COMBAT CORSAIR

1/12 SCALE AMA EVENT 750, CLASS 2610 ARF

INSTRUCTION MANUAL

Wingspan: 43.25 in [1110mm]
Wing Area: 340 sq in [21.9 dm²]
Weight: 2.5-3 lb [1130-1360 g]
Wing Loading: 17-20 oz/sq ft [52-61 g/dm²]
Length: 34 in [865mm]
Radio: 3-channel
Engine: .15-.25 cu in [2.5-4cc] two-stroke,
          .30 cu in [5cc] four-stroke

AMA EVENT 750
COMBAT
CLASS 2610 LEGAL

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

GREAT PLANES®
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GPMZ0286 for GPMA1470 V1.0

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INTRODUCTION

The Great Planes® 1/12 scale Combat Corsair ARF is a great-flying model suitable for sport flying or AMA Combat Class #2610. Whether you are a competitor or just want a great-looking and great-flying Corsair, this 1/12 scale Combat Corsair ARF will become a favorite.

For the latest technical updates or manual corrections to the Combat Corsair visit the Great Planes web site at www.greatplanes.com. Open the "Airplanes" link, then select the 1/12 scale Combat Corsair 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

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below:

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

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

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.

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

1. Your Combat Corsair 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 Combat Corsair, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.

2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.

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

4. You must use an R/C radio system that is in first-class condition and a correctly sized engine and components (fuel tank, wheels, etc.) throughout the building process.

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

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

7. If you are not 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.

8. While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high stress flying, such as 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.

9. **WARNING:** The cowl and tail cone 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.

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

ADDITIONAL ITEMS REQUIRED

Hardware and Accessories

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

❏ 3 channel radio
❏ (3) Micro servos with 34 oz-in of torque
❏ (2) 12" [305mm] servo extensions
❏ Engine
❏ Propellers suitable for your engine**.**

Adhesives and Building Supplies

In addition to common household tools and hobby tools, this is the "short list" of the most important items required to build the Combat Corsair. ***Great Planes Pro*™ *CA and Epoxy glues are recommended.***

❏ R/C foam rubber (1/4" [6mm] - HCAQ1000, or 1/2" [13mm] - HCAQ1050)
❏ 1/2 oz. [15g] Thin Pro CA (GPMR6001)
❏ 1/2 oz. [15g] Medium Pro CA+ (GPMR6007)
❏ Pro 30-minute epoxy (GPMR6047)
❏ Pro 6-minute epoxy (GPMR6045)
❏ 4-40 tap and drill set (GPMR8101)
❏ #1 Hobby knife (HCAR0105)
❏ #11 blades (5-pack, HCAR0211)
❏ R/C-56 canopy glue (JOZR5007)
❏ CA applicator tips (HCAR3780)

Optional Supplies and Tools

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

❏ Epoxy brushes (6, GPMR8060)
❏ Mixing sticks (50, GPMR8055)
❏ Mixing cups (GPMR8056)
❏ Builder's Triangle Set (HCAR0480)
❏ Curved-tip canopy scissors for trimming plastic parts (HCAR0667)
❏ Masking tape (TOPR8018)
❏ 2 oz. [57g] spray CA activator (GPMR6035)
❏ Denatured alcohol (for epoxy clean up)
❏ Switch & Charge Jack Mounting Set (GPMM1000)
❏ Rotary tool such as Dremel®
❏ Rotary tool reinforced cut-off wheel (GPMR8200)
❏ Servo horn drill (HCAR0698)
❏ Hobby Heat™ micro torch (HCAR0750)
❏ Dead Center™ Engine Mount Hole Locator (GPMR8130)
❏ AccuThrow™ Deflection Gauge (GPMR2405)
❏ CG Machine™ (GPMR2400)
❏ Precision Magnetic Prop Balancer™ (TOPQ5700)

IMPORTANT BUILDING NOTES

• 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 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.

COMMON ABBREVIATIONS

Fuse = Fuselage
Stab = Horizontal Stabilizer
Fin = Vertical Fin
LE = Leading Edge
TE = Trailing Edge
LG = Landing Gear
Ply = Plywood
" = Inches
mm = Millimeters
SHCS = Socket Head Cap Screw

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes 1/12 Combat Corsair ARF 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**. Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer. If a hobby shop is not available, replacement parts may also be ordered from Tower Hobbies® at www.towerhobbies.com, or by calling toll free (800) 637-6050.

