see that you have the radio 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) 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 your 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 your 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 with an assistant holding the model, using hand signals to show you what is happening. 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.

Lithium batteries do not need to be cycled.

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.

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 10-20 minutes between flights.

2. The ideal power source for the RV-4 Park Flyer system is an 8-cell (9.6 volt) battery pack. The use of a higher voltage battery may reduce motor life. The recommended motors are very high performance and care must be taken to prevent the motor from overheating. If a 3-cell Lithium Polymer battery is used, full power must be minimized as this will over-voltage the motor. For additional suggestions on motor care and lifespan, see the ***"Decisions You Must Make"*** section at the front of this manual.

Oil the Wheels

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

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 motors.

Use safety glasses when running motors.

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, screwdrivers) that may fall out of shirt or jacket pockets into the prop.

The electric motor and battery used in your RV-4 Park Flyer 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 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 RV-4 Park Flyer is a "Park Flyer," the **best** place to fly **any** 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 to cover you in case of a flying accident. The AMA address and telephone number are in the front of this manual.

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, be aware that there may be others like yourself who could be flying nearby. If both of your models happen to be on the same frequency, interference will likely cause one or both of the models to crash. An acceptable minimum distance between flying sites is five miles, so keep this in mind when searching for a flying site.

In addition to obstacles, it is important to be aware of people who may wander into the area once you begin flying. At AMA club flying sites it is a severe rule infraction to fly over others, and this is a good practice if flying elsewhere. R/C models tend to attract onlookers whose numbers can soon multiply, forming small, uncontrolled crowds. Onlookers pose two main problems: First is the danger of actually crashing your model into a person, causing injury. Second is the distraction of those who ask you questions while you are trying to concentrate on flying. To minimize or avoid this problem, have an assistant standing by who can spot people who wander into your flying site (so you can avoid flying over them) and who can perform "crowd control" if people start to gather.

FLYING

IMPORTANT: If you are an inexperienced modeler we strongly urge you to seek the assistance of a competent, experienced R/C pilot to check your model for airworthiness AND to teach you how to fly. No matter how stable or "forgiving" the RV-4 Park Flyer is, 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 and supervision until you have acquired the skills necessary for safe and fully controlled operation of your model.

Takeoff

We recommend flying the RV-4 Park Flyer when the wind is no greater than ten miles per hour. Less experienced flyers should fly the RV-4 Park Flyer only in calm (less than one mile per hour) conditions. Frequently, winds are calm in the early morning and early evening. Often these are the most enjoyable times to fly anyway!

Until you have the RV-4 Park Flyer 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. Turn on the receiver by following the instructions that came with your speed control.

IMPORTANT: Confirm that the transmitter operates the controls by moving the sticks and watching the surfaces respond. Occasionally, electric models have been launched with the transmitter turned off or the battery disconnected from the speed control!

When ready to launch, the assistant should hold the bottom of the fuselage behind the landing gear, then raise the model high above his head and point it **into the wind**. With the pilot *(that would be you!)* standing behind the plane, fully advance the throttle to start the motor. As soon as the motor is at full power, the hand launcher 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 and 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 you 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) 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 RV-4 Park Flyer 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 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 RV-4 Park Flyer 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 you fly into a rising air current.

Landing

Because the RV-4 Park Flyer 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, cut-off the motor power and make the "final" 180° 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 cut the 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 3 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.

Until you are able to accurately judge how far the RV-4 Park Flyer can glide, it may 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 RV-4 Park Flyer. If planning an ROG takeoff, find a paved surface.

After you have trimmed the RV-4 Park Flyer 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 begins to gain 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!

