.60–1.20 size sport scale ARF model

SpaceWalker
Expertly Crafted ALL WOOD Construction

INSTRUCTION MANUAL

Almost Ready-to-Fly

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.

While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high stress flying, such as racing, the modeler is responsible for taking steps to reinforce the high stress points.

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

GREATPLANES®
MODEL MANUFACTURING COMPANY

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www.greatplanes.com

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

Your SpaceWalker ARF is not a toy, but rather a sophisticated, working model that functions very much like a full size airplane. Because of its realistic performance, the SpaceWalker ARF, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage property.

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

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

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

INTRODUCTION

If you have been looking for a way to **WOW** them at the field without a lot of work, you have just found it. The Great Planes SpaceWalker ARF is a balsa, built-up, semi-scale, 1/4 scale airplane that assembles in only a few hours and is easy on the budget. It does not require any special building or flying skills. With its thick airfoil and light wing loading, the SpaceWalker is great for a day of relaxed flying. What more can we say? Impress your flying buddies and maximize your fun for minimal cost and time!

The Great Planes SpaceWalker ARF combines the design expertise and high quality standards of all Great Planes kits with state-of-the-art ARF technology - for craftsmanship and performance superior to all other pre-built models. However, **this is not a beginner's airplane!** While the SpaceWalker ARF is easy to assemble, we must discourage you from selecting this kit as your first R/C airplane. It is highly maneuverable, and lacks the self-recovery characteristics of a good **basic trainer** such as the Great Planes **PT**™ Series airplanes. On the other hand, if you are confident with your flying skills and can safely handle aileron airplanes, the SpaceWalker ARF is an excellent choice.

PRECAUTIONS

1. 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.

2. Take time to build straight, true and strong.

3. Use an R/C radio system that is in first-class condition, and a correctly sized engine throughout the building process.

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

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

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

Remember: Take your time and follow directions to end up with a well-built model that is straight and true. Please inspect all parts carefully before starting to build!

YOU CAN CONTACT US...

If any parts are missing, broken or defective, or if you have any questions about building or flying this airplane, please call us at (217) 398-8970. You can also check our web site at *www.greatplanes.com* for the latest SpaceWalker ARF updates, or e-mail your questions to *productsupport@greatplanes.com.* If you are calling for replacement parts, please reference the part numbers and have them ready when calling.

DECISIONS YOU MUST MAKE

Engine Selection

There are several engines that will work well in your SpaceWalker ARF. We recommend a *hot* 2-stroke such as an **O.S.® .61FX** or **SuperTigre™ G61**. For unsurpassed power and realistic sound, an **O.S. FS-70 or FS-90** 4-stroke can't be beat.

PREPARATIONS

Required Accessories

*Items in parentheses (GPMQ4243) are suggested part numbers recognized by distributors and hobby shops and are listed for your ordering convenience. **GPM** is the Great Planes brand, **TOP** is the Top Flite® brand, and **HCA** is the Hobbico® brand.*

❑ 4-Channel Radio With 4 Standard Servos and 1 servo with 45 oz.-in. or more of torque
❑ Engine – See **Engine Selection**
❑ Propeller (Top Flite® Power Point™–Refer To Your Engine's Instructions For Proper Size)
❑ Medium Fuel Tubing (GPMQ4131)
❑ 1/4 Scale Pilot Figure
❑ 1/4" Foam Rubber (HCAQ1000)
❑ Switch and Charge Jack (GPMM1000)
❑ Large Scale Control Horns (2)
❑ 24" Servo Extension (2)
❑ "Y" Harness

Building Supplies and Tools

These are the building tools that are required. *We recommend **Great Planes Pro™** CA and Epoxy glue.*

❑ 1/2 oz. Pro CA (Thin, GPMR6001)
❑ 1 oz. Pro CA+ (Medium, GPMR6008)
❑ 6-Minute Pro Epoxy (GPMR6045)
❑ 30-Minute Pro Epoxy (GPMR6047)
❑ Epoxy Brushes (GPMR8060)
❑ Mixing Cups (GPMR8056)
❑ Canopy Glue
❑ Pro Thread Locking Compound (GPMR6060)
❑ T-pins (HCAR5150)
❑ Isopropyl Alcohol (70%)
❑ Hobby Knife (HCAR0105), #11 Blades (HCAR0211)
❑ Dead Center™ Hole Locator (GPMR8130)
❑ Small Phillips and Flat Blade Screwdrivers
❑ Pliers w/Wire Cutter (HCAR0630)
❑ 4mm Hex Wrench (HCAR0521)
❑ Sealing Iron (COVR2700)
❑ Heat Gun (TOPR2000)
❑ Straightedge w/Scale (HCAR0475)
❑ Builders Triangle Set (HCAR0480)
❑ Masking Tape (TOPR8018)
❑ Sandpaper (coarse, medium, fine grit)
❑ Easy-Touch™ Bar Sander (GPMR6170, or similar)
❑ Paper Towels
❑ Electric Drill
❑ Drill Bits: 1/16", 7/64", 1/8", 3/32", 3/16", 7/32" 5/32" 1/4", 5/64" (HCAR0699)
❑ Petroleum Jelly

Optional Supplies and Tools

❑ CA Applicator Tips (HCAR3780)
❑ CA Debonder (GPMR6039)
❑ Curved Tip Canopy Scissors For Trimming Plastic Parts (HCAR0667)
❑ Fuel Filler Valve (GPMQ4160)
❑ Bar Of Hand Soap

General Inspection

Remove the fuselage, wing panels, rudder assembly and stabilizer assembly from their bags. Inspect all items closely to check for any damage. If any damage is found, contact the place where your SpaceWalker ARF was purchased, or Hobby Services, to obtain a replacement for your damaged items.
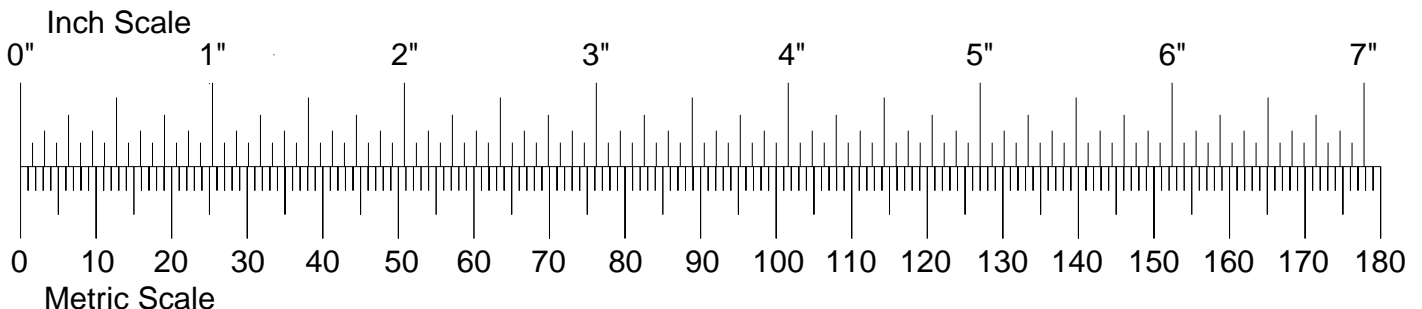
IMAA Information

The Great Planes SpaceWalker ARF is an excellent sport scale model. Because the SpaceWalker ARF is 1/4 scale it is eligible for IMAA events. The IMAA (International Miniature Aircraft Association) is an organization that promotes non-competitive flying of giant scale models.

IMAA
205 S. Hilldale Road
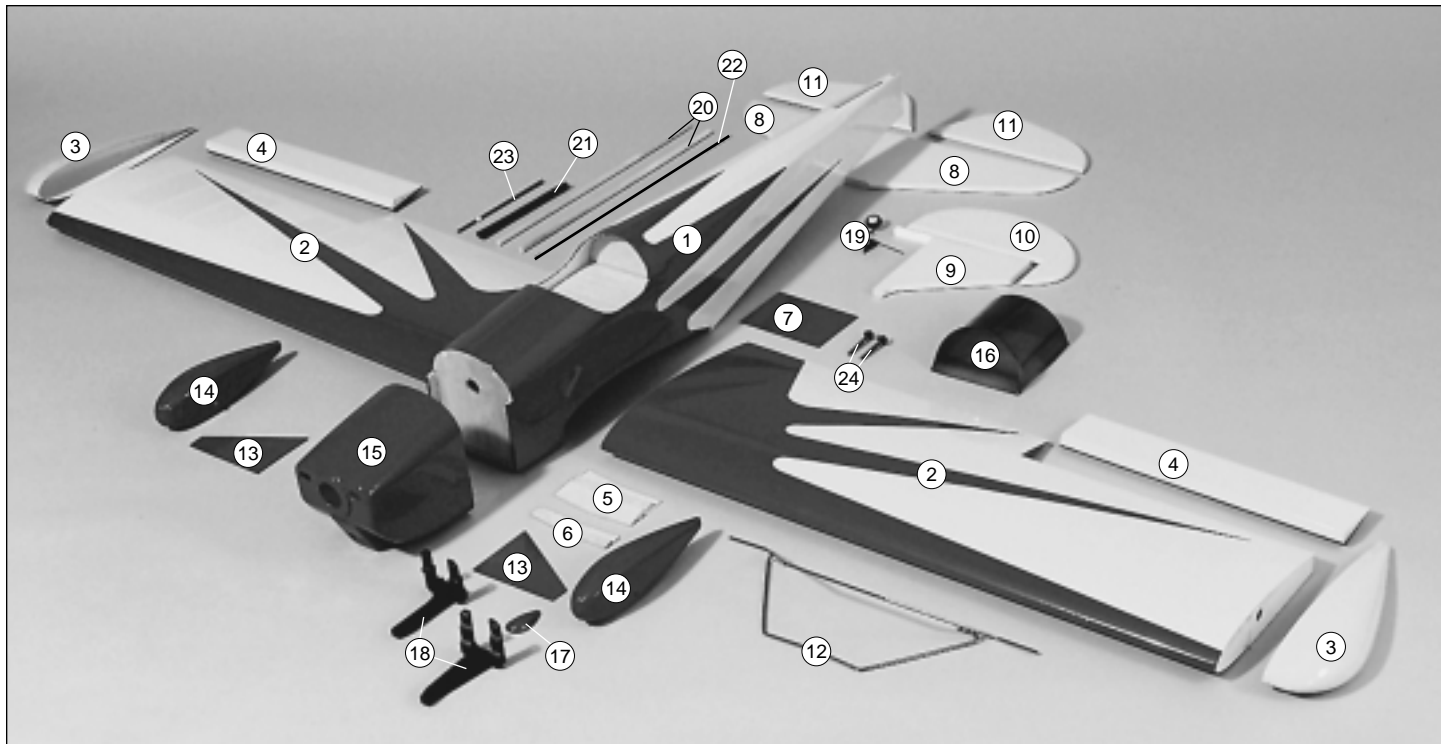**Salina, KS 67401**
Tele. (913) 823-5569

If you intend to fly the SpaceWalker ARF at IMAA events, it may be necessary to replace the 2-56 pushrods, clevises and control horns with 4-40 pushrods, clevises and control horns designed for 1/4 scale airplanes. Although the plane flies great with the hardware supplied, many events require the use of 4-40 style hardware. Also, all control surface related servos must have at least 45 in.-oz. of torque in IMAA events.

