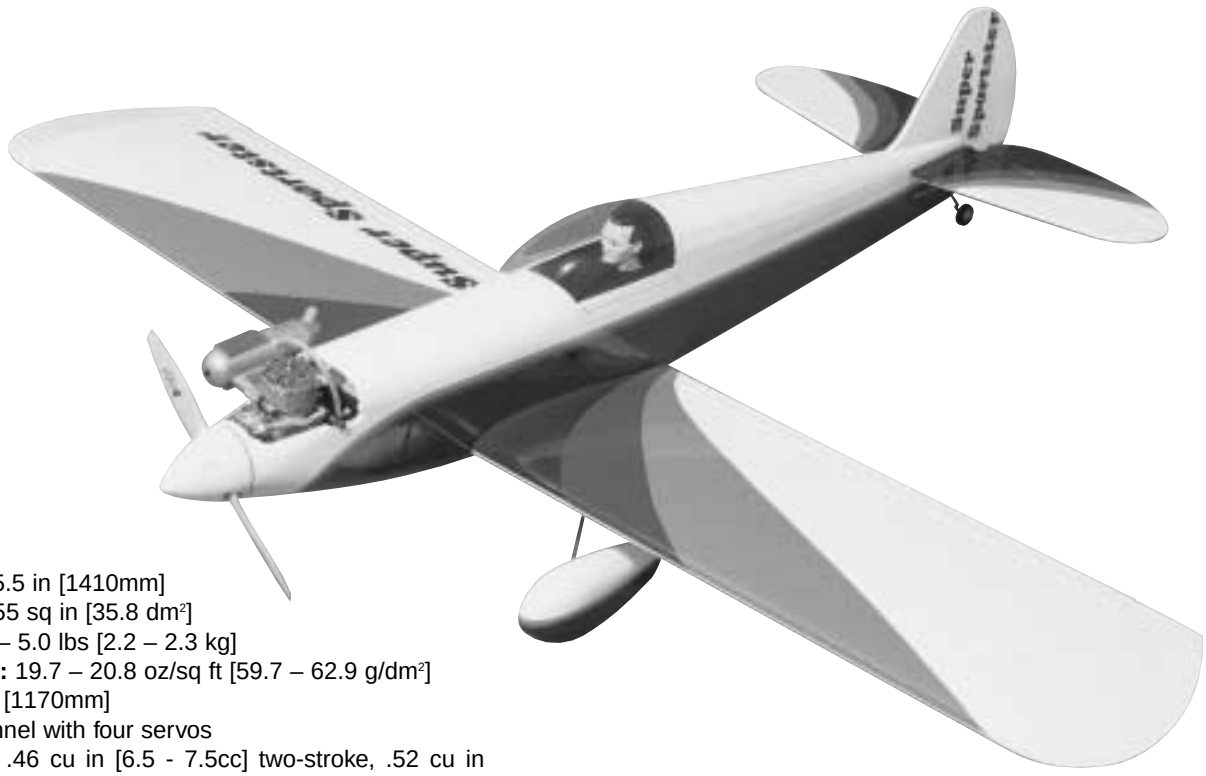
Super Sportster™ 40 MK II ARF

INSTRUCTION MANUAL



Wingspan: 55.5 in [1410mm]
Wing area: 555 sq in [35.8 dm²]
Weight: 4.75 – 5.0 lbs [2.2 – 2.3 kg]
Wing loading: 19.7 – 20.8 oz/sq ft [59.7 – 62.9 g/dm²]
Length: 46 in [1170mm]
Radio: 4-channel with four servos
Engine: .40 - .46 cu in [6.5 - 7.5cc] two-stroke, .52 cu in [8.5cc] four-stroke

WARRANTY

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

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

If the 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.

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
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airsupport@greatplanes.com

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INTRODUCTION

Congratulations and thank you for purchasing the Great Planes Super Sportster™ 40 MK II ARF. If you're relatively new to R/C airplanes, you may not have heard, but the Super Sportster design has been around for several years. It has been so successful, in fact, that it has made its own place in model airplane history. No matter what your primary interest or flight skills, because of its versatility, every modeler who has mastered the basics of R/C flight should own a Super Sportster. It can be flown fast like a pylon racer, relatively slow like a trainer, and of course, the Super Sportster 40 MK II ARF can perform just about all the aerobatics you can throw at it – it's the perfect model!

If you've already mastered a high-wing trainer but haven't yet flown a low-wing sport model, we suggest a couple of "check-flights" with an experienced modeler standing by to assist. There's nothing tricky about flying the Super Sportster, and you'll catch on quickly, but it doesn't have the self-righting characteristics of a basic high-wing trainer.

For the latest technical updates or manual corrections for this model, visit the web site listed below and select the Great Planes Super Sportster 40 MK II ARF. If there is new technical information or changes to this ARF, a "tech notice" box will appear in the upper left corner of the page.

http://www.greatplanes.com/airplanes/index.html

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

1. Your Great Planes Super Sportster 40 MK II ARF should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Super Sportster, if not assembled and operated correctly, 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, and a correctly sized engine and components (fuel tank, wheels, etc.) throughout the building process.

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 clevises or other 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.

8. While this kit has been flight tested to exceed normal use, if the plane will be used for **extremely** high stress flying, such as actual racing, or if the model is to be flown with an engine larger than the recommended range, the modeler is responsible for taking steps to reinforce the high stress points.

We, as the kit manufacturer, provide you with a top quality kit and 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 the instructions to end up with a well-built model that is straight and true.

If you have not flown a low-wing model with ailerons before, we recommend that you get the assistance of an experienced pilot in your R/C club for 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 telephone number below:

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9252
Tele. (800) 435-9262
Fax (765) 741-0057

Or via the Internet at: http://www.modelaircraft.org

ENGINE RECOMMENDATIONS

The recommended engine size range for the Great Planes Super Sportster 40 MK II ARF is .40 – .46 cu in [6.5 - 7.5cc] two-stroke or .52 cu in [8.5cc] four-stroke. The prototype was first tested with an O.S.® MAX .46 FX. If you like to fly fast, this is the ideal engine. With a hot .46, at 4.75 lbs the Super Sportster 40 MK II ARF was fast, yet remained solid, stable and predictable. Later, the Sportster was test-flown with an O.S. .52 four-stroke. If you prefer four-strokes, rest assured, the .52 provides just as much fun. In fact, with a 12 x 6 prop, the vertical performance with the .52 was slightly better than the .46. We did consider doing some flight testing with a .70 four-stroke, and although the Super Sportster 40 kit can be flown with a .70, this ARF version has a lighter airframe, so a .70 would really be just too much (not to mention the additional tail weight that would be required to balance the model!).

Note: If using a "short" engine such as an O.S. MAX LA .40 – .46, you will have to make an engine mount spacer from 1/4" plywood (not supplied) as shown on page 23 in the manual.

ADDITIONAL ITEMS REQUIRED

Hardware & Accessories

This is the list of hardware and accessories required to finish the Great Planes Super Sportster 40 MK II ARF. Order numbers are provided in parentheses.

- ❑ Engine and suitable propellers
- ❑ 2 oz. Pro™ CA (Thin, GPMR6003)
- ❑ 4-channel radio with 4 standard servos
- ❑ 6" [150mm] Servo extension (to connect aileron servo to receiver, HCAM2701 for Futaba®)
- ❑ 3' Medium fuel tubing (GPMQ4131)
- ❑ R/C foam rubber (1/4" [6mm] - HCAQ1000, or 1/2" [13mm] - HCAQ1050)
- ❑ 2" [50mm] (1/6 scale) Pilot figure such as a William's Brother's #180 racing pilot (WBRQ2480) or a #184 Sportsman pilot (WBRQ2484)
- ❑ Black paint for cockpit
- ❑ 1/4" [6mm] White Kwik Stripe striping tape (for canopy trim, GPMQ1610)

Adhesives & Building Supplies

In addition to common household tools and hobby tools, this is a "short list" of the most important items required to build this model. ***Great Planes Pro*** *CA and Epoxy glue is recommended.*

- ❑ 1/2 oz. Thin Pro CA (GPMR6001)
- ❑ 1/2 oz. Medium Pro CA (GPMR6007)
- ❑ 30-Minute Epoxy (GPMR6047)
- ❑ English drill bit sizes: 1/16", 3/32", 1/8", 5/32", 3/16"

-or-

- ❑ Metric drill bit sizes: 1.6mm, 2.4mm, 3.2mm, 4mm, 4.8mm
- ❑ Hobbico® Servo Horn drill (or #48 or 5/64") [2mm] (HCAR0698)

❏ 4-40 tap and #43 (or 3/32") [2.4mm] drill
-or-
❏ Great Planes 4-40 tap and drill set (GPMR8101)
❏ White or clear RTV (room temperature vulcanizing) silicone sealer
❏ Masking tape

Optional Supplies & Tools

Here is a list of additional optional items we used to assemble this model.

❏ CA activator (GPMR6034)
❏ Great Planes 3/32" and 7/64" long-handle hex wrenches (GPMR8002, GPMR8003) Switch and charge jack mounting set (GPMM1000)
❏ 21st Century® sealing iron (COVR2700)
❏ 21st Century iron cover (COVR2702)
❏ Top Flite® Trim Seal Tool™ (TOPR2200)
❏ Microballoons (TOPR1090)
❏ Builders Triangle Set (HCAR0480)
❏ Dead Center™ engine mount hole locator (GPMR8130)
❏ Great Planes Threadlocker™ thread locking compound (GPMR6060)
❏ K & S #801 Kevlar thread (for stab alignment K+SR4575)
❏ Denatured Alcohol (for epoxy clean up)
❏ Curved Tip Canopy Scissors for trimming plastic (HCAR0667)
❏ R/C-56 Canopy Glue (JOZR5007)
❏ Great Planes CG Machine™ (GPMR2400)
❏ Great Planes AccuThrow™ Deflection Gauge (for measuring control throws, GPMR2405)
❏ Top Flite Precision Magnetic Prop Balancer™ (TOPQ5700)

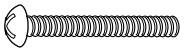
IMPORTANT BUILDING NOTES

• There are two types of screws used in this kit:

Sheet metal screws are designated by a number and a length. **For example #6 x 3/4" [19mm].**

This is a number six screw that is 3/4" [19mm] long.

Machine screws are designated by a number, threads per inch, and a length. **For example 4-40 x 3/4" [19mm].**



This is a number four screw that is 3/4" [19mm] long with forty threads per inch.

• When you see the term ***test fit*** in the instructions, it means that you should first position the part on the assembly without using any glue, then slightly modify or custom fit the part as necessary for the best fit.

• Whenever the term ***glue*** is written you should rely upon your experience to decide what type of glue to use. When a specific type of adhesive works best for that step, the instructions will make a recommendation.

• Whenever just ***epoxy*** is specified you may use ***either*** 30-minute (***or*** 45-minute) epoxy ***or*** 6-minute epoxy. When 30-minute epoxy is specified it is **highly** recommended that you use only 30-minute (or 45-minute) epoxy, because you will need the working time and/or the additional strength.

• **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.

• The Great Planes Super Sportster 40 MK II ARF is factory-covered with Top Flite MonoKote® film. Should repairs ever be required, MonoKote can be patched with additional MonoKote purchased separately. MonoKote is packaged in six-foot rolls, but some hobby shops also sell it by the foot. If only a small piece of MonoKote is needed for a minor patch, perhaps a fellow modeler would give you some. MonoKote is applied with a model airplane covering iron, but in an emergency a regular iron could be used. A roll of MonoKote includes full instructions for application. Following are the colors used on this model and order numbers for six foot rolls.