This model belongs to:

Name

Address

City, State, Zip

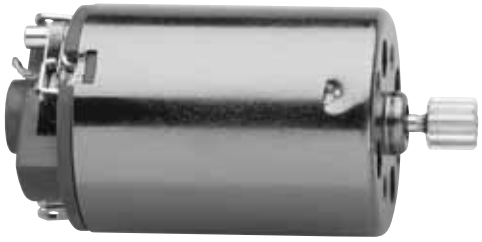
Phone number

AMA number

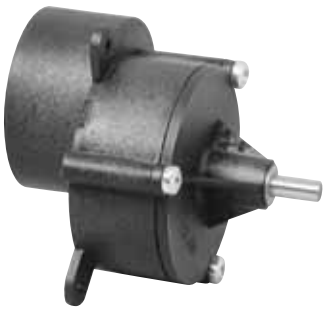
OTHER ITEMS AVAILABLE FROM GREAT PLANES

Great Planes RV-4
A natural for Sunday sport flying with a .40, the 54.65" span RV-4 can also be an agile aerobat with a .46. Either way, it's a fast "build" – and a good fit – for intermediates. Precision-formed ABS parts add detail with minimum work. Under the butyrate canopy, the cockpit includes rollover bar and instrument panels. Performance is realistic, too, with easy low-speed handling and dual aileron servos. Flaps can be added, and the nylon mount adjusts to fit a wide engine range. Requires a 2-stroke .40 – .52 or 4-stroke .48 – .70 engine, Pitts-style muffler, 4–5 channel radio w/5–7 servos (5 channel radio w/7 servos for optional flaps). **GPMA0180**

Great Planes ElectriFly™ C-20 Electronic Speed Control
Vibration-resistant SMT components in the C-20 Mini ESC save space and work with built-in BEC to reduce weight. A Safe Start feature prevents unintentional motor starts. High-frequency switching enhances smooth throttle response and minimizes waste heat production. Three ceramic capacitors minimize motor noise for better reception; a low-voltage cut-off reserves power for safe landings. The C-20 also offers the convenience of an ON/OFF radio switch and set-up LED, as well as a Schottky diode for efficiency, plus factory-installed Futaba® "J" and standard connectors; thermal shutdown; reverse polarity protection; and a 180-day warranty. **GPMM2020**



Great Planes ElectriFly S-280 Ferrite BB Motor
Compact electric park flyer models demand high power in an efficient package – and it's supplied by this 7.2–8.4V, speed 280-size motor from ElectriFly. Among its features are ball bearings, a single-wind armature, factory-installed capacitors, and a factory-installed 2-pin connector designed to plug into Great Planes ElectriFly C-5 or C-10 electronic speed controls. **GPMG0305**



Great Planes ElectriFly S-280 Gearbox
Developed for low noise and low maintenance, this Great Planes ElectriFly gearbox features a 5:1 gear ratio and uses standard bronze bushings for long-lasting sport use. A lightweight, fiber-reinforced, sealed gear case resists damage and keeps out dust and debris. Paired with a 280-size motor, it helps draw the maximum climbing power and flight times from every battery mAh. It uses a brass pinion gear for strength and a nylon main gear for quiet, low-friction operation. **GPMG0200**

ElectriFly by Great Planes Triton™ Peak Charger
Imagine a charger so versatile it can be used with lithium-ion and lead-acid batteries as effectively as NiCd and NiMH cells. A unit that can peak charge tiny park flyer packs and 24V car batteries alike. A charger that can discharge as well as charge, cycle packs from 1 to 10 times automatically, memorize peak and average battery voltages for each cycle – and constantly display battery capacity, voltage, current and time as each cycle progresses. Then, imagine that the charger, which can do all this, is about the size of a thick paperback book, and weighs just over a pound. The advanced computer technology in the Triton Peak Charger makes it possible to accomplish all this and more, through controls and menus so simple that programming is a breeze. For more information, log on at *www.electrifly.com* – and be amazed. 1-year warranty. **GPMM3150**

Great Planes C.G. Precision Aircraft Balancer™
Accurate balancing makes trainers more stable, low-wings more agile, and pylon planes move at maximum speed. The innovative C.G. Machine helps you achieve optimum balance easily, without measuring or marking–and without the errors that fingertip balancing can cause. You'll quickly pinpoint your plane's exact center of gravity. Then you'll know at a glance whether weight should be added, removed or relocated. The C.G. Machine works with kits and ARF models of any size and wingspan. Its slanted wire balancing posts support models weighing up to 40 pounds. **GPMR2400**