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			

Inch Scale

0"　　　1"　　　2"　　　3"　　　4"　　　5"　　　6"　　　7"

0　10　20　30　40　50　60　70　80　90　100　110　120　130　140　150　160　170　180

Metric Scale

Parts List

Key#	Description	Qty
1	Fuselage	1
2	Wing Panel Right & Left	2
3	Wing Tips	2
4	Aileron Right & Left	2
5	Forward Plywood Wing Joiner	3
6	Aft Plywood Wing Joiner	2
7	Wing Bolt Plate	1
8	Horizontal Stabilizer	1
9	Vertical Fin	1
10	Rudder	1
11	Elevator	2
12	Wire Landing Gear	1
13	Main Landing Gear Cover	2
14	Wheel Pants	2
15	Cowl	1
16	Windshield	1
17	Scale Fuel Level Fairing	1
18	Adjustable Engine Mount Right & Left	2
19	1" Tail Wheel	1
20	Wood Dowel Pushrod	2
21	Plastic Heat Shrink Tubing	1
22	Throttle Pushrod	1
23	2-56 x 12" Threaded Pushrod	7
24	5mm x 50.8mm Wing Bolt	2

Parts Included in the Hardware Bag

Description	Qty
Inner Throttle Pushrod	1
2-1/2" Main Wheels	2
2-1/2" Spinner	1
Cockpit Coaming	1
Large Nylon Control Horn	3
Nylon Clevis	5
Silicone Clevis Retainer	5
Faslink Pushrod Keeper	4
CA Hinge Strip	1
14 oz. Fuel Tank	1
Screw-Lock™ Pushrod Connector	1
Pushrod Connector Retainer	1

Description	Qty
4-40 Hex Nut	6
4-40 Lock Nut	4
8-32 Blind Nut	4
2-56 x 1/8" Set Screw	1
2-56 x 5/8" Machine Screw	6
4-40 x 1/8" Socket Head Cap Screw	1
4-40 x 3/8" Machine Screw	6
4-40 x 3/4" Machine Screw	4
6-32 x 1/8" Set Screw	4
8-32 x 1" Socket Head Cap Screw	4
#2 x 3/8" Sheet Metal Screw	4
#4 x 1/2" Sheet Metal Screw	18
#6 x 1" Sheet Metal Screw	4
3/32" Wheel Collar	1
3/16" Wheel Collar	4
#4 Flat Washer	20
#8 Flat Washer	4
#8 Lock Washer	4
Landing Gear Cover Brackets	6
Wheel Pant Bracket	2
3mm x 9.5mm Machine Screw	2
Landing Gear Straps	4

Replacement Parts

If needed, replacement parts for SpaceWalker ARF are available through your hobby supplier.

Canopy GPMA2163
Cowl...GPMA2164
Spinner GPMQ4522
Wing Set GPMA2160
Tail Fin Set GPMA2162
Fuselage Set..GPMA2161
Landing Gear Set...GPMA2165

Join the Two Wing Halves

❏ 1. Use 5-minute epoxy to glue the three plywood **forward wing joiners** together and the two **aft wing joiners** together. Use clothespins or c-clamps to clamp the joiners together until the epoxy cures. Wipe off any excess epoxy with a paper towel and isopropyl alcohol before it cures. Draw a vertical **centerline** on the forward and aft wing joiners.
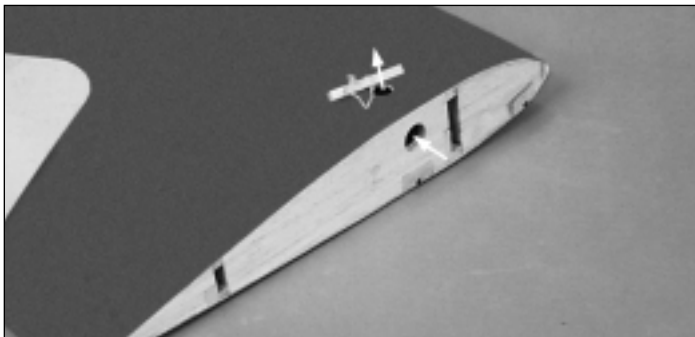

❏ 2. Use a sharp hobby knife to cut the covering from the **servo cord exits** on the top of each wing half. Carefully untie the string from the stick at the root rib and route the string through the servo cord exit. Re-tie the strings around the stick.
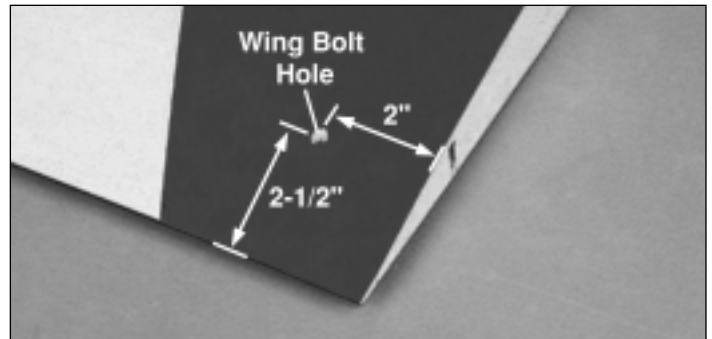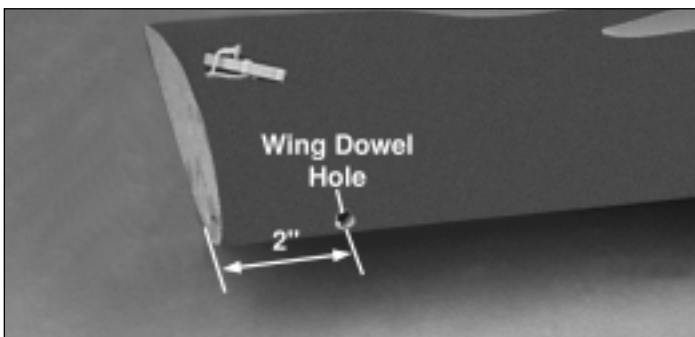
❏ 3. Use a sharp hobby knife to cut the covering from the **wing dowel holes** in the leading edge and the **wing bolt holes** at the trailing edge of each wing half. The wing dowel holes are approximately **2" [50.8mm]** from the wing root. The wing bolt holes are approximately **2" [50.8mm]** from the wing root and **2-1/2" [63.5mm]** from the trailing edge.
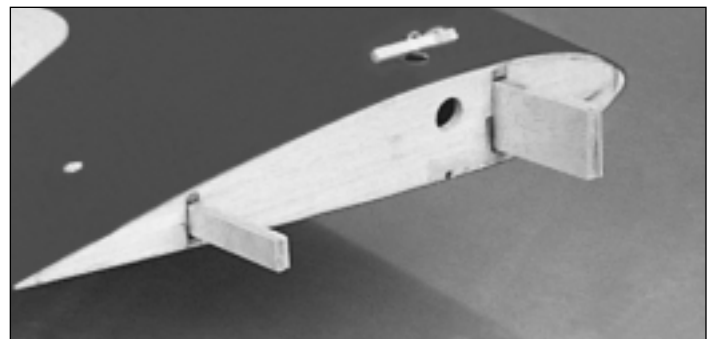

❏ 4. Test fit the wing joiners in both wing halves. A snug fit is desirable. If the joiners do not fit properly, lightly sand the edges and sides of the joiners. **Note:** The plywood wing joiners have a slight dihedral angle. This angle should point toward the top of the wing. When satisfied with the fit of the wing joiners, use **30-minute epoxy** to glue the joiners in the left wing half. Use plenty of epoxy, making sure the joiners are glued to the spars and shear webs. Before the epoxy cures, make sure the joiners are straight and in good contact with the spars. Wipe off any excess epoxy from the root rib and the wing covering using a paper towel dampened with isopropyl alcohol.
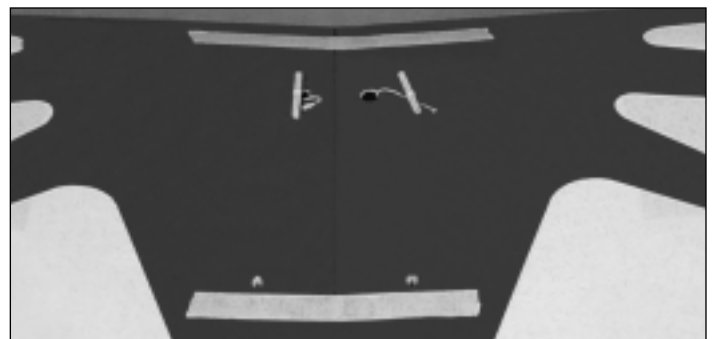

❏ 5. Test fit the two wing halves together. The wing halves should seat together without any gaps and the front and back edges of each wing should line up with each other. Completely cover the exposed portion of the wing joiners, spars and root ribs with 30-minute epoxy. Slide the two

6

wing halves together, removing any excess epoxy with a paper towel dampened with isopropyl alcohol. Use masking tape to hold the wing halves together while the epoxy cures.
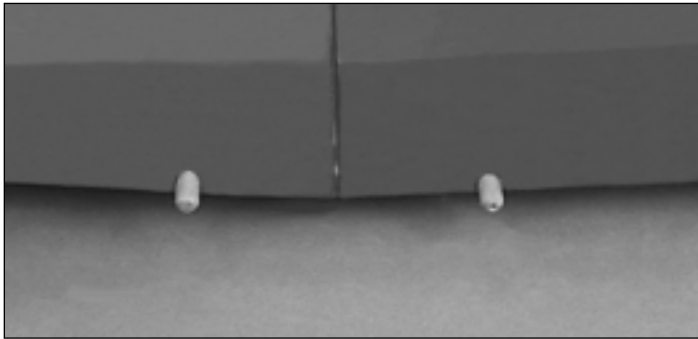

❏ 6. Use 6-minute epoxy to glue the two **1-5/8" [41.3mm] wing dowels** in the wing dowel holes. The rounded end should protrude from the wing approximately **1/2" [12.7mm]**.

Mount the Wing to the Fuselage
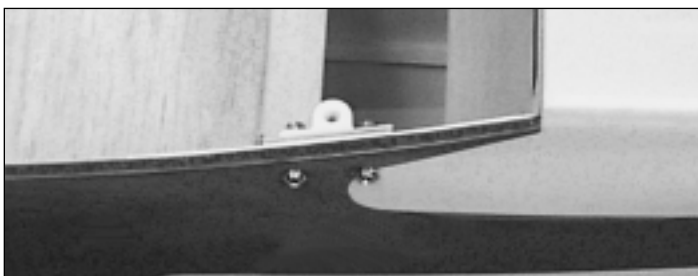
❏ 1. The plastic wing bolt mounts are temporarily glued to the inside of the fuselage. Use a T-pin to locate the four **wing bolt mounts'** screw holes in the side of the fuselage. Use a sharp hobby knife to cut the covering from the screw holes. Use four **4-40 x 3/4" machine screws,** four **#4 flat washers** and four **4-40 lock nuts** to attach the wing bolt mounts to the fuselage sides. **Do not** crush the balsa fuselage sides by overtightening the screws.

❏ 2. Test fit the wing on the fuselage, checking that the **wing bolts** will thread into the wing bolt mounts. Remove the wing bolts from the wing.
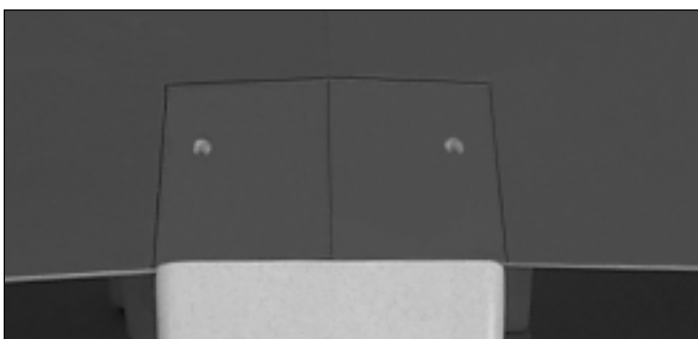
❏ 3. With the wing centered on the fuselage, center the plywood **wing bolt plate** on the aft edge of the wing. Trace the outline of the wing bolt plate onto the wing.
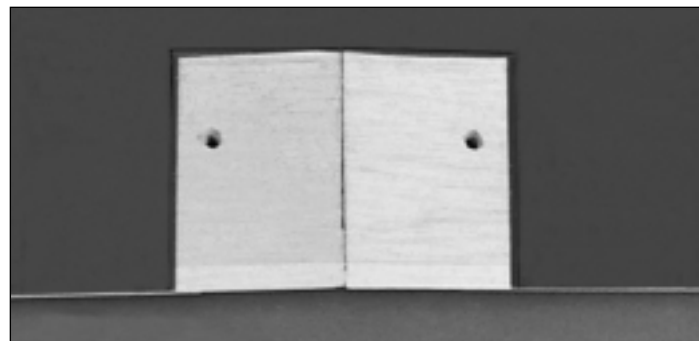

❏ 4. Use a sharp hobby knife to trim the covering from the wing, 1/8" [3.2mm] inside the wing bolt plate outline. **Be careful** to not cut into the balsa wood of the wing as this will weaken it.

❏ 5. Glue the wing bolt plate to the wing using 6-minute epoxy. Wipe off any excess epoxy with a paper towel dampened with isopropyl alcohol. Hold the wing bolt plate in place with clamps until the epoxy cures.

