Citabria

INSTRUCTION MANUAL

SPECIFICATIONS

Wingspan: 85 in [2160mm]
Length: 62 in [1575mm]
Wing Loading: 29–33 oz/ft² [88–101 g/dm²]
Wing Area: 1168 in² [75.3 dm²]
Weight: 14.5–16.5 lb [6570–7480 g]
Radio: 5-channel minimum
Engine: 1.8 - 2 cu in [30 - 35cc] two-stroke gasoline engine
Motor: Great Planes RimFire 1.60 (63-62-250) Outrunner Brushless

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.

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

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

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

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

GREAT PLANES® MODEL MANUFACTURING COMPANY

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

TABLE OF CONTENTS

INTRODUCTION

Great Planes is very proud to bring you the Citabria. This is a great flying model that you will enjoy and will turn heads at the flying field. We have made a realistic airplane that has no bad flight characteristics. We believe you will be very pleased with the final product.

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

AMA

If you are not already a member of the AMA, please join! The AMA is the governing body of model aviation and membership provides liability insurance coverage, protects modelers' rights and interests and is required to fly at most R/C sites:

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

IMPORTANT!!! Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

IMAA

The Great Planes Giant Scale Citabria ARF is an excellent sport-scale model and is eligible to fly in IMAA events. The IMAA (International Miniature Aircraft Association) is an organization that promotes non-competitive flying of giant-scale models. If you plan to attend an IMAA event, obtain a copy of the **IMAA Safety Code** by contacting the IMAA at the address or telephone number below, or by logging on to their web site at:

IMAA
205 S. Hilldale Road
Salina, KS 67401

Tele. (913) 823-5569
www.fly-imaa.org/imaa/sanction.html

Scale Competition

Though the Great Planes Citabria is an ARF and may not have the same level of detail as an "all-out" scratch-built competition model, it is a scale model nonetheless and is therefore eligible to compete in the Fun Scale class in AMA competition (we receive many favorable reports of Great Planes ARFs in scale competition!). In Fun Scale, the "builder

of the model" rule does not apply. To receive the five points for scale documentation, the only proof required that a full size aircraft of this type in this paint/markings scheme did exist is a single sheet such as a kit box cover from a plastic model, a photo, or a profile painting, etc. If the photo is in black and white other written documentation of color must be provided. Contact the AMA for a rule book with full details.

If you would like photos of the full-size Citabria for scale documentation, or if you would like to study the photos to add more scale details, photo packs are available from:

Bob's Aircraft Documentation
3114 Yukon Ave
Costa Mesa, CA 92626

Tele: (714) 979-8058
Fax: (714) 979-7279
bobsairdoc.com

SAFETY PRECAUTIONS

Protect Your Model, Yourself & Others…
Follow These Important Safety Precautions

1. Your Citabria 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 Citabria, 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 good condition, a correctly sized engine, and other components as specified in this instruction manual. All components must be correctly installed so that the model operates correctly on the ground and in the air. You must check the operation of the model and all components before every flight.

5. If you are not an experienced pilot or have not flown this type of model 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.

6. 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, or if an engine larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high stress points and/or substituting hardware more suitable for the increased stress.

7. WARNING: The cowl and other miscellaneous parts included in this kit are made of fiberglass, the fibers of which may cause eye, skin and respiratory tract irritation. Never blow into a part to remove fiberglass dust, as the dust will blow back into your eyes. Always wear safety goggles, a particle mask and rubber gloves when grinding, drilling and sanding fiberglass parts. Vacuum the parts and the work area thoroughly after working with fiberglass parts.

We, as the kit manufacturer, provide you with a top quality, thoroughly tested 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.

NOTE: Some technically-minded modelers who wish to check the wing, stab and motor thrust angles may do so by visiting the web site at www.greatplanes.com and clicking on "Technical Data."

REMEMBER: Take your time and follow the instructions to end up with a well-built model that is straight and true.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the CITABRIA that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Radio Equipment

The Citabria can be flown with a minimum of a five channel radio. For our installation we used six channels. One channel each was used for the throttle, choke, elevator, rudder, ailerons, flaps.

Recommended servos: All control surfaces require the use of a high-quality servo of at least 85 oz-in of torque. A servo of 40 oz-in of torque can be used for the throttle, and choke.

- ❍ Control surfaces – Futaba 3305 (FUTM0045)
- ❍ Throttle and choke – Futaba 9001 (FUTM0075)
- ❍ Two 20" [500mm] Heavy-Duty Servo Extensions (FUTM4147) for the ailerons and two 8" [200mm] Heavy Duty Servo Extensions for the flaps.
- ❍ Depending on your choice of receiver and the number of channels you will be using, you may have to use "Y" harnesses (FUTM4135) on the aileron and flaps.
- ❍ 3200 mAh NiCd receiver battery or equivalent (FUTM1285).
- ❍ 2 - Heavy duty switch harness (FUTM4385).
- ❍ 2 - Earnst Charge Receptacle (ERNM3001).

Engine Recommendations

The recommended engine size range for the Citabria is a 30 – 35cc [1.8 - 2 ci.] two-stroke gasoline engine. We used the DLE 30 engine for our model. Other engines can also be used but you may need to make modifications for mounting those engines.

- ❍ J'TEC Radiowave Wrap Around Pitts Muffler DLE30 (JTCG2100)

Motor Recommendations

- ❍ Great Planes RimFire 1.60 63-62-250 Outrunner Brushless (GPMG4795)
- ❍ Great Planes large motor mount (GMPG1260)
- ❍ Great Planes 80A Brushless ESC (GPMM1860)
- ❍ Great Planes 6mm Male/4mm Female Bullet Adapter (GPMM3119)
- ❍ Two - FlightPower LiPo Pro50 4S 14.8V 5000mAh 50C
- ❍ Spinner Adapter Kit (GPMQ4589)

Pilot

- ❍ Great Planes 1/4 scale sport pilot figure (GPMQ9010)

ADDITIONAL ITEMS REQUIRED

Required Hardware and Accessories

This is the list of hardware and accessories required to finish the CITABRIA. Order numbers are provided in parentheses.

- ❍ R/C foam rubber (1/4" [6mm] - HCAQ1000, or 1/2" [13mm] - HCAQ1050)
- ❍ 1 oz. [30g] Thin Pro CA (GPMR6002)
- ❍ 1 oz. [30g] Medium Pro CA+ (GPMR6008)
- ❍ Pro 30-minute epoxy (GPMR6047)
- ❍ Pro 6-minute epoxy (GPMR6045)
- ❍ Silver solder w/flux (STAR2000)
- ❍ Hobbico Soldering Iron 60 Watt (HCAR0776)
- ❍ #1 Hobby knife (XACR4325)
- ❍ #11 blades (5-pack, XACR0211)
- ❍ R/C-56 canopy glue (JOZR5007)
- ❍ Duratrax Shoe Goo (DTXC2460) or other silicone glue
- ❍ Masking tape
- ❍ Threadlocker thread locking cement (GPMR6060)
- ❍ Denatured alcohol (for epoxy clean up)
- ❍ Rotary tool such as Dremel
- ❍ Rotary tool reinforced cut-off wheel (GPMR8200)
- ❍ Drill bits: 1/16" [1.6mm], 3/32" [2.4mm], 1/8" [3.2mm], 3/16" [4.8mm], 1/4" [6mm]
- ❍ One package of 3' x 1/8" I.D. Tygon fuel tubing (DUBQ0493)
- ❍ Fuel barbs (DUBQ0672)

Tools and Building Supplies

Here is a list of optional tools mentioned in the manual that will help you build the Citabria.

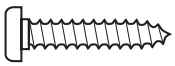
- ❍ 21st Century sealing iron (COVR2700)
- ❍ 21st Century iron cover (COVR2702)
- ❍ 2 oz. [57g] spray CA activator (GPMR6035)
- ❍ 4 oz. [113g] aerosol CA activator (GPMR634)
- ❍ Epoxy brushes (6, GPMR8060)
- ❍ Mixing sticks (50, GPMR8055)
- ❍ Mixing cups (GPMR8056)

IMPORTANT BUILDING NOTES

- There are three types of screws used in this kit:

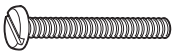
  Sheet Metal Screws are designated by a number and a length. For example #6 × 3/4" [19mm].

  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 × 3/4" [19mm].

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

  Socket Head Cap Screws (SHCS) are designated by a number, **threads per inch**, and a length. For example 4-40 × 3/4" [19mm].

  This is a 4-40 SHCS 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 Giant Scale Citabria 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.

  Missile Red TOPQ0201
  Jet White TOPQ0204
  Black TOPQ0208

- The stabilizer and wing incidences and engine thrust angles have been factory-built into this model. However, some technically-minded modelers may wish to check

these measurements anyway. To view this information visit the web site at www.greatplanes.com and click on "Technical Data." Due to manufacturing tolerances which will have little or no effect on the way your model will fly, please expect slight deviations between your model and the published values.

KIT INSPECTION

Before starting to build, 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 **Product Support**. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list.

Great Planes Product Support
3002 N Apollo Drive, Suite 1 Ph: (217) 398-8970, ext. 5
Champaign, IL 61822 Fax: (217) 398-7721

E-mail: airsupport@greatplanes.com

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Citabria are available using the order numbers in the **Replacement Parts List** that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Great Planes web site at www.greatplanes.com. Select "Where to Buy" in the menu across the top of the page and follow the instructions provided to locate a U.S., Canadian or International dealer.

Parts may also be ordered directly from Hobby Services by calling (217) 398-0007, or via facsimile at (217) 398-7721, but full retail prices and shipping and handling charges will apply. Illinois and Nevada residents will also be charged sales tax. If ordering via fax, include a Visa® or MasterCard® number and expiration date for payment.

Mail parts orders and payments by personal check to:
Hobby Services
3002 N Apollo Drive, Suite 1
Champaign IL 61822

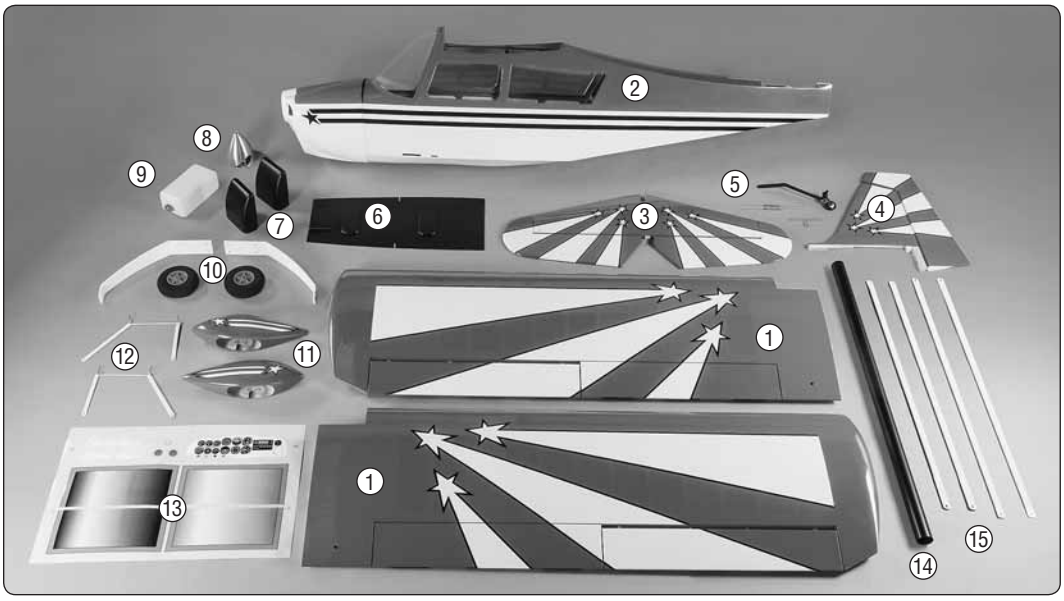
Be certain to specify the order number exactly as listed in the **Replacement Parts List**. Payment by credit card or personal check only; no C.O.D.

If additional assistance is required for any reason contact Product Support by e-mail at productsupport@greatplanes.com, or by telephone at (217) 398-8970.

REPLACEMENT PARTS LIST

Order No.	Description
GPMA4535	Wing Set
GPMA4536	Fuselage
GPMA4537	Horizontal Stabilizer
GPMA4538	Vertical Stabilizer
GPMA4539	Cowl
GPMA4540	Landing Gear
GPMA4541	Wheel Pants
GPMA4542	Hatch
GPMA4543	Tailwheel Assembly
GPMA4544	Spinner
GPMA4545	Wing Tube
GPMA4546	Wing Struts
GPMA4547	Bracket Set
GPMA4548	Decals

KIT CONTENTS

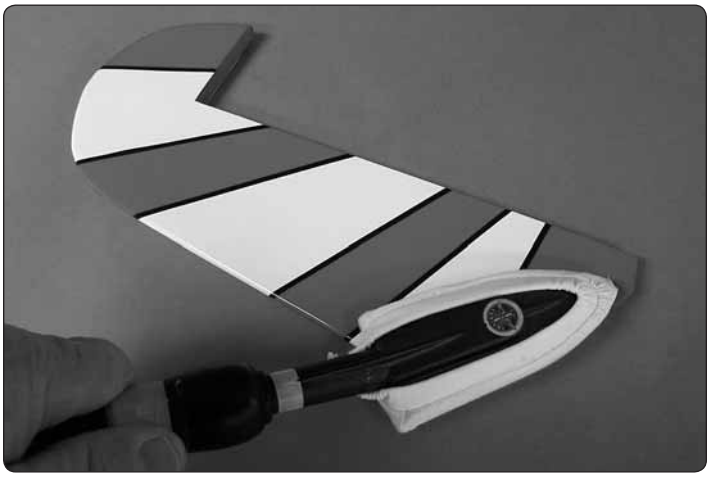


Kit Contents

1. Wing Halves
2. Fuselage
3. Horizontal Stabilizer
4. Fin
5. Tailwheel Assembly
6. Cockpit Floor
7. Cockpit Seat Backs
8. Spinner
9. Fuel Tank
10. Main Landing Gear
11. Wheel Pants
12. Interplane Struts
13. Decal Sheet
14. Wing Tube
15. Wing Struts

PREPARATIONS

❏ 1. If you have not done so already, remove the major parts of the kit from the box and inspect for damage. If any parts are damaged or missing, contact Product Support at the address or telephone number listed in the “Kit Inspection” section on page 5.



❏ 2. Use a covering iron with a covering sock on high heat to tighten the covering if necessary. Do this for all of the components of the model. Apply pressure over sheeted areas to **thoroughly** bond the covering to the wood.

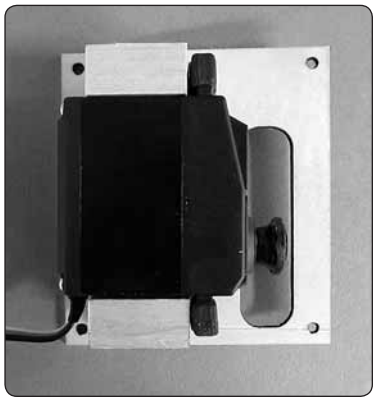
ASSEMBLE THE WING

Note: *Throughout this instruction manual you will be instructed to use screws to secure different parts. In all cases, whenever a screw is threaded into wood sheeting or wood blocks we recommend that you install the screw and then remove it. Apply a drop of thin CA glue into the hole to harden the threads. After the glue has hardened, re-install the screw. Following this step will insure that you have a solid thread for your screws.*

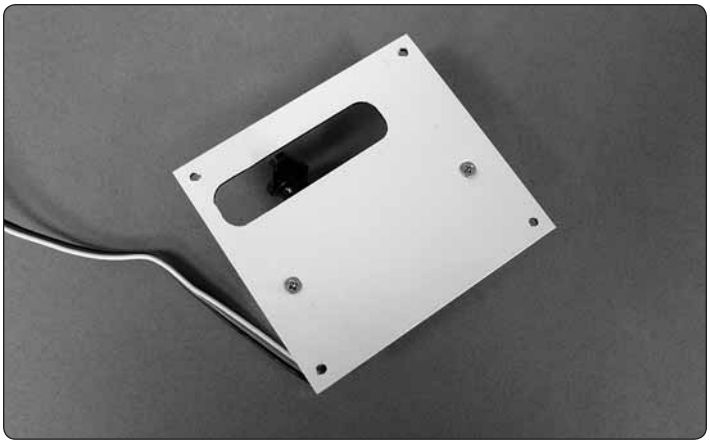
Begin with your left* wing panel *first so your assembly matches the photos in the manual.

❏ ❏ 1. Install the grommets and eyelets into the servo and then attach a 20" [500mm] servo extension to your aileron servo. Secure it with heat shrink tubing, tape or other method for securing them together.

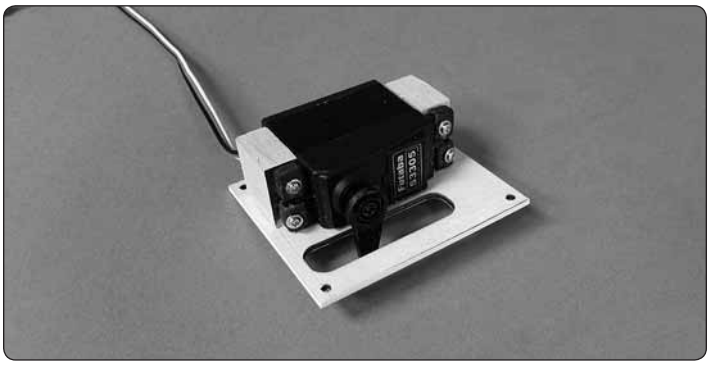
❏ ❏ 2. Install a 8" [200mm] servo extension to your flap servo. Secure it with heat shrink tubing, tape or other method for securing them together.



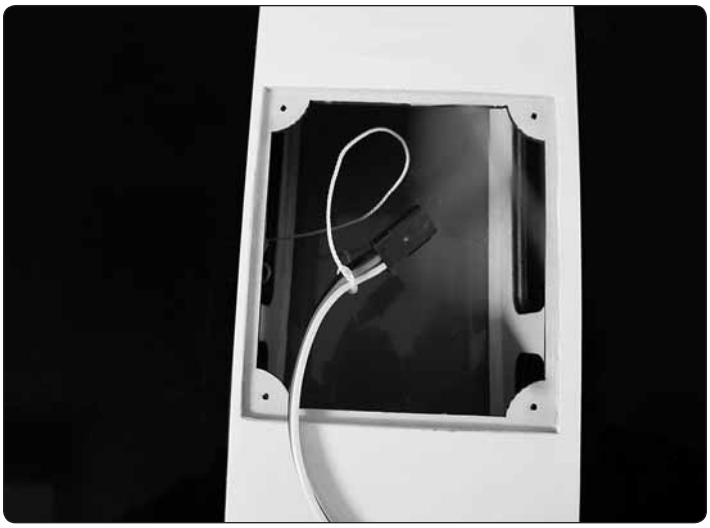
❏ ❏ 3. Remove the tape holding the **servo covers** to the bottom of the wing. Locate two 5/16" x 3/4" x 3/4" [8mm x 19mm x 19mm] hardwood blocks. Place your servo on the cover, centering the servo arm in the slot. Adjust the positioning of the blocks for your brand of servo.



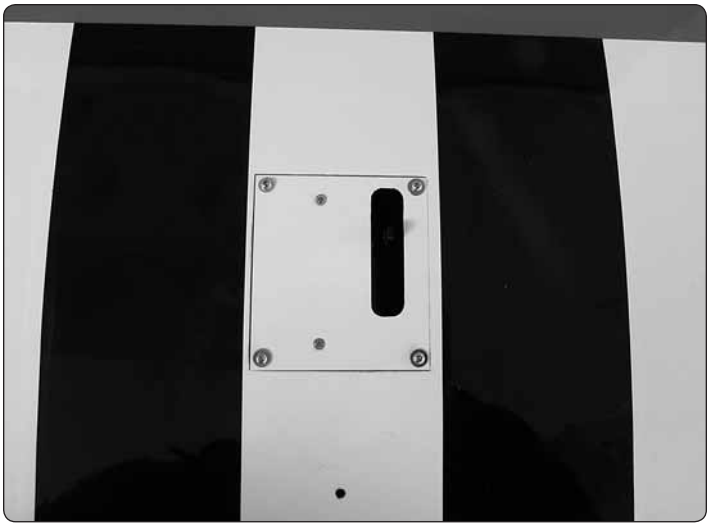
❏ ❏ 4. Glue the blocks to the servo cover. Once the glue has cured, drill a 1/16" [1.6mm] hole through the cover and into the servo mounting blocks Secure the block to the cover with a #2 x 3/8" [#2 x 9.5mm] wood screw. Do this for both of the servo covers.



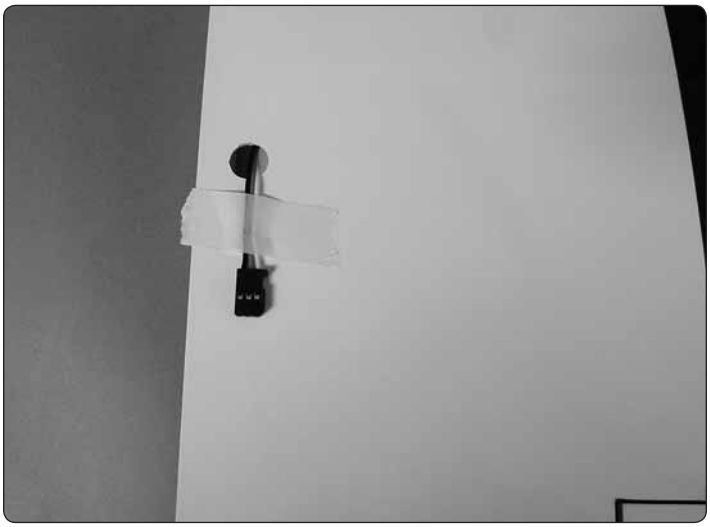
❏ ❏ 5. If you haven’t already, center the servos and install the servo arm onto your servos. The servos require a 3/4" [19mm] servo arm (typically the longest servo arm with your servo). Place your servo onto the mounting blocks. Drill a 1/16" [1.6mm] hole through the servo mounting tabs into the mounting blocks. Secure the servos to the mounting blocks with the screws that came with your servos.



❏ ❏ 6. Inside the aileron and flap servo compartment you will find a string. Tie the string to the servo lead. The other end of the string is taped to the root wing of the rib. Pull the leads through the wing.



❑ ❑ 7. Install the servo cover to the wing securing them to the wing with four #2 x 3/8" [9.5mm] screws and four #2 flat washers.

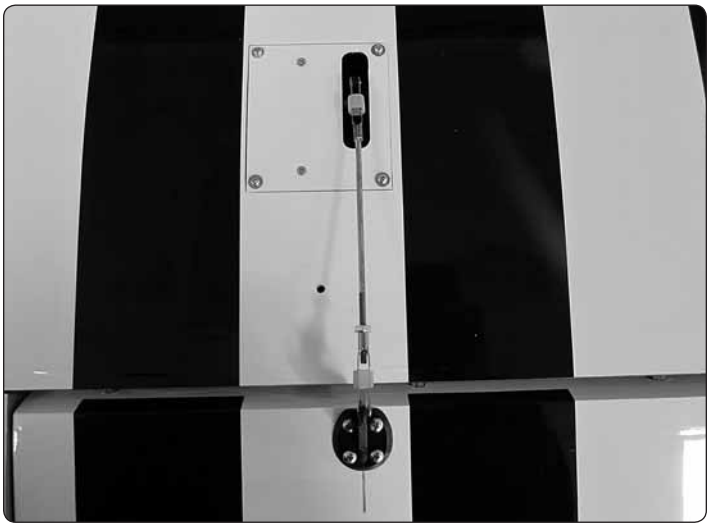


❑ ❑ 8. Tape the servo lead to the top of the wing to prevent the leads from falling back into the wing.