BUILDING NOTES

Kit Purchased Date: _____

Where Purchased:_____

Date Construction Started: _____

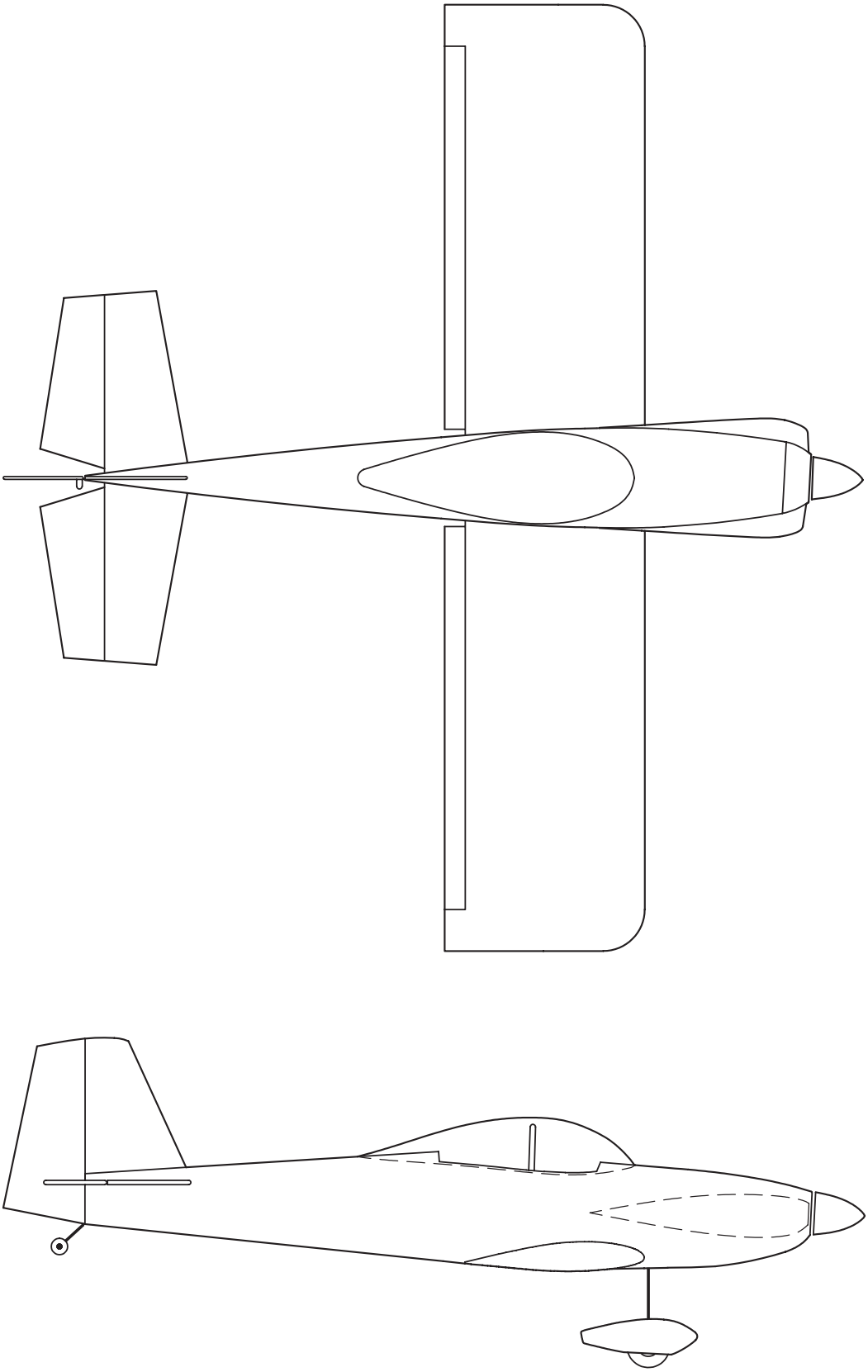
Date Construction Finished: _____

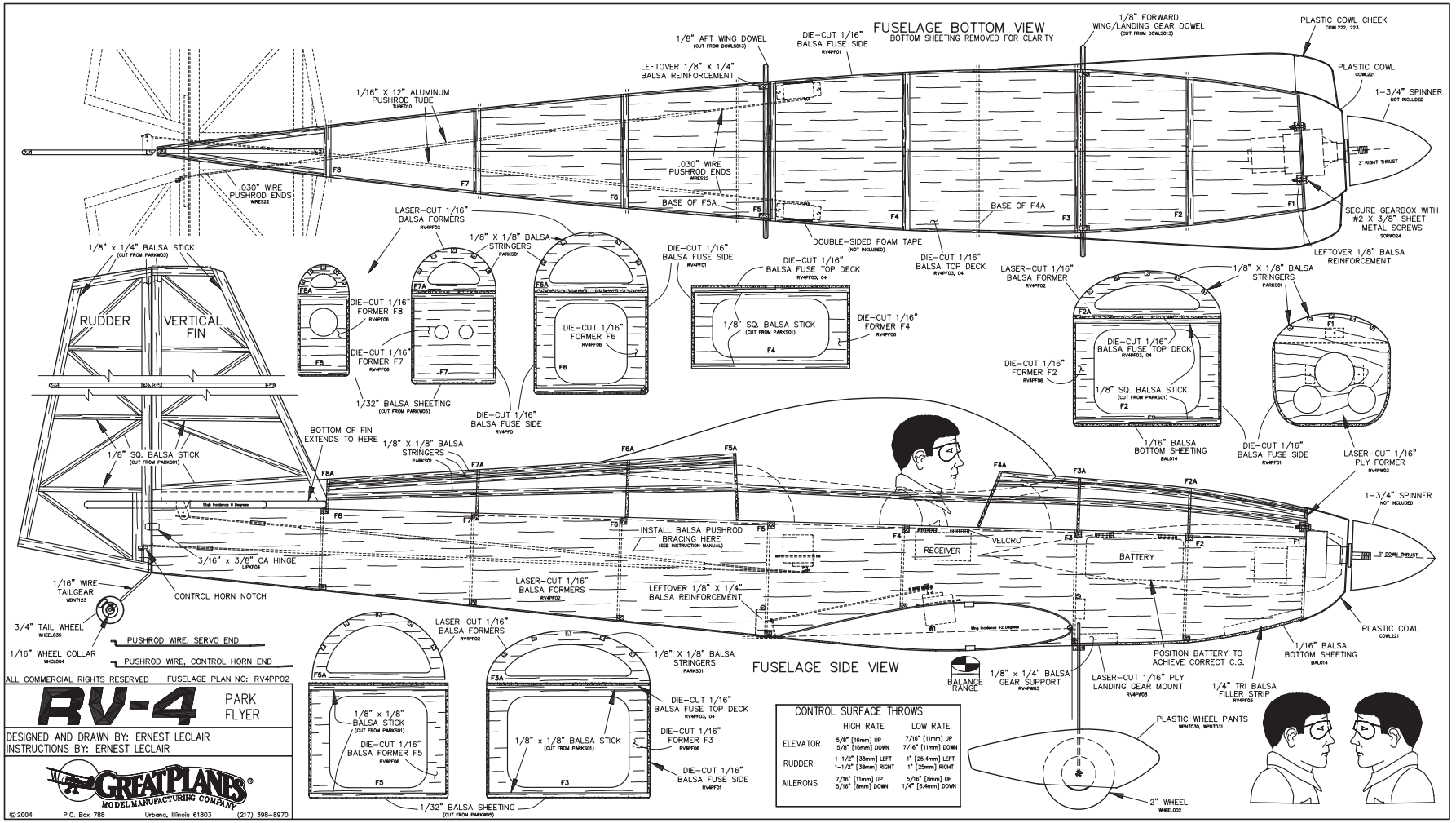
Finished Weight: _____

Date of First Flight: _____

FLIGHT LOG

TWO VIEW DRAWING
Use copies of this page to plan your trim scheme




FUSELAGE BOTTOM VIEW
BOTTOM SHEETING REMOVED FOR CLARITY
1/8" AFT WING DOWEL
(CUT FROM DOWLS013)
DIE-CUT 1/16" BALSA FUSE SIDE
RV4PF01
1/8" FORWARD WING/LANDING GEAR DOWEL
(CUT FROM DOWLS013)
PLASTIC COWL CHEEK
COWL222, 223
PLASTIC COWL
COWL221
1-3/4" SPINNER
NOT INCLUDED
3° RIGHT THRUST
LEFTOVER 1/8" X 1/4" BALSA REINFORCEMENT
1/16" X 12" ALUMINUM PUSHROD TUBE
TUBE010
.030" WIRE PUSHROD ENDS
WIRE022
BASE OF F5A
BASE OF F4A
DOUBLE-SIDED FOAM TAPE
(NOT INCLUDED)
DIE-CUT 1/16" BALSA TOP DECK
RV4PF03, 04
SECURE GEARBOX WITH #2 X 3/8" SHEET METAL SCREWS
SCRW024
LEFTOVER 1/8" BALSA REINFORCEMENT