❏ 6. Drill two **1/4" [6.3mm]** holes through the wing bolt plate using the pre-drilled holes in the wing as a guide. Test fit the wing on the fuselage, making sure the wing bolts align with the wing bolt mounts.

TAIL ASSEMBLY

Install the Stabilizer and Vertical Fin

Remove Spacer Block
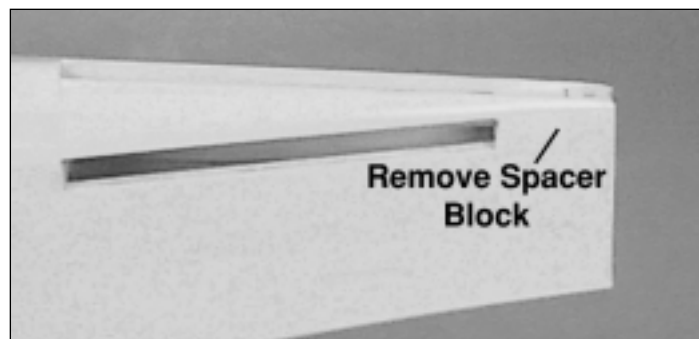
❏ 1. Trim the covering from the stabilizer slot. Remove the balsa **spacer block** at the aft end of the slot.

A   A
A=A
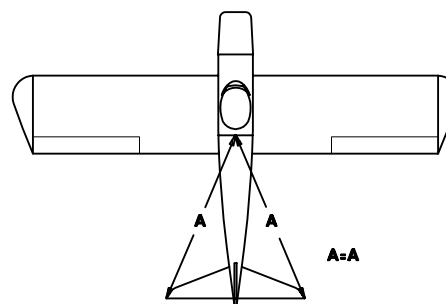
❏ 2. Draw a centerline on both sides of the **stabilizer.** Center the stabilizer in the stabilizer slot. Attach a piece of string with a T-pin to the fuselage centerline as shown.

Stretch the string to one corner of the stabilizer. Repeat the procedure on the other side of the stabilizer. Adjust the angle of the stabilizer until the distance from the pin to the stabilizer is **equal** on both sides. With the wing installed, sight the aft end of the plane from 8' to 10' back. If the stabilizer is not parallel to the wing, carefully sand the high side of the stabilizer slot.

❏ 3. Carefully use a felt-tip pen to mark where the fuselage sides contact the top and bottom of the stabilizer.
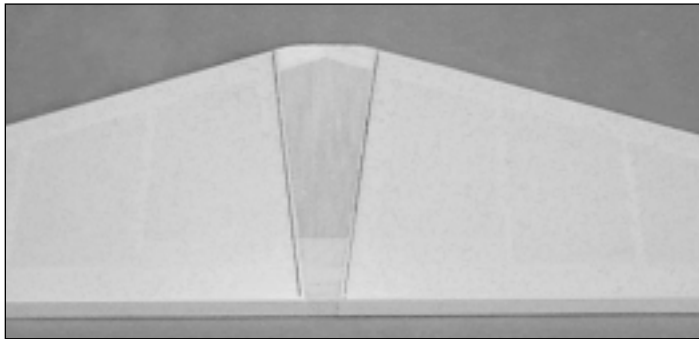
❏ 4. Remove the stabilizer from the fuselage. Carefully trim the covering from inside the marks. **Important:** You must not cut into the wood, as this will weaken the stabilizer which may cause it to break in flight.

❏ 5. Apply 30-minute epoxy to the bare wood at the center of the stabilizer. Insert the stabilizer back into the stabilizer slot. Use the pin and string method to confirm the stabilizer alignment. Wipe off any excess epoxy before it cures, then recheck alignment.

❏ 6. Test fit the vertical fin in the fin slot. Use a Hobbico Builder's Triangle to ensure that the fin is **perpendicular** to the stabilizer. Use 30-minute epoxy to glue the fin to the stabilizer and fuselage. Hold the fin in position with masking tape until the epoxy cures.

Install the Rudder, Elevators and Ailerons

❏ 1. You may need to cut the covering from the hinge slots in the elevator and stabilizer.


EXPERT TIP

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

carefully to obtain the best results. These instructions may be used to effectively install any of the various brands of CA hinges.

The most common mistake made by modelers when installing this type of hinge is not applying a sufficient amount of glue to fully secure the hinge over its entire surface area; or, the hinge slots are very tight, restricting the flow of CA to the back of the hinges. This results in hinges that are only "tack glued" approximately 1/8" [3.2mm] to 1/4" [6.3mm] into the hinge slots. The following technique has been developed to help ensure thorough and secure gluing.

DRILL A 3/32" HOLE
1/2" DEEP, IN CENTER
OF HINGE SLOT
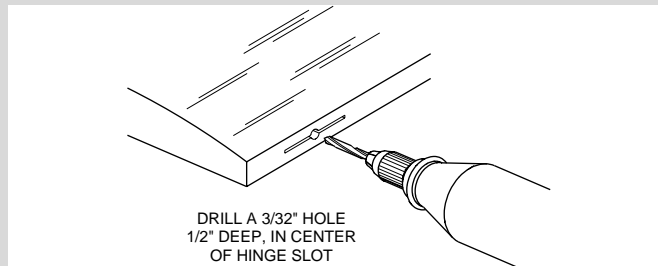
Drill a 3/32" [2.4mm] hole, 1/2" [12.7mm] deep, in the center of the hinge slot. If you use a Dremel Moto-Tool™ for this task, it will result in a cleaner hole than if you use a slower speed drill. Drilling the hole will twist some of the wood fibers into the slot, making it difficult to insert the hinge, so you should insert a knife blade, working it back and forth a few times to clean out the slot.


TEMPORARY PIN
TO KEEP HINGE
CENTERED
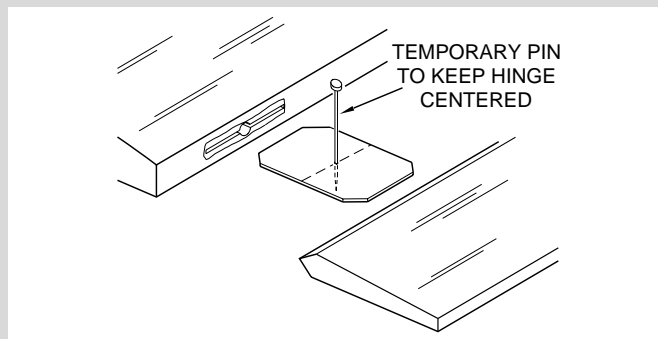
It is best to leave a very slight hinge gap, rather than closing it up tight, to help prevent the CA from wicking along the hinge line. Make sure the control surfaces will deflect to the recommended throws without binding. If your hinge slots are cut too deep, the hinges may slide in too far, leaving only a small portion of the hinge in the control surface. To avoid this, you may insert a small pin through the center of each hinge before installing. This pin will keep the hinge centered while you install the control surfaces.
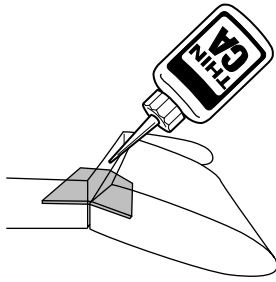
❏ 2. Apply 6 drops of thin CA adhesive to both sides of each hinge in the elevator. Allow a few seconds between drops for the CA to wick into the slot.

Aileron Servo Hole (Under Covering)
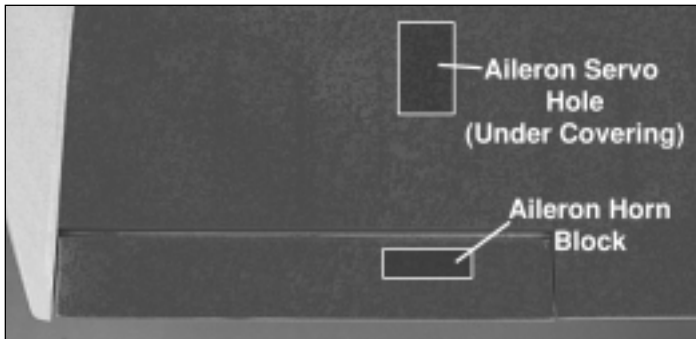
Aileron Horn Block

❏ 3. Install the ailerons, centering them in the aileron bay. Repeat the hinge gluing technique described previously. **Note:** On the red side of the aileron, in the second rib bay from the inward end, there is a horn block along the leading edge. This block must line up with the aileron servo hole in the wing.
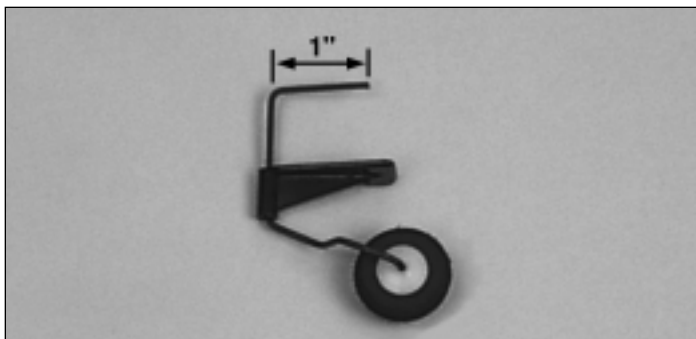

❏ 4. Make a 90° bend in the **tailgear wire** 1" from the end of the wire. Install the **1" tail wheel** and secure it to the tailgear wire with a **3/32" wheel collar** and **2-56 x 1/8" set screw.**
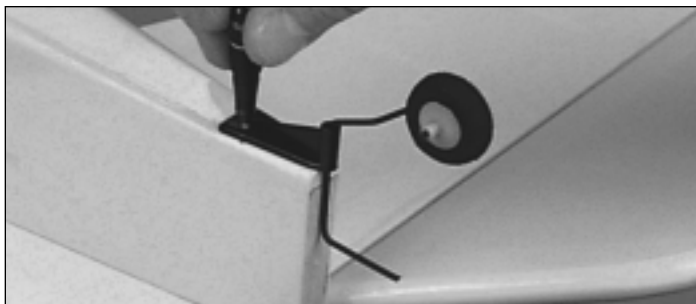
❏ 5. Position the tailgear on the bottom of the aft end of the fuselage. Center the tailgear mount with the tailgear

wire against the fuselage. Mark the four mounting holes in the tailgear mount.

❏ 6. At each mark drill a 1/16" [1.6mm] pilot hole. Attach the tailgear to the bottom of the fuselage with four **#2 x 3/8" sheet metal screws.**
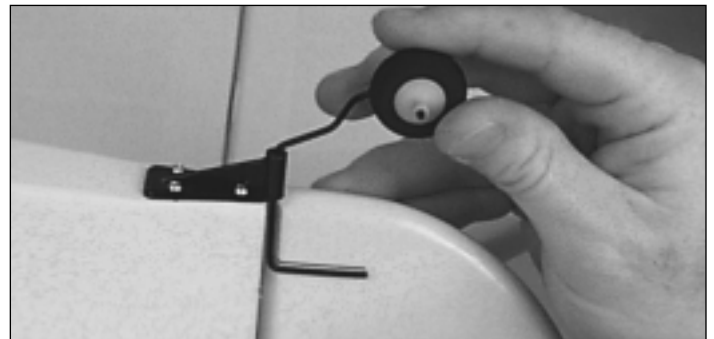

❏ 7. Hold the **rudder** in position on the trailing edge of the vertical fin. There should be a 1/16" [1.6mm] gap between the top of the vertical fin and the rudder balance tab. Mark the tailgear arm location where it will enter the leading edge of the rudder.

❏ 8. Drill a 3/32" [2.4mm] hole, 1-1/4" [31.7mm] deep, in the leading edge of the rudder at the tailgear arm location. Cut a groove for the tailgear wire in the leading edge of the rudder from the 3/32" [2.4mm] hole to the bottom of the rudder.

❏ 9. Apply a little petroleum jelly to the tailgear wire where it passes through the nylon bearing. This will prevent the wire from being glued into the bearing.

❏ 10. Prepare the hinge slots in the rudder the same way you did for the elevators.