❑ ❑ 9. Located in both the aileron and the flap is a plywood mounting plate. If you look at the control surface at a slight angle you will be able to see the plate through the covering.

❑ ❑ 10. Place a black nylon control horn onto the plywood mounting plate in the aileron in line with the servo arm. Drill a 3/32" [2.4mm] hole through each of the holes in the control horn. Drill only through the plywood plate. ***Do not*** *drill through the top of the control surface*. Mount the horn with four #4 x 3/8" [10mm] screws.

❑ ❑ 11. Each aileron and flap pushrod are made from a 5-3/4" [146mm] 4-40 pushrod wire threaded on one end, a threaded metal clevis, a 4-40 nut, a metal solder clevis and two silicone clevis keepers.



❑ ❑ 12. Screw the 4-40 nut and the threaded metal clevis onto the pushrod wire. Attach the clevis to the second hole down on the control horn. Attach the metal solder clevis into the outer hole of the aileron servo arm. Center the aileron servo arm and the aileron. Mark on the pushrod wire where to cut the wire. Remove all of the pushrod wire components. Solder the metal solder clevis to the pushrod. If you are not familiar with soldering, read the ***Expert Tip*** that follows.

EXPERT TIP

HOW TO SOLDER

1. Roughen the end of the pushrod with coarse sandpaper where it is to be soldered. Use denatured alcohol or other solvent to thoroughly clean the pushrod.

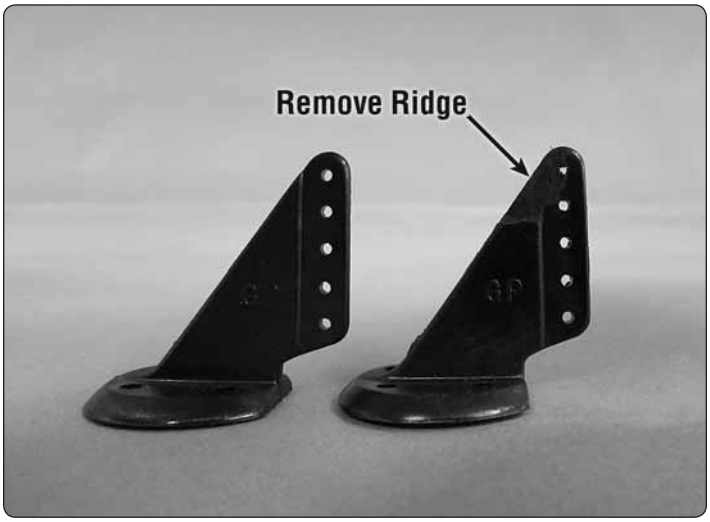
2. Apply a few drops of soldering flux to the end of the pushrod, and then use a soldering iron or a torch to heat it. "Tin" the heated area with silver solder by applying the solder to the end. The heat of the pushrod should melt the solder – not the flame of the torch or soldering iron – thus allowing the solder to flow. The end of the wire should be coated with solder all the way around.

3. Place the clevis on the end of the pushrod. Add another drop of flux, then heat and add solder. The same as before, the heat of the parts being soldered should melt the solder, thus allowing it to flow. Allow the joint to cool naturally without disturbing. Avoid excess blobs, but make certain the joint is thoroughly soldered. The solder should be shiny, not rough. If necessary, reheat the joint and allow to cool.

4. Immediately after the solder has solidified, but while it is still hot, use a cloth to quickly wipe off the flux before it hardens. ***Important:*** *After the joint cools, coat the joint with oil to prevent rust.* ***Note:*** *Do not use the acid flux that comes with silver solder for electrical soldering.*

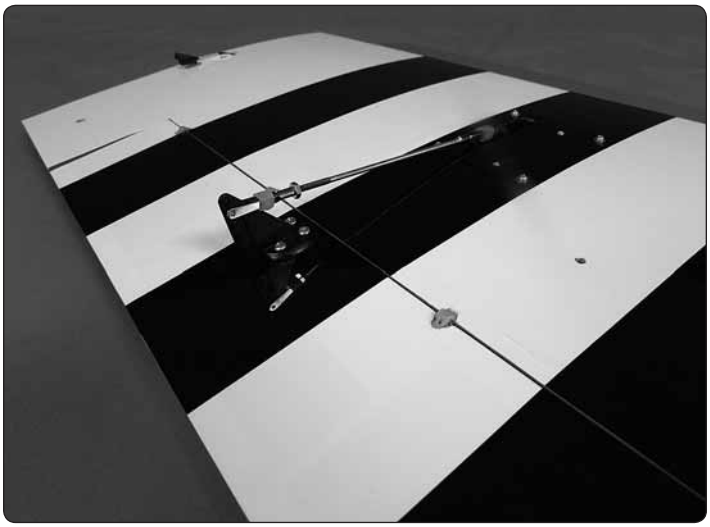
This is what a properly soldered clevis looks like – shiny solder with good flow, no blobs and flux removed.

❏ ❏ 13. Once the solder has cooled slide a silicone clevis keeper over each clevis. Install the pushrod wire assembly to the aileron servo arm and aileron control horn.



❏ ❏ 14. The flap control horn needs to be modified. Trim a control horn as shown. A high speed motor tool works well for this.

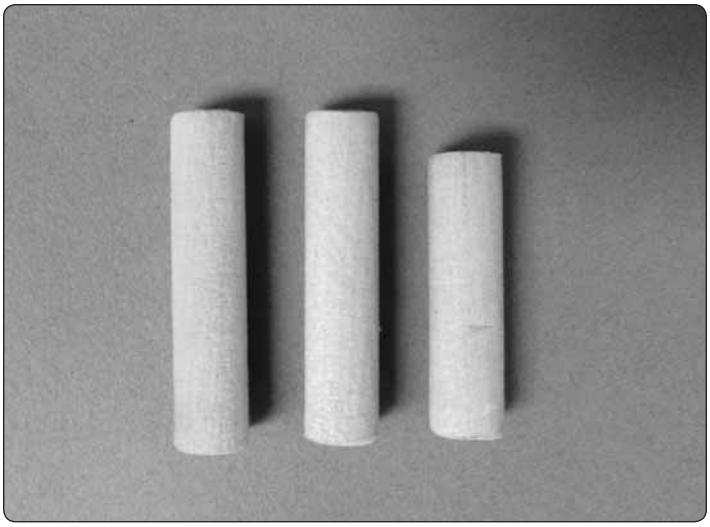
❏ ❏ 15. Install the modified control horn to the flap. However, the flap horn is rotated 180° from the direction the aileron horn was installed. Install the horn using the same method used for the aileron. Make sure the base of the horn is even with the flap leading edge.

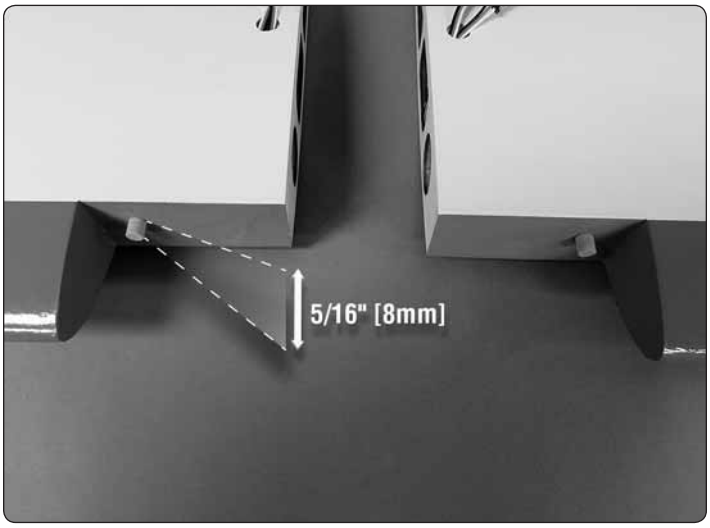


❏ ❏ 16. Screw the 4-40 nut and the threaded metal clevis onto the pushrod wire. Attach the clevis to the second hole down on the control horn. Attach the metal solder clevis into the outer hole of the flap servo arm. For the flap servo you will not center the servo. Instead, make sure the flap is fully closed to the bottom of the wing. Then position the servo arm so that it is rotated toward the wing trailing edge. Now you can proceed with making the pushrod wire assembly.

Mark on the pushrod wire where to cut the wire. Remove all of the pushrod wire components. Solder the metal solder clevis to the pushrod. Once the solder has cooled slide a silicone clevis keeper over each clevis. Install the pushrod wire assembly to the servo arm and control horn.

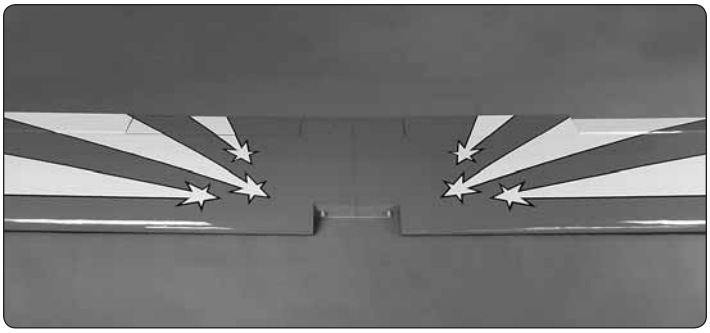
❏ 17. Repeat steps 1-16 for the right wing.





❏ 18. The kit includes two 5/16" x 1-5/16" [8 x 35mm] wood dowels and one 5/16" x 1-1/8" [8 x 30mm] wood dowel. Using 5 minute epoxy, glue the two 5/16" x 1-5/16" [8 x 35mm] wood dowels into the holes in the leading edge of both wings. The dowels should be completely seated into the hole. This will allow approximately 5/16" [8mm] to extend out of the wing.

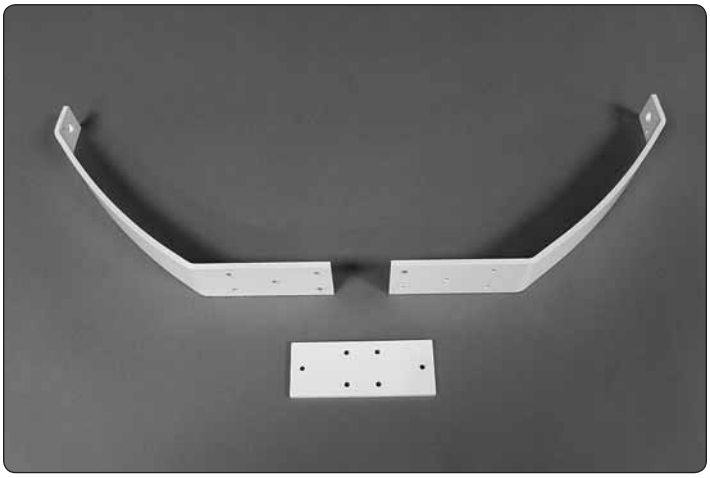
❏ 19. Using 5 minute epoxy, glue the 5/16" x 1-1/8" [8 x 30mm] wood dowel into the hole at the trailing edge of the root rib on either the left or right wing.



❏ 20. Once the glue has hardened test fit the two wing halves together by inserting the wing tube into one of the wings and then sliding the other wing onto the tube. Once you are satisfied they fit together well, set the wing aside and move on to the fuselage assembly.

ASSEMBLE THE FUSELAGE

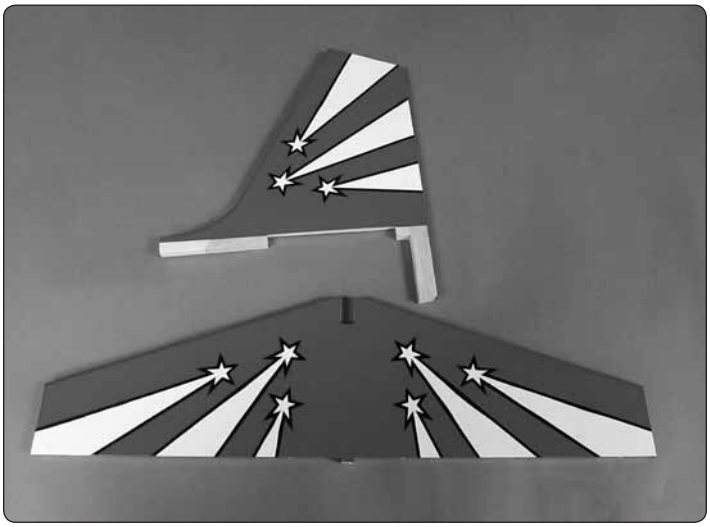
❏ 1. Remove the windshield from the front of the fuselage. It is attached to the fuselage with magnets. Pull forward on the top of the windshield frame to release the frame from the fuselage.

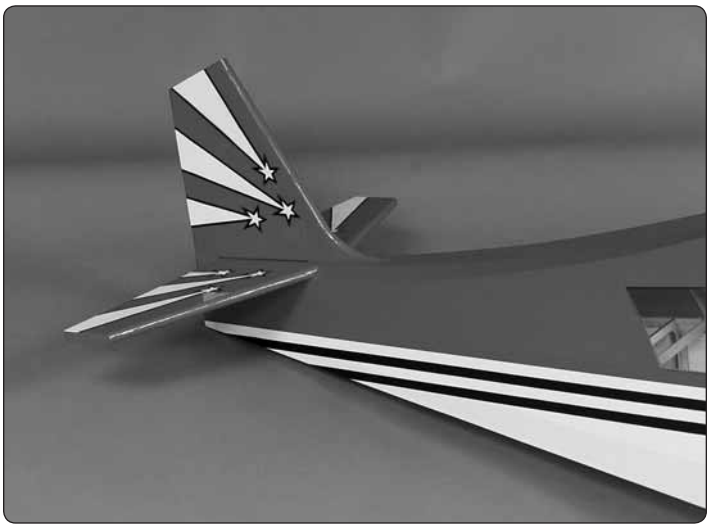


❏ 2. Install the landing gear. With the landing gear in place you will find it easier to handle the fuselage while assembling the components. Locate the landing gear and the landing gear doubler plate.

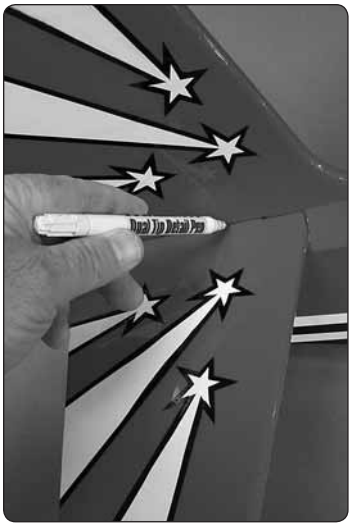
❏ 3. Slide the landing gear into the slots in both sides of the fuselage and place the aluminum doubler onto the landing gear. Secure the doubler and the landing gear to the fuselage with ten #6 x 3/4" [19mm] socket head cap screws, #6 lock washers and #6 flat washers. Apply a drop of thread locker to each of the screws. **NOTE:** The landing gear will have a slight forward sweep when installed correctly.

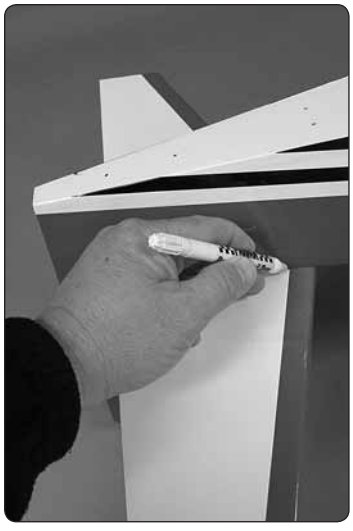
Install the Stabilizer and Rudder



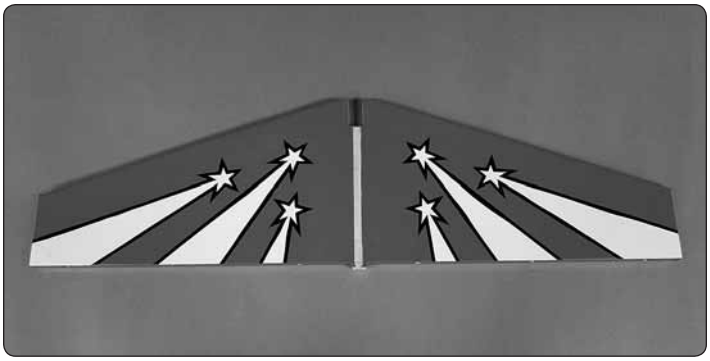


❏ 1. Locate the stabilizer and vertical fin. Test fit them in place on the back of the fuselage.





❏ 2. Use a felt tip pen to outline the fin on the top of the stabilizer and to outline the fuselage on the bottom of the stabilizer.

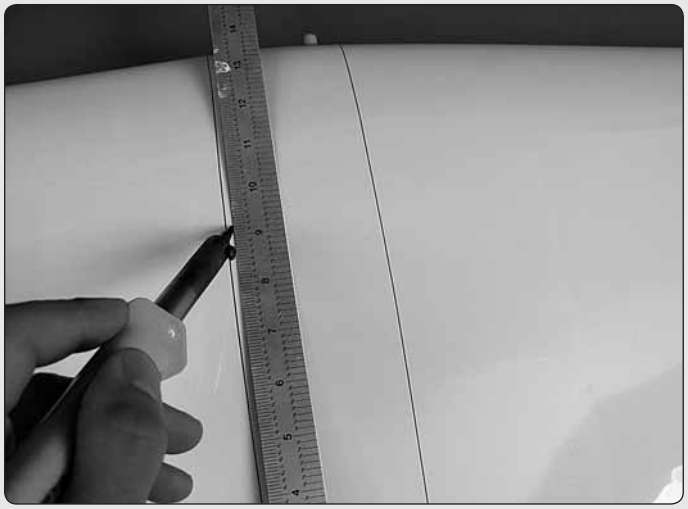


❏ 3. Remove the fin and stabilizer from the fuselage. Cut the covering from the stabilizer just inside of the lines you have drawn**. Be careful to only cut through the covering. *DO NOT* cut the wood structure.** You may find it easiest to cut the covering away using the Expert Tip "How to Cut Covering from Balsa".

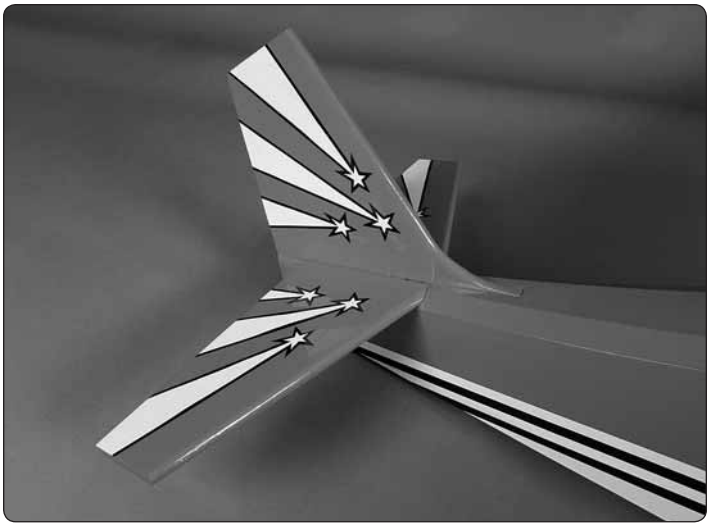
EXPERT TIP

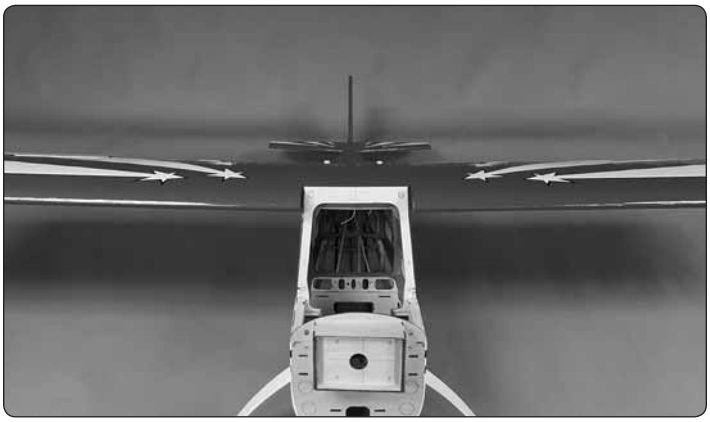
HOW TO CUT COVERING FROM BALSA

Use a soldering iron 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.

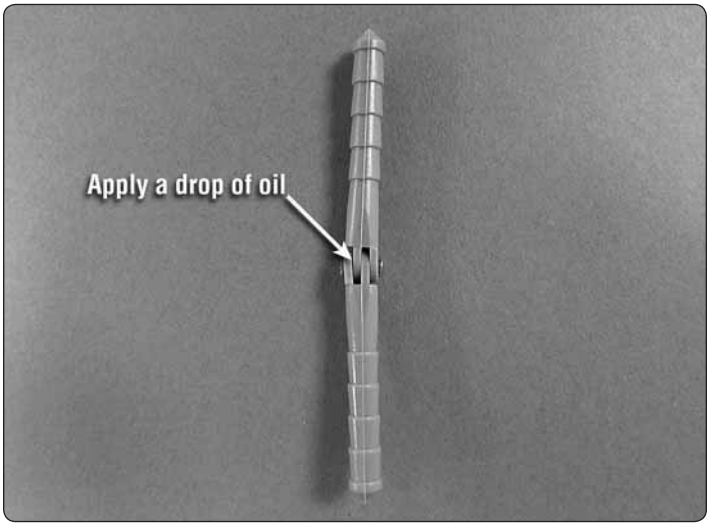


Use a straightedge to guide the soldering iron at a rate that will just melt the covering and not burn into the wood. The hotter the soldering iron, the faster it must travel to melt a fine cut. Peel off the covering.