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
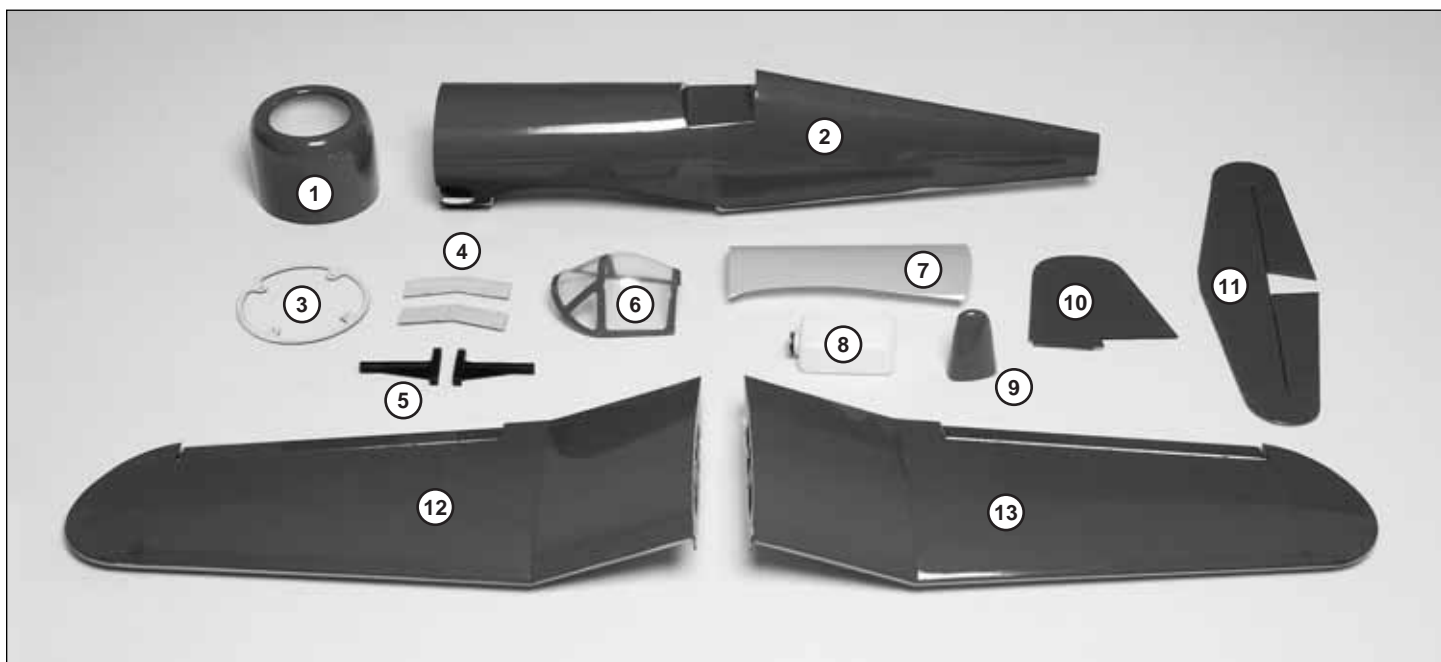or by telephone at (217) 398-8970.

Replacement Parts List

Order Number	Description	How to Purchase
	Missing pieces	Contact Product Support
	Instruction manual	Contact Product Support
	Full-size plans	Not available
	Kit parts listed below	Hobby Supplier
GPMA2610	Fuselage Set	
GPMA2611	Wing Set	
GPMA2612	Tail Set	
GPMA2613	Canopy	
GPMA2614	Cowl	
GPMA2615	Decal Sheet	

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
Champaign, IL 61822
Telephone: (217) 398-8970, ext. 5
Fax: (217) 398-7721
E-mail: *airsupport@greatplanes.com*

KIT CONTENTS

Kit Contents (Photographed)

1	Cowl	**8**	Fuel Tank
2	Fuselage	**9**	Tail Cone
3	Cowl Ring	**10**	Fin with Rudder
4	Wing Joiner	**11**	Stabilizer with Elevators
5	Engine Mount	**12**	Right Wing with Aileron
6	Canopy	**13**	Left Wing with Aileron
7	Belly Pan		

Kit Contents (Not Photographed)