Jet White	TOPQ0204
Orange	TOPQ0202
Red	TOPQ0201
Sapphire Blue	TOPQ0226

ORDERING REPLACEMENT PARTS

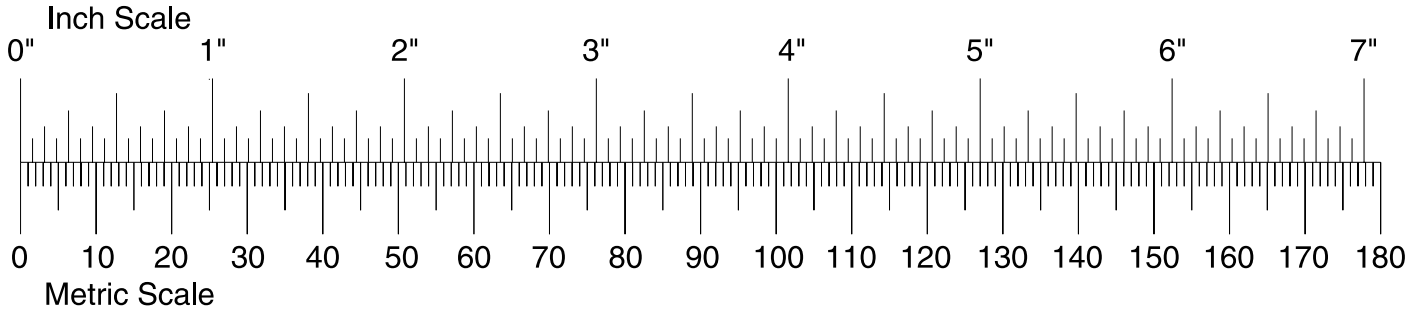
To order replacement parts for the Great Planes Super Sportster 40 MK II ARF, use the order numbers in the **Replacement Parts List** that follows. Replacement parts are available only as listed. Not all parts are available separately (an aileron cannot be purchased separately, but is only available with the wing kit). Replacement parts are not available from Product Support, but can be purchased from hobby shops or mail order/Internet order firms. Hardware items (screws, nuts, bolts) are also available from these outlets. If you need assistance locating a dealer to purchase parts, visit **www.greatplanes.com** and click on "Where to Buy." If this kit is missing parts, contact **Great Planes Product Support.**

Replacement Parts List

Order Number	Description	How to Purchase
	Missing pieces	Contact Product Support
	Instruction manual	Contact Product Support
	Full-size plans	Not available
GPMA2134	Wing Set	Contact Your Hobby Supplier to Purchase These Items
GPMA2135	Fuse Set	
GPMA2136	Tail Set	
GPMA2139	Wheel Pants	
GPMA2137	Canopy	
GPMA2138	Landing Gear (L&R)	

Metric Conversions

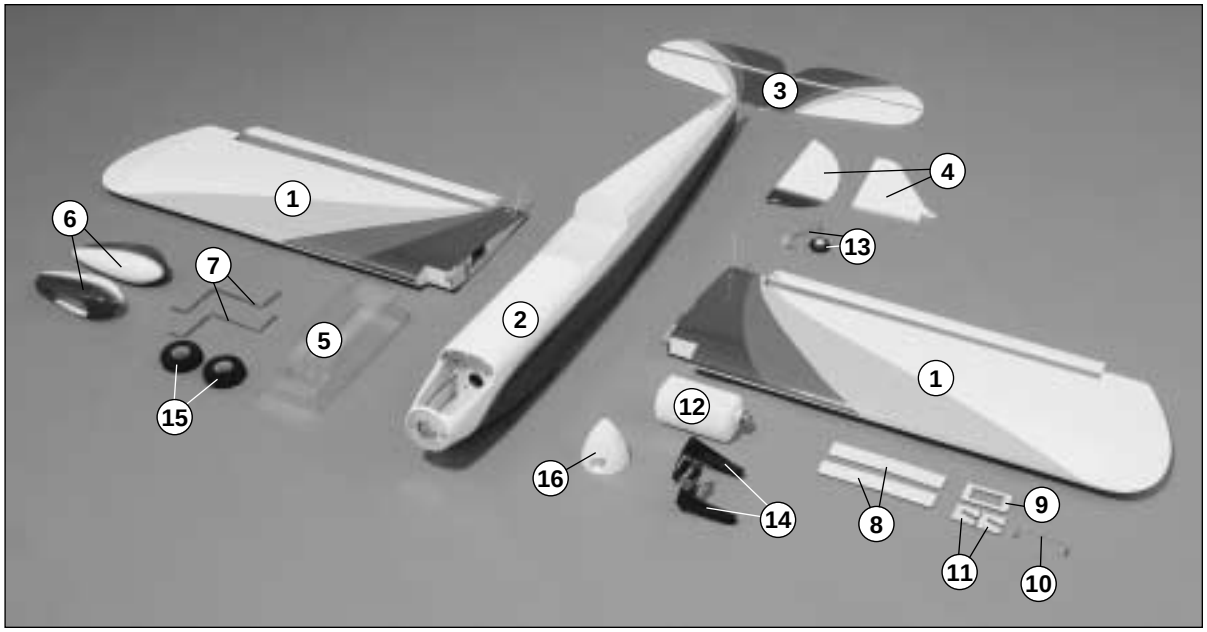
1/64"	=	.4 mm	3/8"	=	9.5 mm	12"	=	304.8 mm
1/32"	=	.8 mm	1/2"	=	12.7 mm	18"	=	457.2 mm
1/16"	=	1.6 mm	5/8"	=	15.9 mm	21"	=	533.4 mm
3/32"	=	2.4 mm	3/4"	=	19.0 mm	24"	=	609.6 mm
1/8"	=	3.2 mm	1"	=	25.4 mm	30"	=	762.0 mm
5/32"	=	4.0 mm	2"	=	50.8 mm	36"	=	914.4 mm
3/16"	=	4.8 mm	3"	=	76.2 mm			
1/4"	=	6.4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



KIT CONTENTS

Before starting to build, use the **Kit Contents** list to take an inventory of this kit to make sure it is complete, and inspect the parts to make sure they are of acceptable quality. If any parts are missing or are not of acceptable quality, or if you need assistance with assembly, contact **Great Planes Product Support.** When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list on this page

Great Planes Product Support:
Phone: (217) 398-8970
Fax: (217) 398-7721
E-mail: airsupport@greatplanes.com



Kit Contents (Photographed)

1. R & L Wing panels w/ailerons
2. Fuselage
3. Stab w/elevators
4. Fin w/rudder
5. Canopy
6. (2) Painted wheel pants
7. (2) Main landing gear wires
8. (2) 1/8" [3.2mm] Plywood wing joiners
9. Aileron servo mount
10. Elevator joiner wire
11. (2) 1/8" [3.2mm] Plywood inner wheel pant mounts
12. Fuel tank w/hardware
13. Tail gear w/tail wheel
14. Great Planes .40 – .70 adjustable engine mount
15. (2) 2-3/4" [70mm] Wheels
16. Spinner

Kit Contents (Not Photographed)

(4) 6-32 x 3/4" [19mm] SHCS (socket-head cap screws, engine mount to firewall)
(4) #6 Lock washers (engine mount to firewall)
(4) #6 Flat washers (engine mount to firewall)
(4) 4-40 x 3/4" [19mm] SHCS (engine to mount)
(4) #4 Lock washers (engine to mount)
(4) #4 Flat washers (engine mount)
(2) Tree of 4 nylon straps (wheel pants-2, landing gear-4)
(8) #2 x 1/2" [13mm] Screws (landing gear straps)
(4) #2 x 3/8" [9.5mm] Screws (wheel pant straps)
(4) 5/32" [4mm] Wheel collars (main wheels)
(4) 6-32 Set screws (for wheel collars)
(1) Prebent tail gear wire w/nylon bearing mount
(1) 1" [25mm] Tail wheel
(1) 3/32" [2.4mm] Wheel collar (tail wheel)
(1) 4-40 Set screw (tail wheel)
(4) Faslinks (ailerons-2, elevator, rudder)
(5) Nylon clevis (ail.-2, throt, rudd, elev)
(5) Silicone retainers (clevises)
(2) 4-40 Nylon torque rod horn (ailerons)
(2) Large control horns (elev., rudd.)
(4) 2-56 x 1/2" [13mm] Phillips screws (control horns)
(1) Brass body screw-lock connector (throttle servo)
(1) 4-40 x 1/4" [6mm] SHCS (screw-lock connector)
(1) Nylon retainer (screw-lock connector)
(2) .074" x 36" [2 x 910mm] Threaded one-end pushrod wire (elevator, rudder)
(2) .074" x 6" [2 x 150mm] Threaded one-end pushrod wire (ailerons)
(1) .074" x 17-1/2" [2 x 445mm] Threaded one-end pushrod wire (throttle)
(1) 3/16" x 12" [4.8 x 300mm] Guide tube (throttle)
(1) 2" x 9" [50 x 230mm] CA hinge strip
(2) 1/4-20 x 2" [50mm] Nylon wing mounting bolts
(2) 3/16" X 36" [4.8 x 910mm] Pushrod guide tubes (preinstalled, elevator/rudder)
(2) 1/4-20 Blind nuts (preinstalled, wing mount)
(1) Decal sheet

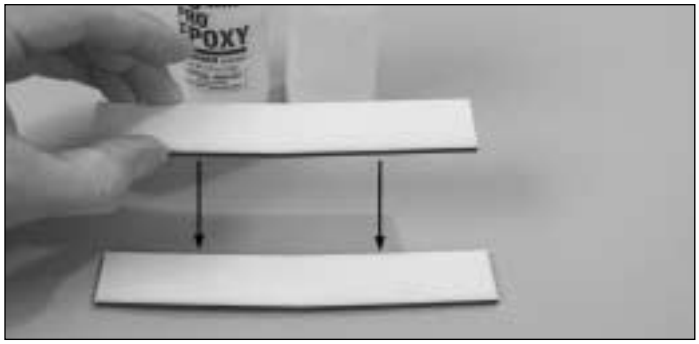
PREPARATIONS

❑ 1. If you have not yet done so already, remove the major parts of the kit from the box (wings, fuse, wheel pants, cowl, tail parts, etc.) and inspect them for damage. If any parts are damaged or missing, contact Product Support at the address or telephone number on page 6.

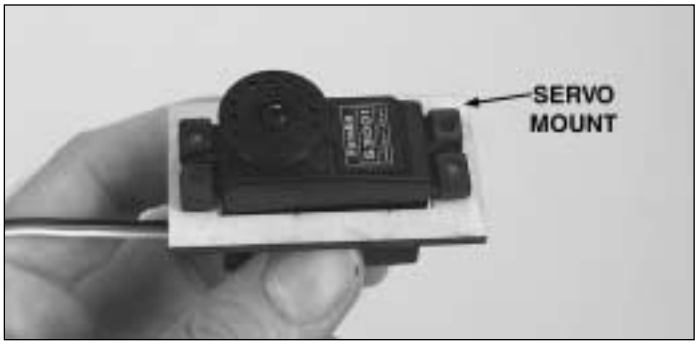
❑ 2. Remove the masking tape and separate the ailerons from the wing, the rudder from the fin and the elevators from the stab. Where necessary, use a covering iron with a covering sock to tighten the covering that may have loosened during storage or from removing the masking tape. Apply pressure over sheeted areas to **thoroughly** bond the covering to the wood.

BUILD THE WING

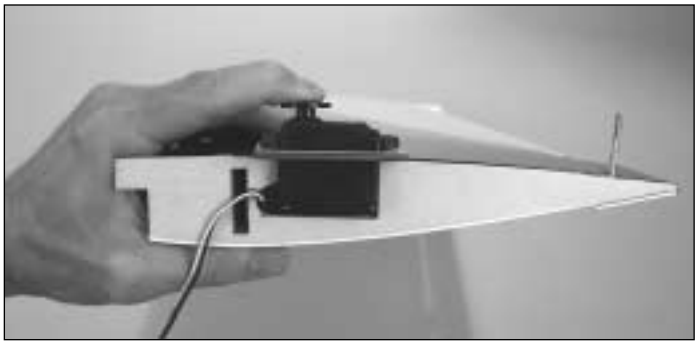
Join the Wing



❑ 1. Use epoxy to glue both 1/8" [3.2mm] plywood **wing joiners** together.



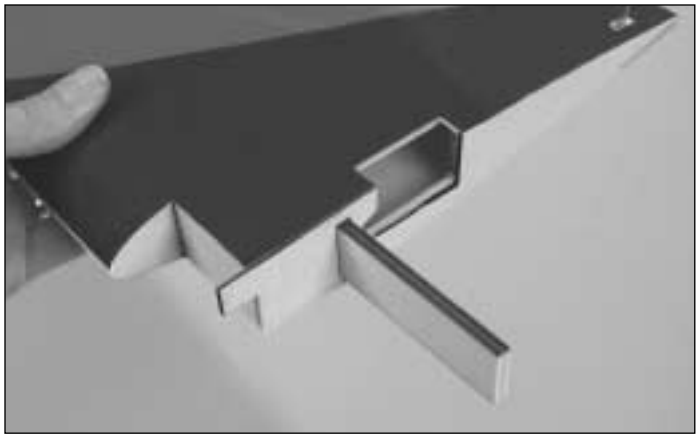
❑ 2. Test fit the aileron servo in the 1/8" [3.2mm] plywood **aileron servo mount.** If necessary, trim the opening in the mount to accommodate the servo.