LASER-CUT 1/16" BALSA FORMERS
RV4PF02
1/8" X 1/8" BALSA STRINGERS
PARK501
1/8" x 1/4" BALSA STICK
(CUT FROM PARK503)
RUDDER
VERTICAL FIN
DIE-CUT 1/16" FORMER F8
RV4PF06
DIE-CUT 1/16" FORMER F7
RV4PF06
DIE-CUT 1/16" FORMER F6
RV4PF06
1/32" BALSA SHEETING
(CUT FROM PARK905)
DIE-CUT 1/16" BALSA FUSE SIDE
RV4PF01
1/8" SQ. BALSA STICK
(CUT FROM PARK501)
DIE-CUT 1/16" FORMER F4
RV4PF06
LASER-CUT 1/16" BALSA FORMER
RV4PF02
DIE-CUT 1/16" BALSA FUSE TOP DECK
RV4PF03, 04
DIE-CUT 1/16" FORMER F2
RV4PF06
1/16" BALSA BOTTOM SHEETING
BAL014
DIE-CUT 1/16" BALSA FUSE SIDE
RV4PF01
LASER-CUT 1/16" PLY FORMER
RV4PW03
BOTTOM OF FIN EXTENDS TO HERE
1/8" SQ. BALSA STICK
(CUT FROM PARK501)
3/16" x 3/8" CA HINGE
LPKP04
INSTALL BALSA PUSHROD BRACING HERE
(SEE INSTRUCTION MANUAL)
RECEIVER
VELCRO
BATTERY
1/16" WIRE TAILGEAR
WIRT123
CONTROL HORN NOTCH
3/4" TAIL WHEEL
WHEL035
1/16" WHEEL COLLAR
WHCL004
PUSHROD WIRE, SERVO END
PUSHROD WIRE, CONTROL HORN END
FUSELAGE SIDE VIEW