(4) 3mm Blind Nuts
(4) 3 x 19mm Machine Screws
(4) 3 x 19mm Sheet Metal Screws
(6) 2x 15mm Screws
(4) 2x7mm Washer Head Screws
(8) 3mm flat Washers
(4) 3mm lock Washers
(1) Elevator Joiner Wire
(2) 2x 15mm Threaded Rod
(1) 1 x 305mm Wire

(1) 1 x 500mm Wire
(1) 2 x 254mm Tube
(3) Nylon Control Horns
(2) Control Horns
(2) Faslinks
(4) Clevis Retainers
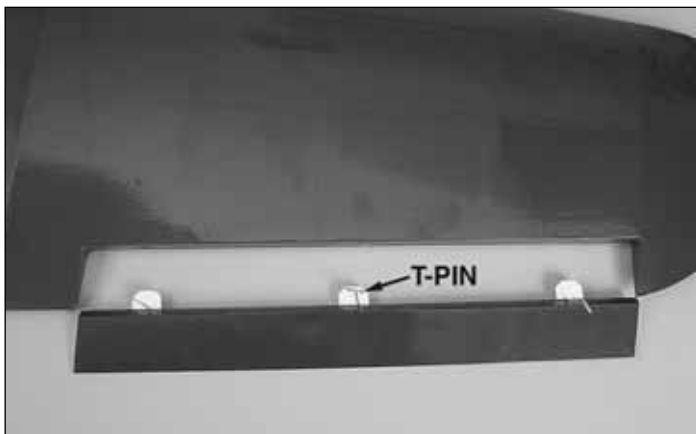(12) Hinges
(1) 2.5mm Allen Wrench

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. Remove the tape and separate the ailerons from the wing and the elevators from the stab. Use a covering iron with a covering sock on high heat to tighten the covering if necessary. Apply pressure over sheeted areas to **thoroughly** bond the covering to the wood.

ASSEMBLE THE WING

Install the Ailerons

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

❏ ❏ 1. Test fit the right aileron to the wing with three hinges. If the hinges don't remain centered, stick a pin through the middle of the hinge to hold it in position.

❏ ❏ 2. Remove any pins you may have inserted into the hinges. Adjust the aileron so there is a small gap between the LE of the aileron and the wing. The gap should be small, just enough to see light through or to slip a piece of paper through. Apply six drops of thin CA to the top and bottom of each hinge. Do not use CA accelerator. After the CA has fully hardened, test the hinges by pulling on the aileron.
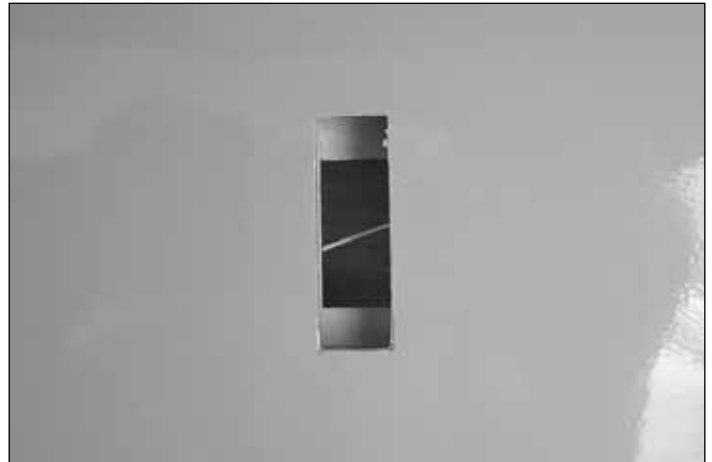
❏ ❏ 3. Cut the covering from the opening in the bottom of the wing for the aileron servo. Use an iron to seal the covering to the edges of the opening.

❏ ❏ 4. On the top of the wing cut the covering inside the opening for the aileron servo wire to pass through. Use an iron to seal the covering to the edges of the opening.

❏ 5. Repeat steps 1-4 for the left wing panel.

Install the Aileron Servos and Pushrods

❏ ❏ 1. Installing the servos in the wing will require the use of two 12" [305mm] servo extensions. One Y-harness connector is required and is used to allow the aileron servos to plug into one slot in your receiver. You may have a computer radio that allows you to plug the servos into separate slots and then mix them together through the radio transmitter. If you choose to mix them with the radio rather than the Y-harness, refer to the instructions with your particular brand of radio.