❑ ❑ 3. Cut the sheeting over the aileron servo mounting area in the right wing panel to accommodate the servo. As you can see in following photos, the servo will be centered in the wing after the two panels are joined. Test fit the servo and the ply servo mount to the wing panel. Trim the center rib as necessary to accommodate the servo and the servo wire.

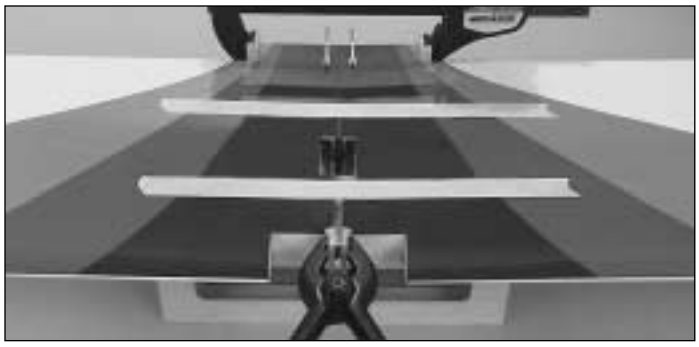
❑ 4. Prepare the other wing panel the same way.

❑ 5. Trim the covering from the ribs on the end of both wing panels. This is easily done with a bar sander and medium-grit sandpaper as shown.



❏ 6. Test fit the wing joiner in one wing panel, then the other. Be certain the joiner is installed upright (the joiner is angled upward for wing dihedral). Test fit the wing panels together with the joiner. Make certain both panels fit well. Make adjustments where required (it is possible that the joiner may require slight sanding to remove slivers or excess epoxy that may interfere with the fit).

❏ 7. Once satisfied with the fit of the joiner and the wing, **thoroughly** coat the inside of both wing panels where the joiner fits and one half of the joiner with 30-minute epoxy. Making certain the joiner is upright, insert the coated end into one of the wing panels. Coat the other end of the joiner with the epoxy and join the other wing panel.

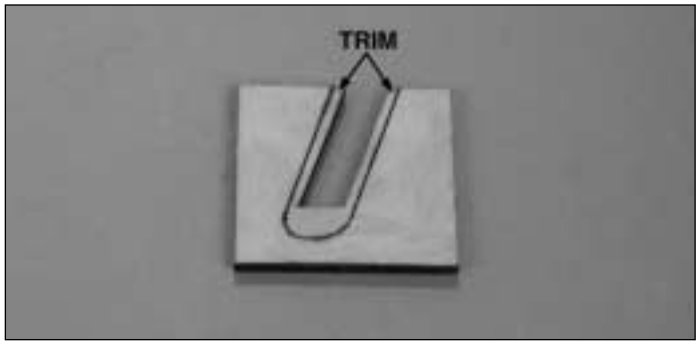


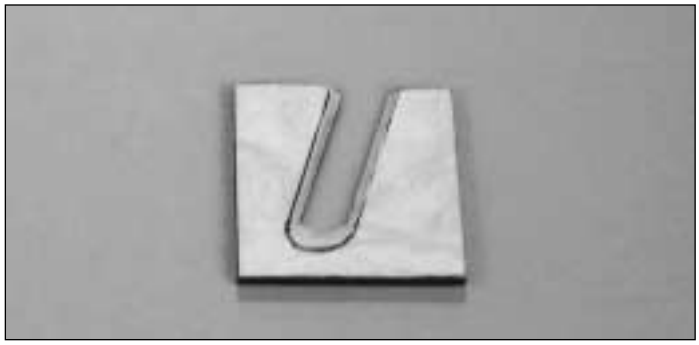
❏ 8. Wipe away epoxy that squeezes out from between the wing halves. Use clamps and masking tape to hold the wing together as shown. If you don't have a clamp large enough for the rear, use rubber bands instead. Be certain the joining ribs on the ends of the wing panels accurately align. Again, wipe away excess epoxy and do not disturb the wing until the epoxy has fully hardened.

While the epoxy on the wing is hardening, go ahead and work on the landing gear.

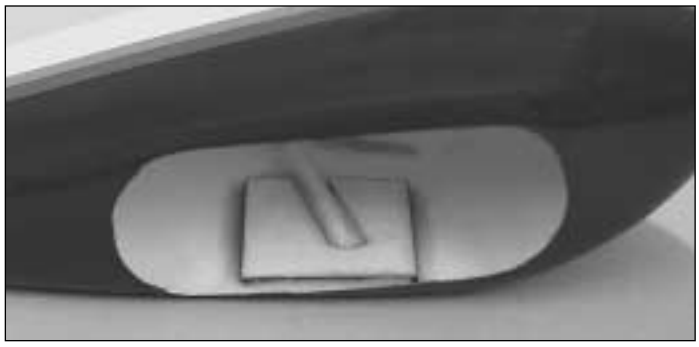
Assemble the Landing Gear

Although only the right wheel pant is shown in the photos, both pants may be assembled at the same time.



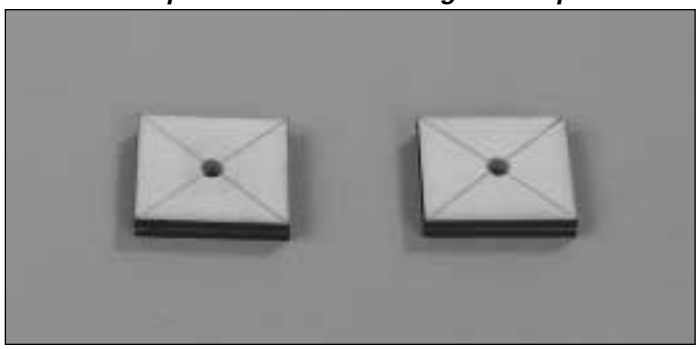


❏ ❏ 1. Refer to the photo at step 2 to see how the 1/8" [3.2mm] plywood **inner wheel pant mount** fits inside the right wheel pant. Use a hobby knife to trim a bevel along the inner edge of the cutout (indicated by the lines) so the mount lays flat inside the pant.



❏ ❏ 2. Use epoxy mixed with microballoons or other suitable filler to securely glue the inner wheel pant mount to the inside of the wheel pant.

Refer to this photo for the following two steps.

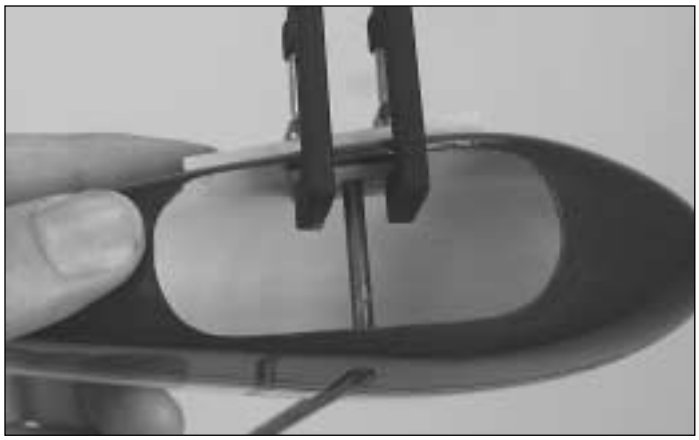


❏ ❏ 3. Glue together two 1/8" x 7/8" x 1" [3.2 x 22 x 25mm] plywood **outer wheel pant mounts.** Glue together two more mounts the same way. Use a straightedge to draw lines on the mounts connecting the corners.

❏ ❏ 4. Drill a 5/32" [4mm] hole through both mounts where the lines cross in the center.

❏ ❏ 5. Drill a 5/32" [4mm] hole through the bottom of the molded-in indentation in the pant for the landing gear wire.

❏ ❏ 6. Fit the wheel pant onto the landing gear wire followed by the outer wheel pant mount. Position the wheel pant on the landing gear so the landing gear is centered in the pant. Push the mount all the way to the outside of the pant. This is the where the mount is to be glued to the pant.



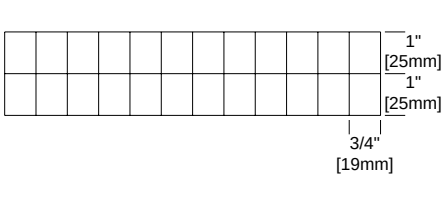
❏ ❏ 7. Use 30-minute epoxy to glue the mount to the pant. Remove the landing gear wire before the epoxy hardens.

❏ 8. If you have not yet done so, return to step 1 and assemble the left wheel pant the same way.

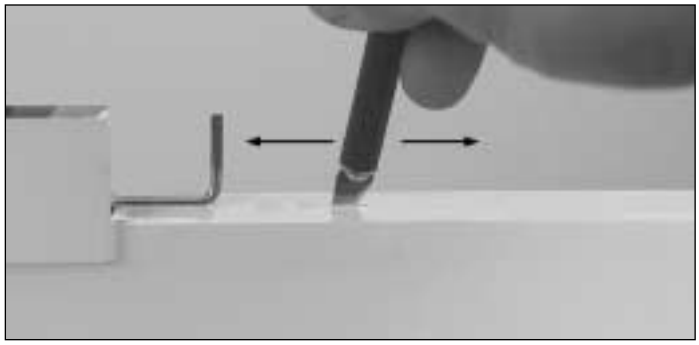
While the epoxy on the wheel pants is hardening, return to the wing and hook up the ailerons.

Hook Up the Ailerons

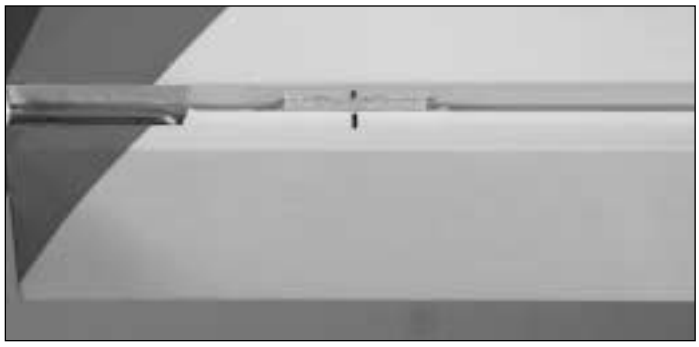
Do the left wing first so yours matches the photos the first time through. You can do one wing at a time, or work on them together.



❏ ❏ 1. Cut four 3/4" x 1" [19 x 25mm] hinges from the 2" x 9" [50 x 230mm] CA hinge strip. Snip the corners off so they go in easier.

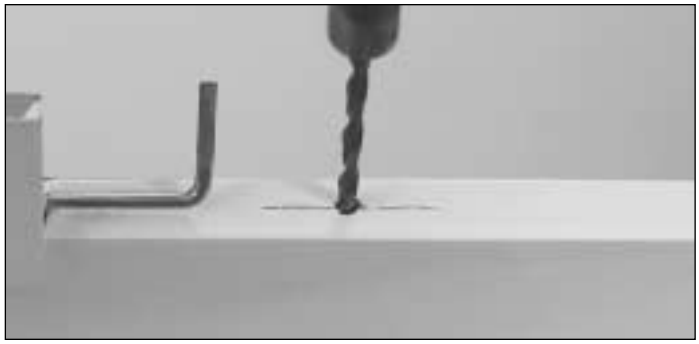


❏ ❏ 2. Test fit the hinges in the hinge slots of the aileron and the wing. If you have difficulty inserting the hinges, insert a #11 blade into the slot and **carefully** move it back and forth to slightly widen the slot.



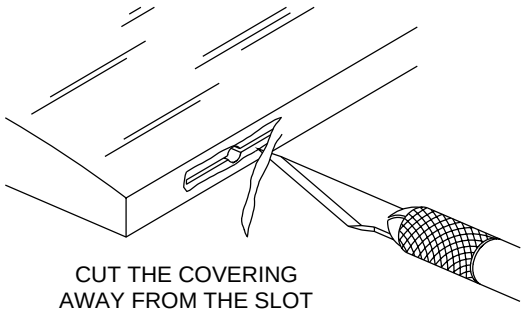
❏ ❏ 3. Test fit the aileron to the wing with the hinges. Use a fine-point ballpoint pen to mark the wing and aileron in the middle of each hinge.

❏ ❏ 4. Separate the aileron from the wing and take out all the hinges.

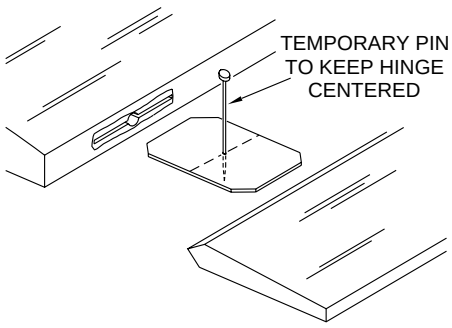


❏ ❏ 5. Drill a 3/32" [2.4mm] hole, 1/2" [13mm] deep at the marks you made in the center of each hinge slot to allow the CA to “wick” in. Follow with a #11 blade to clean out the

slots. **Hint:** If available, use a high-speed rotary tool to drill the holes.