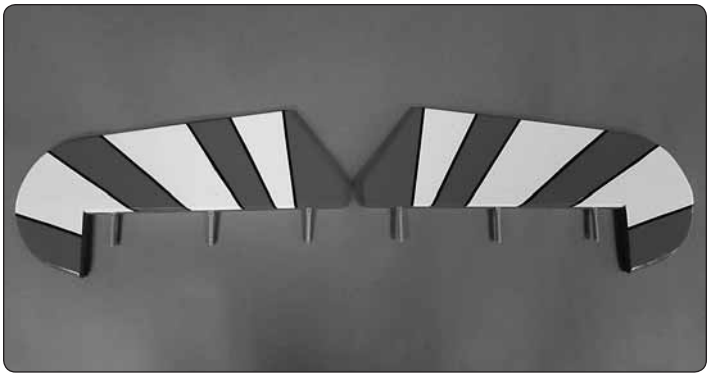


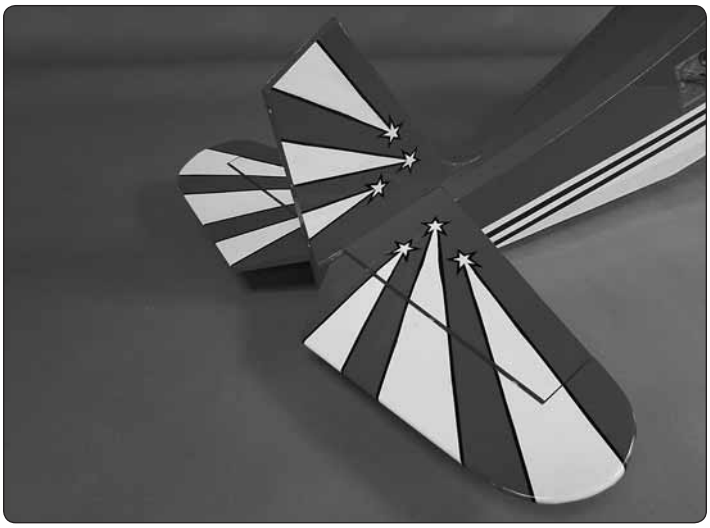


❏ 4. Install the wing on top of the fuselage securing it with two 1/4-20 x 2" [51mm] nylon wing bolts. Glue the horizontal stabilizer and vertical fin in place on the fuselage with 30 minute epoxy. Any excess glue can be cleaned up with paper towels and rubbing alcohol. Before the glue hardens check the alignment of the stab in relation to the wing to be sure they are aligned with each other. After you are satisfied things are aligned, leave the parts undisturbed until the glue has hardened.

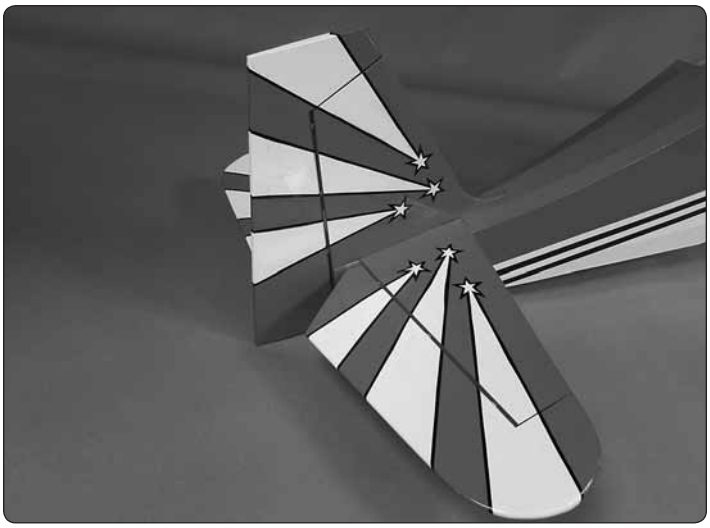


❏ 5. Locate six hinges. Apply a drop of oil to each hinge to prevent glue from getting into the hinge when installing them in the stabilizer.





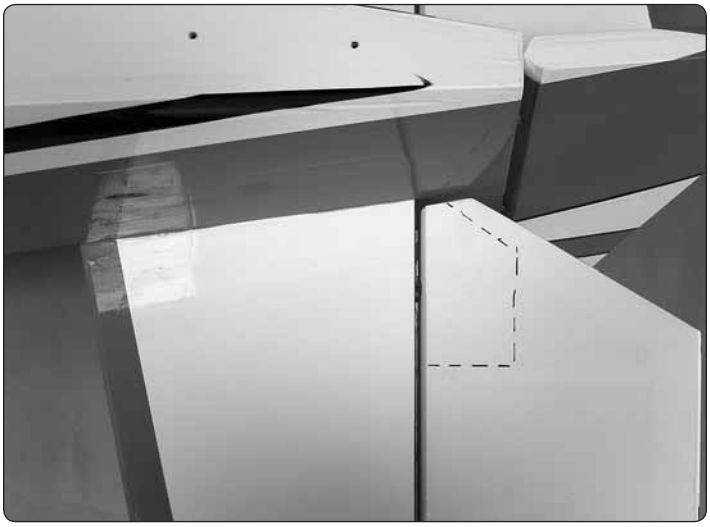
❏ 6. Mix 1/4 ounce of 30 minute epoxy. Use a toothpick to apply a small amount of glue into each of the hinge holes in the stab and both halves of the elevator. Apply 30 minute epoxy to one side of each of the six hinges and install them in the holes in the left and right half of the elevator. Clean excess epoxy with a paper towel and rubbing alcohol. Move quickly and apply 30 minute epoxy to the other half of the hinge and then install each elevator to the horizontal stabilizer. Allow the glue to harden.

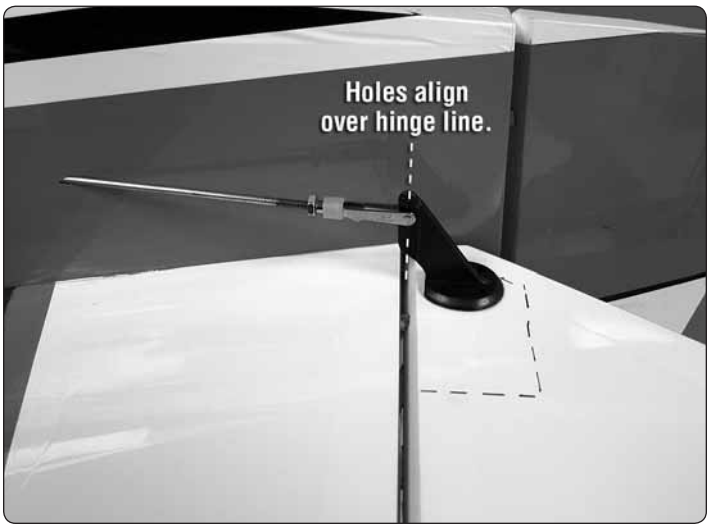


❏ 7. Use the same technique to install the rudder to the fin.

Install the Elevator and Rudder Servos

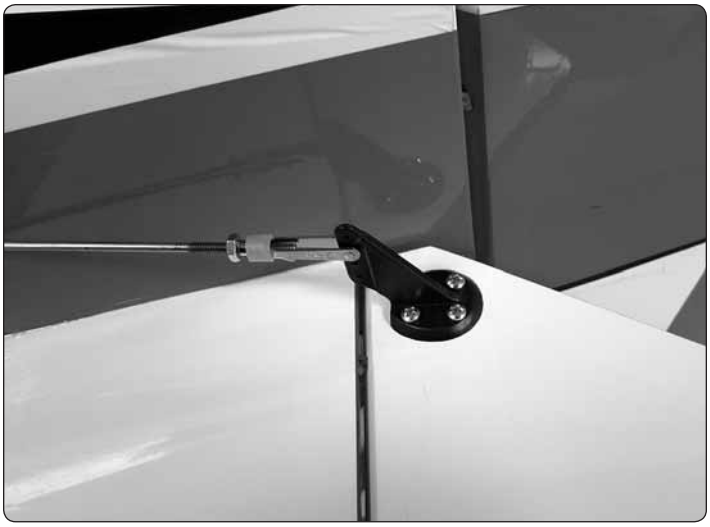
❏ 1. Install a 4-40 nut, clevis keeper and 4-40 threaded clevis onto two 4-40 x 48" [1220mm] threaded wires.



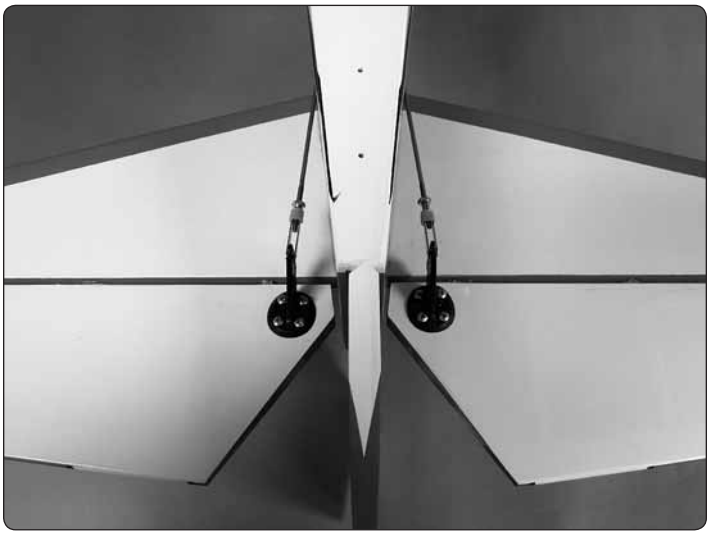


❏ 2. On the bottom of each elevator there is a plywood plate. Install one of the clevises into the second hole from the bottom of a control horn. Slide the 4-40 wire into the hole in the side of the fuselage and the place the control horn onto the plywood plate. The holes in the control horn should be aligned over the hinge line.

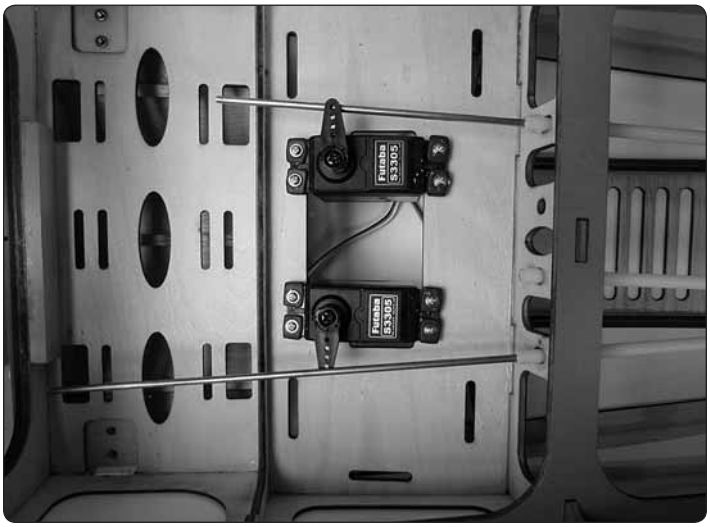
❏ 3. Once the horn is properly positioned mark the location of the control horn mounting holes onto the elevator with a felt tip marker. On each of the marks drill a 3/32" [2.4mm] hole through the plywood plate. ***Do not drill through the top of the elevator!***



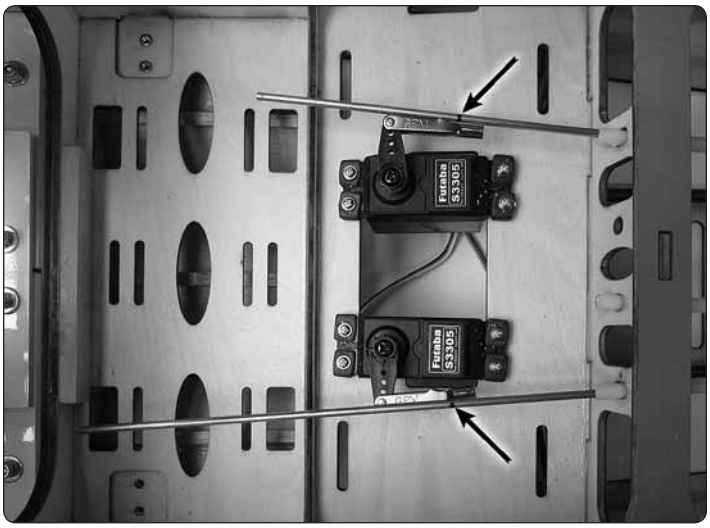
❏ 4. Install and then remove a #4 x 3/8" sheet metal screw into each of the holes. Apply a drop of thin CA glue into each of the holes to harden the threads. Once the glue has hardened secure the control horn to the elevator with the four screws.



❏ 5. Use the same technique for the remaining elevator half.



❏ 6. Install the grommets and eyelets onto two servos. Cut three arms from a four arm servo horn, center the servo and install the horn onto the servo. Install a 4-40 solder clevis into the outer hole in each of the servo arms. Place the two servos in the servo tray with the servo arms aligned with the pushrod wires. Drill a 1/16" [1.6mm] hole through each of the mounting holes in the two servos. Install and remove a servo mounting screw into each of the holes you drilled. Apply a drop of thin CA glue to harden the threads. When the glue has hardened, secure the servos with the screws.



❏ 7. Center the elevator halves and the two elevator servo arms. Using the solder clevis as your guide, make a mark on the pushrod wire where it needs to be cut. Remove the clevis from the elevator control horn and remove the pushrod from the fuselage. Do this for both pushrod wires.

Once the wires have been removed cut the wires on the marks you made. Solder a 4-40 solder clevis to the wire using the same procedure used on the ailerons. When the solder has cooled remove the threaded clevis and 4-40 nut from the threaded end of the wires. Slide a silicone clevis keeper onto the solder clevis. Re-install the wire through the front of the fuselage into the pushrod guide tubes. Attach the clevis from each pushrod wire to the outer hole of the servo arm. Re-install the nuts and threaded clevises onto each wire, adjusting them so that the elevators are centered. Then secure the elevators with the clevises.

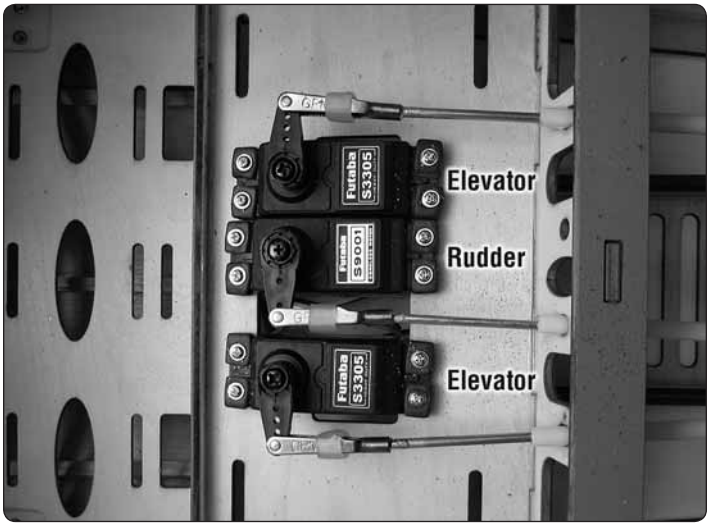
❏ 8. Install a 4-40 nut, clevis keeper and 4-40 threaded clevis onto the remaining 4-40 x 48" [1220mm] threaded wire.

❏ 9. Just like the elevator there is a plywood plate at the bottom of the rudder. Install the clevis into the second hole from the bottom of a control horn. Slide the 4-40 wire into the hole in the side of the fuselage and the place the control horn onto the plywood plate. The holes in the control horn should be aligned over the hinge line.

❏ 10. Once the horn is properly positioned mark the location of the control horn mounting holes onto the rudder with a felt tip marker. On each of the marks drill a 3/32" [2.4mm] hole through the plywood plate. ***Do not drill through the top of the rudder!***

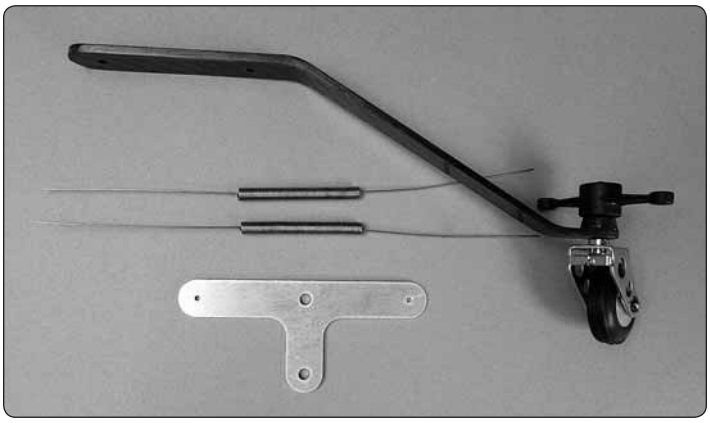
❏ 11. Install and then remove a #4 x 3/8" sheet metal screw into each of the holes. Apply a drop of thin CA glue into each of the holes to harden the threads. Once the glue has hardened secure the control horn to the elevator with the four screws.

❏ 12. Install the grommets and eyelets on to a servo. Cut three arms from a four arm servo horn, center the servo and install the horn onto the servo. Install a 4-40 solder clevis into the outer hole in each of the servo arms. Place the servo in the servo tray with the servo arms aligned with the pushrod wire. Drill a 1/16" [1.6mm] hole through each of the mounting holes in the two servos. Install and remove a servo mounting screw into each of the holes you drilled. Apply a drop of thin CA glue to harden the threads. When the glue has hardened secure the servo with the screws.

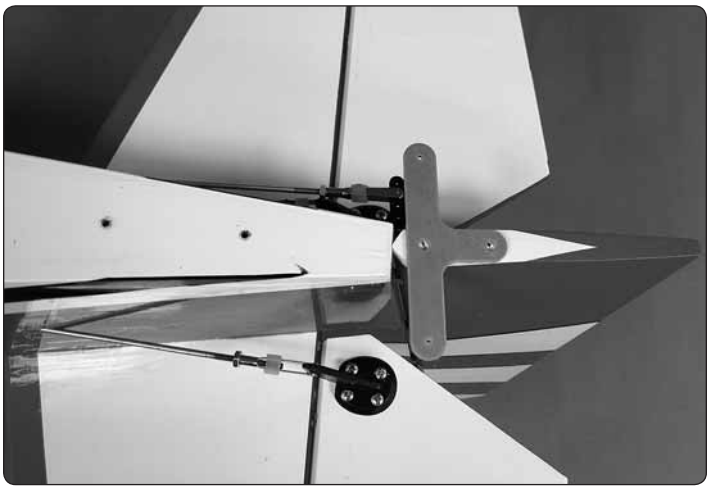


❏ 13. Center the rudder and the rudder servo arm. Using the solder clevis as your guide, make a mark on the pushrod wire where it needs to be cut. Remove the clevis from the rudder control horn and remove the pushrod from the fuselage. Cut the wire on the mark you made. Solder a 4-40 solder clevis to the wire using the same procedure used on the elevators. When the solder has cooled remove the threaded clevis and 4-40 nut from the threaded end of the wires. Slide a silicone clevis keeper onto the solder clevis. Re-install the wire through the front of the fuselage into the pushrod guide tubes. Attach the clevis from each pushrod wire to the outer hole of the servo arm. Re-install the nut and threaded clevis onto the wire, adjusting it so that the rudder is centered. Then secure the rudder with the clevis.

Mount the Tail Wheel, Bracket and Support Wires

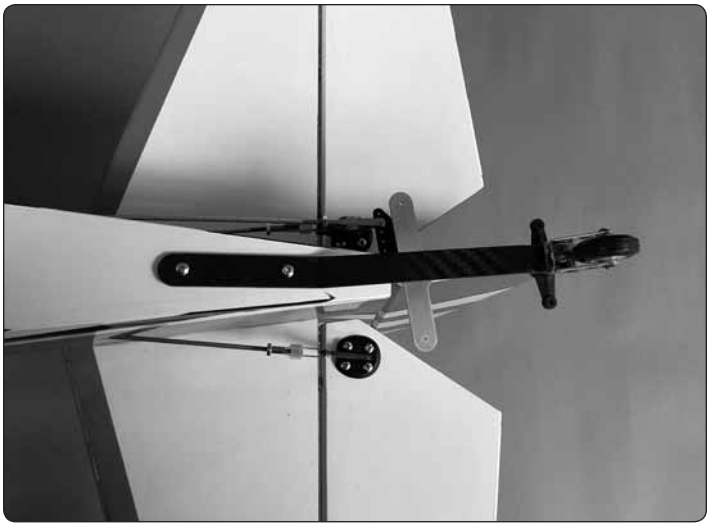


❏ 1. Locate all of the components of the tail wheel assembly.

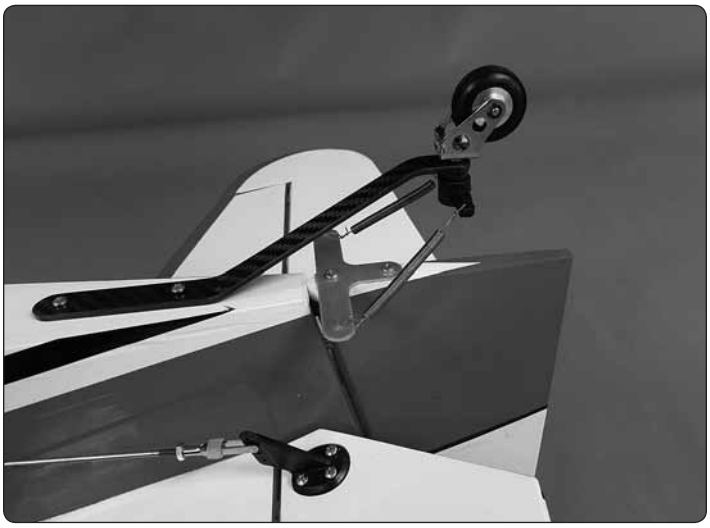


❏ 2. Place the aluminum “T” bracket on the bottom of the rudder. Mark the location of the mounting holes with a felt tip marker onto the bottom of the rudder.

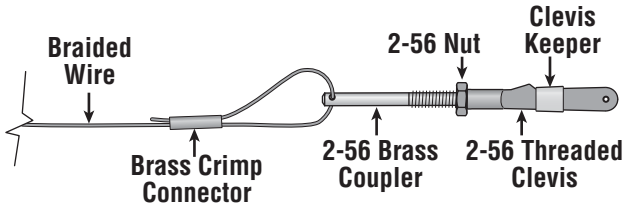
❏ 3. Drill a 3/32" [2.4mm] hole into the rudder on each of the marks. Insert and then remove a #4 x 3/8" [9.5mm] sheet metal screw into each of the holes you drilled. Apply a drop of thin CA glue into each of the holes to harden the threads. Once the glue hardens secure the “T” bracket to the rudder with two #4 x 3/8" [9.5mm] screws.



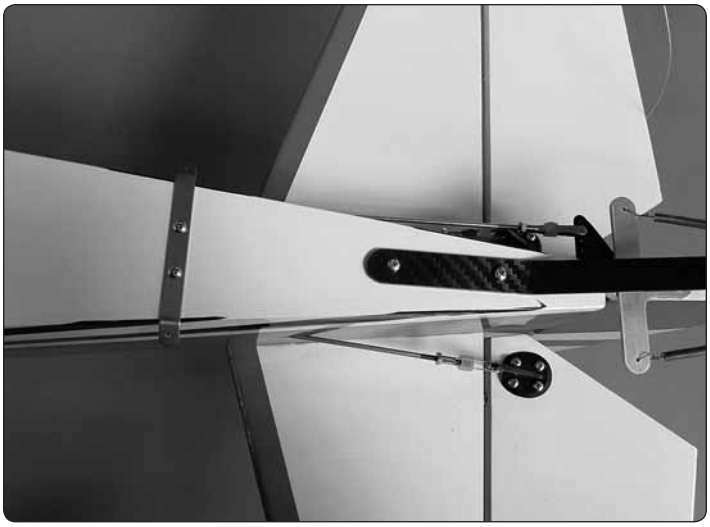
❏ 4. On the bottom of the fuselage just ahead of the rudder are two pre-drilled holes. Insert and then remove a #4 x 3/8" [9.5mm] screw into each of the holes. Apply a drop of thin CA glue into each of the holes to harden the threads. Once the glue hardens secure the tail wheel bracket to the fuselage.