POSITION BATTERY TO ACHIEVE CORRECT C.G.
BALANCE RANGE
1/8" x 1/4" BALSA GEAR SUPPORT
RV4PW03
LASER-CUT 1/16" PLY LANDING GEAR MOUNT
RV4PW03
1/4" TRI BALSA FILLER STRIP
RV4PF05
PLASTIC WHEEL PANTS
WPNT030, WPNT031
2" WHEEL
WHEEL002
1/8" x 1/8" BALSA STICK
(CUT FROM PARK501)
DIE-CUT 1/16" BALSA FORMER F5
RV4PF06
1/8" x 1/8" BALSA STICK
(CUT FROM PARK501)
DIE-CUT 1/16" FORMER F3
RV4PF06
1/32" BALSA SHEETING
(CUT FROM PARK905)
CONTROL SURFACE THROWS
HIGH RATE
LOW RATE
ELEVATOR
5/8" [16mm] UP
5/8" [16mm] DOWN
7/16" [11mm] UP
7/16" [11mm] DOWN
RUDDER
1-1/2" [38mm] LEFT
1-1/2" [38mm] RIGHT
1" [25.4mm] LEFT
1" [25mm] RIGHT
AILERONS
7/16" [11mm] UP
5/16" [8mm] DOWN
5/16" [8mm] UP
1/4" [6.4mm] DOWN
ALL COMMERCIAL RIGHTS RESERVED
FUSELAGE PLAN NO: RV4PP02
RV-4
PARK FLYER
DESIGNED AND DRAWN BY: ERNEST LECLAIR
INSTRUCTIONS BY: ERNEST LECLAIR
GREAT PLANES
MODEL MANUFACTURING COMPANY
© 2004
P.O. Box 788
Urbana, Illinois 61803
(217) 398-8970