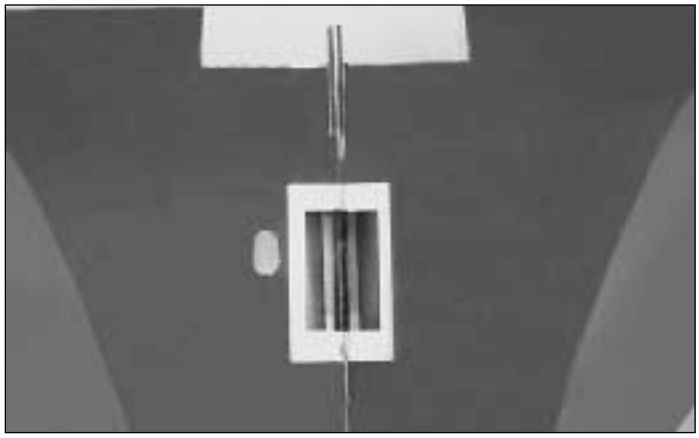
❑ ❑ 6. Cut a small strip of covering from both sides of each hinge slot. If this is not done, the covering may interfere with the penetration of the CA into the slot and may also interfere with free movement of the aileron.



❑ ❑ 7. Coat the "arm" portion of the aileron torque rod and the groove and the hole in the aileron where the torque rod fits with epoxy. Join the aileron to the wing and the torque rod with the hinges. If the hinges don't remain centered, stick a pin through the middle of the hinge to hold it in position. Wipe away excess epoxy with a tissue.

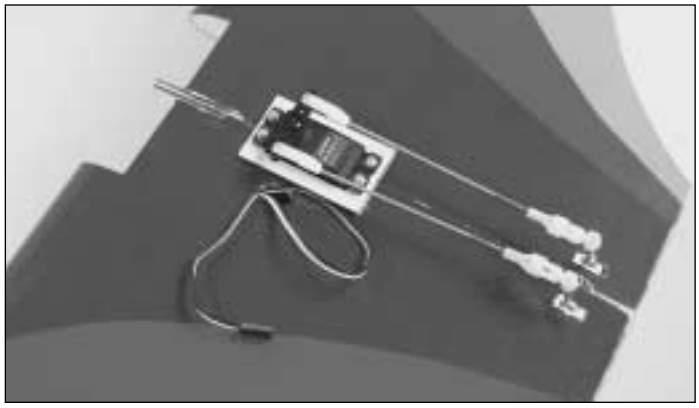
❑ ❑ 8. Remove the pins if you've used any. Adjust the aileron so there is a **small** gap–just enough to see light through or to slip a piece of paper through–between the aileron and the wing.

❑ ❑ 9. Apply six drops of **thin** CA to the top and bottom of each hinge. Do not use CA accelerator. After the CA has fully hardened, test the hinges by pulling on the aileron.



❑ ❑ 10. Use a sharp #11 blade to cut the covering from the wing for the aileron servo mount. Also cut a hole for the aileron servo wire.

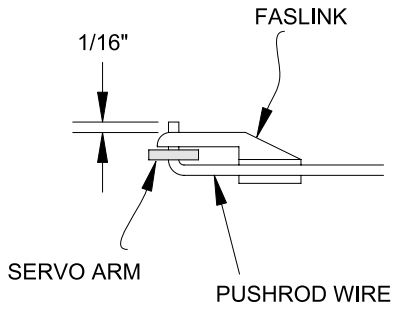
Refer to this photo for the following four steps.



❑ ❑ 11. Glue the servo mount to the wing. Drill 1/16" [1.6mm] holes through the servo mount for the servo screws. Add a few drops of thin CA to the holes and allow to fully harden. Mount the aileron servo using the screws that came with the servo.

❑ ❑ 12. Thread a 4-40 nylon torque rod horn onto both aileron torque rods until the top of the horn is even with the top of the torque rod.

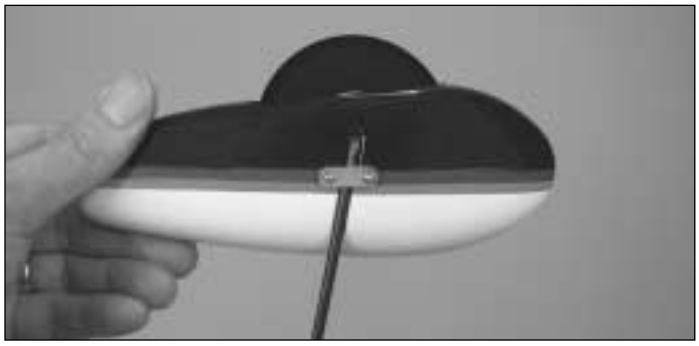
❑ ❑ 13. Make a two-arm servo arm by cutting two arms off a four-arm servo arm. Enlarge the holes in the arm with a Hobbico® Servo Horn Drill (or a #48 or 5/64" [2mm] drill bit) so the pushrods will fit.

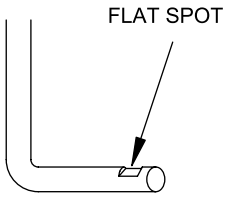


❑ ❑ 14. Connect the servo to the torque rod horns with pushrods made from two 6" [150mm] wire pushrods, clevises, silicone

retainers and Faslinks. After bending the pushrods for the Faslinks, be certain to leave 1/16" [1.6mm] of wire protruding from the Faslink as shown in the sketch. Connect the pushrods.

Finish up the landing gear, then proceed to the fuselage. The same as before, both gears may be assembled at the same time, or separately.

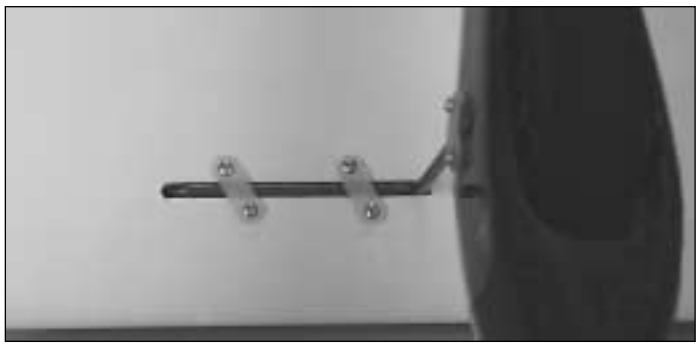




❏ ❏ 15. Insert the landing gear wire into the wheel pant and mount the wheel using a 5/32" [4mm] wheel collar with a set screw on both sides of the wheel. Mount the pant to the gear with a nylon strap and two #2 x 3/8" [9.5mm] screws (drill 1/16" [1.6mm] holes through the wheel pants for the #2 screws). Use a **small drop** of thread lock on the set screws. **Hint:** File a flat spot on the landing gear wire for the outer wheel collar.

❏ ❏ 16. Use a straightedge and a hobby knife to cut a slit in the covering down the middle of the groove in the landing gear rail. If you have a trim iron, iron the covering down inside the groove.

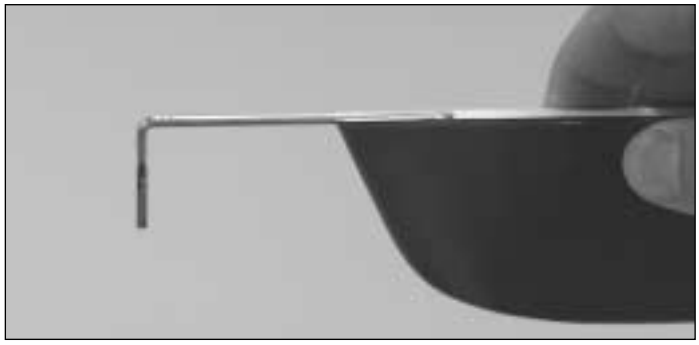
❏ ❏ 17. Use a hobby knife to bevel the edge of the hole in the landing gear rail to accommodate the radius in the bend in the landing gear wire.



❏ ❏ 18. Mount the landing gear to the wing with two nylon straps and four #2 x 1/2" [13mm] screws (drill 1/16" [1.6mm] holes for the screws).

BUILD THE FUSELAGE

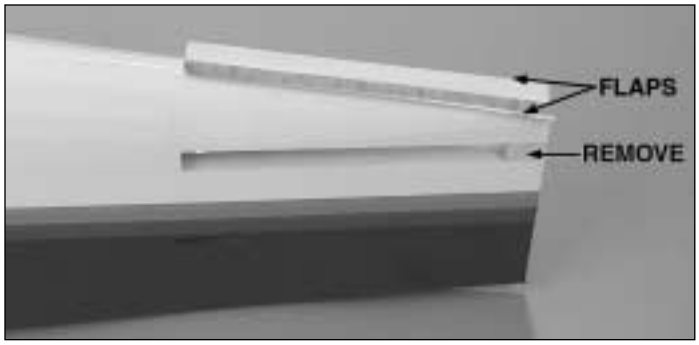
Mount the Stab & Fin



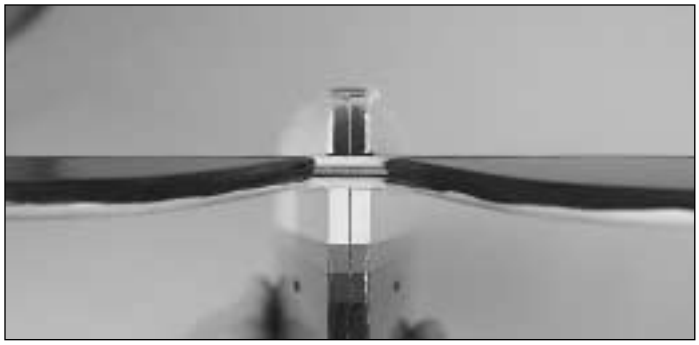
❏ 1. Cut the covering from the grooves in both elevators for the elevator joiner wire. Test fit the joiner wire in the elevators. If necessary, “tweak” the joiner wire so both elevators are even with each other (so both elevators have the same “up” and “down”).

❏ 2. The same as was done for the wing and ailerons, cut the covering from the hinge slots in the stab and elevators and the fin and rudder. Drill 3/32" [2.4mm] holes through the middle of the slots (as shown on page 9).

❏ 3. Cut nine 3/4" x 1" [19mm x 25mm] CA hinges from the CA hinge strip. Temporarily join the elevators to the stab and the fin to the rudder with the hinges.

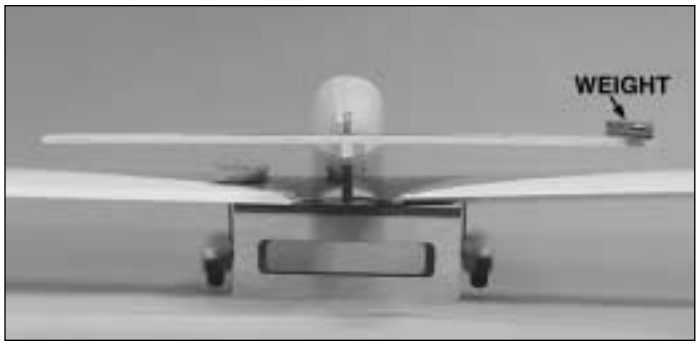


❏ 4. Cut the covering from the slots on the side of the fuse for the stab. Cut a slit in the covering in the center of the slot in the top of the fuse for the fin. Note the “flaps” of the covering that will be ironed to the fin later. Remove the small balsa spacer block.

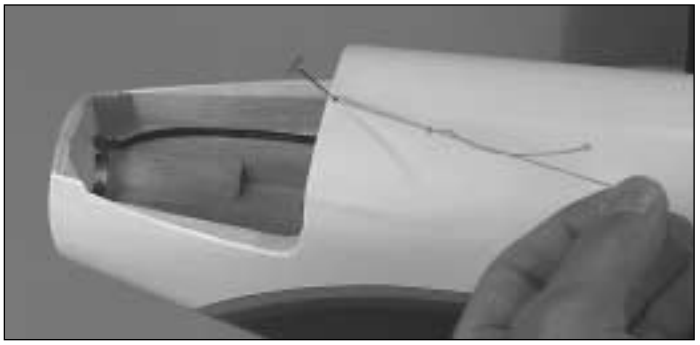


❏ 5. Taking accurate measurements, locate the center of the stab on the trailing edge. Stick a T-pin through the center of the stab 1/8" [3mm] from the trailing edge. Slide the stab into the fuse and center the T-pin over the aft end of the fuse. Push the T-pin into the fuse to hold the trailing edge of the stab in position.