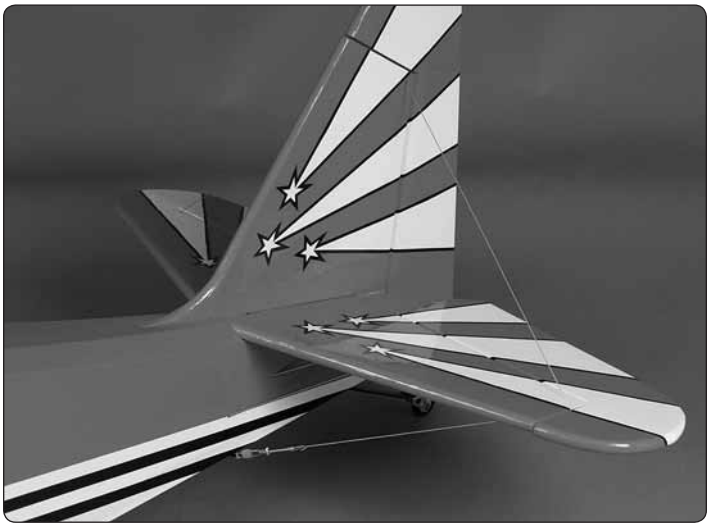
❏ 5. Center the rudder and the tail wheel. Secure the two springs to the arm on the tail wheel assembly and the "T" bracket by twisting the wire through and around the holes in the brackets. Keep the tension from the two springs equal on both sides of the tail wheel bracket.



❏ 6. Locate the small spool of braided wire, two 2-56 brass couplers, two 2-56 nuts, two silicone clevis keepers and two copper crimp connectors. Slide a crimp connector onto one end of the braided cable. Insert the braided cable into the hole in the end of one of the 2-56 brass couplers and loop it back through the crimp connector. Crimp the connector tightly with a pliers to secure the connector to the braided cable. Install a 2-56 nut, clevis keeper and 2-56 threaded clevis.



❏ 7. Locate the aluminum tail wire bracket. Position it on the bottom of the fuselage over the pre-drilled holes. Insert and then remove a #4 x 3/8 screw into each of the two holes. Apply a drop of thin CA glue into the holes to harden the threads. After the glue has hardened, secure the bracket to the fuselage with the screws.



❏ 8. Attach the clevis to one side of the bracket. Insert the other end of the wire into the hole in the stab. Continue inserting the wire into holes in the fin and the opposite side

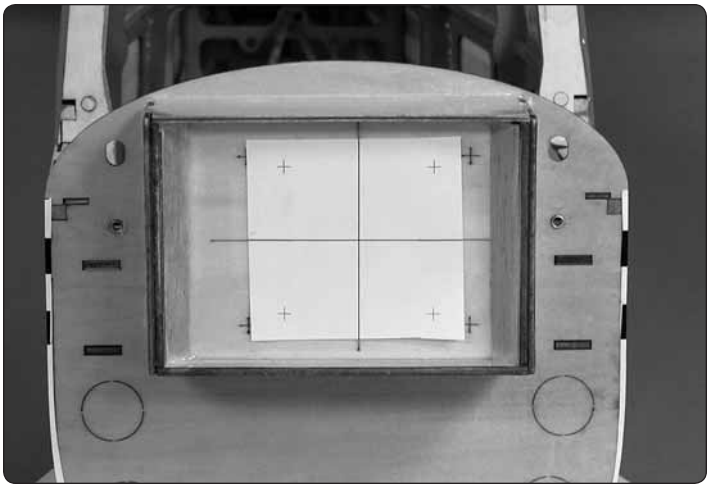
of the stab. Assemble another clevis and brass coupler the same as you did in step 6. Install the clevis assembly into the bracket and then insert the wire into the brass coupler, pull the wire tight and secure the wire with the crimp connector. Final tensioning of the cable can be done by adjusting the clevises.

The next few steps cover installation of an electric motor. If you will be installing a gasoline engine skip ahead to ***INSTALL THE ENGINE, THROTTLE/CHOKE SERVOS AND IGNITION SWITCH*** on page 19.

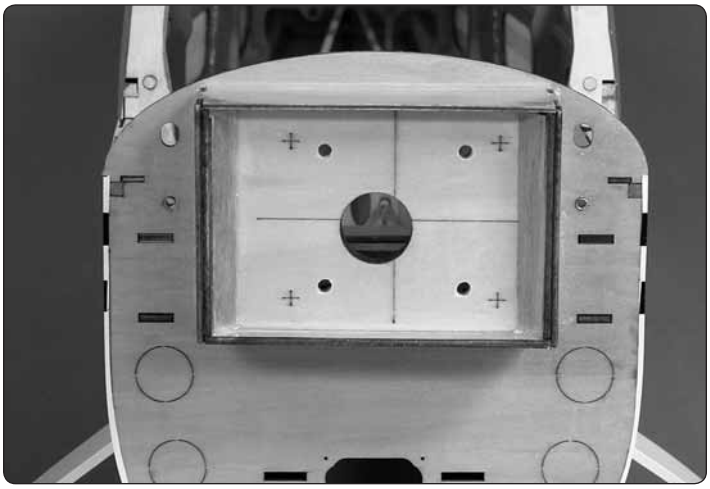
ELECTRIC MOTOR INSTALLATION

❏ 1. When installing an electric motor it will require venting through the fuselage. Inside of the fuselage just behind the servo tray we have installed air vents. Cut the covering to reveal the vents.

❏ 2. To install the motor you will need a motor mount. We recommend the Great Planes large engine mount (GMPG1260). This mount is strong, lightweight and allows for infinite adjustment to accommodate most motor brands.

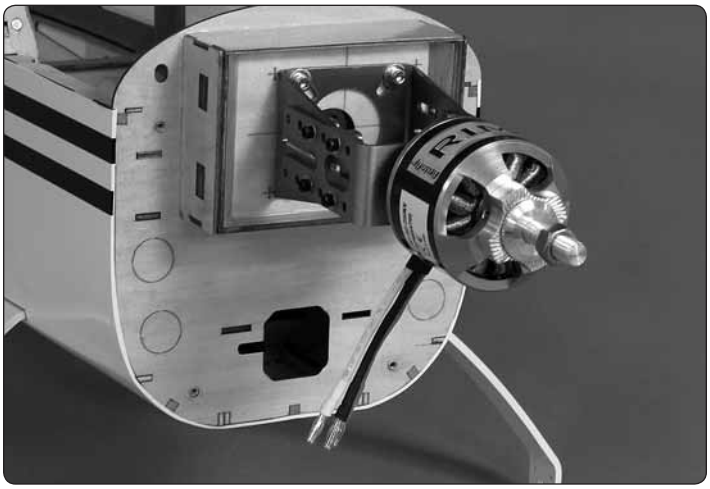


❏ 3. On page 43 of the instruction manual is a paper template for the Great Planes large engine mount. Cut the pattern from the manual. Tape the pattern to the firewall, aligning the lines on the template with the lines on the firewall.



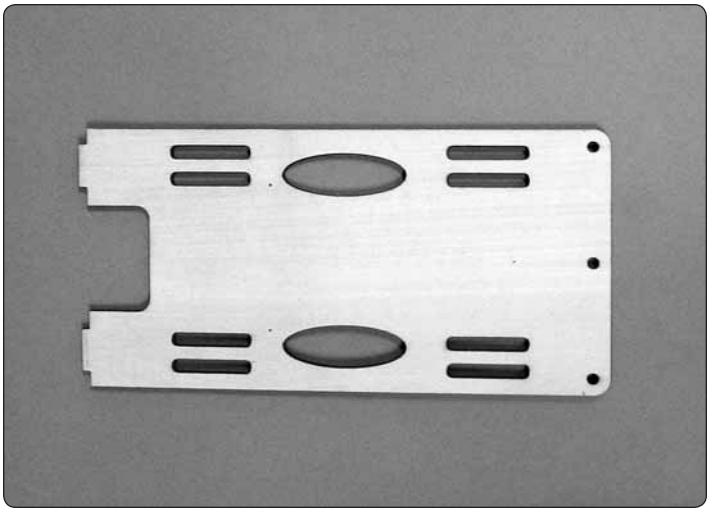
❏ 4. Drill a 1/16" pilot hole on the crosses on the paper and through the firewall. Remove the template and then drill a 3/16 hole through each of the four pilot holes you drilled.

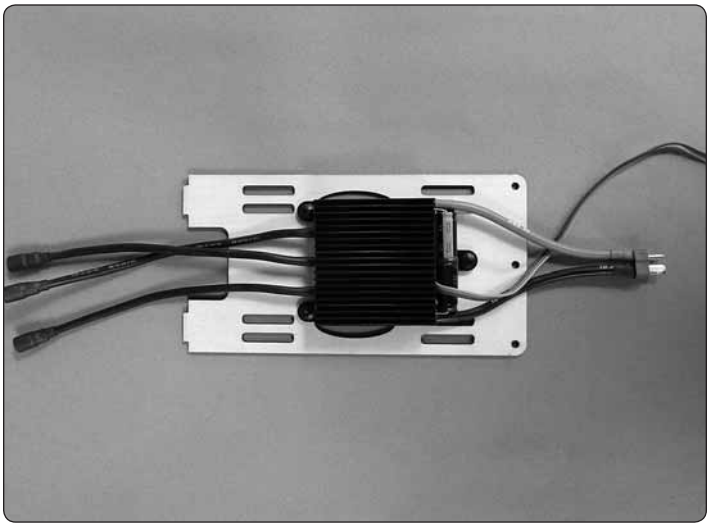
❏ 5. Install a 8-32 blind nut into each of the four holes you drilled, installing the blind nuts into the backside of the firewall.



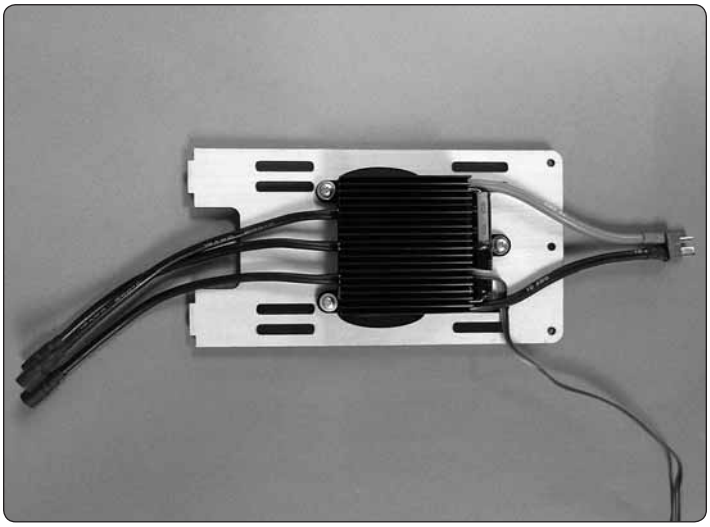
❏ 6. Following the instructions with the motor mount, secure your motor to the mount. Secure the mount to the firewall with

four 8-32 x 3/4" [19mm], flat washers, lock washers and a drop of threadlocker. When positioning the motor adjust the mount so that the distance from the front of the firewall to the front of the drive washer is 6-5/16" [156mm].

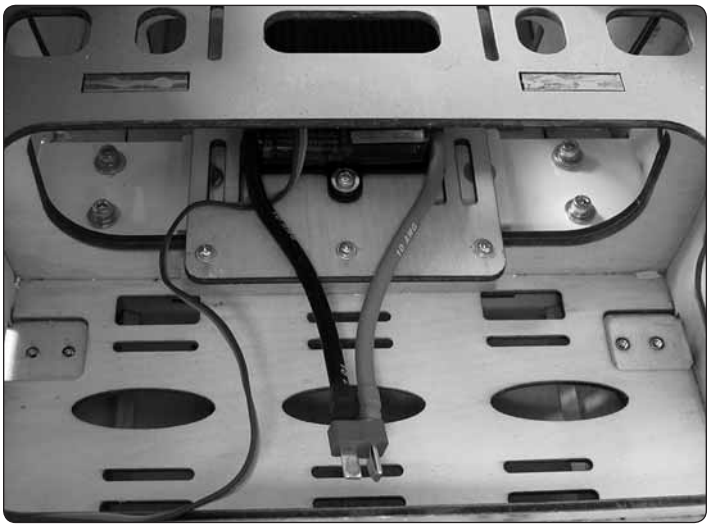




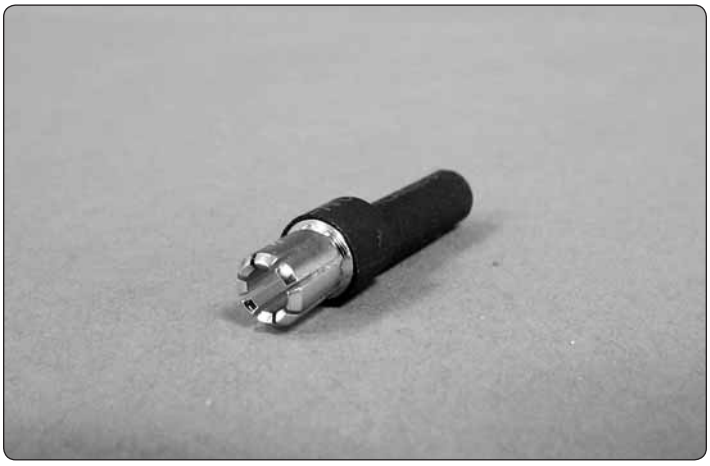
❏ 7. Locate the plywood ESC mounting tray. Place the ESC onto the tray. Mark the location for each of the mounting tabs onto the tray. Drill a 3/32" [2.4mm] hole on each of the marks.



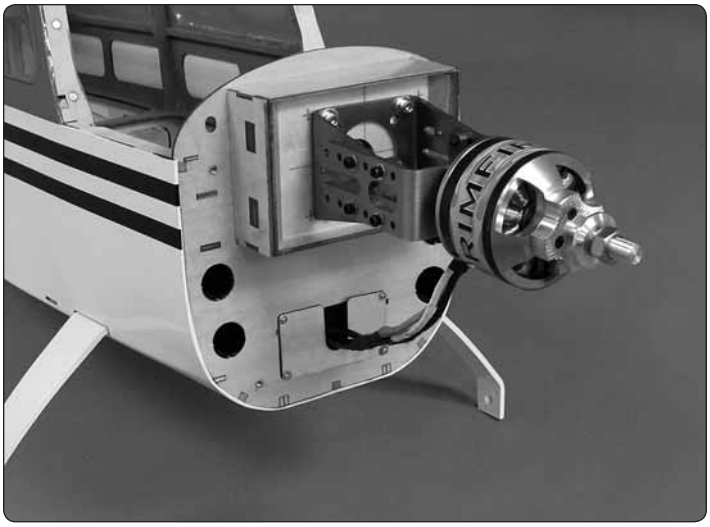
❏ 8. Secure the ESC to the tray with three #4 x 3/8" [10mm] screws and #4 flat washers.



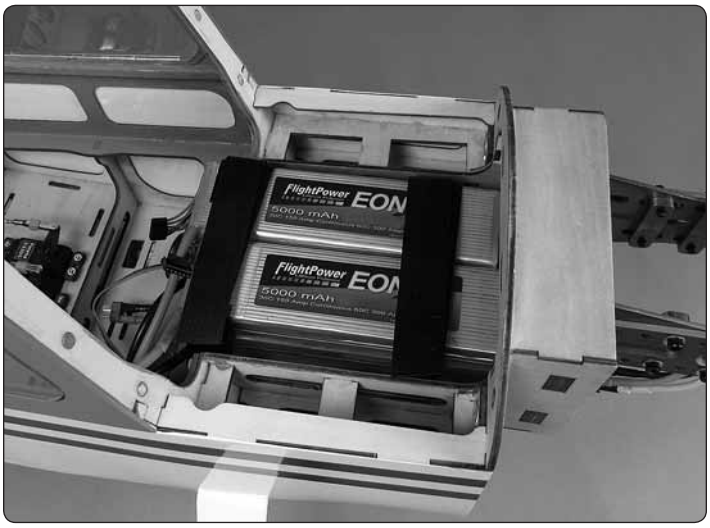
❏ 9. Just behind the landing gear is a hardwood stick that will be used for securing your ESC tray. Slide the tray to the front of the firewall. Insert the two tabs into the slots in the firewall to retain the front of the tray and let the back of the tray rest on the hardwood stick. Drill a 1/16" [1.6mm] hole through the mounting holes in the tray, into the hardwood stick. Secure the tray to the stick with three #2 x 3/8" [10mm] screws and #2 flat washers.



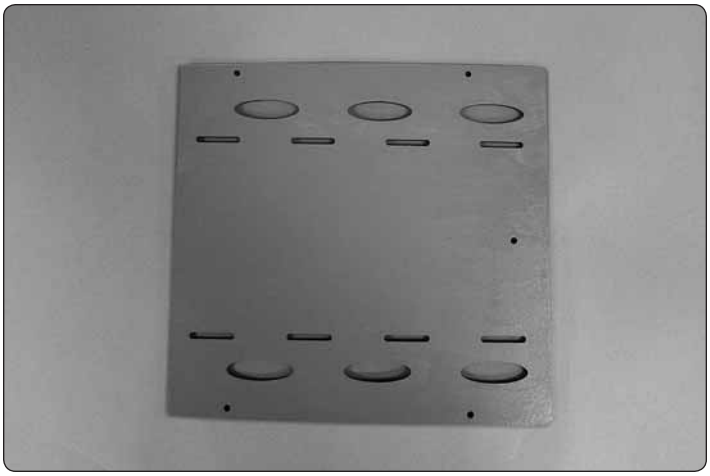
❏ 10. To connect the motor to the ESC you will need three Great Planes 6mm Male/4mm Female Bullet Adapters (GPMM3119). Connect the leads from the motor to the ESC.

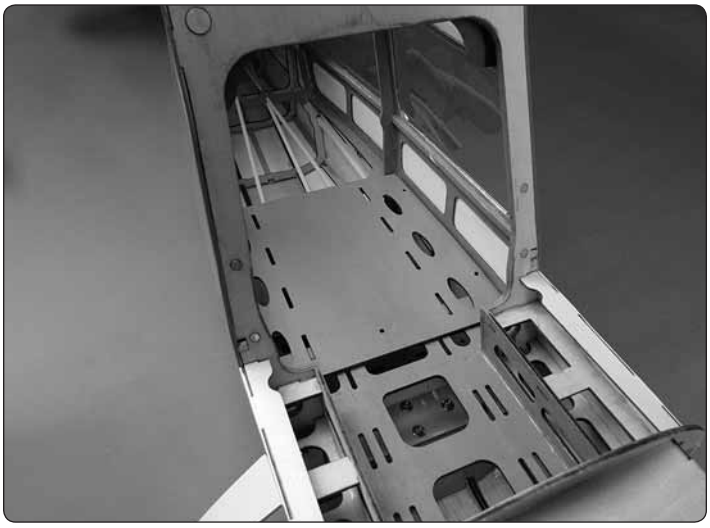


❏ 11. Included in the kit is a small plywood plate to cover a portion of the hole that the motor leads pass through. Place the plate against the firewall and mark the location of the mounting holes. Drill a 1/16th [1.6mm] hole through the mounting holes in the plate. Secure the plate with three #2 x 3/8" [10mm] screws and #2 flat washers.



❏ 12. Your batteries fit nicely on the tray just behind the firewall. Cut the included hook and loop straps to fit around the tray and your choice of batteries. The straps can be inserted through the slots in the tray.



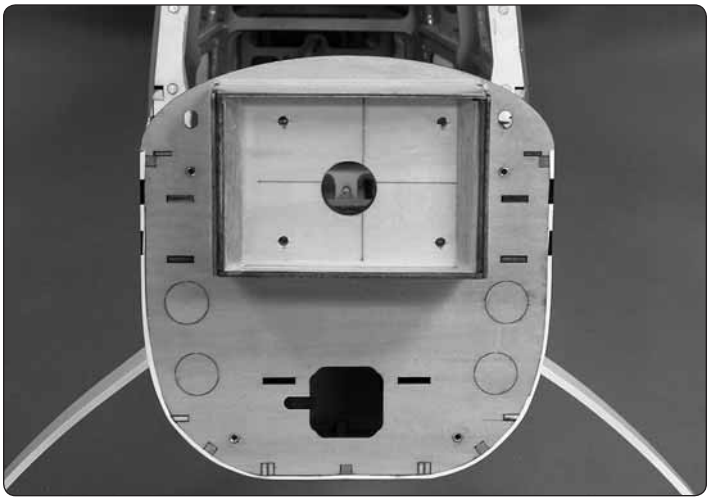


❏ 13. We have included a secondary battery tray. Depending on your choice of motor and batteries your airplane could be slightly nose heavy. If this is the case install the secondary battery tray as shown. It can be secured by drilling a 3/32" [2.5mm] hole through each of the mounting holes and into the plywood rails on each side of the fuselage. Secure the tray with five #4 x 3/8" [10mm] screws. With this tray in place you have a wide range of positions for installing the batteries and adjusting the balance of your model without adding weight.

If you installed the Electric Motor skip ahead to ***INSTALL THE COWL*** on page 25.

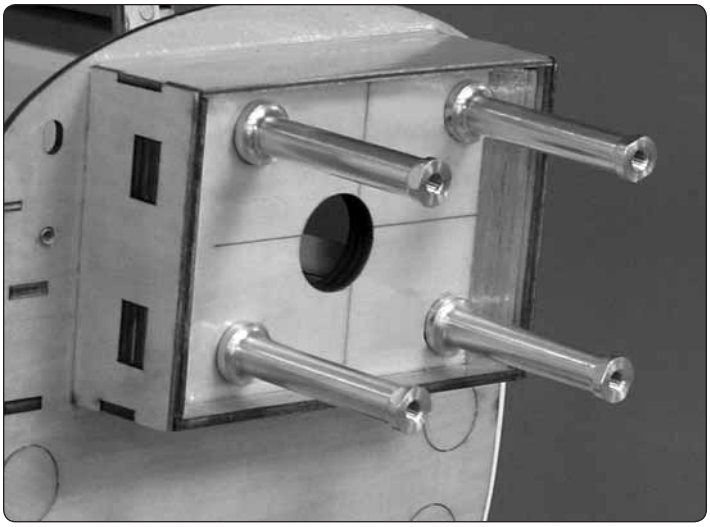
INSTALL THE ENGINE, THROTTLE/CHOKE SERVOS AND IGNITION SWITCH

The following engine mounting instructions show the installation of the DLE30 side exhaust gas engine. An additional DLE engine, the DLE35, mounts very similar to the DLE 30. We do make note of the modification required for installing it in these instructions. The installation of other brands of engines will be similar and the following instructions can be used as a guide.