❏ 11. Roughen the tailgear wire arm with coarse sandpaper and clean with alcohol to improve glue adhesion. Use a toothpick to pack the tailgear arm hole in the rudder with 30-minute epoxy. Join the rudder to the fin with the hinges. Wipe off the excess epoxy with a paper towel dampened with isopropyl alcohol. Repeat the hinge gluing technique described previously after allowing the epoxy to cure.
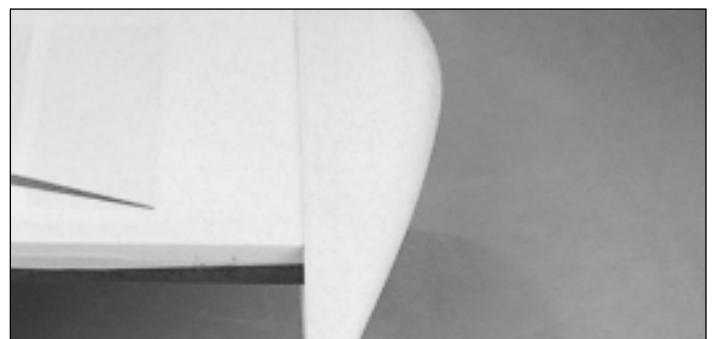

❏ 12. Roughen the inside of the plastic wing tips and approximately 1/8" of the covering at the end of the wing with 400-grit sandpaper before gluing. Use 30-minute epoxy to glue the two wing tips onto the end of the wing. Note that the lip on the wing tip fits over the wing. Use a

paper towel dampened in isopropyl alcohol to wipe off any excess epoxy before it cures.
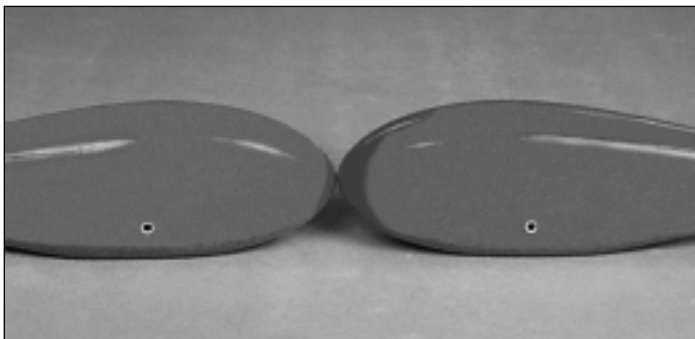
INSTALL THE MAIN LANDING GEAR
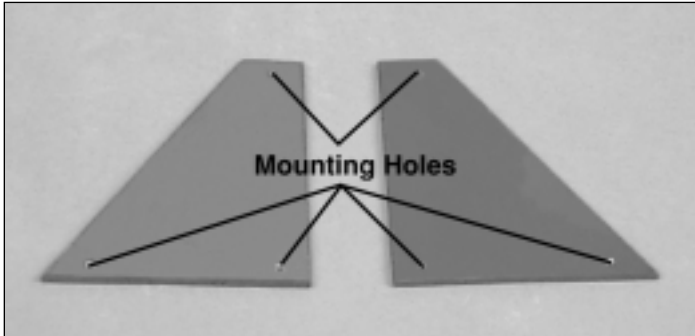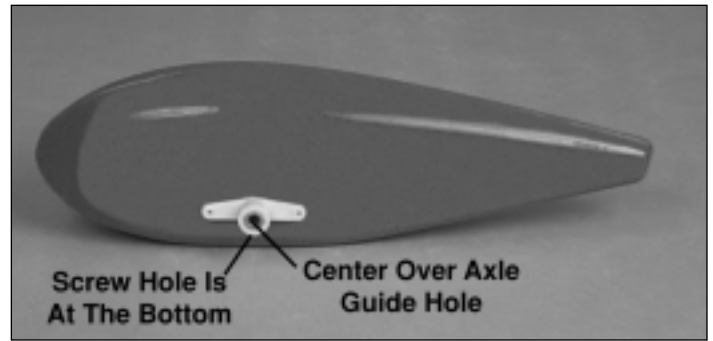

Mounting Holes

❏ 1. Trim the covering from the three mounting holes in each **main landing gear cover.**
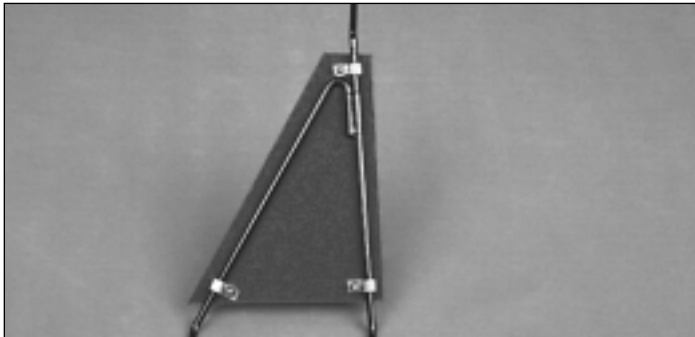
❏ 2. Attach each landing gear cover to the **main landing gear** with three metal **landing gear cover brackets, 4-40 x 3/8" machine screws, #4 washers** and **4-40 nuts.** Be sure to use thread lock on the machine screws to prevent the nuts from vibrating loose.
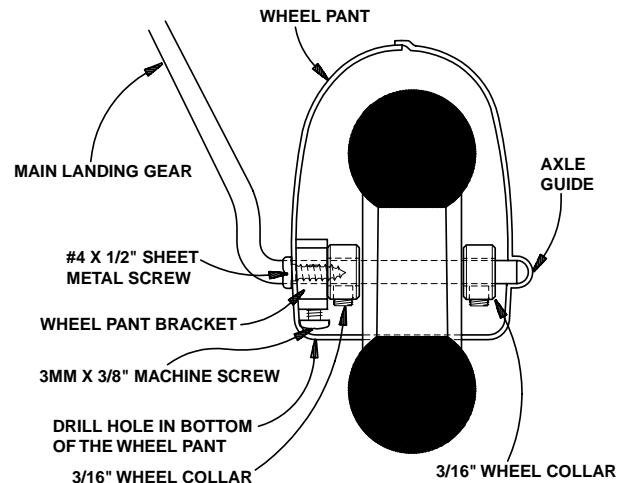

❏ 3. Note that there is a bump (axle guide) on each side of the **wheel pant.** Trim one of the molded axle guides from each wheel pant. **Important:** Be sure to make a **left** and **right** wheel pant.

Screw Hole Is At The Bottom   **Center Over Axle Guide Hole**

❏ ❏ 4. Position the **wheel pant bracket** on the wheel pant, centered over the axle guide hole. Mark the two bracket mounting holes on the wheel pant. A T-pin works great for this. **Important:** The 3mm screw hole in the side of the bracket must be towards the **bottom.**

❏ ❏ 5. Drill a 1/8" hole at both marks on the wheel pant. Attach the wheel pant bracket to the inside of the wheel pant with two **#4 x 1/2" sheet metal screws** and **#4 washers.**

❏ ❏ 6. Drill a 3/16" [4.7mm] hole in the bottom of the pant, aligned with the 3mm hole in the side of the wheel pant bracket. See the drawing in step 7.

WHEEL PANT
MAIN LANDING GEAR
AXLE GUIDE
#4 X 1/2" SHEET METAL SCREW
WHEEL PANT BRACKET
3MM X 3/8" MACHINE SCREW
DRILL HOLE IN BOTTOM OF THE WHEEL PANT
3/16" WHEEL COLLAR
3/16" WHEEL COLLAR

❏ ❏ 7. File a flat spot along the bottom of the landing gear axle. Slide one wheel pant onto the landing gear axle followed by one of the **3/16" wheel collars,** a **2-1/2" wheel** and a second wheel collar. The landing gear axle should seat in the outside axle guide. Screw a **6-32 x 1/8" set screw** into each of the wheel collars. Be sure to use thread lock on the set screws to prevent them from vibrating loose.

❏ ❏ 8. Secure the wheel pant to the landing gear with a **3mm x 3/8" machine screw** threaded into the wheel pant bracket. Again, be sure to apply thread lock to the machine screw before tightening.

Return to step 4 and install the second wheel pant.
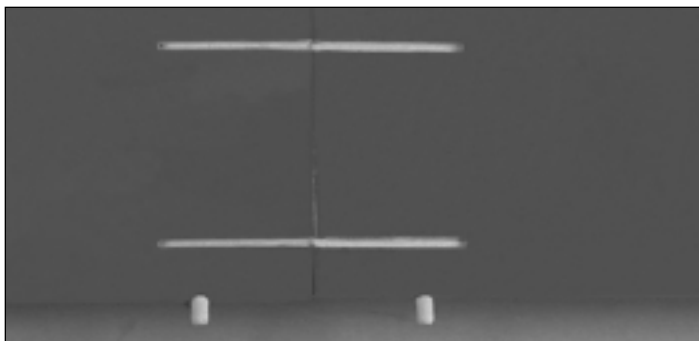
❑ 9. Trim the covering from the main landing gear slots on the bottom of the wing. Apply a small amount of thin CA along the slot to insure it is fuelproofed.
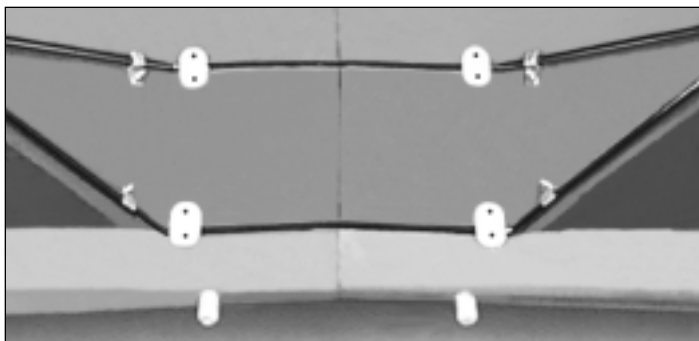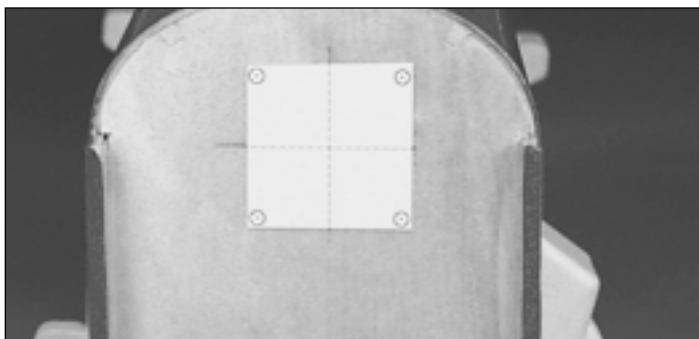

❑ 10. Insert the main landing gear in the landing gear slots. Position the four **nylon landing gear straps** over the landing gear and mark the mounting hole locations.

❑ 11. Drill a 3/32" [2.4mm] pilot hole at each mark.

❑ 12. Attach the landing gear straps to the wing with **#4 x 1/2" sheet metal screws.**

ENGINE INSTALLATION

❑ 1. Position the **engine mount template** (found on page 21 of this instruction manual) on the firewall. Align the centerlines of the template with the embossed marks on the firewall. The marks on the firewall are off center to allow for the built-in right thrust of the firewall.

❑ 2. Mark the engine mount bolt holes and drill a 7/32" [5.5mm] hole through the firewall at each mark.

❑ 3. Insert an **8-32 blind nut** into each hole from the backside of the firewall. Use an **8-32 x 1" socket head cap screw** and **#8 flat washer** to seat the blind nuts in the back of the firewall.

❑ 4. Cut the "spreader bar" from the supplied Great Planes **adjustable engine mount.** Use a hobby knife to remove any flashing left over from the molding process so that the halves fit together without any binding.

❑ 5. Temporarily install the engine mount on the firewall with four 8-32 x 1" socket head cap screws, **#8 lock washers** and #8 flat washers. Do not tighten the screws all the way so you can adjust the mount.

❑ 6. Place your engine on the mount and adjust the halves to fit the engine. Position the mount so the molded-in "tick marks" are equally spaced on the horizontal off set line on the firewall. When the engine mount is adjusted and positioned, tighten the mounting screws.
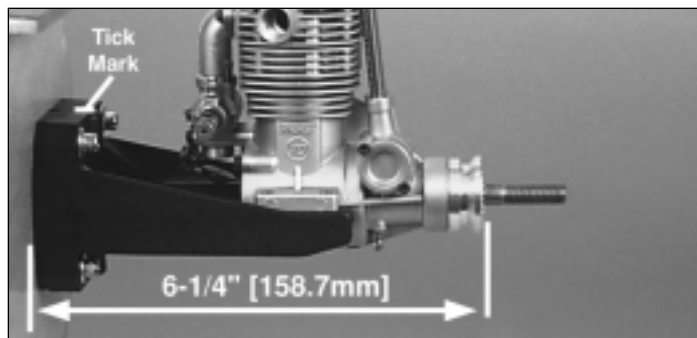
❑ 7. Position the engine on the mount so the drive washer (or the back of the spinner) is 6-1/4" [158.7mm] away from the firewall. **Use a Great Planes Dead Center™ Hole Locator** to mark the engine mounting holes.