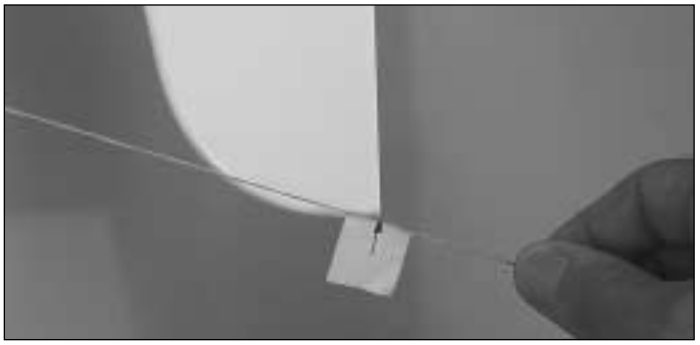
❏ 6. Cut the covering from the holes in the top and bottom of the wing for the wing bolts, then mount the wing to the fuse with two 1/4-20 nylon bolts.



❏ 7. Remove the elevators from the stab. Support the model with a small stand or cardboard box. Stand five to ten feet behind the model and view the stab and wing. If the stab and wing align with each other, proceed to the next step. If the stab and wing do not align, place a weight on the “high” side of the stab to bring it into alignment (a weight may be required on the opposite wing to hold the model on your stand). If much weight is required, remove the stab and sand the slot in the fuse where the stab fits until it aligns with the wing.



❏ 8. Stick a pin into the top of the fuse centered in the middle stringer over the firewall. Tie a small loop in one end of a 42" [1070mm] piece of non-elastic string (such as K & S #801 Kevlar thread; K+SR4575). Slip the loop in the string over the T-pin.



❏ 9. Fold a piece of masking tape over the other end of the string and draw an arrow on it. Slide the tape along the string and align the arrow with one end of the stab as shown in the photo. Swing the string over to the same position on the other end of the stab. Pivot the stab about the T-pin and slide the tape along the string until the arrow aligns with both sides.

❏ 10. Use a fine-point felt-tip pen such as a Top Flite Panel Line Pen (TOPQ2510) to mark the outline of the fuse onto the top and bottom of the stab.

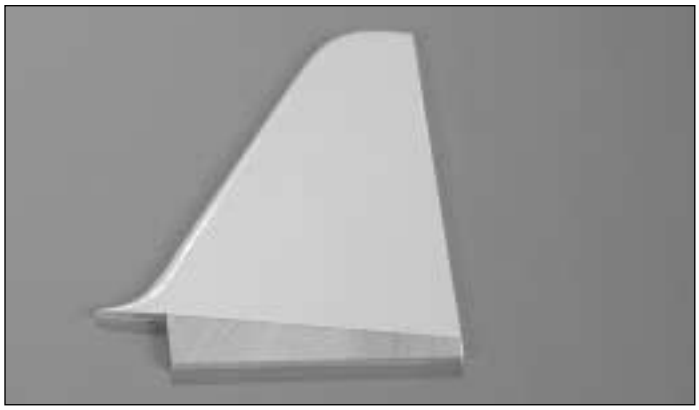
❏ 11. Remove the stab from the fuse. Use a sharp #11 hobby knife or follow the **Expert Tip** that follows to cut the covering from the stab along the lines you marked. Use care to cut **only into the covering** and **not** into the wood. Cutting into the balsa will weaken the structure.

EXPERT TIP

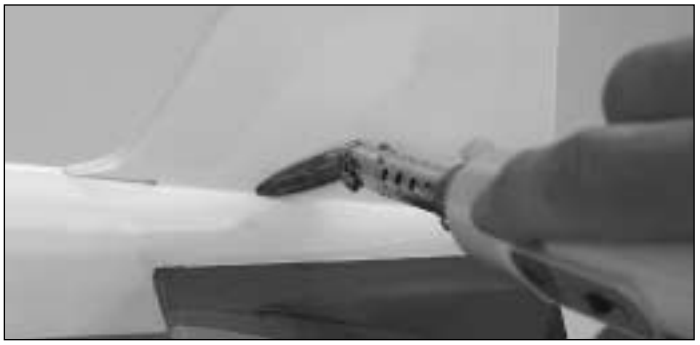
How to cut covering from balsa

To avoid cutting into the balsa, use a soldering iron instead of a hobby knife to cut the covering from the stab. The tip of the soldering iron doesn't have to be sharp, but a fine tip does work best. Allow the iron to heat fully. Use a straightedge to guide the soldering iron at a rate that will just melt the covering and not burn into the wood. The hotter the soldering iron, the faster it must travel to melt a fine cut. Peel off the covering.

❏ 12. Temporarily reposition the stab into the fuse. Fit the fin into the fuse. Mark the trailing edge of the fin at the end of the top of the fuse. Note that the "flaps" of covering have been folded outward.

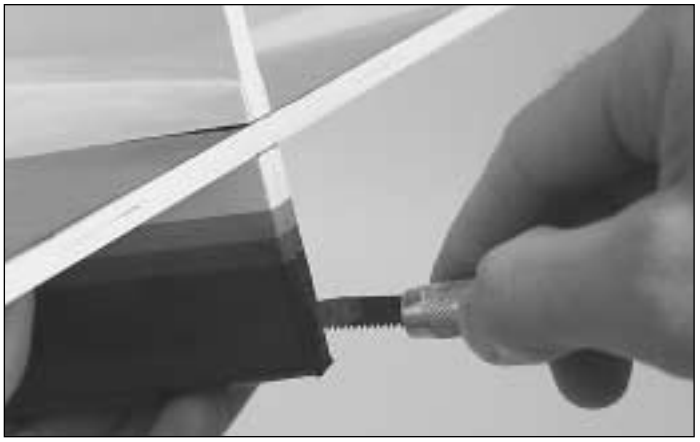


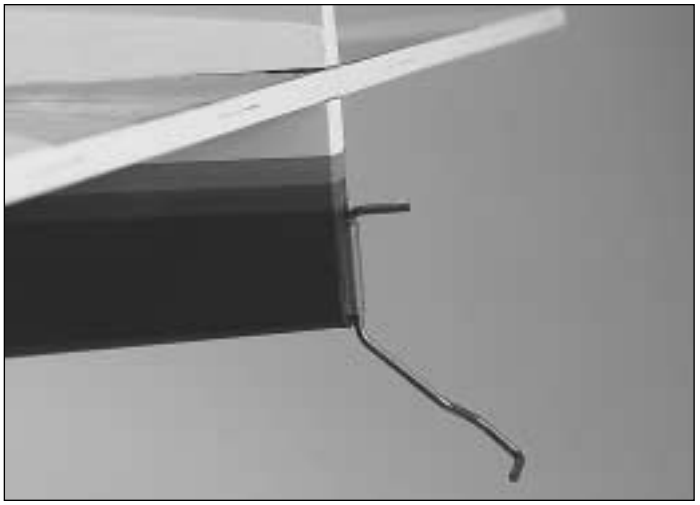
❏ 13. Remove the fin from the fuse and cut the covering from the fin the same way you did the stab.



❏ 14. Apply 30-minute epoxy to **all** joining surfaces of the fin and stab. Slide the stab into position. Wipe away residual epoxy with a tissue dampened with alcohol. If the stab required a weight on one side or the other to align it with the wing, position the weight. Use the pin and string to confirm stab alignment. Insert the fin and wipe away excess epoxy. Use a 90° triangle to check that the fin is vertical. If necessary, use masking tape to pull the tip of the fin to one side or other of the stab until it is vertical. Use a trim iron to iron the fuse covering to the both sides of the fin before the epoxy hardens. As you proceed, use a tissue dampened with alcohol to clean the tip of the iron. Do not disturb the model until the epoxy has fully hardened.

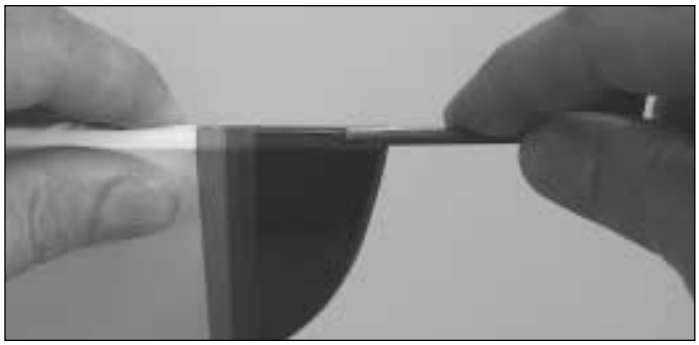
Join the Elevators & Rudder



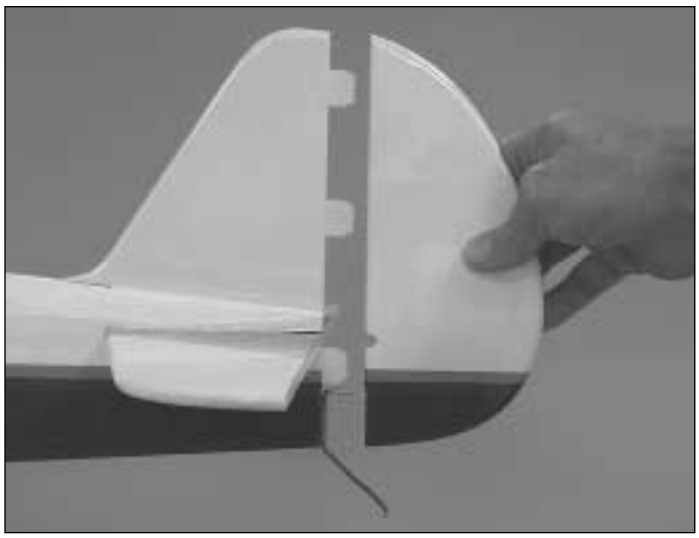


❏ 1. Remove the wing from the fuselage. Test fit the nylon tail gear bearing with the tail gear wire into the slot in the

rear of the fuse. If necessary, enlarge the slot with a small razor saw.



❑ 2. Use a hobby knife or a 5/32" [4mm] brass tube sharpened on the end to cut a groove in the leading edge of the rudder to accommodate the nylon tail gear bearing. Drill a 1/8" [3.2mm] hole into the rudder for the “arm” portion of the tail gear wire.



❑ 3. Temporarily join both elevators to the stab with the elevator joiner wire. Cut a half-round notch in the leading edge of the rudder to accommodate the joiner wire. Test fit the rudder to the fin and tail gear wire with three hinges. Make adjustments where necessary. (For clarity, the elevators are not present in the photo.)

❑ 4. Remove the rudder, elevators and tail gear bearing from the fuse. Take the elevator joiner wire out of the elevators. Roughen the joiner wire with coarse sandpaper so glue will adhere. Carefully apply a small dab of petroleum jelly to the top and bottom of the tail gear bearing where the tail gear wire goes through to keep glue from entering.

❑ 5. Apply 30-minute epoxy to the joiner wire and to the groove and in the holes in the elevators for the joiner wire. Insert the joiner wire into the elevators (if you’ve had to make any adjustments to the joiner wire to align the elevators, be certain you’ve installed the joiner wire correctly). Wipe away excess epoxy with a tissue dampened with alcohol and immediately proceed to the next step.

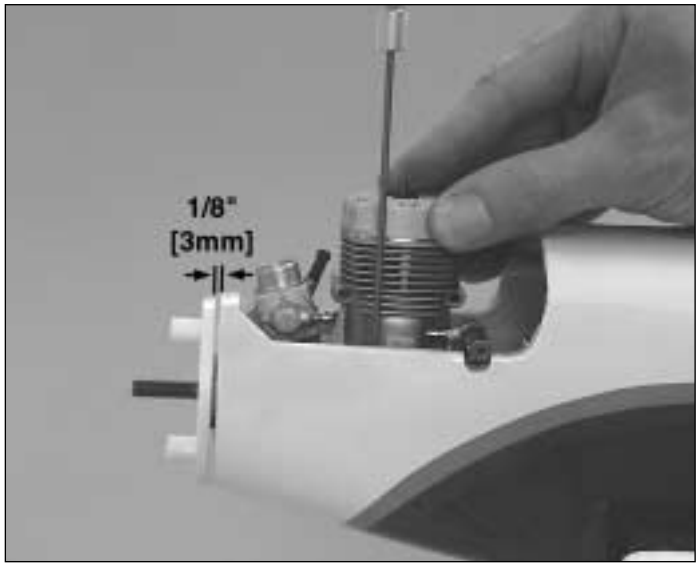
❑ 6. Apply 30-minute epoxy inside the slot in the fuselage for the tail gear bearing and to the hinge of the tail gear bearing. Install the tail gear bearing and wipe away excess epoxy. Fit the elevators to the stab with the hinges.