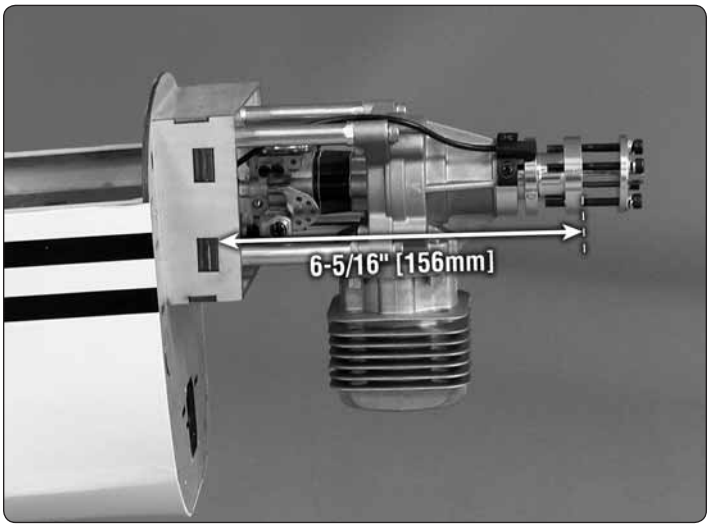


❏ 1. Drill a 3/16" [4.8mm] hole through the firewall at each location marked with a "+" if you are installing the DLE 30. If you are installing an engine with a different mounting bolt pattern the firewall has crosshairs embossed on it to help locate the correct mounting location.

Note: If you are mounting the DLE 35 RA the "+" marks on the top of the firewall will match with two of the mounting holes of the engine. You will need to make measurements for the lower mounts as they are a bit further apart. Additionally you will need to remove a part of the triangle stock as shown. Please use the paper template on page 43 for locating the holes for the DLE35RA after you have removed the triangle stock. When installing the rear exhaust muffler with the DLE 35 you will need to remove a small amount of the bottom of the firewall.

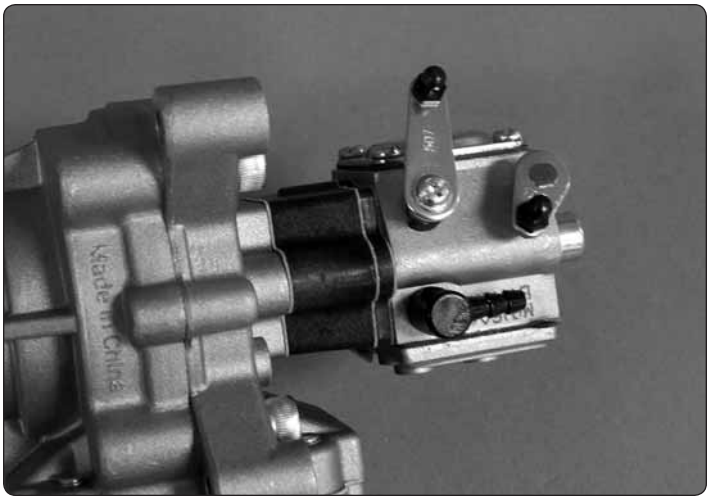


❏ 2. Install engine mounting bolts, flat washers and lock washers from the back of the firewall. (The mounting hardware is not included in this kit. It should come with the engine. If your engine did not include fender washers, purchase four fender washers to mount the bolts from behind the firewall. The fender washer helps to better spread the load from the engine). Apply a drop of thread locker to each bolt before installing them into the engine stand-offs. The standoffs can be permanently mounted. The bolts mounting the engine to the stand-offs should not be permanently installed as they will be removed several times during the process of installing the engine. **Note:** For the DLE 35RA installation you may need to remove some of the triangle stock from the back side of the firewall.

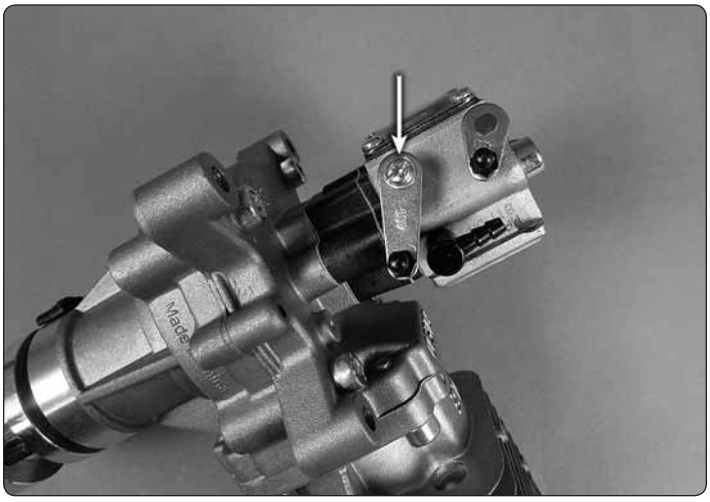


❏ 4. For reference, the distance from the front of the firewall to the front of the drive washer is 6-5/16" [156mm].

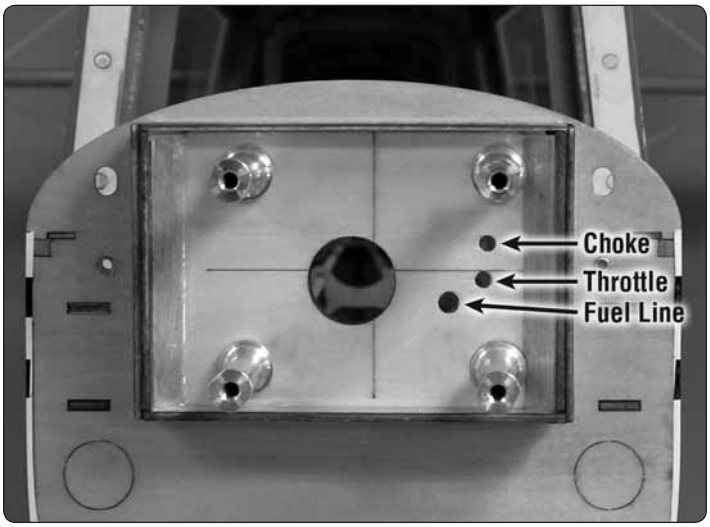
Many modelers have their own preferences for connectors and throttle linkage. We have provided materials for a secure and safe throttle linkage. We have also included a method to connect a linkage to the choke. This will require the use of an additional servo for the choke linkage. Some modelers may prefer a mechanical choke linkage. Review the following procedure. Then, modify it as you wish to fit your personal preferences.



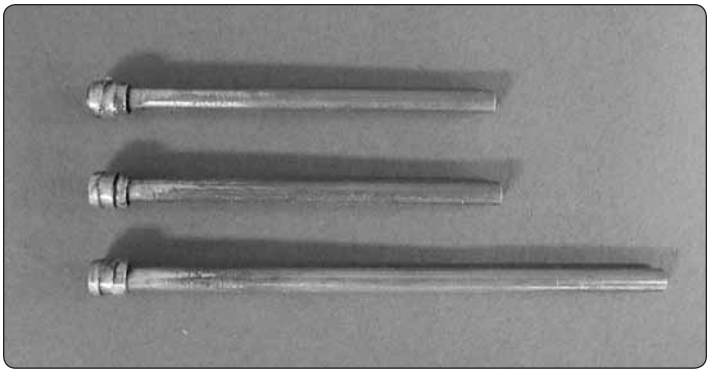
❏ 5. Install a 2-56 ball link and 2-56 nuts to both the throttle and the choke. Be sure to apply a drop of thread locker to the threads on the ball link.



❏ 6. To properly align the throttle linkage with the throttle servo you will need to rotate the throttle arm 180°. Remove the screw, rotate the arm, apply a drop of thread locker to the screw and re-insert it.

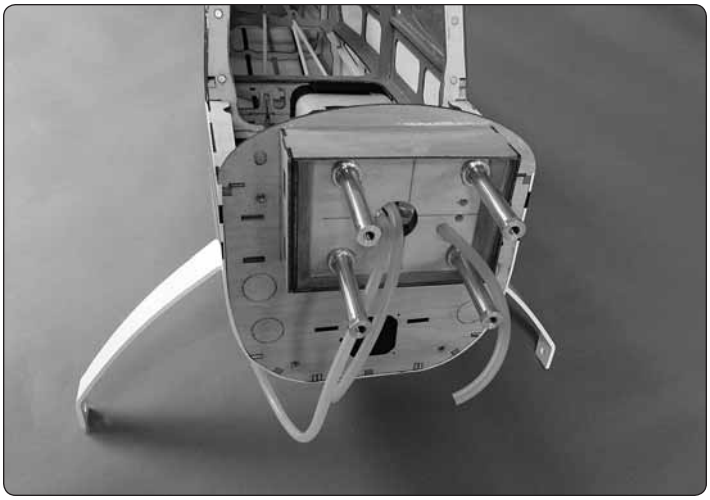


❏ 7. Make marks on the firewall where the throttle, choke and fuel line will pass through. Remove the engine from the stand-offs. Then drill a 3/16" [4.8mm] hole through the firewall for the throttle and choke. Drill a 1/4" [6.4mm] hole on the mark for the fuel line. (Check the diameter of your fuel line to be sure that a 1/4" [6.4mm] hole is correct).

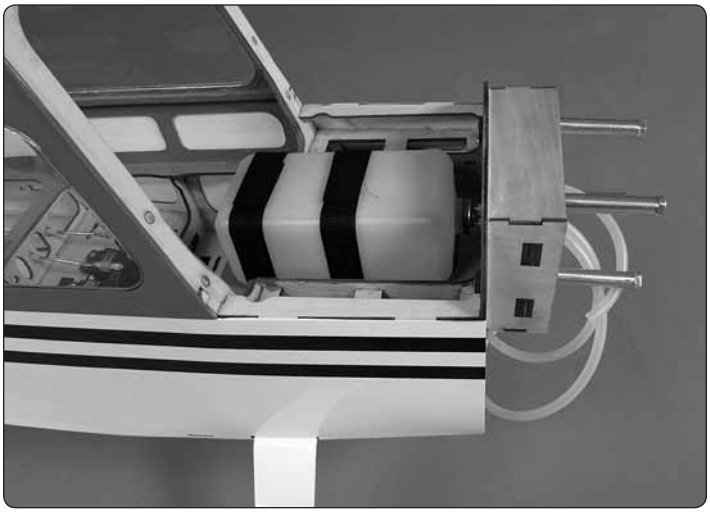


❏ 8. Assemble the fuel tank stopper assembly with the fuel tubes as shown. The easiest way is to first solder a fuel line barb (not included) onto one end of all three tubes. We used the 1/8" Dubro Fuel Line Barbs (DUBQ0670). Insert the tubes into the stopper with the metal plates, and then solder a barb onto the other end of the two short tubes. Bend the vent tube and connect the pickup and fueling/defueling lines (not included) to the short tubes. Connect the clunks to the Tygon Fuel lines (not included).

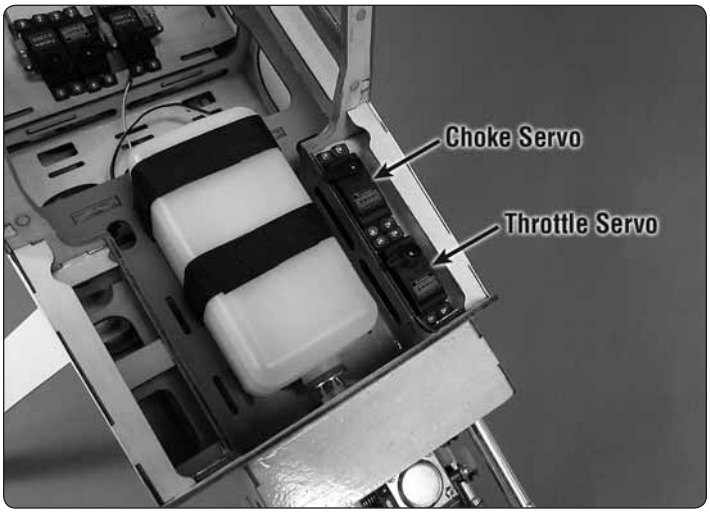
❏ 9. Install the fuel tank stopper assembly in the fuel tank. Check that the clunks move around freely in the fuel tank. Tighten the fuel tank stopper screw.



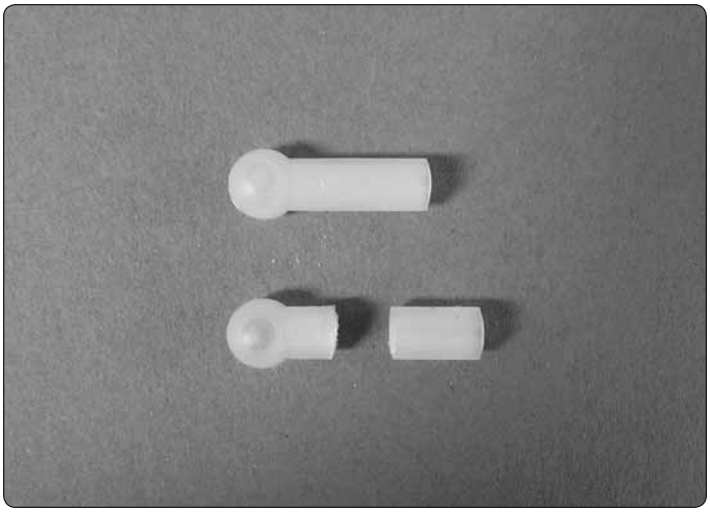
❏ 10. Install fuel lines onto the brass tubes from the fuel tank. To route the fuel lines as shown here you will need to use a 6" [152mm] length of tubing on the fill line, a10" [254mm] length of tubing on the vent line and a 4" [102mm] length of tubing on the carburetor line.



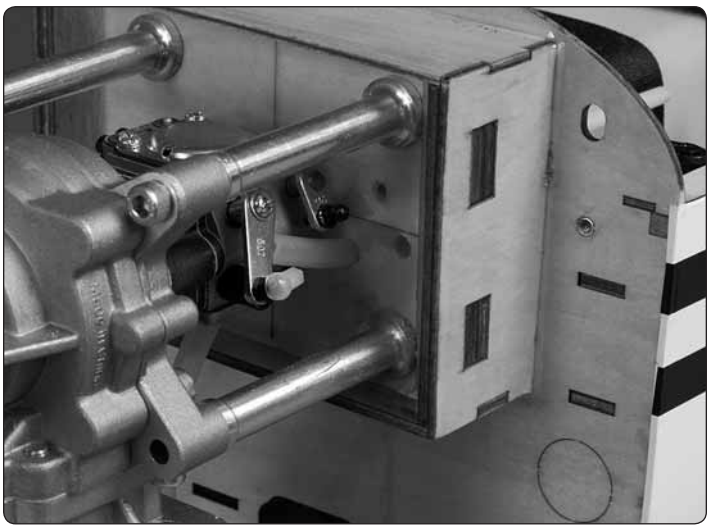
❏ 11. From the hook and loop material provided with the kit cut two straps to fit through the slots in the plywood tray and around the fuel tank to secure the tank in the fuselage.



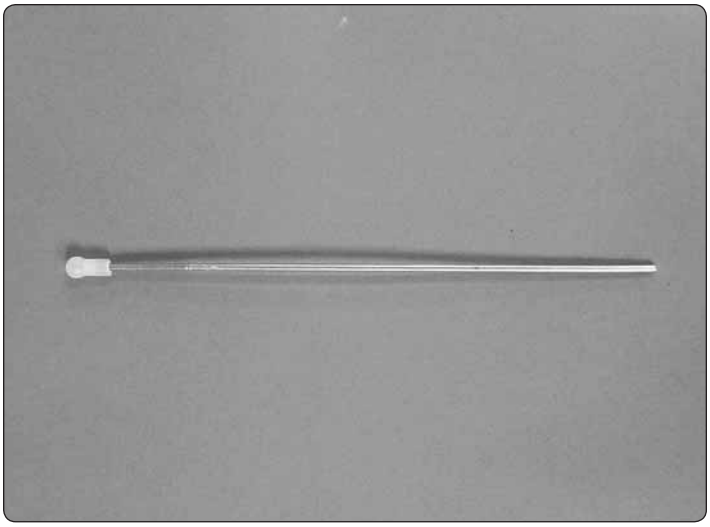
❏ 12. Install the throttle and choke (optional) servos as shown. The servos can be mounted on both sides of the fuselage if your carburetor happens to be on the opposite side of the engine than our DLE 30. Install the servos with the hardware provided with your servos.



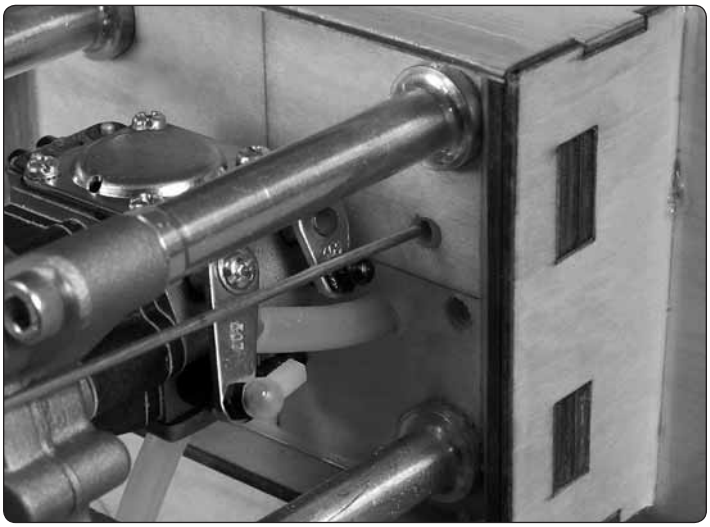
❏ 13. Locate one of the nylon ball links. Cut it in half as shown.

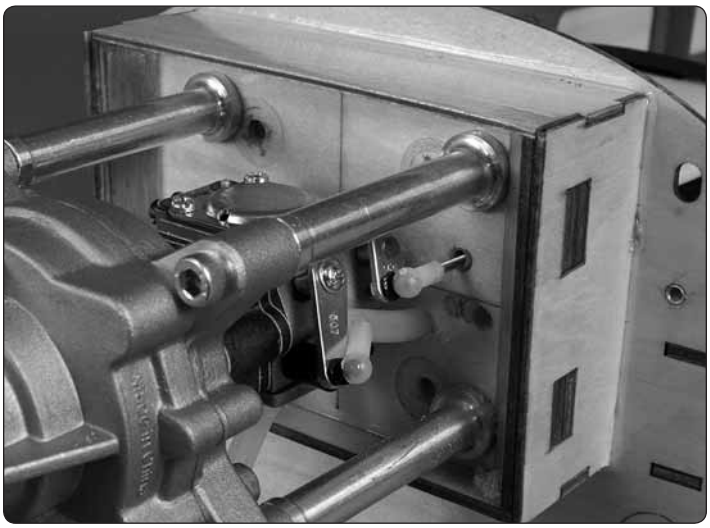


❏ 14. Locate the 11-3/4" plastic pushrod tube. Cut a 4" [102mm] piece from it. Roughen the end of the tube with 120 grit sandpaper. Use 5-minute epoxy and glue the tube into the hole you drilled for the choke linkage. When positioning the tube it should be flush with the firewall.



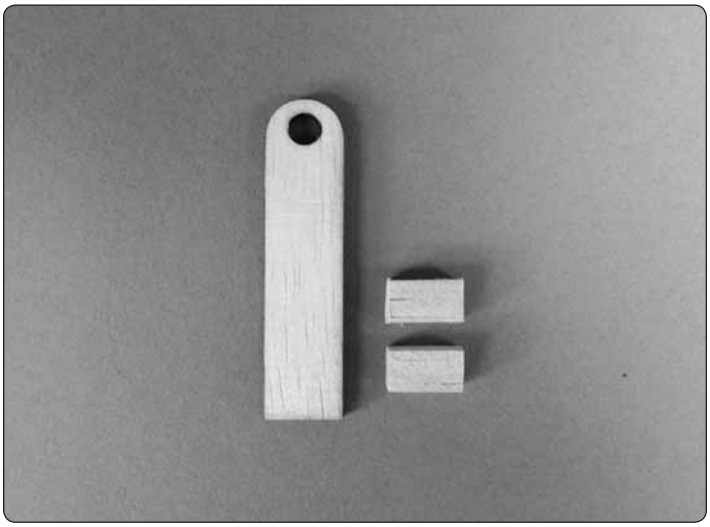
❏ 15. Thread a 2-56 x 6" [152mm] threaded wire into the nylon ball link you cut.



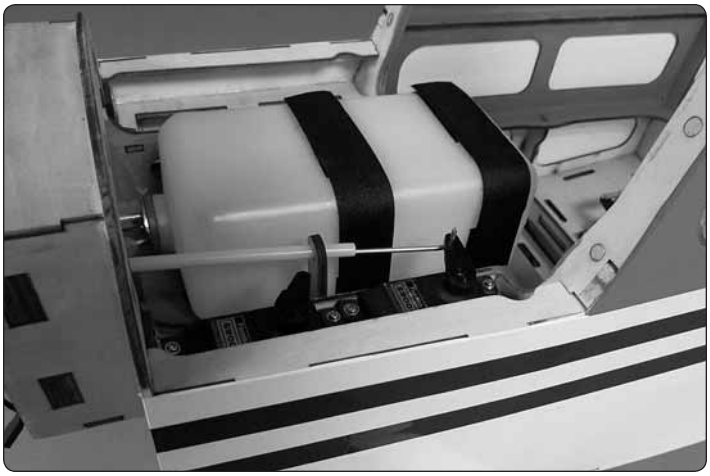


❏ 16. Slide the wire into the tube, inserting it through the front of the firewall. Snap the nylon ball link onto the ball link on the choke servo.

❏ 17. Move the choke arm towards the firewall. Position the servo arm as shown. Bend the pushrod wire in line with the outer hole in the servo arm. Drill the outer hole in the servo arm with a 5/64" [2mm] drill.



❏ 18. Locate the plywood pushrod support and the two 1/4" x 1/4" x 1/2" [6 x 6 x12mm] hardwood sticks.



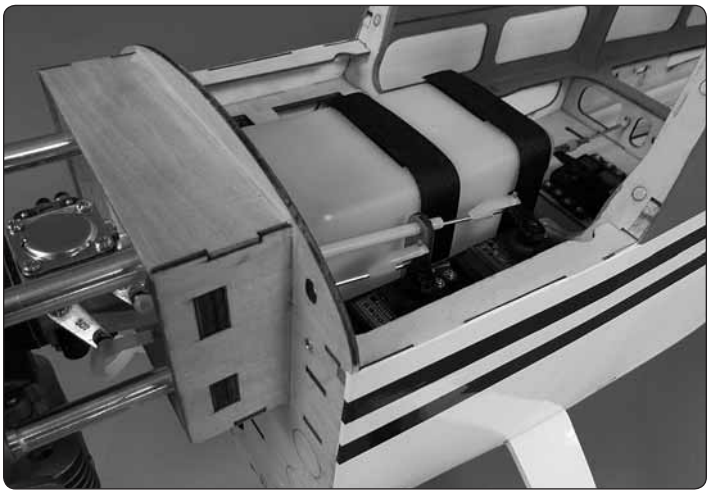
❏ 19. Slide the support over the wire and position it over the pushrod tube in the approximate location shown. The exact placement is not critical, just be sure it will not conflict with the throttle arm. Be sure the length of the pushrod support is not too long, putting any pressure on the pushrod tube. If needed shorten the support until it supports the pushrod tube properly.

❏ 20. Once the support is the proper length, glue a 1/4" x 1/4" x 1/2" [6 x 6 x12mm] hardwood stick on each side of the support and then glue the support to the fuel tank tray and the pushrod tube.