❏ ❏ 2. Attach the servo extensions to the aileron servos. Secure the connectors together using a large piece of heat shrink tubing, tape or other method for securing the connectors.

❏ ❏ 3. Tie the string located inside the servo compartment to the servo wire. Pull the servo wire through the wing with the string. Feed the servo wire out the hole in the top of the wing center section. Tape the servo wire to the wing to prevent it from falling back into the wing.

❏ ❏ 4. Install the servo into the opening in the bottom of the wing. Drill a 1/16" [1.6mm] hole through the mounting holes of the servo, drilling through the plywood plate in the wing. Install and remove a servo mounting screw into each of the holes. Insert a drop of thin CA into the holes to harden the wood. After the glue has hardened, mount the servo onto the blocks using the hardware that came with your servo. Center the servo and install a servo arm as shown.
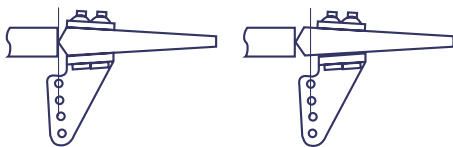
Correct   Incorrect

❏ ❏ 5. Use the nylon mounting plate and two 2 x 16mm screws to mount a nylon control horn to the aileron as shown in the photo and the sketch. Use a 5/64" [2mm] drill to drill the holes for the mounting screws.
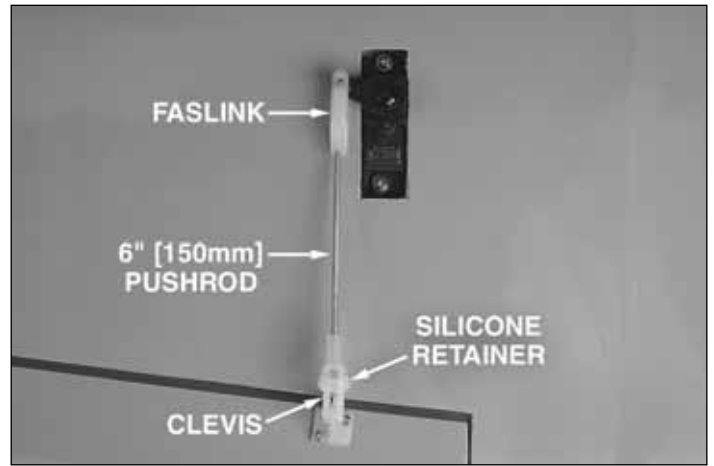
❏ ❏ 6. Make the aileron pushrod and connect the aileron to the servo arm using the hardware shown in the photo. If necessary, enlarge the hole in the servo arm with a 5/64" [2mm] drill.

❏ 7. Repeat steps 1-6 for the left wing panel.