❑ 7. Apply epoxy in the hole in the rudder for the tail gear wire. Also apply epoxy to the bare balsa in the notch for the elevator joiner and to the groove for the tail gear bearing. Wipe away residual epoxy. Fit the rudder to the fuse and tail gear wire with the hinges.

❑ 8. Permanently join the elevators and rudder with six drops of thin CA on both sides of all the hinges.

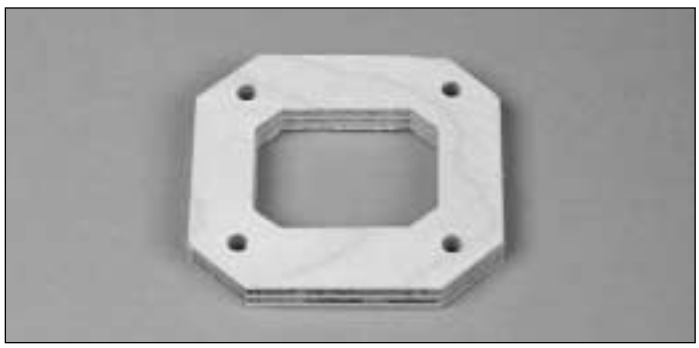
Mount the Engine

Refer to this photo for the following three steps.



❑ 1. Mount the engine mount to the firewall with four 6-32 x 3/4" [19mm] socket-head cap screws (SHCS), #6 lock washers and #6 flat washers, but do not fully tighten the bolts. Place the engine on the mount. If necessary, trim the fuselage where required to accommodate the needle valve.

❑ 2. Adjust the mount to fit the engine and place the back plate of the spinner on the engine. Center the engine and mount in the fuse, then tighten the screws to hold the mount to the firewall. Position the engine to provide the desired clearance between the back plate of the spinner and the front of the fuselage–approximately 1/8" [3mm] is adequate.

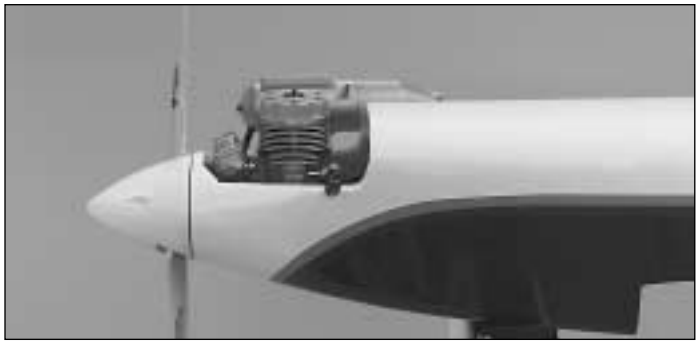


Note: If your engine is too short to allow the drive washer to extend 1/8" in front of the plywood spinner ring on the front

of the fuselage, use the pattern on page 23 to make an **engine mount spacer** from 1/4" plywood (if 1/4" plywood is not available, two spacers could be made from 1/8" plywood). 6-32 x 1" screws (not included) will be required for mounting the engine mount. Coat the spacer with fuelproof paint or 30-minute epoxy. Mount the engine mount to the firewall with the engine mount spacer in between.

❏ 3. Holding the engine in position, use a Great Planes Dead Center Engine Mount Hole Locator (GPMR8130) or another method to mark the engine mount holes on the engine mount.

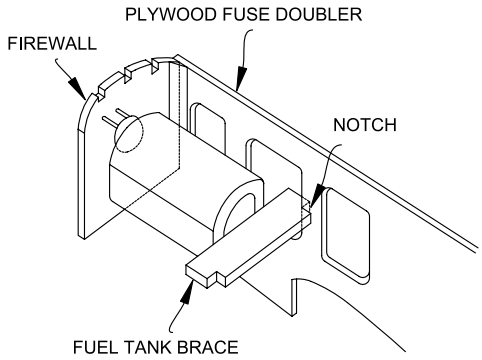
❏ 4. Remove the engine from the mount. Drill #43 (or 3/32" [2.4mm]) holes through the mount at the marks, then tap 4-40 threads into the holes (this is most easily done if the mount is removed from the fuselage). Mount the engine to the mount with four 4-40 x 3/4" [19mm] socket head cap screws and #4 flat washers and lock washers.



❏ 5. Mount the spinner, prop and muffler to the engine. Make adjustments where necessary.

Install the Fuel Tank

❏ 1. Assemble the stopper and tubes as shown in the photo, then insert them into the tank. Tighten the screw to expand the stopper, thus sealing the tank. Be certain the fuel line weight (clunk) at the end of the fuel line inside the tank does not contact the rear of the tank. Otherwise, the line may become stuck above the fuel level and discontinue fuel flow. Remember (or use a felt-tip pen to mark) which tube is the fuel pick-up tube and which tube is the vent (that will be connected to the pressure fitting on the muffler).



❏ 2. Install the tank in the fuse with the neck of the tank inserted into the hole in the firewall. Make a **fuel tank brace** from the 1/4" x 3/4" x 8" [6 x 19 x 200mm] balsa stick by cutting it to the correct length to fit between the fuselage sides at the back of the tank. The width of the brace may vary from kit to kit, but the approximate length should be 3-7/16" [87mm] (but start by cutting the stick slightly long, then trimming to fit). Notch the corners of the brace as shown to accommodate the plywood fuse doublers inside the fuse.

❏ 3. Test fit the fuel tank brace behind the tank. Trim to fit as necessary. When satisfied with the fit of the brace, push it tight against the back of the tank, then glue the brace into position with thin or medium CA. After the CA hardens secure the back of the tank to the brace with a dab of RTV silicone. If removal of the tank is ever necessary, the brace may simply be broken free.

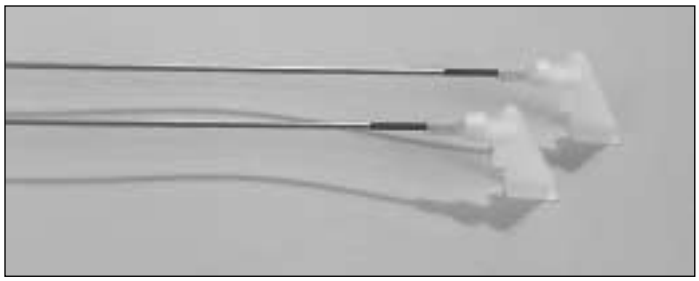
FINAL ASSEMBLY

Hookup the Controls

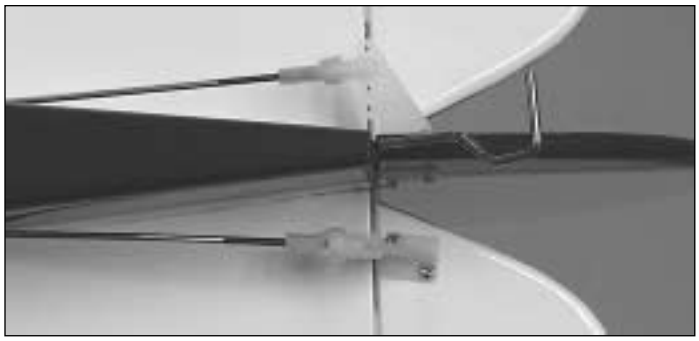
❏ 1. Determine how you will route the throttle pushrod and where it will exit the firewall. There is already a 3/16" [4.8mm] hole in the firewall for the pushrod that will align with the carburetor arm on most two-stroke engines, but if it doesn't align with the engine you are using, drill another hole in a suitable location–be certain not to drill into the fuel tank! As can be seen in the photo of one of the prototypes using an O.S. .52 four-stroke, a hole was drilled through the firewall above the fuel tank in alignment with the carb arm. (In the four-stroke setup shown, due to the short distance between the carburetor and the firewall, a screw-lock connector (not included) was used on the carb.)

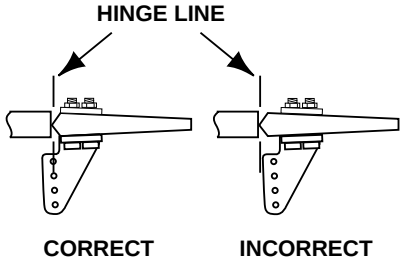
❏ 2. Use coarse sandpaper to roughen the 3/16" x 12" [4.8 x 300mm] guide tube so glue will adhere to it, then guide it through the hole in the firewall for the throttle pushrod.

❏ 3. Thread a nylon clevis twenty full turns onto a 17-1/2" [445mm] threaded pushrod wire. Slip a silicone retainer over the clevis. Insert the pushrod into the throttle guide tube. Bend the pushrod as necessary, then connect the clevis to the carb arm on the engine.



❏ 4. Screw a nylon clevis twenty full turns onto the end of a 36" [910mm] wire pushrod. Slip a silicone retainer over the clevis, then connect the clevis to the second-from-the-outer hole of a nylon control horn. Cut 10" [250mm] from the other end of the pushrod. Prepare another pushrod the same way.



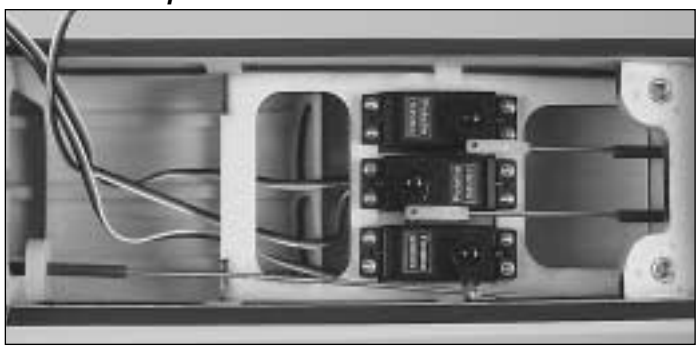


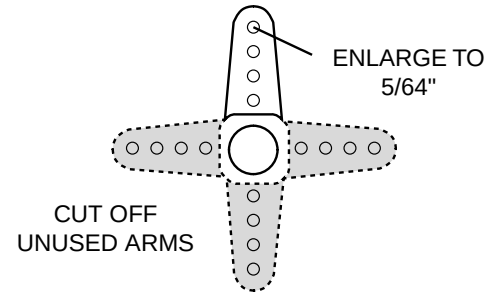
❏ 5. Slide the pushrods through the guide tubes. Position the control horn coming out of the right side of the fuselage on the elevator and position the control horn coming out of the left side of the fuselage on the rudder as shown in the photo. The holes in the horns should be over the hinge gap. If necessary, small bends may be made in the pushrods to get the horns to rest on the control surfaces.

❏ 6. Drill 3/32" [2.4mm] holes through the elevator and rudder for mounting the control horns with 2-56 x 1/2" [13mm] screws, then mount the control horns using the screws and the nylon backing plates on the other side.

Now that all the pushrods are installed, the servos can be mounted…

Refer to this photo to mount the servos.



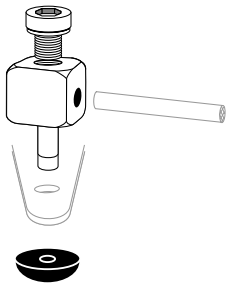


❏ 7. Place the servos in the servo tray. Cut off the extra arms to make one-arm servo arms. Enlarge the holes in only the elevator and rudder servos with a Hobbico Servo Horn Drill (or a #48 or 5/64" [2mm] drill bit). Fit the servo arms on the servos as shown in the photo.

❏ 8. If the guide tubes are too close to the servos, trim the tubes as necessary.

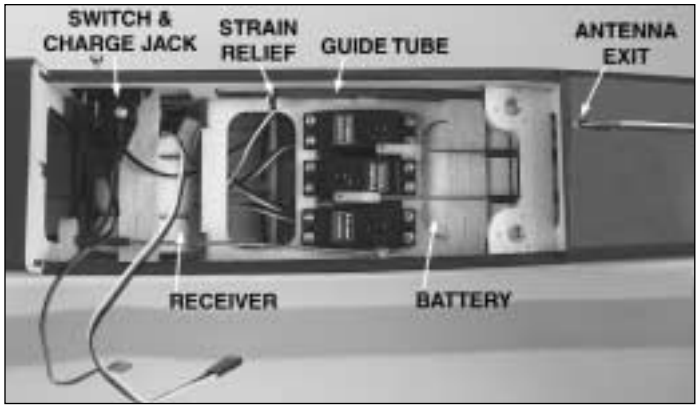
❏ 9. Holding the elevator and rudder centered, mark the elevator and rudder pushrods with a felt-tip pen where they cross the holes in the servo arms. Use pliers to make a 90-degree bend at the marks. Temporarily fit a nylon Faslink to each pushrod, then cut the wire with 1/16" [1.5mm] protruding from the Faslink.