❏ 21. Insert the pushrod wire into the outer hole of the servo arm and secure the wire to the servo arm with a nylon Faslink.

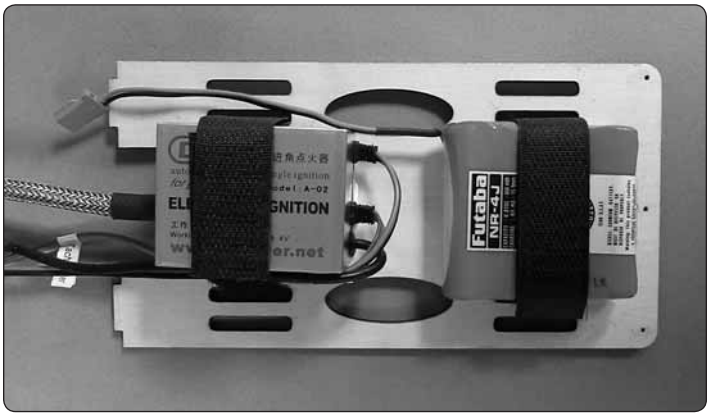
❏ 22. Cut a 2" [51mm'] length of tube from the remaining portion of the plastic pushrod tube you cut in step 15. Roughen the end of the tube with 120 grit sandpaper. Use 5-minute epoxy and glue the tube into the hole you drilled for the throttle linkage.

❏ 23. Drill the outer hole in the throttle servo arm with a 5/64" [2mm] drill.



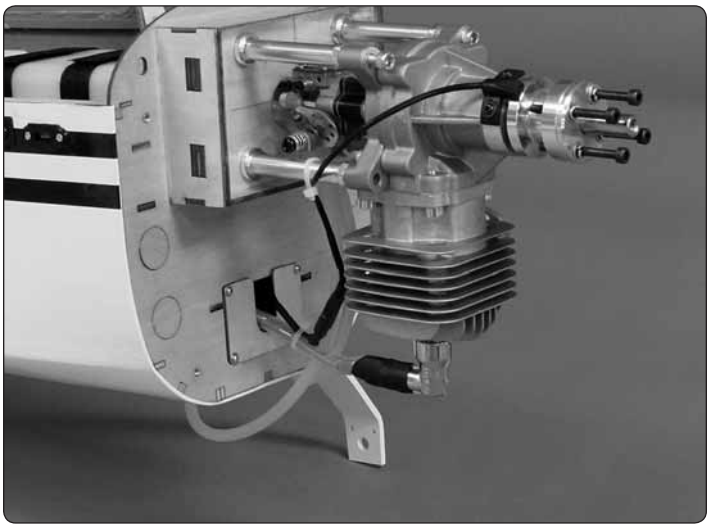
❏ 24. Thread a nylon ball link onto a 2-56 x 6" pushrod wire. Insert the wire into the plastic tube through the firewall. Snap the nylon ball link onto the metal ball link on the throttle. Adjust the throttle and the servo arm position. Bend the pushrod wire in line with the outer hole in the servo arm as you did with the choke servo. Secure the pushrod wire with a nylon faslink.

❏ 25. Install a switch and charge jack for the electronic ignition module in the right side of the fuselage.

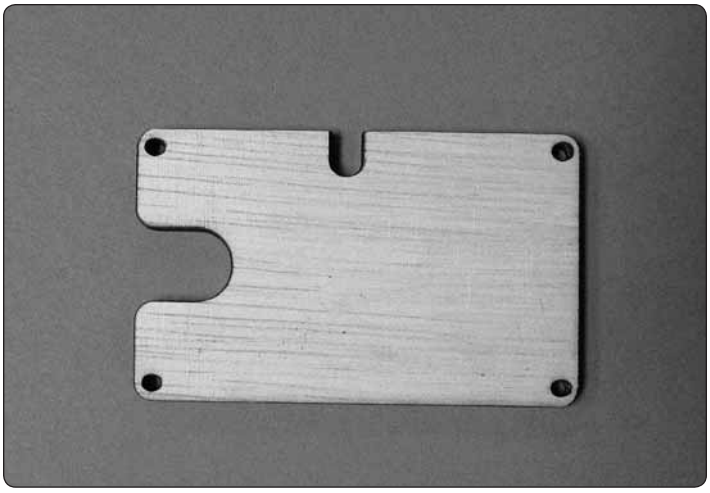


❏ 26. Place a piece of foam (not included) between the ignition module and the plywood accessory tray. Secure the module with the provided hook and loop material. Do the same with the ignition module battery.

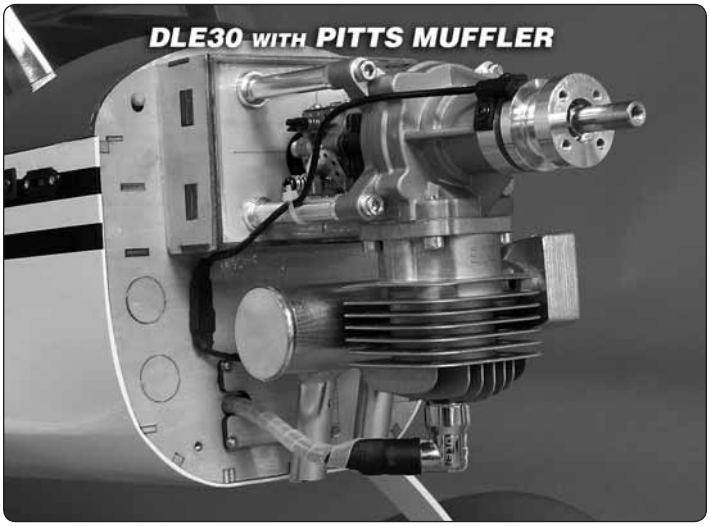
❑ 27. Make all of the required connections between the battery, switch harness and the ignition module following the instructions with the engine.



❑ 28. Insert the accessory tray under the fuel tank and insert the two tabs in the front of the tray into the slots in the firewall to retain the front of the tray. Let the back of the tray rest on the hardwood stick. Drill a 1/16" [1.6mm] hole through the mounting holes in the tray and into the hardwood stick. Secure the tray to the stick with three #2 x 3/8" [10mm] screws and #2 flat washers. The spark plug lead and ignition module connection should feed through the opening in the firewall. Screw the plywood plate in place with four #2 x 3/8" [9mm] screws and #2 flat washers as shown in the photo.



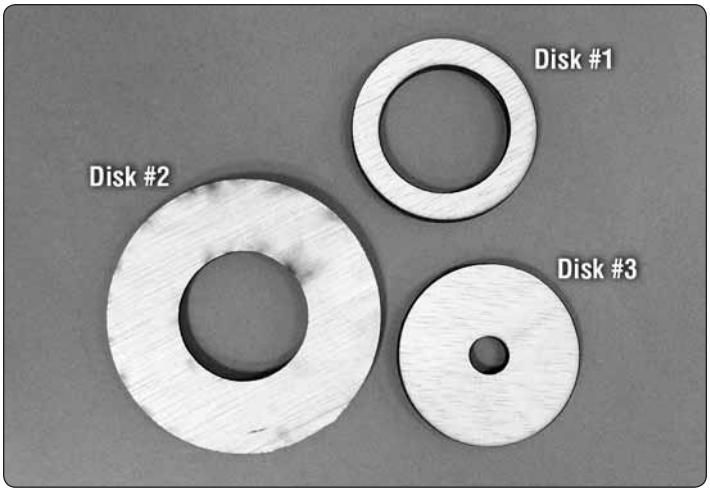
❑ 29. The installation shown of the DLE 30 assumes the installation of the stock muffler, but if you choose to install a Pitts Style muffler you will find that the wires from the ignition module will contact the muffler. If you install a Pitts muffler you need to use the plywood plate shown here to route the wires away from the muffler.

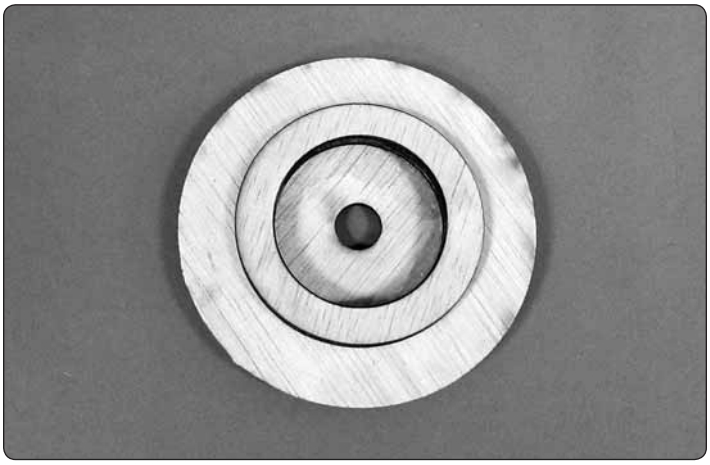


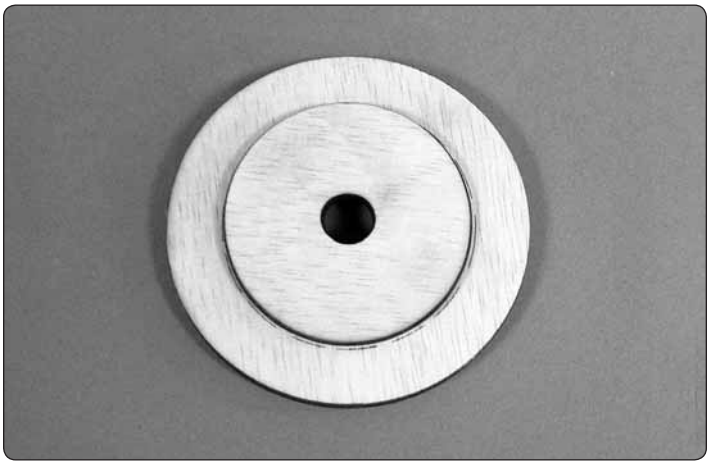
❏ 30. These three photos show three engine installations and the plywood plate installed to assure the ignition leads do not touch the muffler.

INSTALL THE COWL

❏ 1. Locate the plywood cowl ring. Secure it to the firewall with four 6-32 x 3/4" [19mm] socket head cap screws, #6 lock washers and #6 flat washers.



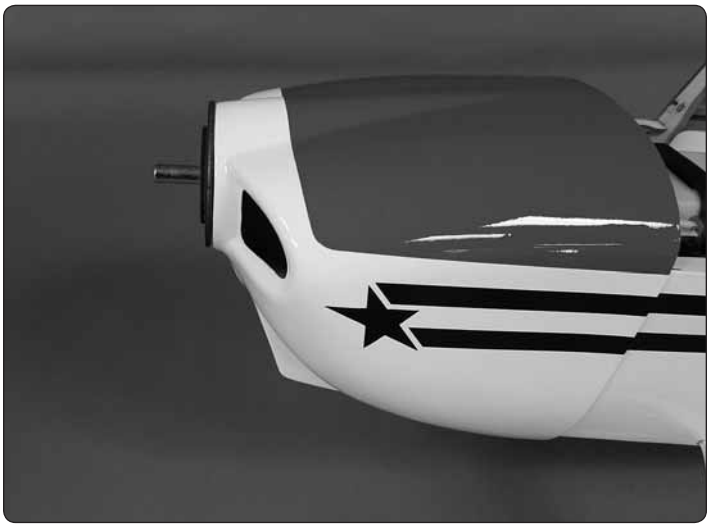


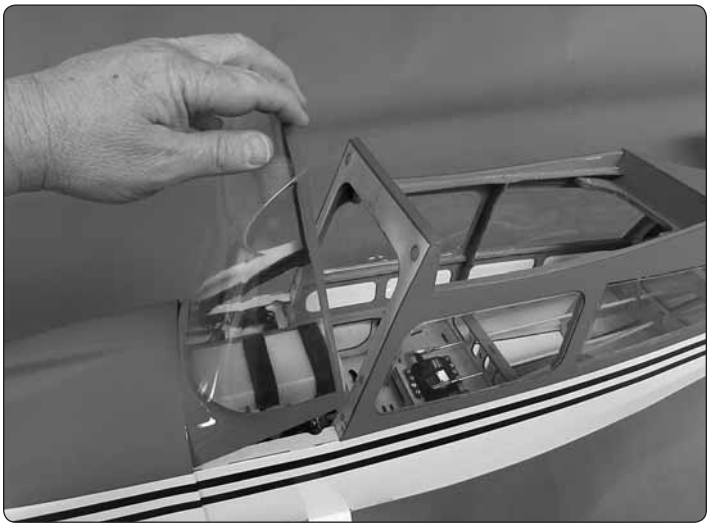


❏ 2. Locate three plywood disks. These will aid you in centering and assembling the cowl. These three disks need to be glued together and centered with one another. The easiest way to do this is to slide disk #1 onto the front of the engine. Then glue disk #2 to disk #1, again sliding disk #2 onto the engine. When the glue has hardened, slide disk #3 onto the crankshaft and glue it to disk #2. This assembly does not require much glue for where it will be used. A small amount of medium CA glue should work well. Once the glue has hardened, remove it from the front of the engine.

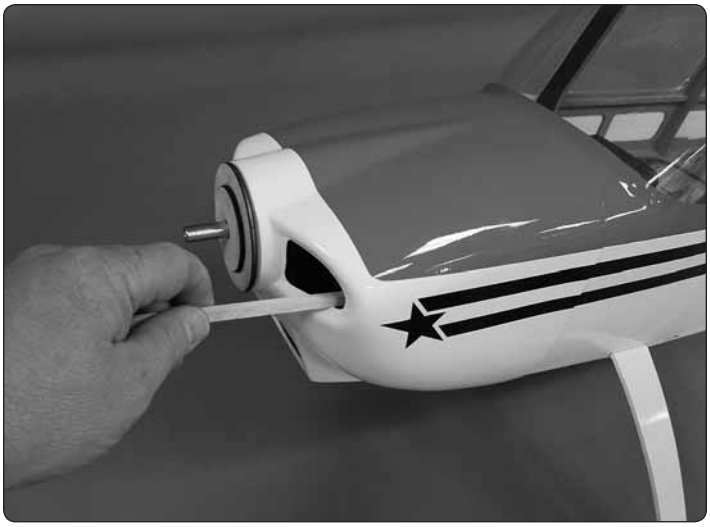
❏ 3. Measure inside the cowl from the back of the cowl approximately 1" [25mm]. Lightly sand (roughen) that area inside of the cowl with 120 grit sandpaper and then wipe the area clean with a paper towel wetted with rubbing alcohol.

❏ 4. Slide the cowl over the engine and then slide the ring assembly onto the engine. Be sure the ring assembly fits tight against the face of the engine drive washer.



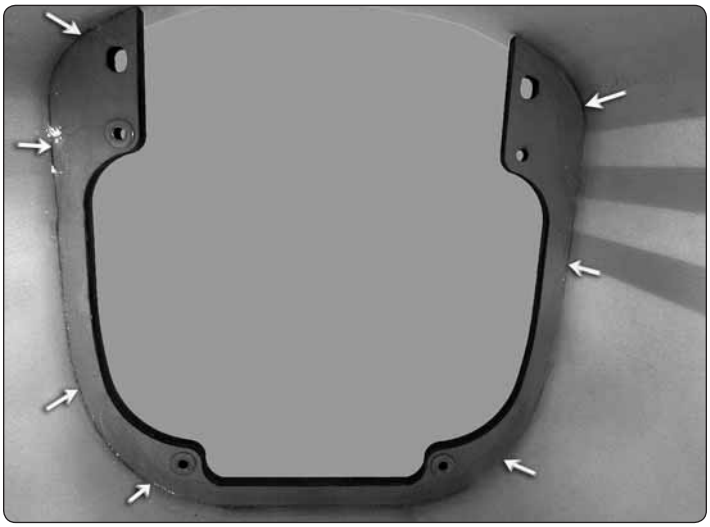


❏ 5. Slide the cowl forward, fitting it tight to disk #2. Be sure the black trim on the cowl and fuselage align. Slide the windshield onto the fuselage. This will assure you have adequate clearance once the cowl is glued in place.



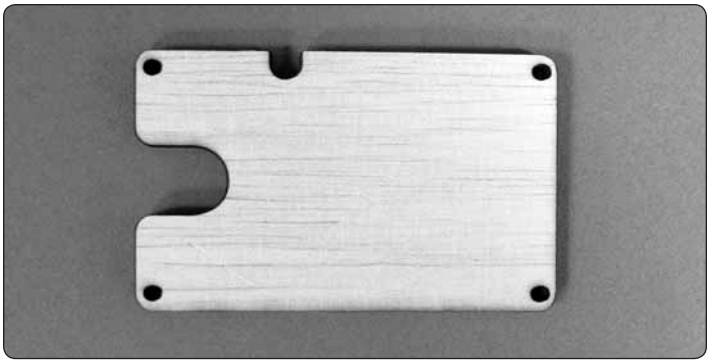
❏ 6. Mix approximately 1/2 ounce of 30-minute epoxy and a small amount of micro balloons to thicken the glue. Use a long stick or rod and apply a small amount of epoxy to the cowl ring and the cowl. Apply the glue in four to six spots to tack glue the cowl to the cowl ring. Allow the glue to harden.

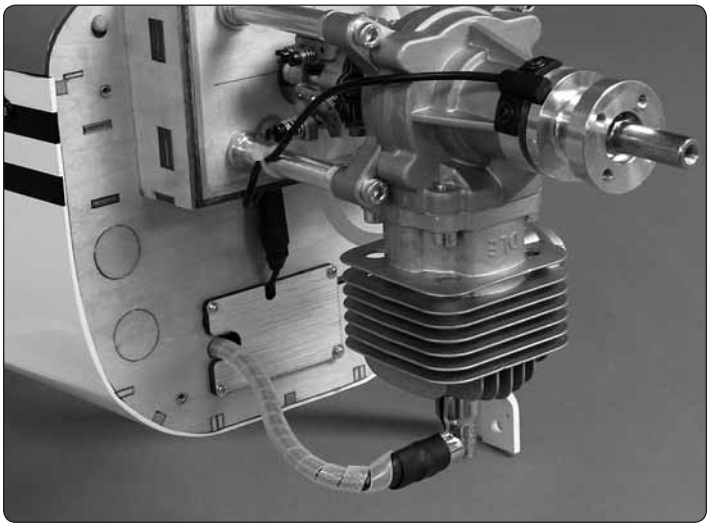
❏ 7. Remove the disk assembly from the front of the cowl. Use a long handled ball wrench and remove the bolts holding the cowl in place. Remove the cowl, being careful not to break the cowl ring from the cowl where you glued them together.



❏ 8. Glue the cowl to the cowl ring by applying a fillet of Shoe Goo® or good quality silicone glue to the front of the cowl ring. A Popsicle stick works well for spreading the glue. Set the cowl aside and allow the glue to cure.

❏ 9. We have shown the installation of the DLE stock muffler. Doing so will require you to cut more of the cowl away than you may like. A Pitts style muffler will be a more compact installation and require less of the cowl away. If you will be installing a Pitts style muffler you will need make a modification to the firewall shown in the next step.





❏ 10. Locate the plywood plate shown here. Screw it in place as shown. This will allow the spark plug lead and the ignition lead to be routed clear of the muffler.

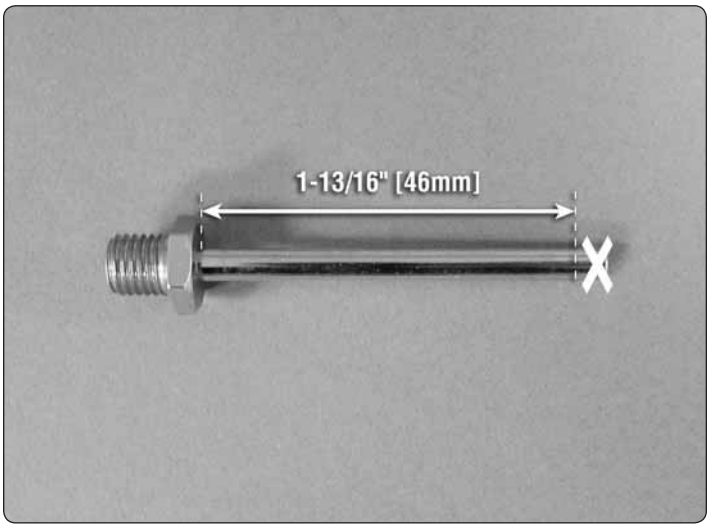
❏ 11. Install the muffler of your choice.

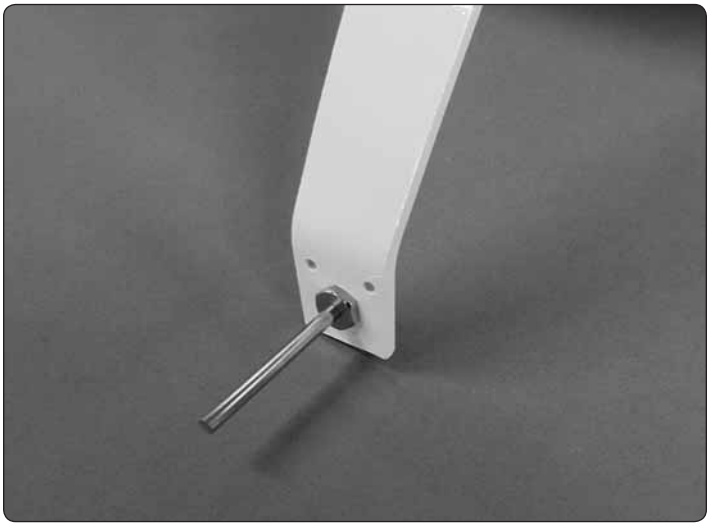
❏ 12. Slide the cowl onto the front of the fuselage. Work slowly and mark where the cowl needs to be cut to allow it to fit completely over the engine. Continue until the cowl will slip over the engine and can be bolted to the firewall.

❏ 13. Once you have successfully mounted the cowl, make any additional modifications to the cut outs in the cowl.

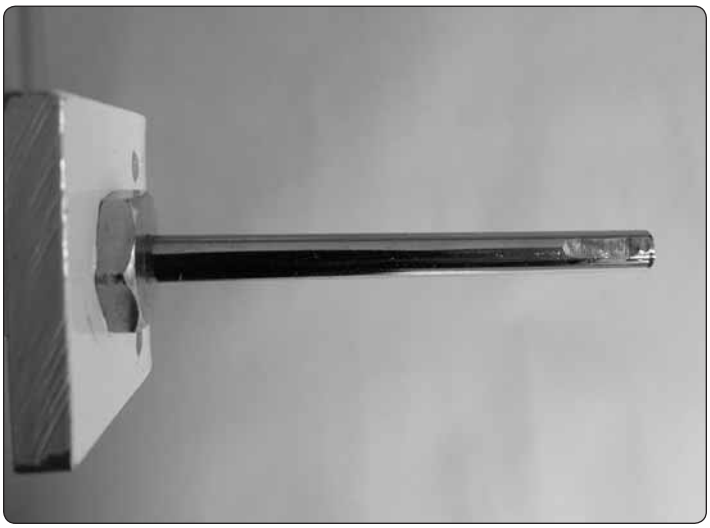
❏ 14. Make two holes in the cowl for the fuel fill line and the vent line.