Join the Wings
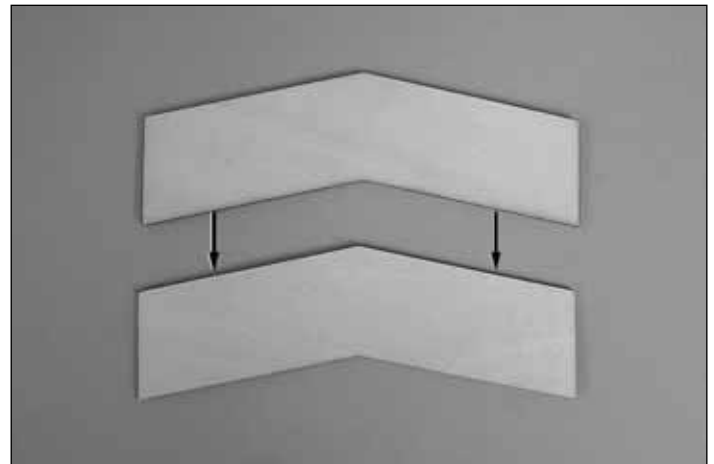
❏ 1. Glue both plywood **wing joiners** together with epoxy. Clamp them together until the glue hardens.
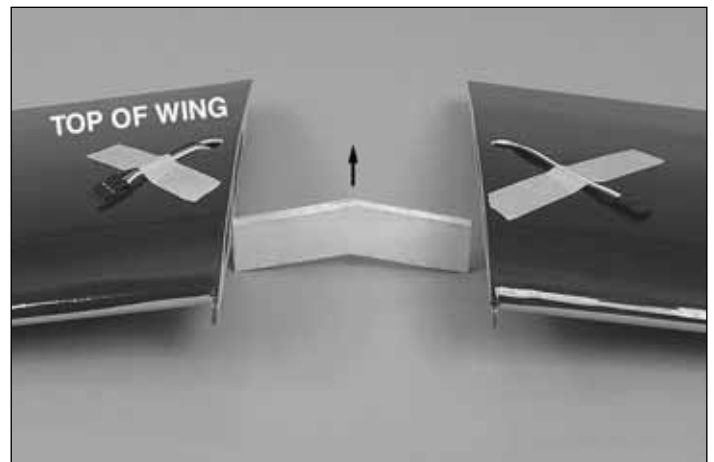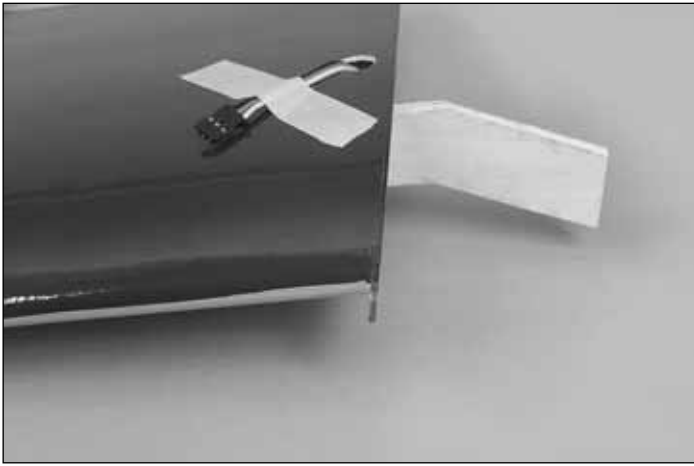
❏ 2. Test fit the plywood wing joiner into the joiner pocket in each wing half. Be careful to make sure that you insert the joiner positioned as shown.

❏ 3. When satisfied with the fit, apply 30-minute epoxy to the joiner, the joiner pockets and the root of both wing halves. Insert the joiner into the pockets. Clean excess epoxy with denatured alcohol. Hold the wing together by applying masking tape to the top and bottom of the wing. Set the wing aside and allow the glue to harden.

Mount the Wing to the Fuselage
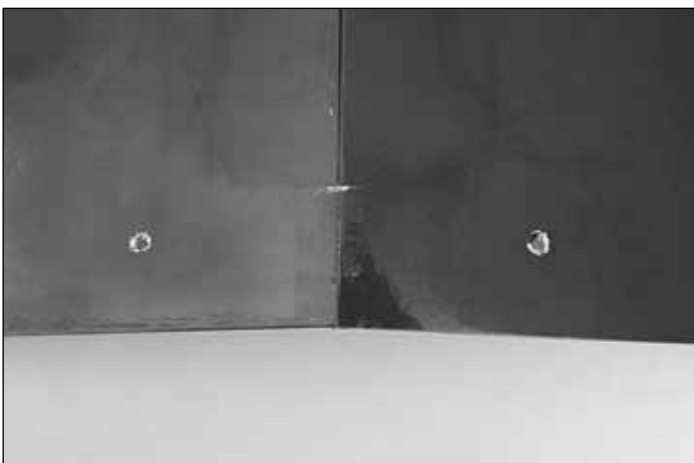
❏ 1. Cut the covering from the top and bottom of the wing revealing the wing bolt holes.
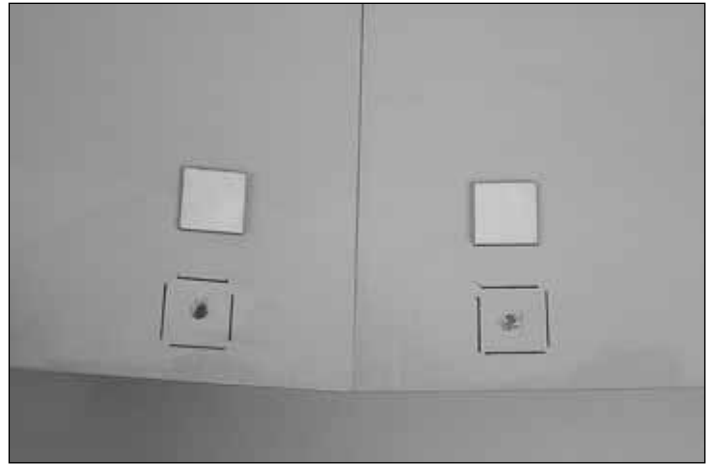
❏ 2. Center the hardwood wing bolt plates over the wing bolt holes. Use a fine-point felt-tip pen to trace the wing bolt plate location onto the wing. Cut the covering away from the wing inside the lines you have drawn. Use a sharp #11 hobby knife or use the **Expert Tip** that follows to cut the covering from the wing along the lines you have marked. Use care to cut **only into the covering** and **not** into the wood.