❏ 10. Connect the elevator and rudder pushrods to the servo arms with the Faslinks.



❏ 11. Connect a screw-lock connector to the throttle servo arm using a nylon retainer. Cut the throttle guide tube and pushrod wire to the correct length, then bend the wire as necessary so it will align with the screw-lock connector on the servo arm. Make a **guide tube support** by drilling a 3/16" [4.8mm] hole through a piece of balsa leftover from the fuel tank brace, then position the support as shown. Connect the throttle pushrod wire to the servo, then glue the guide tube support and the guide tube into position.

❏ 12. Drill 1/16" [1.6mm] holes through the servo tray for the servo mounting screws. Add a drop of thin CA to the holes and allow to harden (it is best to take the servos out of the tray while doing this to avoid inadvertently gluing the servos to the tray). Reposition the servos and mount them to the tray with the screws that came with the servos.



❏ 13. Mount the battery pack, receiver and on/off switch (be certain to mount the switch on the side of the fuse opposite the engine exhaust). The switch was mounted to a Great Planes Switch and Charge Jack which allows access to the battery charging cord from outside the model for quick field charging and battery monitoring. You could wait until balancing the model (see page 19) to determine the location of these items (to minimize or eliminate the requirement for additional ballast to get the model to balance), but the model shown in this manual required no tail weight with the components mounted where shown. After connecting the servo, battery and switch wires, wrap both the battery pack and receiver in 1/4" or 1/2" [6mm or 13mm] R/C foam rubber to protect them from vibration. Hold them in position with a balsa stick glued to the fuselage sides. **Note:** If you have difficulty installing the battery pack where indicated, remove the servos and install the battery from the cutout where the servos go. A 500 mAh flat pack was used in this model.

❏ 14. Glue the piece of guide tube leftover from the throttle to the inside of the fuselage to keep the antenna away from the servos and pushrods. Make a *strain relief* from one of the cut-off servo arms and install it on the antenna. Route the receiver antenna through the tube and out of the fuselage. On the model shown in the manual the antenna was routed out the bottom of the fuselage through a small piece of tubing, then connected to a hook fashioned from another leftover servo arm which was connected to a rubber band and a wire hook (made from a T-pin) inserted into the bottom of the fuse.

❏ 15. Mount the tail wheel to the tail gear wire using a 3/32" [2.4mm] wheel collar and the set screw with a small drop of thread locking compound on the threads.

Finish the Cockpit

Refer to this photo while finishing the cockpit and gluing in the pilot.

❏ 1. Paint the inside of the cockpit black, or other color of your choice. After the paint is fully dry, cut out, then apply the instrument panel decal.

❏ 2. Use curved-tip scissors to trim the canopy 1/4" [6mm] outside the molded-in cutline. True the edges by sanding with medium-grit sandpaper, then remove the "fuzz" from the edges by sanding with 400-grit sandpaper. Wash the canopy in soapy water, then rinse.

❏ 3. If installing a pilot *(don't cut corners now–go all the way!)*, select a 1/6-scale pilot such as a William's Brother's #180 Racing pilot (WBRQ2480) or a #184 Sportsman pilot (WBRQ2484). Assemble the pilot, then place it in the cockpit and position the canopy to see if the pilot fits. If necessary, trim the pilot to fit under the canopy.

❏ 4. Paint the pilot. Acrylic paints found at craft stores are recommended as they usually have a satin finish and wash up with water.

❏ 5. Securely glue the pilot into position.

❏ 6. Glue the canopy into position with R/C-56 Canopy Glue (JOZR5007), clear RTV silicone or CA. If using CA, first use a fine-point ballpoint pen to draw the outline of the canopy onto the covering. Use a hobby knife to trim a 1/16" [2mm] strip of covering just inside the canopy outline, or use a T-pin to poke several holes through the covering into the balsa. Remove the ink line with a tissue dampened with alcohol. Glue the canopy into position using CA sparingly. Otherwise, it will "fog" the canopy as it hardens.

❏ 7. Apply 1/4" [6mm] striping tape around the edges of the canopy as shown.

❏ 8. Since the right side of the fuselage gets coated with much oil from the engine exhaust, it would be a good idea to apply white or clear RTV silicone around the edges of the canopy where it contacts the fuselage. If the gap between the canopy and the fuselage is not thoroughly sealed, over time, this residue may loosen the glue joint between the canopy and fuse and eventually seep into the cockpit.

Fuelproof the Model

❏ 1. Look for areas of bare balsa in the engine compartment that may not have been coated with epoxy. If there are any, coat them with fuelproof paint or 30-minute epoxy. This can be done with an epoxy brush, or a piece of a paper towel.

❏ 2. Coat the bare wood on the front of the middle of the wing and the inside of the radio compartment near the edges of the covering with fuelproof paint or epoxy. Only a thin coating is all that is required–just to keep exhaust residue or cleaners from soaking into the wood.

Apply the Decals

1. Use scissors or a sharp hobby knife to trim the decals from the sheet.

2. Determine the location of the decals using the photos on the kit box cover as a guide.

3. Be certain the model is clean and free from oily fingerprints and dust. Prepare a container such as a dishpan or a small bucket with a mixture of liquid dish soap and warm water–about one teaspoon of soap per gallon of water. Submerse the decal in the solution and peel off the paper backing.

4. Position the decal on the model where desired. Holding the decal, use a paper towel to wipe most of the water away.

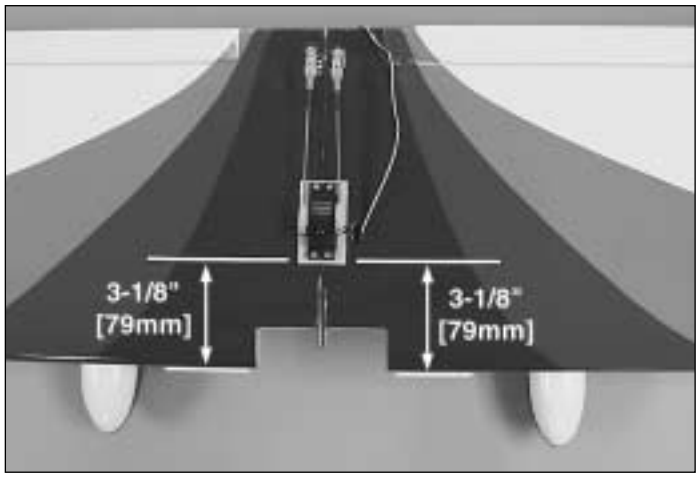
5. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way. This "soap and water" technique allows for accurate placement of the decal and eliminates air bubbles.

GET THE MODEL READY TO FLY

Balance the Model (C.G.)

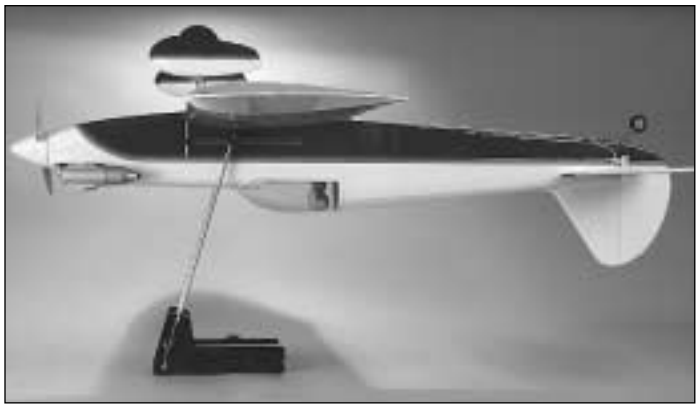
More than any other factor, the **C.G.** (center of gravity, also referred to as the balance point) can have the **greatest** effect on how a model flies, and may determine whether or not your first flight will be successful. If you value this model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.** A model that is not properly balanced will be unstable and possibly unflyable.

At this stage the model should be in ready-to-fly condition with all of the systems installed including the engine, landing gear, propeller and spinner and the radio system. The fuel tank should be empty.

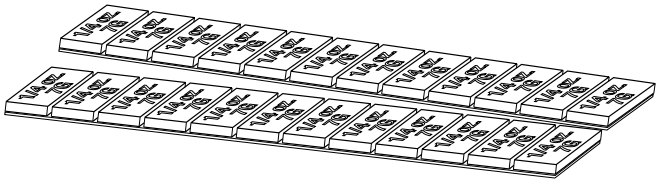


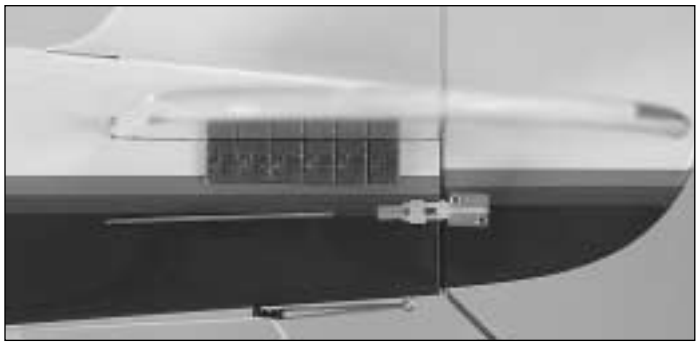
❏ 1. If using a Great Planes C.G. Machine to balance the model, read the note following this step, then proceed to step 2. If you do not have a Great Planes C.G. Machine, use a felt-tip pen or 1/16" to 1/8" [1.5 to 3mm] tape to accurately mark the C.G. on the top of the wing 3-1/8" [79mm] from the leading edge of the wing next to both sides of the fuselage.

This is where the model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 7/16" [11mm] forward or 7/16" [11mm] back to change the flying characteristics. Moving the C.G. forward will increase stability, but will decrease maneuverability. Conversely, moving the C.G. aft will increase maneuverability, but will decrease stability. In any case, as long as the model is balanced **within the recommended range** it will not display any bad tendencies. Do not at any time balance the model outside the recommended range.



❏ 2. Mount the wing to the fuselage. If using a C.G. Machine, adjust the rulers to measure 3-1/8" [79mm], then place the model on the machine. If not using a C.G. Machine, lift the model at the balance point marked on top of both sides of the wing using the tip of the middle finger on both hands.





❏ 3. If the nose drops the model is nose-heavy and will require weight on the tail to balance. If the tail drops however, the model is tail heavy and the model will require weight on the nose to balance. If possible, mount the battery pack and receiver in a location that will minimize or eliminate any additional ballast required. If additional weight is required, nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz. [29g] weight, or GPMQ4646 for the 2 oz. [57g] weight). In many cases, though, Great Planes (GPMQ4485) "stick-on" lead weight is suitable. A good place to add stick-on lead to the nose is to the firewall. If tail weight is required (as most likely will be the case), it may be temporarily attached to the side of the fuse (opposite the engine exhaust) under the stab. After test flying and confirming the amount of weight required, the bottom of the fuse may be cut open and the weight permanently glued inside.

Note: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Use RTV silicone or epoxy to permanently hold the weight in place.

❏ 4. **IMPORTANT:** If you found it necessary to add any weight, recheck the C.G. after the weight has been installed.

Balance the Model Laterally

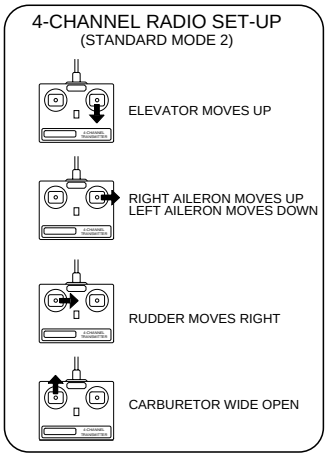
❏ 1. With the wing level, lift the model by the engine propeller shaft and the bottom of the fuse under the trailing edge of the fin. Do this several times.

❏ 2. If one wing always drops when lifting the model, it means 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.**

Check the Control Directions

❏ 1. Turn on the transmitter and receiver and center the trims. If necessary, remove the servo arms from the servos and reposition them so they are centered. Reinstall the screws that hold on the servo arms.