❑ 8. Drill a 7/64" [2.8mm] hole at each mark. Mount the engine to the engine mount with four **#6 x 1" sheet metal screws. Hint:** The screws will be easier to install if you first rub the threads on a bar of soap.

Note: On some engines the carburetor can be rotated so that the needle valve points towards the top of the plane.

Aligned With Throttle Arm

5/32" Hole For Throttle Pushrod Tube

❏ 9. Drill a 5/32" [3.9mm] hole through the firewall and the second former, in line with the throttle arm on the engine.

❏ 10. Use coarse sandpaper to roughen the outside of the **throttle outer pushrod tube** so the glue adheres well. Insert the outer tube through the firewall and second former. Glue the outer tube in place, leaving approximately 1/2" [12.7mm] of the tube protruding from the front of the firewall.

RADIO INSTALLATION

### Install the Throttle, Elevator and Rudder Servos
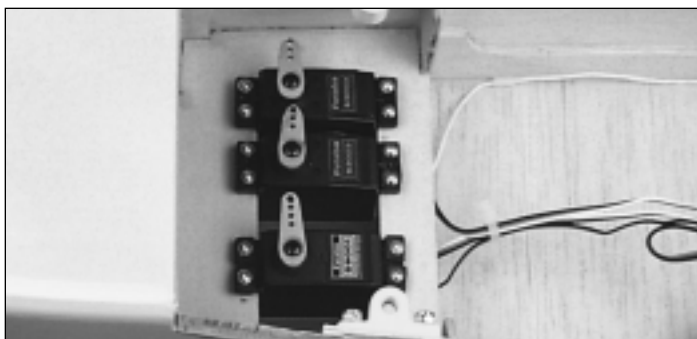
❏ 1. Install the servos in the servo tray, spacing them apart as necessary so the servo arms do not interfere with each other. **Note:** We recommend that a servo with at least 45 oz-in. [3.25 kg-cm] of torque be used on the elevators.


Receiver
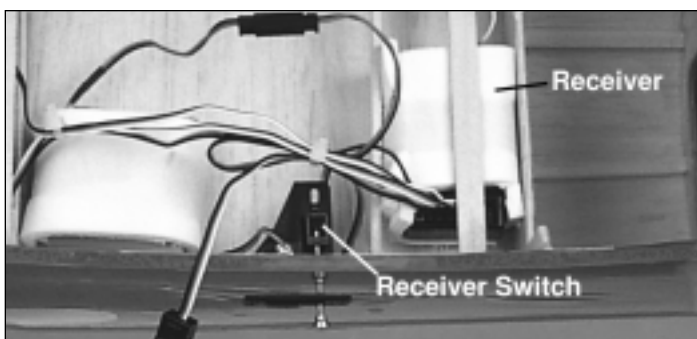
Receiver Switch

❏ 2. Install the **receiver switch** on the left side of the fuselage. We prefer a Great Planes Switch & Charge Jack Mounting Set (GPMM1000). This allows the receiver battery to be checked and charged at the flying field without removing the wing. Wrap the receiver and receiver battery

in 1/4" [6.4mm] foam rubber to protect them from vibration. Plug the servos, receiver switch and Y-harness into the receiver. Secure the receiver in the fuselage with a couple of scrap sticks glued to the sides of the fuselage.

Note: Do not permanently mount the receiver battery until the step "Balance Your Model" on page 18 has been completed.

CUT   CUT
RUBBER BAND   T-PIN
STRAIN RELIEF INSIDE FUSELAGE
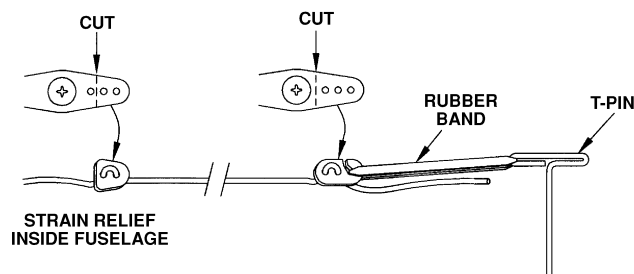
❏ 3. On our models we drilled a 1/16" [1.2mm] hole through the top stringer of the turtledeck just behind the cockpit. The receiver antenna is routed along the inside of the fuselage and out this hole. The antenna is attached to the fin with a T-pin, rubber band and a cut off servo arm.

Silicone Retainer

Clevis

Screw-Lock Pushrod Connector
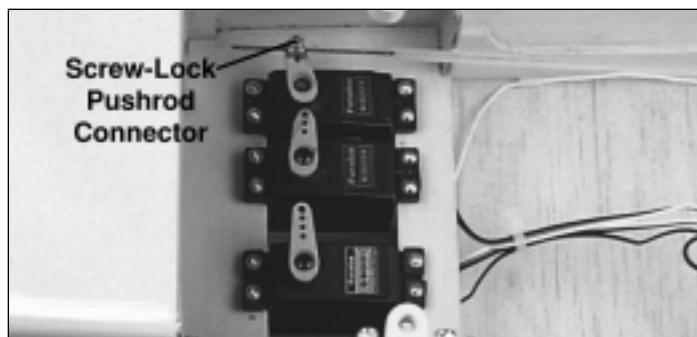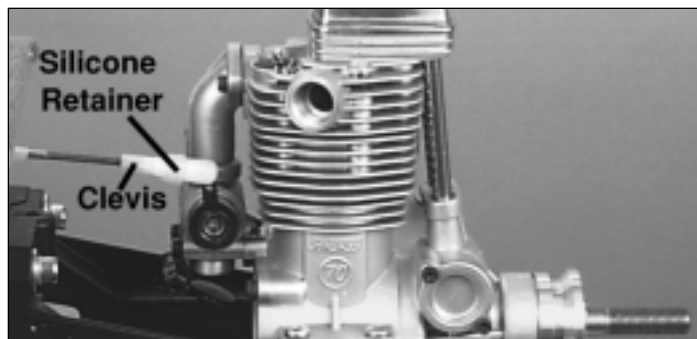
❏ 4. Temporarily install the brass **Screw-Lock™ Pushrod Connector** in the throttle servo arm. Slide a **silicone clevis retainer** over the threaded end of a **2-56 x 36" pushrod.** Thread a **nylon clevis** 14 turns onto the pushrod. Attach the clevis to the throttle arm on the carburetor. Slide the throttle pushrod through the outer pushrod tube and pushrod connector. Install a **4-40 x 1/8" socket head cap screw** in the pushrod connector. Connect the clevis to the throttle arm and slide the silicone clevis retainer into place.

❏ 5. If you installed a 2-stroke engine on your plane, install the muffler and bend the throttle pushrod as needed to avoid interference between the muffler.

❏ 6. Switch your radio system on. Check that the throttle opens and closes completely using the throttle stick and trim on the transmitter. *(See your radio instruction manual for proper adjustment.)* When satisfied with the operation of the throttle, permanently attach the pushrod connector to the servo arm with the **plastic retainer** and tighten the cap screw onto the pushrod. Cut off the excess pushrod.

❏ 7. Glue the throttle outer pushrod tube to the formers to secure it in position.

❏ 8. Cut both wood dowels to 14" [355.6mm] long.
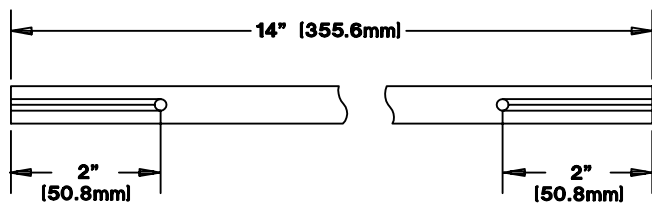
❏ 9. In one of the **wood dowels,** drill 5/64" [2mm] holes through the dowel, 2" [50.8mm] from each end. On each end of the dowel, use a hobby knife to cut a groove from the hole to the end of the dowel, deep enough for a 2-56 threaded pushrod to fit in.
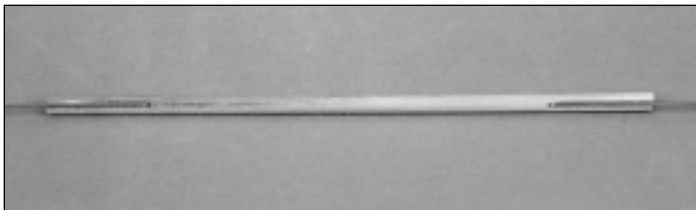

❏ 10. From the threaded end of a 2-56 x36" pushrod, cut an 11" [279.4mm] long piece. Cut a second non-threaded 11" [279.4mm] piece from the same 36" pushrod. Make a 90° bend 1/4" [6.4mm] from the non-threaded end of both 11" pushrods. Insert the "bent end" of the wire into the holes in the wood dowel.

❏ 11. Cut the 8" [203mm] **shrink tubing** into four 2" [50.8mm] pieces. Slide a 2" [50.8mm] piece over each end of the wood dowel and pushrod. Use a heat gun to shrink the tubing tight around the dowel. Apply several drops of thin CA to each end of the shrink tubing to secure it to the dowel. This is now the rudder pushrod.

❏ 12. Trim the covering from the two elevator pushrod exits and the rudder pushrod exit at the aft end of the fuselage. Apply a small amount of thin CA around the exits to fuelproof them.
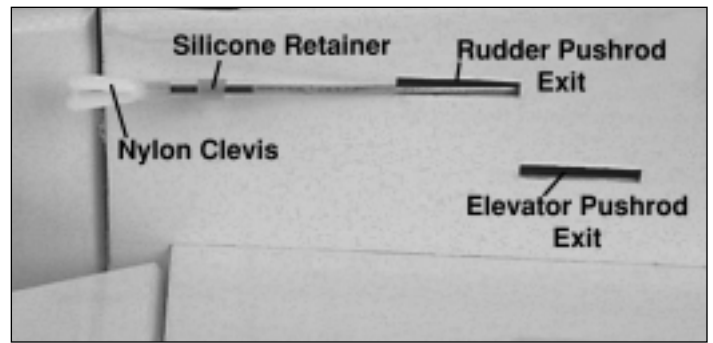
❏ 13. Insert the rudder pushrod into the fuselage with the threaded rod exiting out the rudder exit slot. Slide a silicone clevis retainer over the rudder pushrod and screw a nylon clevis 14 turns onto the rudder pushrod.
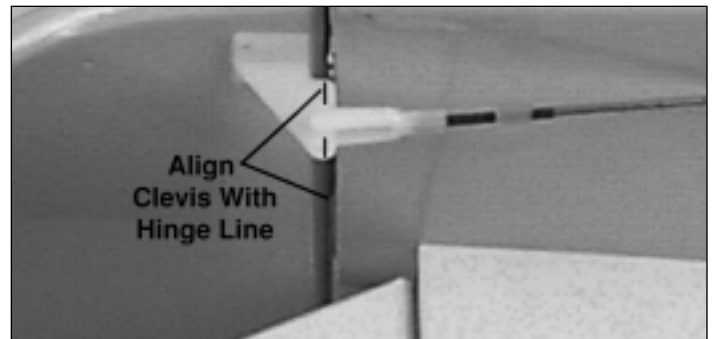

❏ 14. Attach a **control horn** to the clevis. Align the clevis holes in the control horn with the hinge line of the rudder. Mark the control horn mounting holes.

❏ 15. Drill a 3/32" [2.4mm] hole at both marks. Mount the rudder control horn to the rudder with the backing plate and two 2-56 x 5/8" machine screws. Slide the silicone retainer over the clevis to secure it in place.


❏ 16. With the servos centered and the rudder in the neutral position, use a felt-tip pen to mark where the pushrods cross the mounting holes in the servo arms.
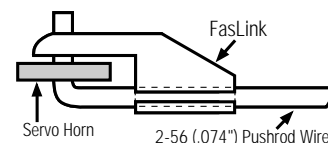

❏ 17. Make a 90° bend at the mark you made. Insert the rudder pushrod in the rudder servo horn and secure it with

a nylon **Faslink.** Cut the excess pushrod so it slightly protrudes out of the Faslink.