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.

❏ 3. Glue the plates to the wing. Allow the glue to harden.

❏ 4. From the top of the wing, drill a 1/4" [6mm] hole through the wing bolt hole and through the wing bolt plates. Attach the wing to the fuselage with two 1/4-20 x 2" [51mm] nylon wing bolts.

❏ 5. Cut the covering from the holes in the belly pan. Place the belly pan in position on the wing. Trace the outline of the belly pan onto the wing with a felt tip pen. Remove the belly pan from the fuselage.

❏ 6. Cut away the covering 1/8" [3mm] inside the lines you have drawn. Glue the belly pan to the wing with 6-minute epoxy. *Important: Do not use CA. It will melt the foam!*

Install the Stab and Fin

❏ 1. Cut the covering from the slots for the stab and fin and the pushrod and antenna exits.
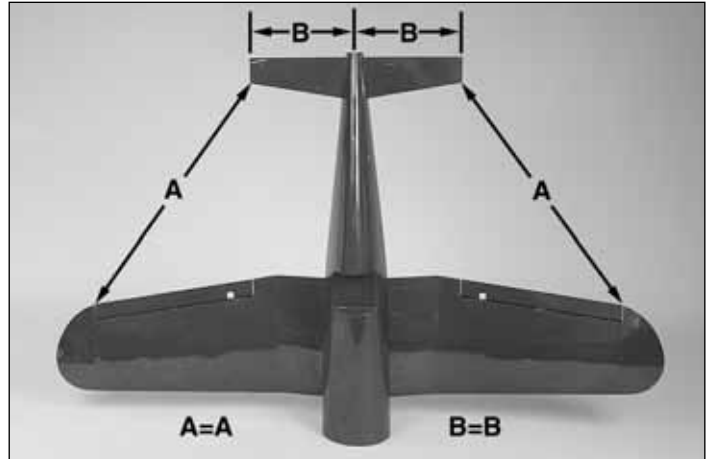
❏ 2. If the wing is not mounted to the fuselage, install the wing to the fuselage. Insert the **horizontal stab** into the slot in the side of the fuselage. Make sure the stab is centered and the distance from the tip of the stab to the tip of the wing is an equal distance.
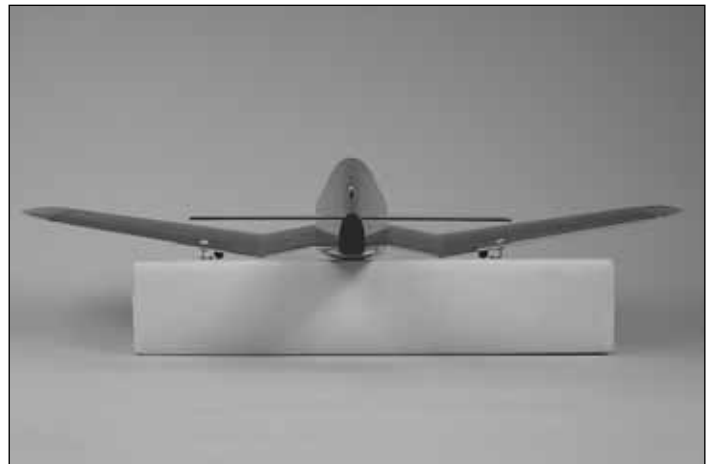
❏ 3. Stand back approximately 6' [2m] from the back of the airplane. Check to be sure the stab is aligned with the wing. If not, sand the high side of the stab saddle to bring the stab into alignment.