INSTALL THE WHEELS, WHEEL PANTS AND WING STRUTS





❏ 1. Cut the two wheel axles to a length of 1-13/16" [46mm]. Install the axle to the main landing gear securing it with the two 5/16-24 nylon lock nuts.



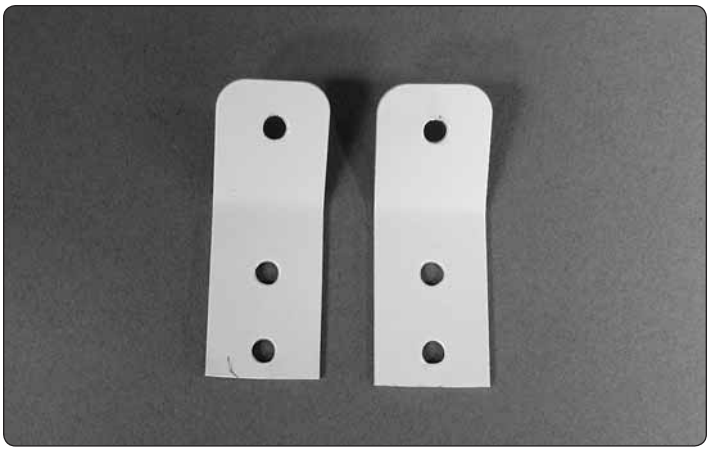
❏ 2. Make a flat spot on the end of the axle. The flat spot should be towards what will be the bottom of the airplane.

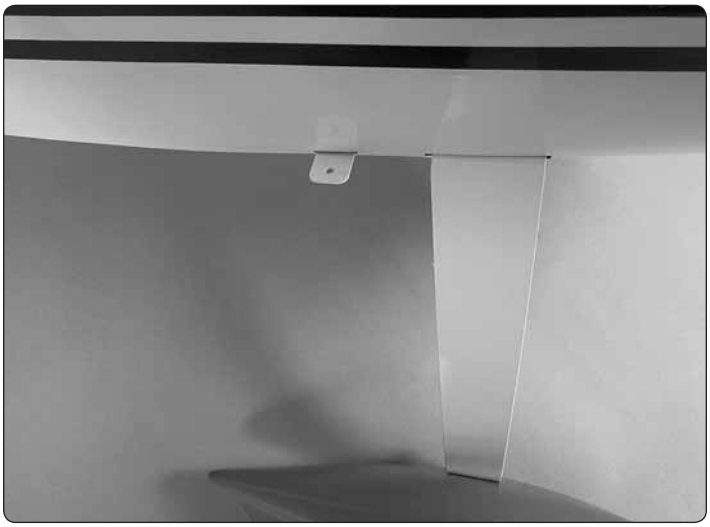
❏ 3. Insert a 6-32 set screw into two of the 3/16" [4.8mm] wheel collars. Slide one wheel collar onto the axle followed by the wheel and then another 3/16" [4.8mm] wheel collar. Center the wheel and then tighten the set screws. Be sure the wheel collar on the end of the axle rests on the flat spot you made.

❏ 4. Slide the wheel pant over the wheel and axle. Secure the pant to the landing gear with two 4-40 x 1/2" [13mm] socket head cap screws, #4 lock washer and #4 flat washer. Apply a drop of thread locker before inserting the screws into the

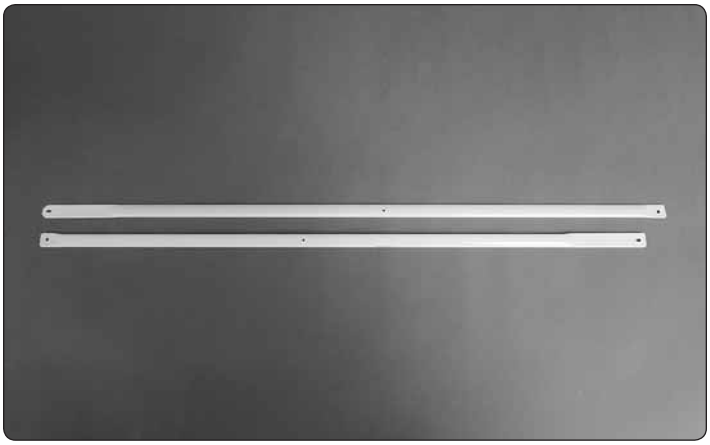
wheel pant. Adjust the wheel collars to be sure the wheel is centered in the pant and does not bind against it. Repeat this for the remaining wheel pant.

❏ 5. Install the wing to the fuselage, securing it with two 1/4-20 x 2" [51mm] nylon wing bolts.

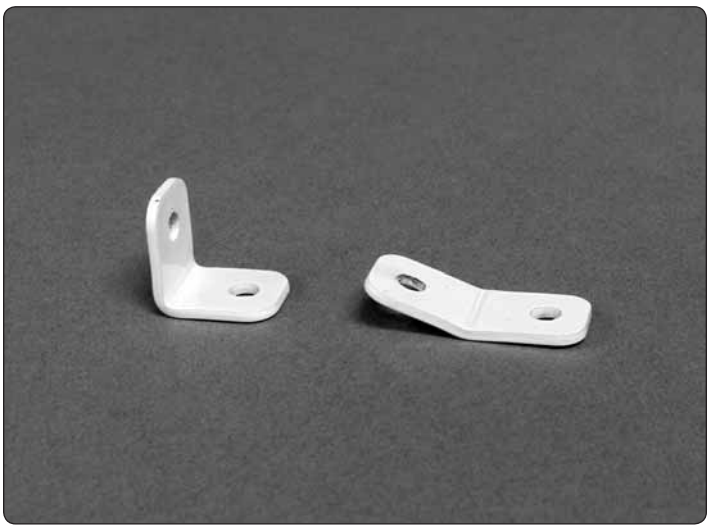




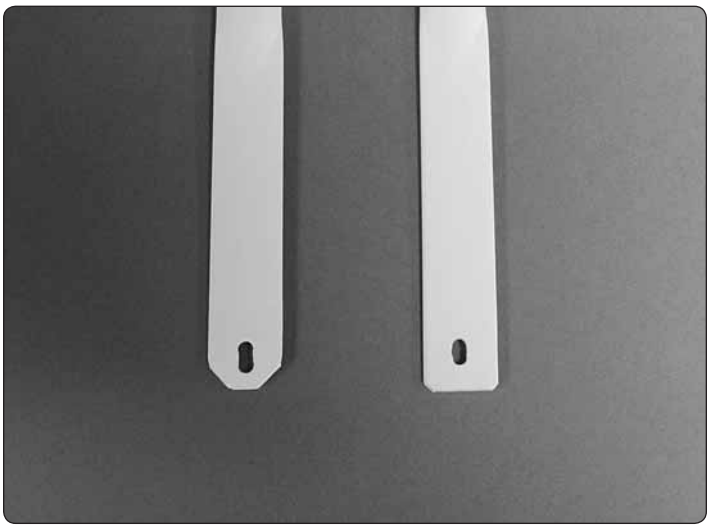
❏ 6. Locate the two wing strut brackets. Slide the end of the bracket with two holes into the slot on each side of the fuselage. Secure the bracket to the fuselage with two #4 x 1/2" [13mm] socket head cap screws, #4 lock washers and #4 flat washers. Be sure to apply a drop of thread locker on each of the screws before inserting them into the brackets.



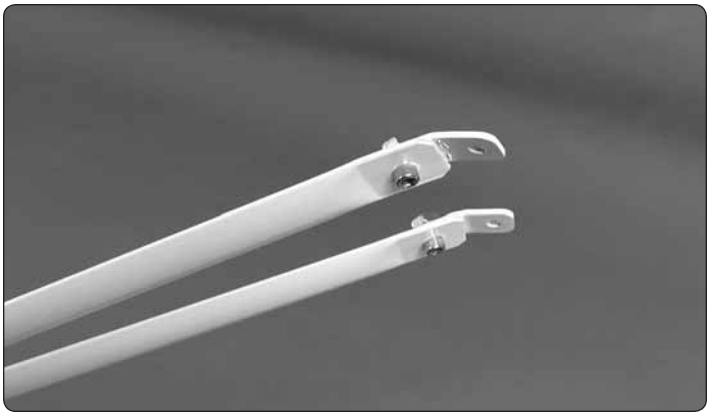
❏ 7. Your kit includes 2 pair of struts. Each pair is comprised of a 24" [610mm] and 25-1/2" [647mm] long strut. The 24" [610mm] strut is the front strut and the 25-1/2" [647mm strut] is the rear strut.



❏ 8. There are two different brackets used for mounting the strut. You will need two of the 90 degree brackets and two of the angle brackets for each wing half.

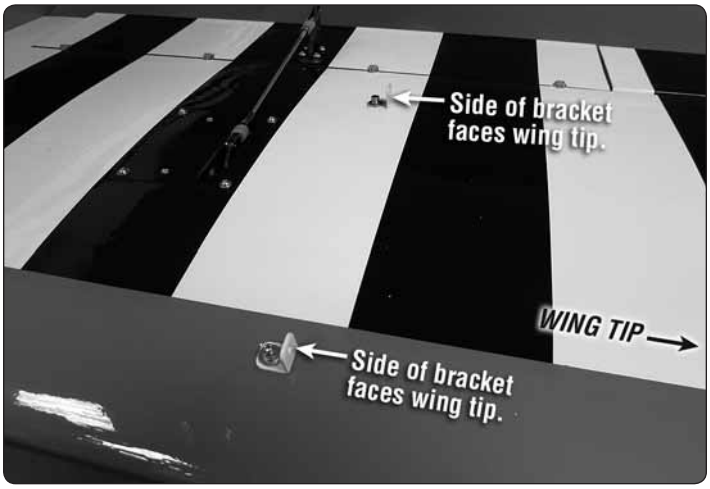


❏ 9. Look closely at the end of each strut. You will see that on one end of each strut there is a slot rather than a hole. The slotted end of the strut is the end that will be attached to the bracket on the fuselage.



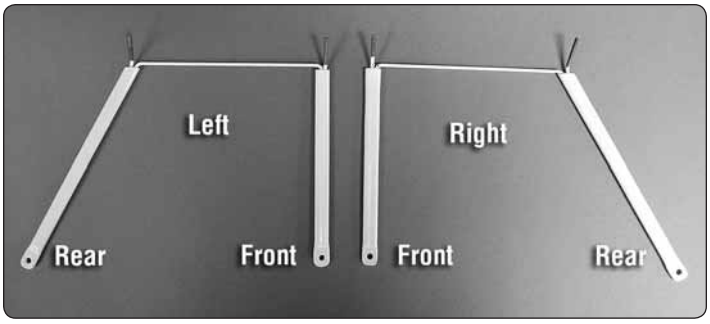
❏ 10. Install an angled bracket to the end of each strut with a 4-40 x 1/4" [6mm] socket head cap screw, 4-40 lock washer and 4-40 nut. Be sure to put a drop of thread locker on each screw.

❏ 11. Look closely at the bottom of the wing. You will find four mounting holes for the struts. Each of the mounting holes has a 4-40 blind nut pre-installed in the wing. The two mounting holes closest to the wing tip are for the long wing struts. The two holes near the center of the wing are for the interplane struts.



❏ 12. Install a 90 degree bracket into each of the two holes near the center of the wing for the interplane struts. Each bracket should be secured with a 4-40 x 1/2" socket head cap screw, #4 lock washer and #4 flat washer. The bracket should be position as shown

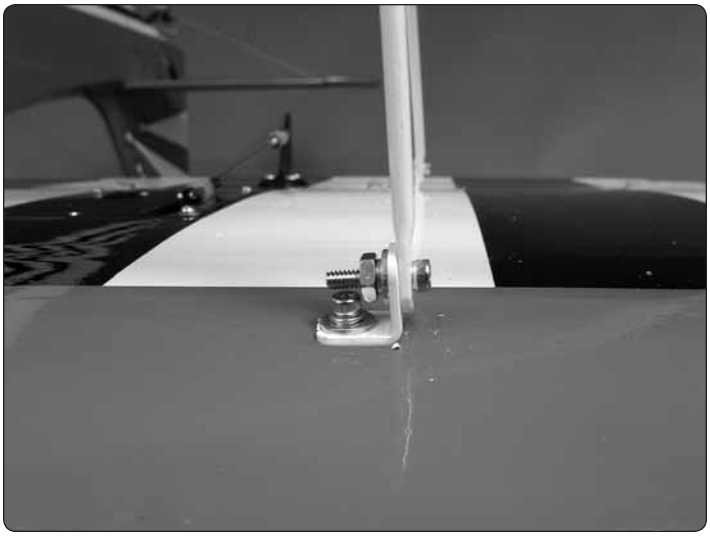
❏ 13. Install the wing struts to the wing and the fuselage with a 4-40 x 1/2" [13mm] socket head cap screw, #4 flat washer and #4 lock washer, mounting it to the bracket extending from the fuselage and the two blind nuts located in the wing near the wing tip. Attach the struts to the fuselage with a 4-40 x 1/2" [13mm] socket head cap screw, #4 flat washer and #4 lock washer.



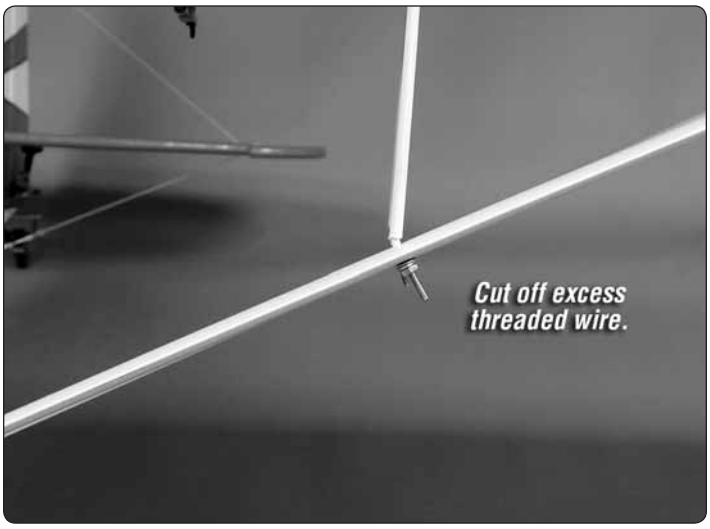
❏ 14. Locate the two interplane struts. You will notice the threaded wires are a bit loose inside the tube. This is intentional so you can make the final adjustments required for the installation of the strut.

❏ 15. Insert the threaded portion of the wire through the strut. You may need to rotate the threaded wire slightly so it protrudes through the strut as shown in the photo. Once you have the wires adjusted work some epoxy or medium CA into the tube to help secure the wire inside the tube.

❏ 16. Secure the interplane strut to the wing strut with a 2-56 nut, #2 flat washer and #2 lock washer.



❏ 17. Secure the opposite end of the interplane strut to the bracket you installed in the wing with a 4-40 x 1/2" [13mm] socket head cap screw, #4 flat washer and #4 lock washer.



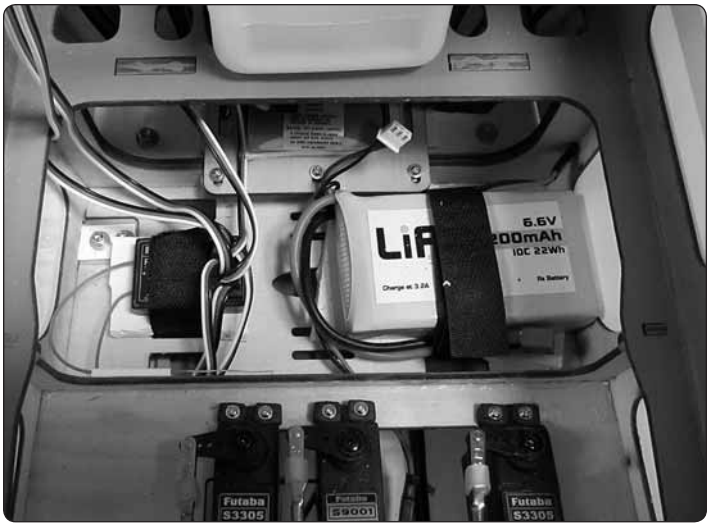
❏ 18. After installing the nuts and washers you may wish to use a high speed motor tool and cut-off wheel to cut off the excess threaded wire.

❏ 19. Repeat steps 9 – 16 for the opposite wing strut.

❏ 20. Once you have completed the strut assembly remove the wing. Because the wing is in two pieces you can remove the bolt on the struts that attaches to the fuselage. Remove the wing bolts and then slide the wing out of the wing saddle continuing back towards the tail. Once the wing is far enough aft of the wing saddle the struts will be wider than the fuselage. At that point you can lift the wing off the fuselage. Using this method for installing and removing the wing you can leave the struts on the wing halves. This makes installation of the wings and struts quick and easy.

COMPLETE THE RADIO INSTALLATION

❏ 1. Both sides of the fuselage have pre-cuts in the fuselage for the radio switch and charge jack. Determine which of the openings best fit your switch and then cut the covering away from the fuselage. Install your radio switch and the charge jack if you intend to use one.

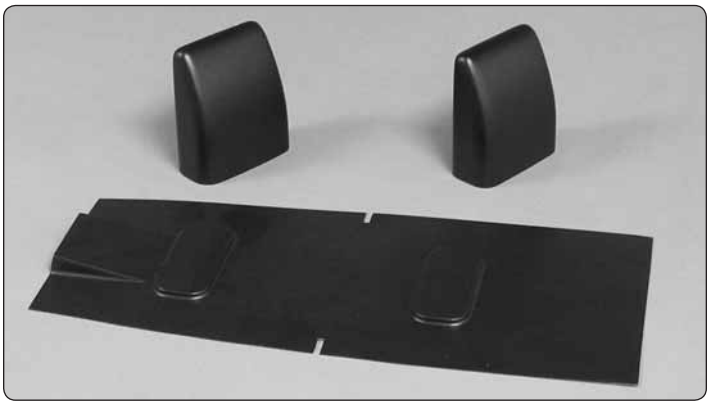


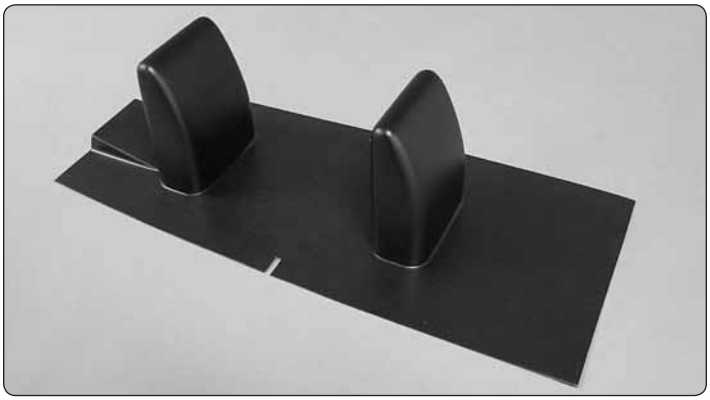
❏ 2. Install your receiver battery of choice to either side of the fuselage. Place a piece of R/C foam rubber under the battery and secure the battery with Velcro®. Plug your servos into the receiver, place R/C foam under the receiver and secure it with Velcro®.

❏ 3. Install a 20" [500mm] servo lead into the aileron and the flap port of your receiver.

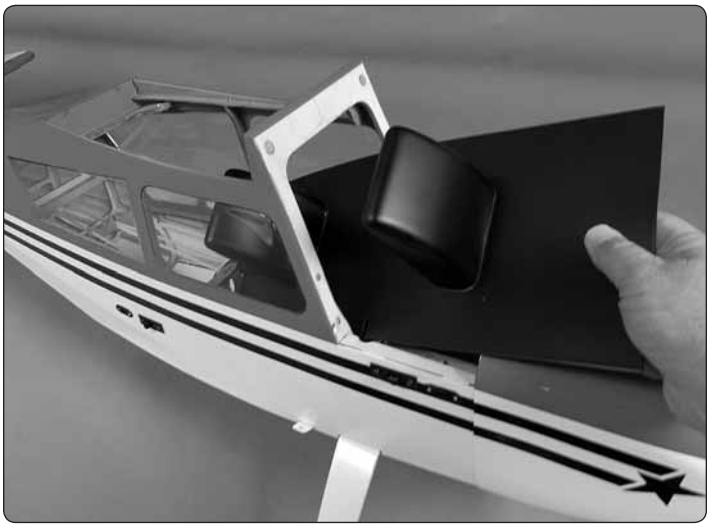
❏ 4. Install a dual servo lead or "Y" harness on the flap leads and the aileron leads in your wing.

INSTALL THE COCKPIT, PILOT AND SPINNER





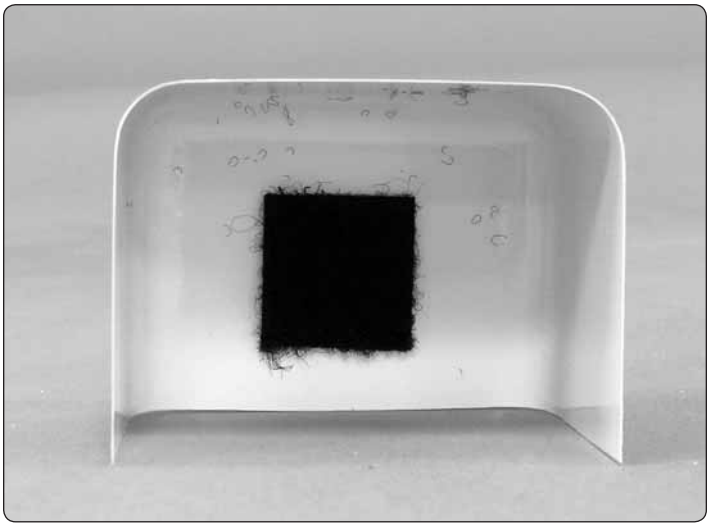
❏ 1. Locate the cockpit floor and the seat backs. Glue the seat backs to the cockpit floor.



❏ 2. Remove the windshield and un-do the Velcro® holding the fuel tank in place. Test fit the cockpit floor inside the fuselage. The cockpit floor is pre-cut and should fit without any modifications. The easiest way to install the floor is through the front of the cockpit. When it is properly positioned on the frame the fuel tank will overhang slightly on the floor.

❏ 3. For our installation we applied heat shrink tubing to the aileron and flap servo leads and applied glue to the heat shrink, gluing them to the sides of the cockpit frame. This required an opening to be cut in the cockpit floor. Make any modifications to your floor that are required to accommodate the servo leads.

❏ 4. We have included a black plastic cover to disguise the fuel tank.



❏ 5. Attach a 1" [25mm] piece of self-adhesive Velcro® to the inside of the cover.

❏ 6. Attach a 1" [25mm] piece of self-adhesive Velcro® to the back of the fuel tank. This will secure the cover and allow it to be easily removed if you need to service the fuel tank.