Note: If necessary, enlarge the hole in the servo arm with a 5/64" [2mm] drill bit (or a #48 bit for precision).
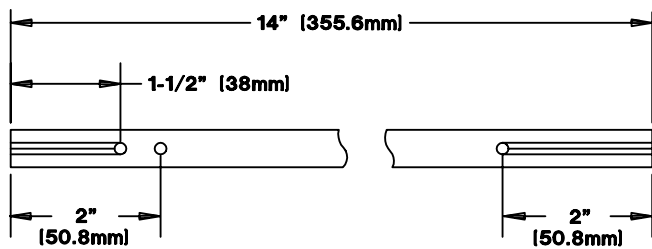
❏ 18. In the second wooden dowel, drill 5/64" [2mm] holes through the dowel, 2" [50.8mm] from each end. On one of the ends, also drill a hole 1-1/2" [38mm] from the end. On each end of the dowel, use a hobby knife to cut a groove from the holes to the end of the dowel, deep enough for a 2-56 threaded pushrod to fit in. The groove for the 1-1/2" [38mm] hole should be on the opposite side from the groove for the 2" [50.8mm] hole.
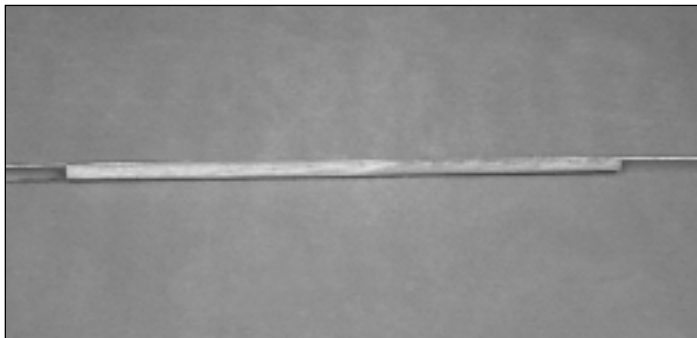

❏ 19. Cut 1-1/2" [38mm] off of the non-threaded end of a 2-56 x 12" threaded pushrod. From the threaded end of a 2-56 x 36" pushrod, cut an 11" [279.4mm] long piece. Cut a second non-threaded 11" [279.4mm] piece from the same 36" pushrod. Make a 90° bend 1/4" [6.4mm] from the non-threaded end of the 10-1/2" and both 11" pushrods. Insert the two 11" [279.4mm] pushrods in the holes, 2" [50.8mm] from the end of the wooden dowel. The 10-1/2" [266.7mm] pushrod is inserted in the hole 1-1/2" [38mm] from the end.

❏ 20. Slide a 2" [50.8mm] piece of shrink tubing over each end of the wood dowel and pushrods. Use a heat gun to shrink the tubing tight around the dowel and use thin CA to secure it to the dowel. This is now the elevator pushrod.

❏ 21. Following the same procedure used to install the rudder pushrod, insert the elevator pushrod into the fuselage with the two threaded rods exiting out the elevator exit slots. **Hint:** Bend the pushrods apart slightly. It's best to guide one pushrod out one of the pushrod exits. Align the second rod with the other pushrod exit and use a hobby knife or small flat screwdriver to guide it out the exit. Slide silicone clevis retainers over the threaded rods and screw nylon clevises 14 turns onto the threaded rods.

❏ 22. Attach a control horn to both clevises. Align the adjustment holes in the control horns with the hinge line of the elevator. Mark the control horn's mounting holes.
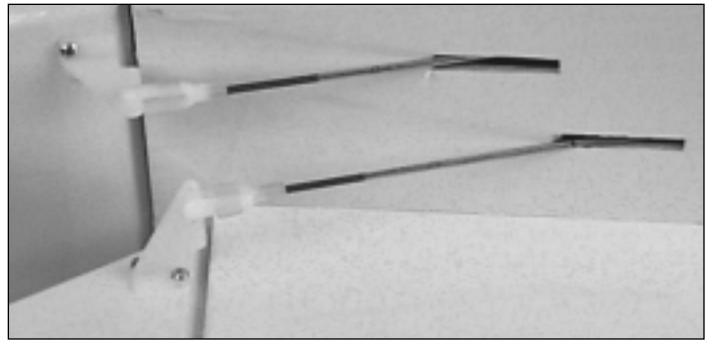

❏ 23. Drill a 3/32" [2.4mm] hole at each mark. Mount the elevator control horns to the elevators with the backing plate and 2-56 x 5/8" machine screws. Slide the silicone retainer over the clevis to secure it in place.

❏ 24. With the elevator servo centered and the elevators in the neutral position, use a felt-tip pen to mark where the pushrod crosses the mounting holes in the servo arm.

❏ 25. Make a 90° bend at the mark you made. Insert the elevator pushrod in the elevator servo horn and secure it with a nylon Faslink. Cut the excess pushrod so it slightly protrudes out of the Faslink. **Note:** If necessary, enlarge the hole in the servo arm with a 5/64" [2mm] drill bit (or a #48 drill for precision).

Install the Aileron Servos
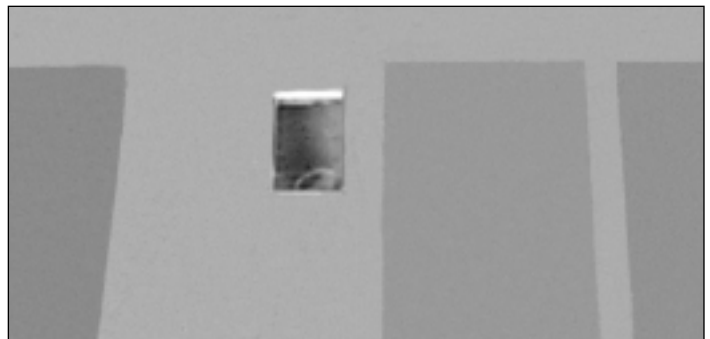
❏ ❏ 1. Trim the covering from the aileron servo tray on the bottom of the right wing half.

❏ ❏ 2. Plug a 24" [609.6mm] servo extension into the aileron servo. As a precaution, use tape or shrink tubing (not included) to prevent the connectors from separating.

❏ ❏ 3. Carefully pull the string in the aileron servo bay out enough to tie it to the end of the 24" servo extension. **Gently** pull the extension through the wing until it exits at the center of the wing.
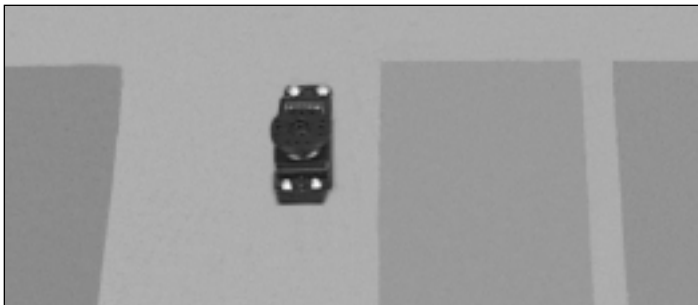
❏ ❏ 4. Mark the aileron servo mounting hole locations on the wing. Remove the aileron servo and drill a 1/16" [1.6mm] hole at each mark. Mount the aileron servo in the wing with the mounting screws included with the servo.
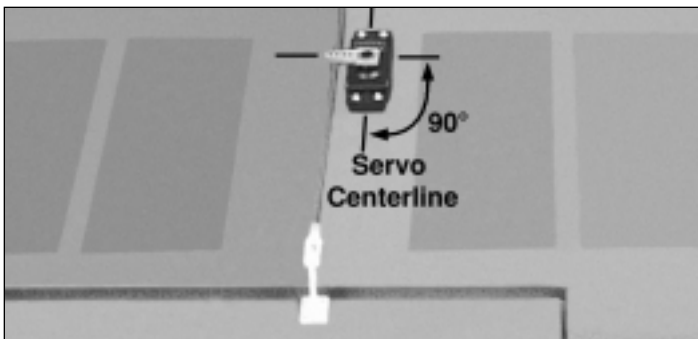
❏ ❏ 5. Trim three of the four arms from a cross servo arm. Plug the aileron servo into your receiver, switch the radio system on and center the aileron servo. Install the servo arm on the servo so that it is perpendicular to the centerline of the servo. Screw a nylon clevis 14 turns onto a 2-56 x 12" threaded pushrod. Attach the clevis to a control horn and position the control horn on the aileron so that the pushrod is aligned with the servo arm, and the adjustment holes in the horn are aligned with the aileron hinge line. Mark the horn mounting holes.

❏ ❏ 6. Mount a large scale control horn (not included), to the aileron following the manufacturer's instructions.

❏ ❏ 7. With the ailerons in the neutral position, use a felt-tip pen to mark where the pushrod crosses the mounting holes in the servo arm.

❏ ❏ 8. Slide a silicone retainer on the pushrod and over the clevis. Make a 90° bend in the pushrod at the mark you made in step 7. Insert the aileron pushrod in the aileron servo horn and secure it with a nylon Faslink. Cut the excess pushrod so it slightly protrudes out of the Faslink.

Note: If necessary, enlarge the hole in the servo arm with a 5/64" [2mm] drill bit (or a #48 drill for precision).
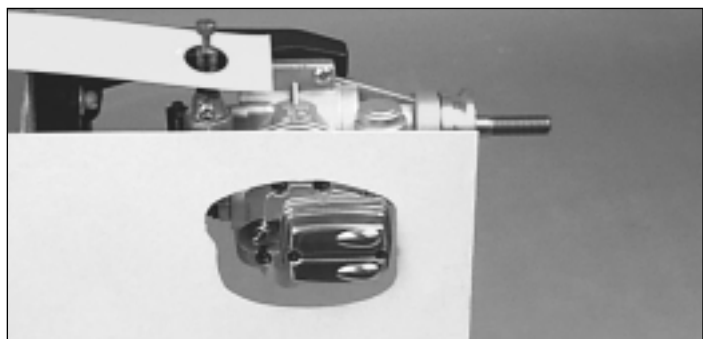
❏ 9. Return to step 1 of "Install The Aileron Servos" and install the second aileron servo. **Note:** Install the servo arms so that they both point outward, toward the wing tips.

❏ 10. Plug both ailerons into the "Y" cable.