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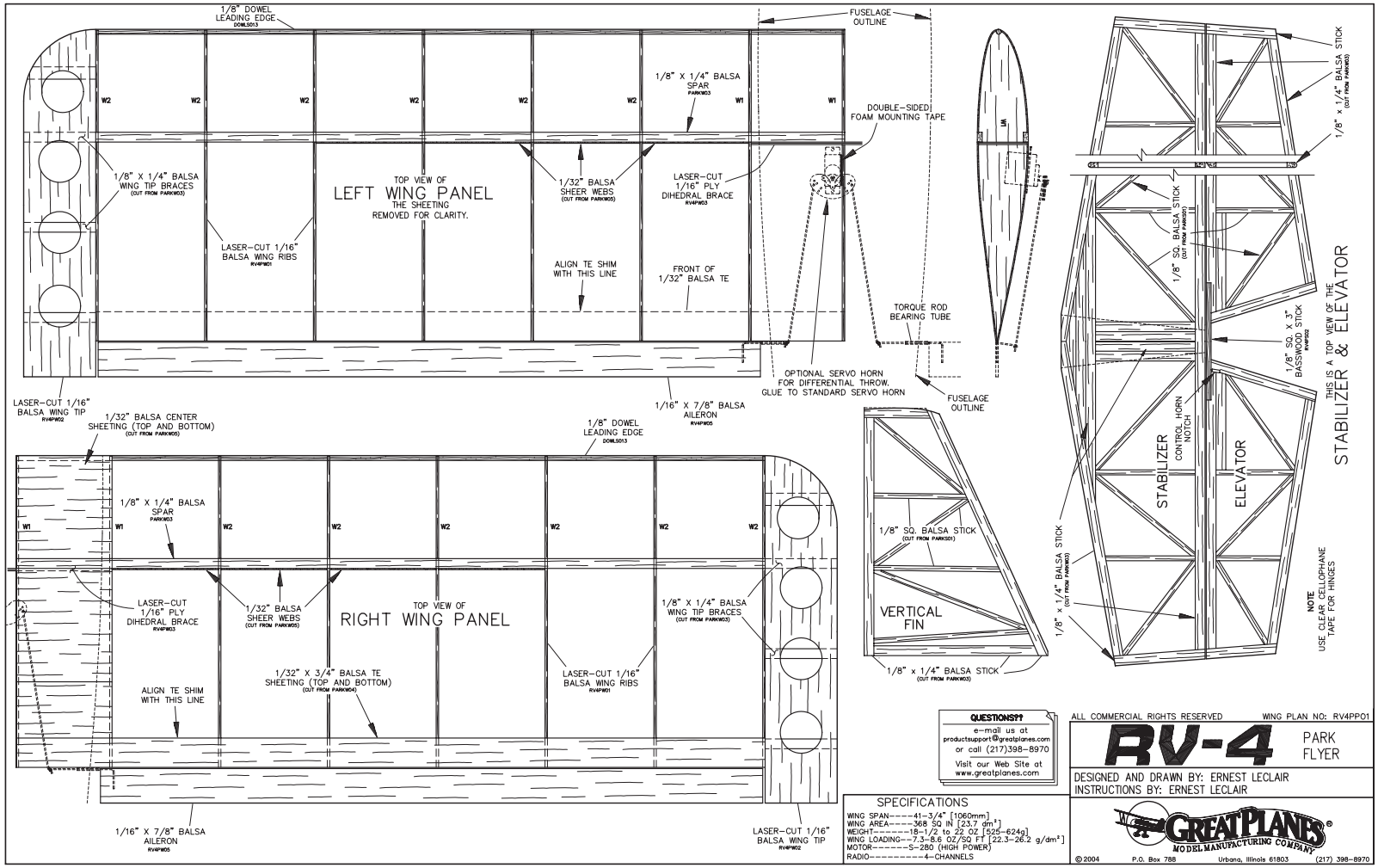
1/8" DOWEL LEADING EDGE
DOWLS013
FUSELAGE OUTLINE
1/8" X 1/4" BALSA SPAR
PARKW03
DOUBLE-SIDED FOAM MOUNTING TAPE
1/8" X 1/4" BALSA WING TIP BRACES
(CUT FROM PARKW03)
TOP VIEW OF
LEFT WING PANEL
THE SHEETING
REMOVED FOR CLARITY.
1/32" BALSA SHEER WEBS
(CUT FROM PARKW05)
LASER-CUT 1/16" PLY DIHEDRAL BRACE
RV4PW03
LASER-CUT 1/16" BALSA WING RIBS
RV4PW01
ALIGN TE SHIM WITH THIS LINE
FRONT OF 1/32" BALSA TE
TORQUE ROD BEARING TUBE
OPTIONAL SERVO HORN FOR DIFFERENTIAL THROW. GLUE TO STANDARD SERVO HORN
FUSELAGE OUTLINE
LASER-CUT 1/16" BALSA WING TIP
RV4PW02
1/32" BALSA CENTER SHEETING (TOP AND BOTTOM)
(CUT FROM PARKW05)
1/16" X 7/8" BALSA AILERON
RV4PW05
1/8" DOWEL LEADING EDGE
DOWLS013
1/8" X 1/4" BALSA SPAR
PARKW03
LASER-CUT 1/16" PLY DIHEDRAL BRACE
RV4PW03
1/32" BALSA SHEER WEBS
(CUT FROM PARKW05)
TOP VIEW OF
RIGHT WING PANEL
1/8" X 1/4" BALSA WING TIP BRACES
(CUT FROM PARKW03)
ALIGN TE SHIM WITH THIS LINE
1/32" X 3/4" BALSA TE SHEETING (TOP AND BOTTOM)