❏ 7. Now is a good time to decide if you will install a pilot. We used the Great Planes 1/4-scale sport pilot figure (GPMQ9010). Because the cockpit floor is vacuum formed plastic it is light-weight but does not provide a strong base for mounting a pilot so you will need to make a plywood base for you particular pilot. Additionally, most pilot busts will be too short and will need

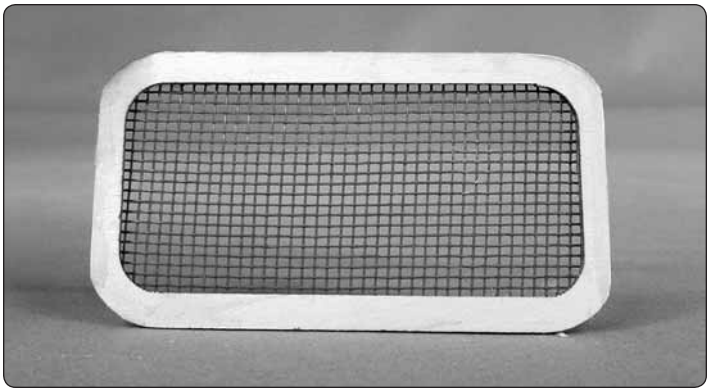
to be built up to make the pilot sit tall enough in the cockpit. We used the Great Planes sport pilot and added a block of balsa to the base and sanded it to match the shape of the pilot. Then we painted it to match the pilot. Because most of the pilot base is below the window lines the overall effect is good and the added balsa base does not take away the look of the finished pilot. Once you have the pilot at the proper height you will need to make a mounting plate. We used a piece of light plywood (not included) and made it wide enough to reach the rails on both sides of the fuselage. To make the base less obvious we painted it flat black to match the floor.

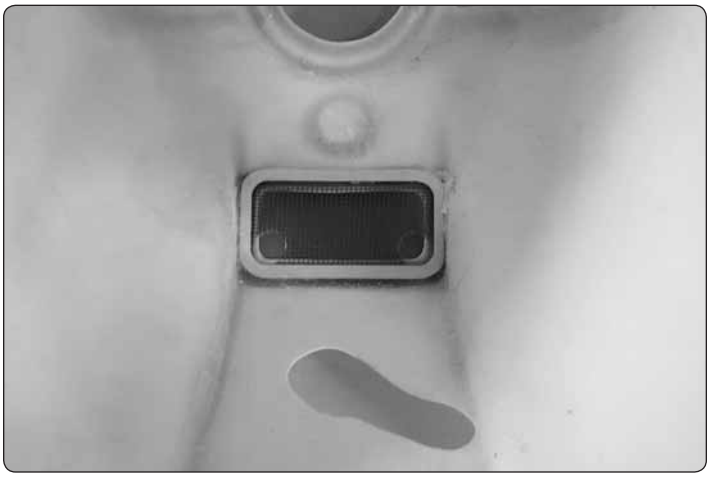
❏ 7. The pilot was then screwed through the cockpit floor and into the rails on the inside of the fuselage. This secures the pilot as well as securing the front half of the cockpit floor to the fuselage.

❏ 8. If you choose not to install a pilot, secure the floor to the rails in the fuselage by drilling four 1/16" [1.6mm] holes through the floor and the mounting rails. Secure the floor with four #2 x 3/8" [10mm] screws and #2 flat washers. Refer to the above photo to see the location of the screws we installed.

❏ 9. Apply the instrument panel decal to the instrument panel shroud.

❏ 10. Install the instrument panel shroud into the front of the windshield. You will notice the bottom of the shroud is cut to allow clearance for the fuel tank. You will also notice that there is room for the shroud to move inside the windshield. This wiggle room will allow you to position the shroud exactly where it needs to be. If you are doing the electric installation you should install your batteries before gluing the shroud in place to be sure you leave clearance room. Apply 5-minute epoxy inside of the windshield where the shroud will make contact. Install the windshield to the fuselage and then position the shroud over your fuel tank or batteries. Allow the glue to harden.



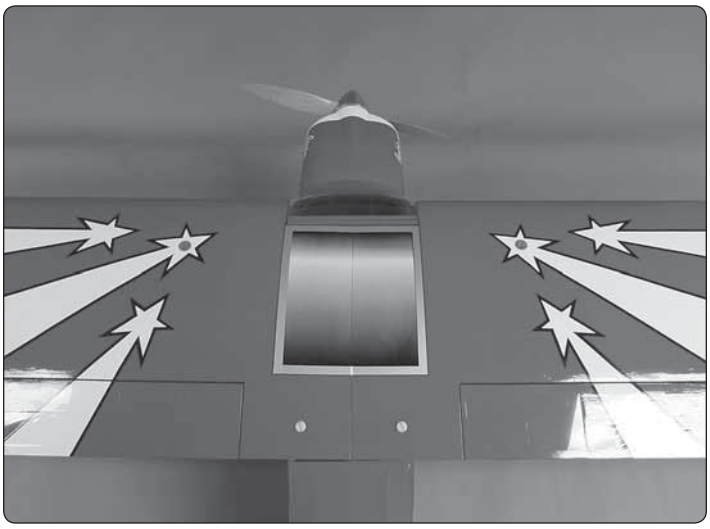


❏ 11. Included in the kit is a screen that can be glued in the front of the cowl to add a nice scale detail. This installation is optional. If you install the screen you will not have access to two of the cowl mounting screws. Depending on which muffler you used, you may be able to reach the screws through the cut outs you made for the muffler. You can also cut the lower corner of the screen as shown in the photo. This will allow you the access you need. Once you have modified the screen or cowl as needed, glue the screen inside the cowl.

❏ 12. Install the spinner onto the front of the engine or motor. The spinner back plate is pre-drilled for the O.S. GT33. The spinner also comes with a bushing that will allow the back plate to be used on smaller shafts that may be on electric motors or glow engines. If you are using a DLE 30 the hole in the spinner will need to be enlarged by drilling the spinner with a 25/64" [10mm] drill bit.

APPLY THE DECALS

Refer to these pictures and the pictures on the box to determine the location for the decals. Use the following instructions to apply the decals.



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

2. Be certain the model is clean and free from oily fingerprints and dust. Prepare a dishpan or 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 soap and water and peel off the paper backing. **Note:** Even though the decals have a "sticky-back" and are not the water transfer type, submersing them in soap & water allows accurate positioning and reduces air bubbles underneath.

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

4. 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.

GET THE MODEL READY TO FLY

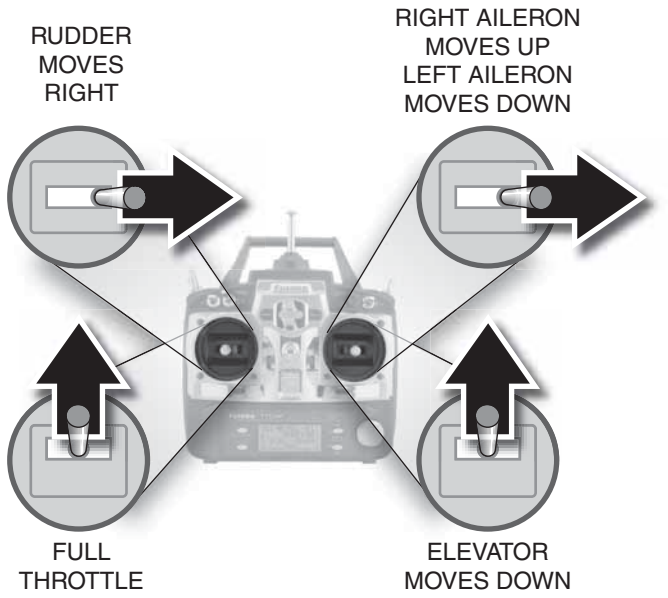
Check the Control Directions

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.

4-CHANNEL RADIO SET UP (STANDARD MODE 2)



3. Make certain that the control surfaces and the carburetor respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have remained centered. Adjust if necessary.

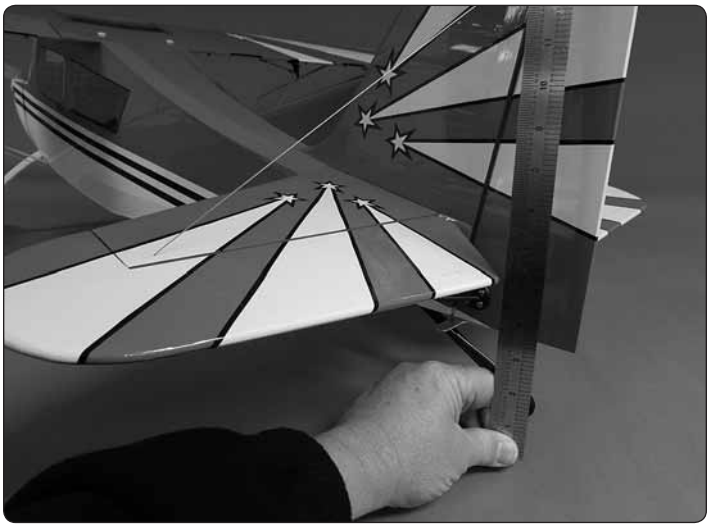
Set the Control Throws

To ensure a successful first flight, set up your Citabria according to the control throws specified in this manual. The throws have been determined through actual flight testing and accurate record-keeping, allowing the model to perform in the manner in which it was intended. If, after you have become accustomed to the way the Citabria flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model too responsive and difficult to control, so remember, "more is not always better."

❑ 1. Use a box or something similar to prop up the bottom of the fuselage so the horizontal stabilizer and wing will be level.

*Measure the **high rate** elevator throw first…*

❏ 2. Hold a ruler vertically on your workbench against the widest part (front to back) of the trailing edge of the elevator. Note the measurement on the ruler.



❏ 3. Move the elevator up with your transmitter and move the ruler forward so it will remain contacting the trailing edge. The distance the elevator moves up from center is the "up" elevator throw. Measure the down elevator throw the same way.

❏ 4. If necessary, adjust the location of the pushrod on the servo arm or on the elevator horn, or program the ATVs in your transmitter to increase or decrease the throw according to the measurements in the control throws chart.

❏ 5. Measure and set the **low rate** elevator throws and the high and low rate throws for the rest of the control surfaces the same way.

These are the recommended control surface throws:

	LOW		HIGH	
	Up	**Down**	**Up**	**Down**
ELEVATOR	3/4" [19mm] 11°	3/4" [19mm] 11°	1-3/16" [30mm] 17°	1-3/16" [30mm] 17°
	Up	**Down**	**Up**	**Down**
AILERON	3/4" [19mm] 13°	3/4" [19mm] 13°	1-1/8" [28mm] 20°	1-1/8" [28mm] 20°
	Right	**Left**	**Right**	**Left**
RUDDER	7/8" [22mm] 11°	7/8" [22mm] 11°	1-5/8" [41mm] 23°	1-5/8" [41mm] 23°
	Down		**Down**	
FLAPS	5/8" [16mm] 11°		1" [25mm] 18°	

NOTE: The throws are measured at the **widest part** of the elevators, rudder and ailerons.

Balance the Model (C.G.)

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

At this stage the model should be in ready-to-fly condition with **all** of the components in place including the complete radio system, engine, muffler, propeller, spinner and pilot. The fuel tank should be empty.

❏ 1. If using a Great Planes C.G. Machine, set the rulers to 3.5" [89mm]. If not using a C.G. Machine, use a fine-point felt tip pen to mark lines on the top of wing on both sides of the fuselage 3.5" [89mm] back from the leading edge measured at the fuselage. Apply narrow (1/16" [2mm]) strips of tape over the lines so you will be able to feel them when lifting the model with your fingers.

This is where your model should balance for the first flights. Later, you may experiment by shifting the C.G. 3/16" [4.8mm] forward or 3/16" [4.8mm] back to change the flying characteristics. Moving the C.G. forward will improve the smoothness and stability, but the model will then be less aerobatic (which may be fine for less-experienced pilots). Moving the C.G. aft makes the model more maneuverable and aerobatic for experienced pilots. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.

❏ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, place the model on a Great Planes CG Machine, or lift it at the balance point you marked.

❏ 3. If the tail drops, the model is "tail heavy." If the nose drops, the model is "nose heavy." Use Great Planes "stick-on" lead (GPMQ4485) to balance the model. To find out how much weight is required, place incrementally increasing amounts of weight on the bottom of the fuselage over the location where it would be mounted inside until the model balances. A good place to add stick-on nose weight is to the firewall. Do not attach weight to the cowl—this will cause the mounting screws to open up the holes in the cowl. Once you have determined the amount of weight required, it can be permanently attached. If required, tail weight may be added by cutting open the bottom of the fuse and gluing it permanently inside.

Note: If mounting weight where it may be exposed to fuel or exhaust, do not rely upon the adhesive on the back to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Instead, permanently attach the weight with glue or screws.

❏ 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, have an assistant help you lift the model by the engine propeller shaft and the bottom of the fuse under the TE of the fin. Do this several times.

❏ 2. If one wing always drops when you lift 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.**

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 42 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.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter and receiver batteries should be done for 15 hours **using the slow-charger that came with the radio system**. This will "condition" the batteries so that the next charge may be done using the fast-charger of your choice. If the initial charge is done with a fast-charger the batteries may not reach their full capacity and you may be flying with batteries that are only partially charged.

Balance Propellers

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

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

Ground Check and Range Check

Run the engine for a few minutes to make sure it idles reliably, transitions smoothly and maintains full power indefinitely. Afterward, shut the engine off and inspect the model closely, making sure all fasteners, pushrods and connections have remained tight and the hinges are secure. Always ground check the operational range of your radio before the first flight of the day following the manufacturer's instructions that came with your radio. This should be done once with the engine off and once with the engine running at various speeds. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

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.
- 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 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 (EXCERPTS)

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

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 and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

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

5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models while being flown indoors.

7) 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) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.

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

5) **I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed** [in the complete AMA Safety Code].

9) Under no circumstances may a pilot or other person touch a powered model in flight; **nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing.**

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 as they are completed.

❏ 1. Fuelproof all areas exposed to fuel or exhaust residue such as the cowl ring, cowl mounting blocks, wing saddle area, etc.

❏ 2. Check the C.G. according to the measurements provided in the manual.

❏ 3. Be certain the battery and receiver are securely mounted in the fuse. Simply stuffing them into place with foam rubber is not sufficient.

❏ 4. Extend your 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 your model *laterally* as explained in the instructions.

❏ 6. Use threadlocking compound to secure critical fasteners such as the set screws that hold the wheel axles to the struts, screws that hold the carburetor arm (if applicable), screw-lock pushrod connectors, 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. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, cowl mounting screws, 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 included with your radio.

❏ 12. Secure connections between servo wires and Y-connectors or servo extensions, and the connection between your battery pack and the on/off switch with vinyl tape, heat shrink tubing or special clips suitable for that purpose.

❏ 13. Make sure any servo extension cords you may have used do not interfere with other systems (servo arms, pushrods, etc.).

❏ 14. Secure the pressure tap (if used) to the muffler with high temp RTV silicone, thread locking compound or J.B. Weld.

❏ 15. Make sure the fuel lines are connected and are not kinked.

❏ 16. Balance your propeller (and spare propellers).

❏ 17. Tighten the propeller nut and spinner.

❏ 18. Place your name, address, AMA number and telephone number on or inside your model.

❏ 19. Cycle your receiver battery pack (if necessary) and make sure it is fully charged.

❏ 20. If you wish to photograph your model, do so before your first flight.

❏ 21. Range check your radio when you get to the flying field.

FLYING

IMPORTANT! The Citabria does not possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots.

Fuel Mixture Adjustments

A fully cowled engine may run at a higher temperature than an un-cowled engine. For this reason, the fuel mixture should be richened so the engine runs at about 200 rpm below peak speed. By running the engine slightly rich, you will help prevent dead-stick landings caused by overheating.

CAUTION (THIS APPLIES TO ***ALL*** R/C AIRPLANES): If, while flying, you notice an alarming or unusual sound such as a low-pitched "buzz," this may indicate control surface *flutter.* Flutter occurs when a control surface (such as an aileron or elevator) or a flying surface (such as a wing or stab) rapidly vibrates up and down (thus causing the noise). In extreme cases, if not detected immediately, flutter can actually cause the control surface to detach or the flying surface to fail, thus causing loss of control followed by an impending crash. The best thing to do when flutter is detected is to slow the model **immediately** by reducing power, then land as soon as safely possible. Identify which surface fluttered (so the problem may be resolved) by checking all the servo grommets for deterioration or signs of vibration. Make certain all pushrod linkages are secure and free of play. If it fluttered once, under similar circumstances it will probably flutter again unless the problem is fixed. Some things which can cause flutter are; Excessive hinge gap; Not mounting control horns solidly; Poor fit of clevis pin in horn; Side-play of wire pushrods caused by large bends; Excessive free play in servo gears; Insecure servo mounting; and one of the most prevalent causes of flutter; Flying an over-powered model at excessive speeds.

NOTE ABOUT FLYING CHARACTERISTICS: The rudder is VERY effective! Be gentle on the rudder until you become familiar with its characteristics. This is of particular importance when taking off an landing.

Takeoff

Before you get ready to takeoff, see how the model handles on the ground by doing a few practice runs at **low speeds** on the runway. Hold "up" elevator to keep the tail wheel on the ground. If necessary, adjust the tail wheel so the model will roll straight down the runway. If you need to calm your nerves before the maiden flight, shut the engine down and bring the model back into the pits. Top off the fuel, then check all fasteners and control linkages for peace of mind.

The Citabria has a wide landing gear stance making ground handling very good and relatively easy for maintaining straight take-offs. Taking off directly into the wind makes ground

handling relatively easy. We would recommend that whenever possible you take off and land into the wind. Taking off in a cross wind or landing cross wind you will need to be quick on the rudder and may need to use ailerons to help keep the wing level during the take off or landing roll out.

When you're ready, point the model straight down the runway, 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. One of the most important things to remember with a tail dragger is to always be ready to apply **right** rudder to counteract engine torque. Gain as much speed as your runway and flying site will practically allow before gently applying up elevator, lifting the model into the air. At this moment it is likely that you will need to apply more right rudder to counteract engine torque. Be smooth on the elevator stick, allowing the model to establish a **gentle** climb to a safe altitude before turning into the traffic pattern.

Flight

For reassurance and to keep an eye on other traffic, it is a good idea to have an assistant on the flight line with you. Tell him to remind you to throttle back once the plane gets to a comfortable altitude. While full throttle is usually desirable for takeoff, most models fly more smoothly at reduced speeds.

Take it easy with the Citabria 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 she 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.

The Citabria is a very solid flying airplane. It will perform all of the typical aerobatic maneuvers you would expect. Loops, rolls and hammerheads are performed as you would expect. Start slowly with maneuvers requiring use of the rudder as the rudder is very effective. With the flaps deployed the airplane flies very slowly, yet remains stable. When you deploy the flaps expect it to balloon a bit. It is not severe but watch for it. We found that if you mix in 2° of down elevator when the flaps are fully deployed, the ballooning is eliminated. We recommend you spend some time flying with the flaps deployed, flying at slower speeds.

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. In the crosswind leg deploy the flaps. Make your final turn toward the runway (into the wind) keeping the nose down to maintain airspeed and control. Level the attitude when the model reaches the runway threshold, modulating the throttle as necessary to maintain your glide path and airspeed. If you are going to overshoot, smoothly advance the throttle (always ready on the right rudder to counteract torque) and climb out to make another attempt. When you're ready to make your landing flare and the model is a foot or so off the deck, smoothly increase up elevator until it gently touches down. Once the model is on the runway and has lost flying speed, hold up elevator to place the tail on the ground, regaining tail wheel control.

If you are not accustomed to an airplane with flaps you will discover that landings are slightly different. A typical model without flaps will generally initiate a landing approach with a gradual reduction in altitude so that on the final approach you will be at a fairly low altitude and will drive the airplane to the runway. The Citabria lands best if you make your final approach at about 100 feet (30 meters) as you approach the end of the runway. Gradually reduce your speed, point the nose towards the end of the runway maintaining a steady descent. Level the airplane about three feet (1 meter) above the runway and allow the plane to touch down on the main gear and roll out until the tail naturally settles onto the runway.

One final note about flying your 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 your 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 you're going to do 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 your model 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!

This model belongs to:

_____
Name

_____
Address

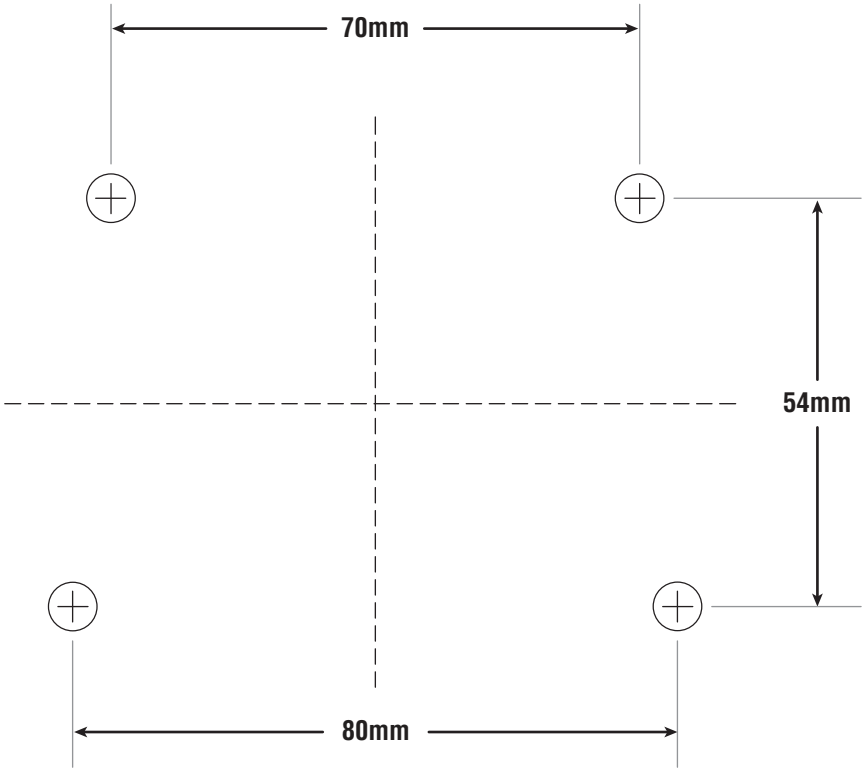
_____
City, State, Zip

_____
Phone Number

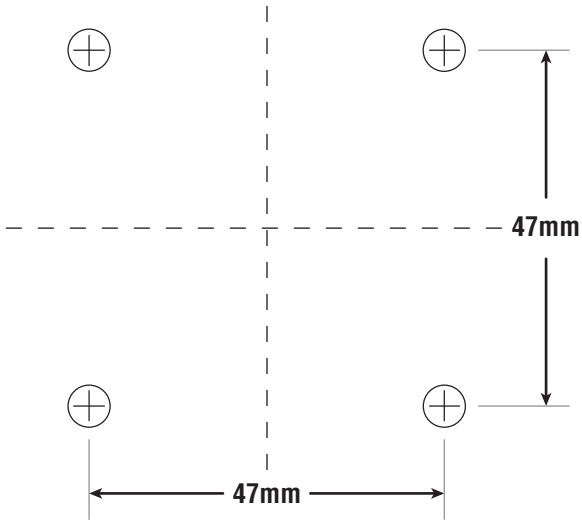
_____
AMA Number

DLE 35RA MOUNTING PATTERN

This pattern is oriented for an inverted engine installation. Examine the mounting holes on the engine and be sure you orient the drilling pattern for the orientation of your engine.



GREAT PLANES BRUSHLESS LARGE MOTOR MOUNT RIMFIRE 1.60

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