INSTALL THE COWL

❏ 1. Use strips of thin cardboard or plastic to make templates to locate the head of the engine and needle valve. Tape the templates to the fuselage, accurately indicating the position of the engine head and needle valve.
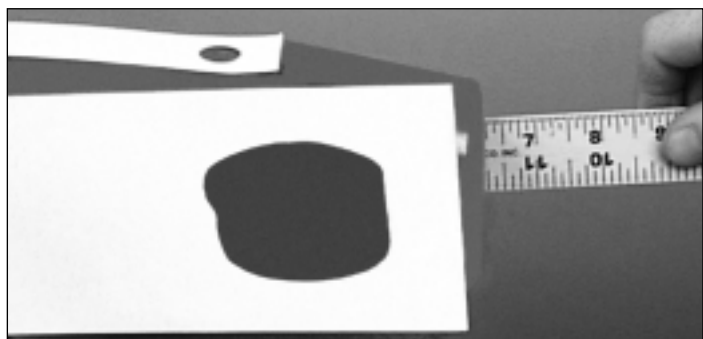
❏ 2. Place the backplate of your spinner on the engine and check that the distance between the firewall and the backplate is 6-1/4" [158.7mm]. Remove the engine from the engine mount, leaving the templates in place. Position the cowl on the fuselage so the forward edge is 3/32" [2.4mm] aft of the measurement you just made, or 6-5/32" [156.3mm] in front of the firewall. Align the cowl on the fuselage and lightly mark the location of the rear of the cowl on the fuselage top.
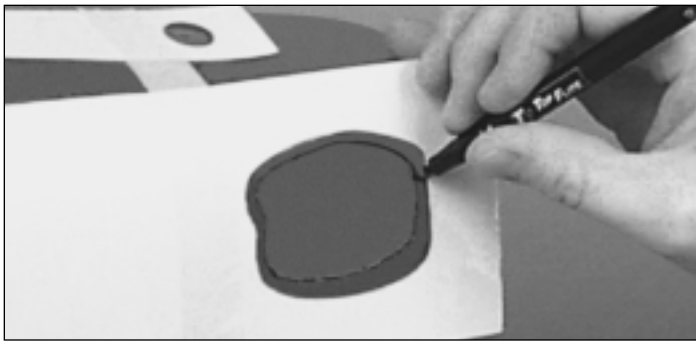
❏ 3. Use a felt-tip pen to transfer the template outlines onto the cowl. Because the cowl comes pre-painted and removing the marks may be difficult, we recommend you draw the outline of the template approximately **1/8" [3.2mm] inside** of the template.
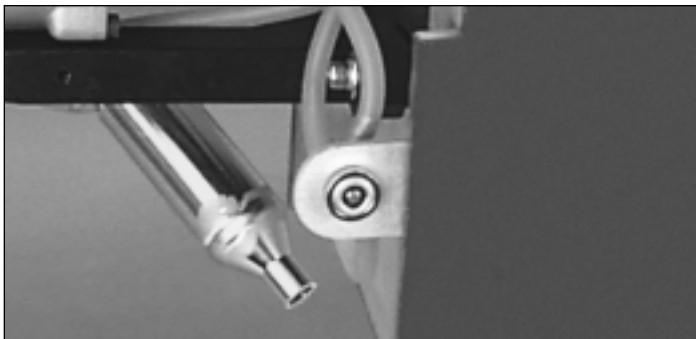
❏ 4. For convenience, we installed on the left side of the firewall, a Great Planes Easy Fueler™ Fuel Filling Valve (GPMQ4160) mounted on a piece of 1/8" [3mm] plywood. To locate the fill valve on the cowl, make a template as previously done for the engine head. Connect the fuel tubing from the **fuel pick-up** to the **carburetor** (or fill valve) and the tubing from the **pressure fitting** to the **muffler pressure tap.**
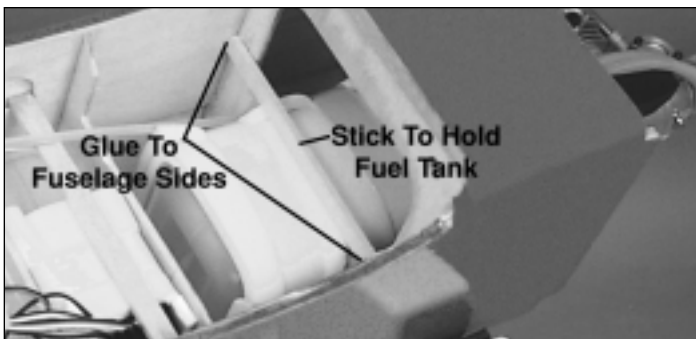
❏ 5. Remove the cowl and templates. Re-install the engine (this should be the last time you need to install it). Install the muffler on the engine so that the muffler exhaust is pointing towards the bottom of the firewall.


❏ 6. Assemble the fuel tank per the manufacturer's instructions. Connect approximately 12" [304.8mm] of fuel tubing to the fuel pick-up fitting and the pressure fitting on the tank. Wrap the tank in 1/4" [6.4mm] foam rubber and slide the tank through the opening in the second former. The top of the tank must face the top of the fuselage. Route the fuel tubing through the firewall. Use a stick (not included) to secure the fuel tank in the fuselage. **Optional:** A third piece of fuel tubing may be installed on the fuel tank for an overflow line and routed to the bottom of the firewall. **Note:** This line must be plugged in flight if you intend to pressurize your fuel tank.

❏ 7. Using the template lines drawn on the cowl, cut the holes for the engine head and needle valve. Also cut out a cooling hole on the bottom of the cowl as shown. **Hint:** Cut the holes in the cowl slightly undersize at first. Test fit the cowl on the fuselage, making slight adjustments to the holes as needed.

❏ 8. When satisfied with the fit of the cowl, install the spinner backplate, propeller and spinner cone on the engine.
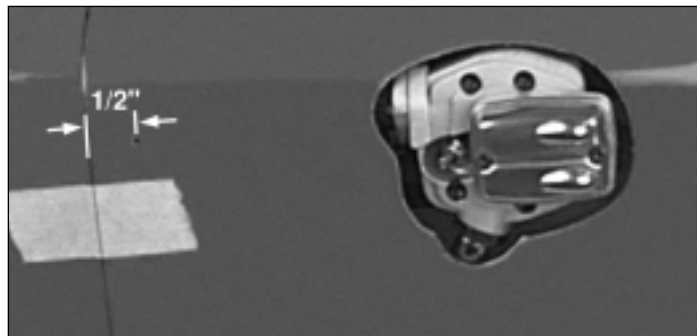
❏ 9. Tape the cowl in position with the cowl front aligned with the spinner backplate. On both sides of the cowl make three marks for the cowl mounting screws **1/2" [12.7mm]** from the aft edge. At each mark drill a 3/32" [2.4mm] pilot hole through the cowl and fuselage sides.

❏ 10. Remove the cowl and enlarge the holes in the cowl to 1/8" [3.2mm]. Mount the cowl to the fuselage with six **#4 x 1/2" sheet metal screws** and **#4 washers.**

ADDING DETAILS TO YOUR SPACEWALKER ARF

❏ 1. We recommend that the cockpit area be painted with a fuelproof paint. We used flat black LustreKote™ on our models.
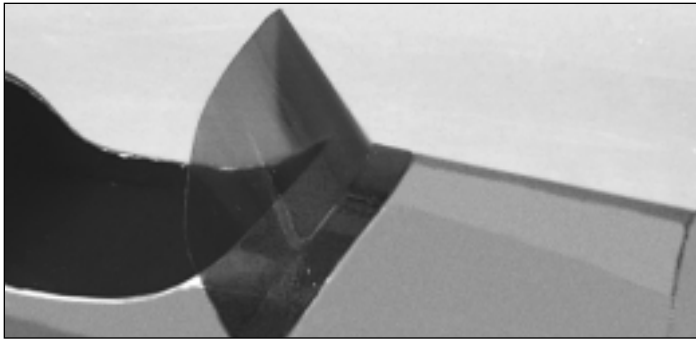
❑ 2. Cut out the **windshield** along the cut lines and glue it to the fuselage. Use rubber bands or masking tape to hold it in position until the glue dries. We recommend a glue specifically formulated for gluing canopies such as Pacer "Formula 560" canopy glue. Formula 560 is like regular white glue (aliphatic resin) in that it dries clear and cleans up with water, but sticks well to butyrate and completely dries overnight.

❑ 3. Glue the **scale fuel level fairing** on top of the fuselage, centered between the windshield and cowl.

❑ 4. Apply a small bead of canopy glue along the edge of the cockpit. Fit the black **cockpit coaming** all around the edge of the cockpit and wipe off any excess glue before it dries.

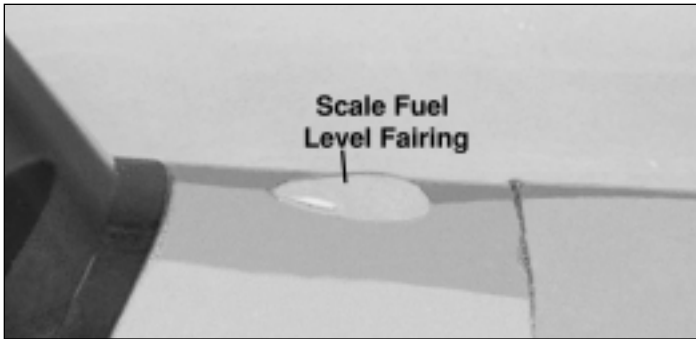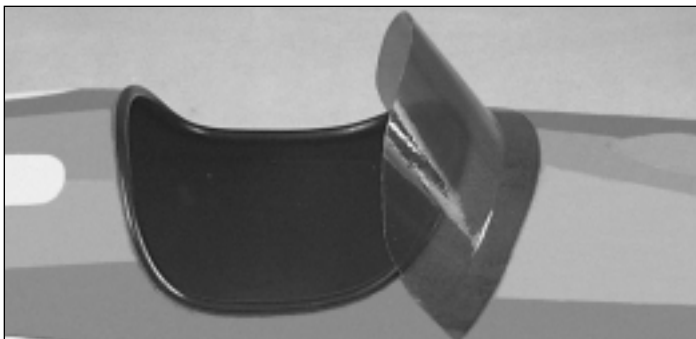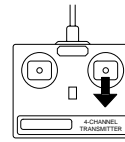❑ 5. We used a Williams Brothers 1/4 scale old time pilot #62500 raised up with a 1/2" [12.7mm] block of wood. Paint the pilot, and after the paint has dried use 6-minute epoxy and two #4 x 1/2" sheet metal screws (not included) to mount the pilot to the cockpit floor.

SET THE CONTROL THROWS

4-CHANNEL RADIO SET-UP
(STANDARD MODE 2)

ELEVATOR MOVES UP
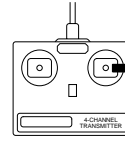
RIGHT AILERON MOVES UP
LEFT AILERON MOVES DOWN
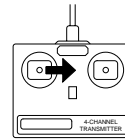
RUDDER MOVES RIGHT
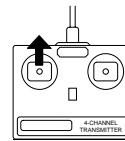
CARBURETOR WIDE OPEN

The throws are measured at the widest part of the elevators, rudder and ailerons. Adjust the position of the pushrods at the servo horns to control the amount of throw. You may also use the ATV's if your transmitter has them, but the mechanical linkages should still be set so the ATV's are near 100% for the best servo resolution (smoothest, most proportional movement).

We recommend the following control surface throws:

	High Rate	**Low Rate**
Elevator:	1" [25.4mm]	5/8" [16mm] up and down
Rudder:	1-3/4" [45mm]	1-3/4" [45mm] left and right
Ailerons:	1-1/4" [31.75mm]	1" [25.4mm] up and down

Note: If your radio does not have dual rates, we recommend setting the throws at the low rate setting. The balance and control throws for the SpaceWalker ARF have been extensively tested. This chart indicates the settings at which the SpaceWalker ARF flies best. Please set up your model to the specifications listed above. If, after you become comfortable with your SpaceWalker ARF, you would like to adjust the throws to suit your tastes, that's fine. Too much throw can force the plane into a stall or snap roll, so remember, "more is not always better."

BALANCE YOUR MODEL

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

4-1/4"
(108mm)
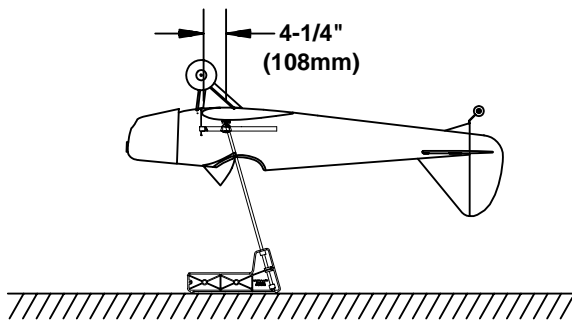
❏ 1. The **balance point (C.G.)** is located **4-1/4"** back from the leading edge of the wing next to the fuse sides as shown in the sketch. Accurately mark the balance point on the top of the wing on both sides of the fuselage. Use thin strips of tape or a felt-tip pen to make the marks.

Note: This is the balance point at which your model should balance for your first flights. After initial trim flights and when you become more acquainted with your SpaceWalker ARF, you may wish to experiment by shifting the balance up to **3/8" forward** or **backward** to change its flying characteristics. Moving the balance **forward** may improve the smoothness and stability, but the model may then require more speed for takeoff and may become more difficult to slow for landing. Moving the balance **aft** makes the model more agile with a lighter, snappier "feel." In any case, **please start at the location we recommend. Do not at any time balance your model outside the recommended ranges shown.**

❏ 2. With all the parts of the model installed (ready to fly) and an empty fuel tank, hold the model upside down at the balance point. The Great Planes CG Machine™ (GPMR2400) works great for balancing the model.

❏ 3. Place the model on the balancer at the balance point. If the **tail** drops, the model is "tail heavy" and you must add

weight to the nose to balance the model. If the **nose** drops, it is "nose heavy" and you must add weight to the tail to balance the model.

Note: If possible, first attempt to balance the model by changing the position of the receiver battery. If nose weight is required, first place the receiver battery under the fuel tank. This may be all that is required to balance the plane. If you are unable to obtain good balance by doing so, then it will be necessary to add weight to the nose or tail to achieve the proper balance point. Nose weight may be easily installed by using a "spinner weight" or gluing lead weights to the firewall. Tail weight may be added by using Great Planes (GPMQ4485) "stick-on" lead weights.