(CUT FROM PARKW04)
LASER-CUT 1/16" BALSA WING RIBS
RV4PW01
1/16" X 7/8" BALSA AILERON
RV4PW05
LASER-CUT 1/16" BALSA WING TIP
RV4PW02
1/8" SQ. BALSA STICK
(CUT FROM PARKW01)
VERTICAL FIN
1/8" x 1/4" BALSA STICK
(CUT FROM PARKW03)
1/8" x 1/4" BALSA STICK
(CUT FROM PARKW03)
1/8" SQ. BALSA STICK
(CUT FROM PARKW01)
1/8" SQ. X 3" BASSWOOD STICK
RV4PW02
THIS IS A TOP VIEW OF THE
STABILIZER & ELEVATOR
STABILIZER
CONTROL HORN NOTCH
ELEVATOR
NOTE
USE CLEAR CELLOPHANE TAPE FOR HINGES
QUESTIONS??
e-mail us at productsupport@greatplanes.com
or call (217)398-8970
Visit our Web Site at www.greatplanes.com
SPECIFICATIONS
WING SPAN-----41-3/4" [1060mm]
WING AREA-----368 SQ IN [23.7 dm²]
WEIGHT-------18-1/2 to 22 OZ [525-624g]
WING LOADING---7.3-8.6 OZ/SQ FT [22.3-26.2 g/dm²]
MOTOR-------S-280 (HIGH POWER)
RADIO----------4-CHANNELS
ALL COMMERCIAL RIGHTS RESERVED
WING PLAN NO: RV4PP01
RV-4
PARK FLYER
DESIGNED AND DRAWN BY: ERNEST LECLAIR
INSTRUCTIONS BY: ERNEST LECLAIR
GREAT PLANES
MODEL MANUFACTURING COMPANY
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