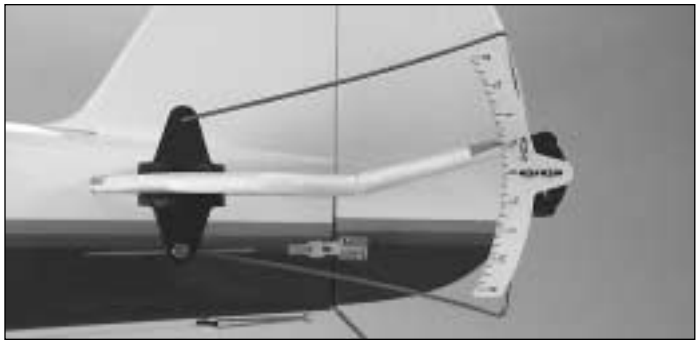
❏ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the clevises on the pushrods to center the control surfaces.



❏ 3. Make certain that the controls respond in the correct direction as shown in the diagram. If necessary, use the

servo reversing in the transmitter to make the controls respond correctly.

Set the Control Throws



Use a Great Planes AccuThrow (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws ***between*** the high and low rate settings.

Note: The throws are measured at the **widest part** of the elevators and rudder.

These are the recommend control surface throws:

	High Rate	Low Rate
ELEVATOR:	1/2" [13mm] up	5/16" [8mm] up
	1/2" [13mm] down	5/16" [8mm] down
RUDDER:	1-1/8" [29mm] right	3/4" [19mm] right
	1-1/8" [29mm] left	3/4" [19mm] left
AILERONS:	1/2" [13mm] up	3/16" [5mm] up
	1/2" [13mm] down	3/16" [5mm] down

IMPORTANT: The Super Sportster 40 MK II ARF has been **extensively** flown and tested to arrive at the throws at which it flies best. Flying your model at these throws will provide the greatest chance for successful first flights. If, after you have become accustomed to the way the Super Sportster 40 MK II ARF flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model difficult to control, so remember, "more is not always better."

PREFLIGHT

Identify Your Model

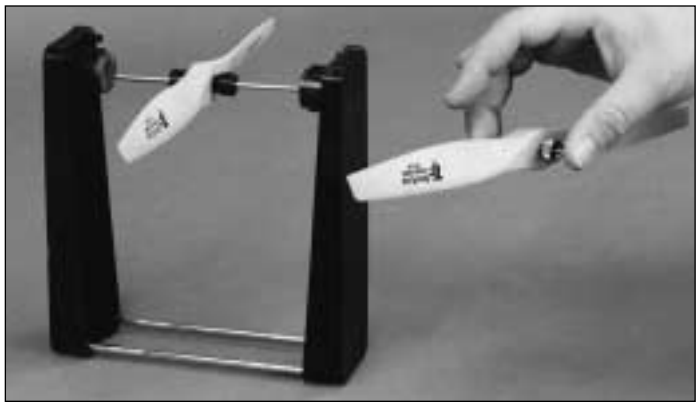
No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 23 and place it on or inside your model.

Charge the Batteries

Follow the battery charging instructions that came with your radio control system to charge the batteries. You should always charge your transmitter and receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

Note: Checking the condition of your receiver battery pack is **highly recommended.** All battery packs, whether it's a trusty pack taken out of another model, or a new battery pack, should be cycled, noting the discharge capacity. Oftentimes, a weak battery pack can be identified (and a valuable model saved!) by comparing its actual capacity to its rated capacity. Refer to the instructions and recommendations that come with your cycler. If you don't own a battery cycler, perhaps you can have a friend cycle your pack and note the capacity for you. We recommend the Hobbico Accu-Cycle™ Plus (HCAP0270).

Balance the Propellers



Carefully balance your propeller and spare propellers before flying. An unbalanced prop can be the single most significant cause of vibration that can damage the model. Not only will engine mounting screws and bolts loosen, possibly with disastrous effect, but vibration may also damage the radio receiver and battery. Vibration can also cause fuel to foam, which will, in turn, cause the engine to run hot or quit.

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

Ground Check

If the engine is new, follow the engine manufacturer's instructions to break-in the engine. After break-in, confirm

that the engine idles reliably, transitions smoothly and rapidly to full power and maintains full power–indefinitely. After you run the engine on the model, inspect the model closely to make sure all screws remained tight, the hinges are secure, the prop is secure and all pushrods and connectors are secure.

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 engine 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.

ENGINE SAFETY PRECAUTIONS

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

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

Get help from an experienced pilot when learning to operate engines.

Use safety glasses when starting or running engines.

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

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

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

Use a “chicken stick” or electric starter to start the engine. Do not use your fingers to flip the propeller. Make certain the glow plug clip or connector is secure so that it will not pop off or otherwise get into the running propeller.

Make all engine adjustments from behind the rotating propeller.

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

To stop a glow engine, cut off the fuel supply by closing off the fuel line or following the engine manufacturer’s recommendations. Do not use hands, fingers or any other body part to try to stop the engine. To stop a gasoline powered engine, an on/off switch should be connected to the engine coil. Do not throw anything into the propeller of a running engine.

AMA SAFETY CODE (excerpt)

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

GENERAL

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

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

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

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

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

RADIO CONTROL

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

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

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

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

CHECK LIST
During the last few moments of preparation your mind may be elsewhere anticipating the excitement of the first flight. Because of this, you may be more likely to overlook certain checks and procedures that should be performed before the model is flown. To help avoid this, a check list is provided to make sure these important areas are not overlooked. Many are covered in the instruction manual, so where appropriate, refer to the manual for complete instructions. Be sure to check the items off they are completed (that's why it's called a *check list!*).

❏ 1. Fuelproof all areas of bare wood that may be exposed to fuel or exhaust residue.
❏ 2. Check the C.G. according to the measurements provided in the manual.
❏ 3. Be certain the battery and receiver are securely mounted. Simply stuffing them into place with foam rubber is not sufficient.
❏ 4. Extend the receiver antenna and make sure it has a strain relief inside the fuselage to keep tension off the solder joint inside the receiver.
❏ 5. Balance the model *laterally* as explained in the instructions.
❏ 6. Use threadlocking compound to secure fasteners such as wheel collars, carburetor arm screw, screw lock connector on the throttle pushrod, etc.
❏ 7. Add a drop of oil to the axles so the wheels will turn freely.
❏ 8. Make sure all hinges are **securely** glued in place.
❏ 9. "Harden" holes for wood screws with thin CA where appropriate (servo mounting screws, landing gear straps, etc.).
❏ 10. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
❏ 11. Make sure there are silicone retainers on all the clevises and that all servo arms are secured to the servos with the screws.
❏ 12. Secure the connection between the battery pack and the on/off switch with tape, heat shrink tubing or special clips suitable for that purpose.
❏ 13. Make sure servo wires do not interfere with other systems (servo arms, pushrods, etc.).
❏ 14. Make sure the fuel lines are connected and are not kinked.
❏ 15. Balance the propeller (and spare propellers).
❏ 16. Tighten the propeller nut and spinner.
❏ 17. Place your name, address, AMA number and telephone number on or inside the model.
❏ 18. Cycle the receiver battery pack (if necessary) and make sure it is fully charged.
❏ 19. If you wish to photograph the model, do so before the first flight.
❏ 20. Range check the radio when you get to the flying field.

FLYING

The Super Sportster 40 MK II ARF is a great-flying model that flies smoothly and predictably. It does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots.

CAUTION (THIS APPLIES TO ALL R/C AIRPLANES): If, while flying, you notice any unusual sounds, such as a low-pitched "buzz," this may indicate control surface *flutter.* Because flutter can quickly destroy components of your airplane, any time you detect flutter you must **immediately** cut the throttle and land the airplane! Check all servo grommets for deterioration (this may indicate which surface fluttered), and make sure all pushrod linkages are secure and free of play. If the control surface fluttered once, it probably will flutter again under similar circumstances unless you can eliminate the free-play or flexing in the linkages. Here are some things which can cause flutter: Excessive hinge gap; Not mounting control horns solidly; Poor fit of clevis pin in horn; Side-play of pushrod in guide tube caused by tight bends; Poor fit of Z-bend in servo arm; Insufficient glue used when gluing in the elevator joiner wire; Excessive *play* or *backlash* in servo gears; and Insecure servo mounting.

Takeoff

If you're not yet confident in your flight skills with a low-wing model, have an experienced modeler by your side who can provide assistance or take over the controls if necessary. Tell him to remind you to throttle back once the plane gets to a comfortable altitude. While full throttle is usually desirable for takeoff, throttling back a bit for the first flight isn't a bad idea to make things happen slower, giving you more time to react.

Before taking off, see how the model handles on the ground by doing a few practice runs at **low speeds** on the runway. Hold "up" elevator to push the tail down and keep the tail wheel on the ground. If the rudder is centered but the model does not roll straight down the runway, adjust the steering by using pliers to bend the tail gear wire as necessary (this is less critical on grass fields). After making ground handling adjustments and getting used to how the model handles, return to the pits, shut off the engine and top off the fuel. Check all fasteners and control linkages to be certain they are secure.

When ready, place the model on the runway facing into the wind. Hold a bit of up elevator to keep the tail on the ground to maintain tail wheel steering, then **gradually** advance the throttle. As the model gains speed decrease up elevator, allowing the tail to come off the ground. Be ready to apply **right** rudder to counteract engine torque. Gain as much speed as the runway and flying site will practically allow before applying up elevator and lifting the model into the air. Be smooth on the elevator stick, allowing the model to establish a **gentle** climb to a safe altitude before turning into the traffic pattern established at the field you are using.

Flight

Take it easy with the Super Sportster 40 MK II ARF for the first few flights, gradually getting acquainted with it as you gain confidence. Adjust the trims to maintain straight and level flight. After flying around for a while, and while still at a safe altitude with plenty of fuel, practice slow flight and execute practice landing approaches by reducing the throttle to see how the model handles at slower speeds. Add power to see how it climbs as well. Continue to fly around, executing various maneuvers and making mental notes (or having your assistant write them down) of what trim or C.G. changes may be required to fine tune the model so it flies the way you like. Mind your fuel level, but use this first flight to become familiar with your model before landing.

Landing

To initiate a landing approach, lower the throttle while on the downwind leg. Allow the nose of the model to pitch downward to gradually bleed off altitude. Continue to lose altitude, but maintain airspeed by keeping the nose down as you turn onto the crosswind leg. Make the final turn toward the runway (into the wind) keeping the nose down to maintain airspeed and control. Add power as necessary to maintain airspeed and make it back to the runway. Level the attitude when the model reaches the runway. If you are going to overshoot the runway, **smoothly** advance the throttle (always ready on the right rudder to counteract torque) and climb out to make another attempt. When ready to make a landing flare and the model is a foot or so off the deck, smoothly increase up elevator until gently touching down. Once the model is on the runway and has lost flying speed, apply up elevator to hold the tail on the ground.

One final note about flying the Super Sportster 40 MK II ARF (or any model). Have a goal or flight plan in mind for **every** flight. This can be learning a new maneuver(s), improving a maneuver(s) you already know, or learning how the model behaves in certain conditions (such as on high or low rates). This is not necessarily to improve flight skills *(though it is never a bad idea!)*, but more importantly so you do not surprise yourself by impulsively attempting a maneuver and suddenly finding that you've run out of time, altitude or airspeed. Every maneuver should be deliberate, not impulsive. For example, if planning a loop, check your altitude, mind the wind direction (anticipating rudder corrections that will be required to maintain heading), remember to throttle back at the top, and make certain you are on the desired rates (high/low rates). A flight plan greatly reduces the chances of crashing just because of poor planning and impulsive moves. **Remember to think.**

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

GOOD LUCK AND GREAT FLYING!

Make photocopies of these items if you do not wish to cut the from the manual.

This model belongs to:

Name

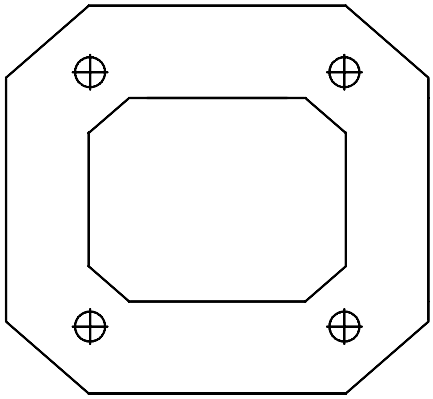
Address

City, State Zip

Phone number

AMA number

1/4" Ply Engine Mount Spacer Pattern



BUILDING NOTES

Kit Purchased Date: _____

Where Purchased:_____

Date Construction Started: _____

Date Construction Finished: _____

Finished Weight: _____

Date of First Flight: _____

FLIGHT LOG