BALANCE THE MODEL LATERALLY

Now that the model is completed, this is the time to balance it laterally (side-to-side). Here's how:

1. With the wings level and attached to the model (and the engine and muffler installed), lift the model by the propeller shaft and the fin. This will require an assistant. Do this several times.

2. The wing that consistently drops indicates the heavy side. Balance the model by adding weight to the other wing tip.

An airplane that is laterally balanced will track better during aerobatic maneuvers.

PREFLIGHT

At this time check all connections including servo horn screws, clevises, servo cords and extensions. Make sure you have installed the nylon retainer on the Screw-Lock Pushrod Connector and the silicone retainers on all the clevises.

Charge the Batteries

Follow the battery charging procedures in your radio instruction manual. You should always charge your transmitter and receiver batteries the night before you go flying and at other times as recommended by the radio manufacturer. We also recommend that you use a voltmeter such as the Hobbico® Digital LCD Voltmeter MKII (HCAP0355) to check the receiver battery between flights.

Balance the Propeller

Balance your propellers carefully before flying. An unbalanced prop is the single most significant cause of

vibration. Not only will engine mounting screws and bolts vibrate out, possibly with disastrous effect, but vibration will also damage your radio receiver and battery. Vibration may cause your fuel to foam, which will, in turn, cause your engine to run lean or quit.
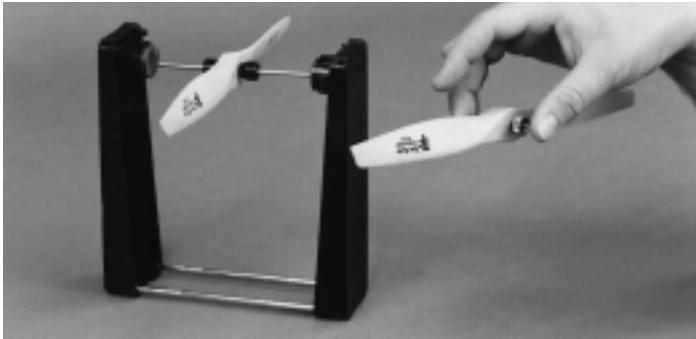
We use a Top Flite® Precision Magnetic Prop Balancer™ (TOPQ5700) in the workshop and keep a Great Planes Fingertip Balancer (GPMQ5000) in our flight box.

Find a Safe Place to Fly

Since you have chosen the Great Planes SpaceWalker ARF, we assume that you are an experienced modeler. Therefore, you should already know about AMA chartered flying fields and other safe places to fly. If for some reason you are a relatively inexperienced modeler and have not been informed, we strongly suggest that the best place to fly is an AMA chartered club field. Ask the AMA or your local hobby shop dealer if there is a club in your area and join. Club fields are set up for R/C flying and that makes your outing safer and more enjoyable. The AMA address and telephone number are in the front of this manual. If a club and flying site are not available, find a large, grassy area at least 6 miles away from houses, buildings and streets and any other R/C radio operation like R/C boats and R/C cars. A schoolyard may look inviting but is too close to people, power lines and possible radio interference.

Ground Check the Model

Inspect your radio installation and confirm that all the control surfaces respond correctly to the transmitter inputs. The engine operation must also be checked by confirming that the engine idles reliably, transitions smoothly and rapidly to full power and maintains full power, indefinitely. The engine must be "broken-in" on the ground by running it for at least two tanks of fuel. Follow the engine manufacturer's recommendations for break-in. Make sure all screws remain tight, that the hinges are secure and that the prop is on tight.

Range Check Your Radio

Whenever you go to the flying field, check the operational range of the radio before the first flight of the day. First,

make sure no one else is on your frequency (channel). With your transmitter on, you should be able to walk at least 100 feet [30 meters] away from the model and still have control. While you work the controls, have a helper stand by your model and tell you what the control surfaces are doing. Repeat this test with the engine running at various speeds with a helper holding the model. If the control surfaces are not always responding correctly, do not fly! Find and correct the problem first. Look for loose servo connections or corrosion, loose bolts that may cause vibration, a defective on/off switch, low battery voltage or a defective receiver battery, a damaged receiver antenna, or a receiver crystal that may have been damaged from a previous crash.

Engine Safety Precautions

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

Keep all engine fuel in a safe place, away from high heat, sparks or flames, as fuel is very flammable. Do not smoke near the engine or fuel; and remember that the engine exhaust gives off a great deal of deadly carbon monoxide. **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. 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 or 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 the radio control frequencies currently allowed by the Federal Communications

FLYING

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 or 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 slop-free. If it fluttered once, it will probably flutter again under similar circumstances unless you can eliminate the slop or flexing in the linkages. Here are some things which can result in flutter: Excessive hinge gap; Not mounting control horns solidly; Sloppy fit of clevis pin in horn; elasticity present in flexible plastic pushrods; Side-play of pushrod in guide tube caused by tight bends; Sloppy fit of control rods in servo horns; Insufficient glue used when gluing in torque rods; Excessive flexing of aileron, caused by using too soft balsa; Excessive "play" or "backlash" in servo gears; and insecure servo mounting.

The Great Planes SpaceWalker ARF is a great-flying plane that flies smoothly and predictably. The SpaceWalker ARF does not, however, possess the self-recovery characteristics of a primary R/C trainer and should only be flown by experienced RC Pilots.

Takeoff

Take off on "low" rates if you have dual rates on your transmitter – especially if you are taking off into a crosswind. For all models it is good practice to gain as much speed as the length of the runway will permit before lifting off. This will give you a safety margin in case the engine quits. When the plane has gained enough flying speed to safely lift off, gradually and smoothly apply up elevator and allow the model to climb at a shallow angle (do not yank the model off the ground into a steep climb!)

Flight

We recommend that you take it easy with your SpaceWalker ARF for the first several flights, gradually "getting acquainted" with this great model as your engine gets fully broken in. If you feel as though you have your hands full, keep this in mind: pull back on the throttle stick to slow the model down. This will make everything happen a little slower and allow yourself time to think and react. Add and practice one maneuver at a time, learning how the SpaceWalker ARF behaves in each. For smooth flying and normal maneuvers, use the low rate settings as listed on

page 17.

Sometime well before it's time to land, you should climb your SpaceWalker ARF to a safe altitude, reduce the throttle to an idle and check out the model's low speed characteristics. Do this a few times so you know what to expect upon landing and how the SpaceWalker ARF handles stalls.
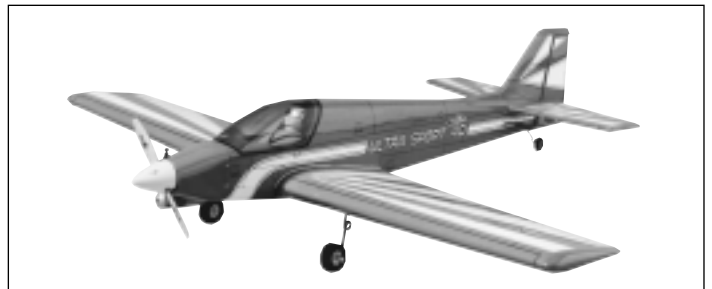
Landing

When it's time to land, fly a normal landing pattern and approach into the wind. Keep a few clicks of power on until you are over the runway threshold. For your first few landings, plan to land slightly faster than stall speed.

Have a ball! But always remember to think about your next move and plan each maneuver before you do it. Impulsively "jamming the sticks" without any thought is what gets most fliers in trouble rather than lack of flying skill. Happy Landings!

Engine Mount Template
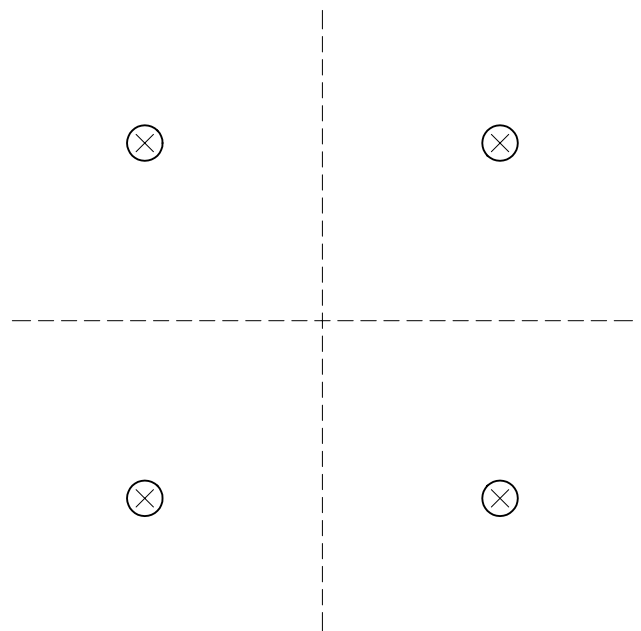
Not only does this 58" span Super Sportster model provide the same satisfying flight characteristics as the original low–wing kit...it also comes 90% prebuilt, with top–quality, all–balsa construction and a dynamic, seven–color trim scheme! It's capable of a wide variety of aerobatics in the experienced flier's hands.

O.S.® .61 FX Engine (OSMG0561)
You'll find many of your most–wanted refinements on the high performance .61 FX, including a backplate–mounted needle for easy, safe mixture adjustments; coarse threads and an O–ring seal on the needle valve to prevent "creep" and air leaks; an advanced carb for precise air/fuel mixing; and dual ball bearing–supported crankshafts for lasting durability. It supplies 1.90 bhp/16,000 rpm, and includes muffler with adjustable exhaust. Backed by 2–year warranty protection. Glow plug required.

O.S. .91 Surpass Engine (OSMG0895)
Give a sharper kick to your Spacewalker's aerobatic maneuvers with the 1.6 horsepower (at 11,000 rpm) O.S. Engines' .91 Surpass. Weighing just 22.2 ounces, this high-performance 4-stroke has a helix gear-driven camshaft on the front end and a dependable updraft carburetor in back. It's generous with power, but economical on fuel consumption—and comes with both muffler and glow plug to increase your value. Also included: warranty protection for 5 years!

Great Planes Master Caddy™ Field Box (GPMP1000)
Constructed of sturdy ply, Master Caddy comes ready to assemble and can be finished however you wish. It measures 25" x 15.75" x 8.25", with large drawers and roomy compartments to carry all of your field gear. Flight line essentials go in the lightweight, removable Auxiliary Power Station (APS). Cushioned, adjustable–width cradles hold your model safely for cleanup and maintenance.

Hobbico Accu-Cycle Charger (HCAP0260)
Routine cycling will maximize the life and capacity of any NiCd or NiMH battery—and Accu–Cycle does it best! Set pack size and discharge rate, push a button and Accu–Cycle takes over. Tx and Rx packs can be cycled alone or simultaneously. Separate LED screens provide discharge time (min.) or battery capacity (mAh) at the flip of a switch. A built–in, 15 hour timer controls separate charge circuits for each type of pack, and switches automatically to trickle charge at the cycle's end. 2–year warranty.

Hobbico TorqMaster 90 Deluxe 12V Starter (HCAP3200)
Hobbico PowerCore™ MKII 12V Starter Power Pack (HCAP0901)
The TorqMaster 90 Deluxe 12V Electric Starter supplies

years of quick starts for engines up to .90 cu in. It includes an easy–press power switch; soldered copper contacts; turned aluminum starter cone; double–wound motor; pre-trued, extra–thick carbon brushes; and self–recoiling 5' DC input cord. Available with alligator clips (HCAP3200) or power panel ready with banana plugs (HCAP3205). Spinners and hubs over 3" in diameter require Jumbo Drive Cone (HCAP3325) and Jumbo Rubber insert (HCAP3330). Operate your TorqMaster with cordless convenience using the PowerCore™ MKII Power Pack (HCAP0901). It contains a rechargeable 12V, 1.2Ah lead acid battery and mounts for securely attaching to the TorqMaster starter.

GPMR8500 Bench Topper™
The Great Planes Bench Topper holds the inexpensive answer to building supply storage and organization hassles. It assembles quickly into a 15.5" long x 7.5" high x 5.25" deep caddy that fits comfortably on any bench – or can be mounted conveniently on a wall. The lite ply parts simply CA together. Knives, scissors, paint brushes, CA and epoxy bottles, mixing cups...the Bench Topper offers a place for everything. You can even customize its top center section to suit your special storage needs!

BUILDING NOTES

Kit Purchased Date _____

Where Purchased _____

Date Construction Started _____

Date Construction Finished _____

Finished Weight _____

Date Of First Flight _____

FLIGHT LOG