❏ 4. Trace the outline of the fuselage to the top and the bottom of the stab. Remove the stab, then carefully cut away the covering inside of the lines you have drawn using the same technique used for the belly pan. **Do not cut the surface of the wood. This *will* weaken the stab.**

❏ 5. Install the elevator joiner wire into the stab slot. Re-install the stab into the fuselage. Double-check the stab placement and alignment to the fuselage. When you are satisfied everything is properly positioned use thin CA to glue the stab to the fuselage. Using an extension tip will allow you to apply the glue easily through the opening for the fin. Apply CA to the bottom of the stab where the fuse and stab meet, allowing the CA to wick into the joint.

❏ 6. Install the vertical fin into the slot in the top of the fuselage. Use a square to be sure the fin is perpendicular to the stab. Trace the outline of the fuselage onto the fin. Remove the fin from the fuselage, then cut away the covering using the same technique used on the stab.

❏ 7. Re-install the fin to the fuselage, double check the fin alignment, and then glue the fin to the fuselage using the same technique used for the stab.

❏ 8. Remove the wing from the fuselage.

❏ ❏ 9. Tape one of the elevators in place on the stab. Center the elevator joiner wire, then mark where the joiner goes into the elevator.

❏ ❏ 10. Using the reference mark you made, drill a 5/64" [2mm] hole into the leading edge of the elevator. **Hint:** Start the hole with a T-pin, pushing the pin into the elevator. Be sure the pin goes into the wood straight and does not come through the surface of the elevator. Once the hole has been made with the pin, drill out the hole. The pin hole will work as a guide for the drill to go in straight.

❏ ❏ 11. Install three hinges into the slots in the elevator. Use a T-pin to keep the hinges centered. Apply a small amount of epoxy to the hole you drilled in the elevator. Insert the elevator onto the joiner wire while guiding the hinges into the hinge slots in the stab. Once positioned apply thin CA to the hinges in the same way you did for the ailerons.

❏ 12. Repeat steps 9-11 for the other elevator.

Install the Elevator Servo and Pushrod

❏ 1. Place the servo into the servo tray, positioning it on the right side of the fuselage. Drill 1/16" [1.6mm] holes for the servo screws. Install the servo into the servo tray with the hardware provided with your radio system.

❏ 2. Install the screw-lock connector and 2mm washer into the outermost hole of the servo arm. Apply a drop of thread-locker to the threads. Then tighten the 2mm knurled nut onto the connector.

❏ 3. Install the elevator pushrod wire through the hole at the back of the fuselage, sliding it into the servo compartment and through the hole in the screw-lock connector.
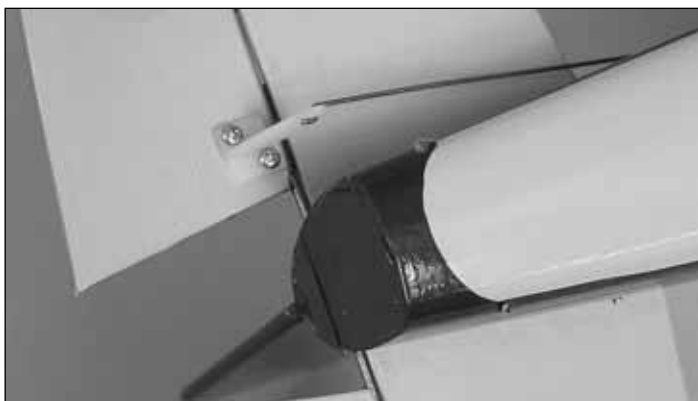
❏ 4. Install a nylon control horn onto the Z-bend of the pushrod wire. Install the control horn the same way as was done with the ailerons.

❏ 5. Center the servo. Then tighten the set screw onto the pushrod wire.

Install the Fuel Tank, Engine, Throttle Servo and Pushrod
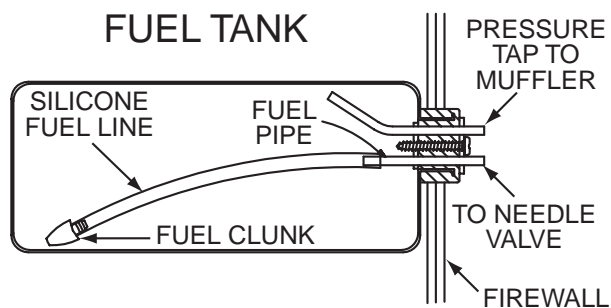
FUEL TANK

❏ 1. Assemble the **fuel tank** as shown in the sketch. When tightening the center screw be sure not to over tighten it. You just want it snug enough to pull the rubber stopper tight against the tank.
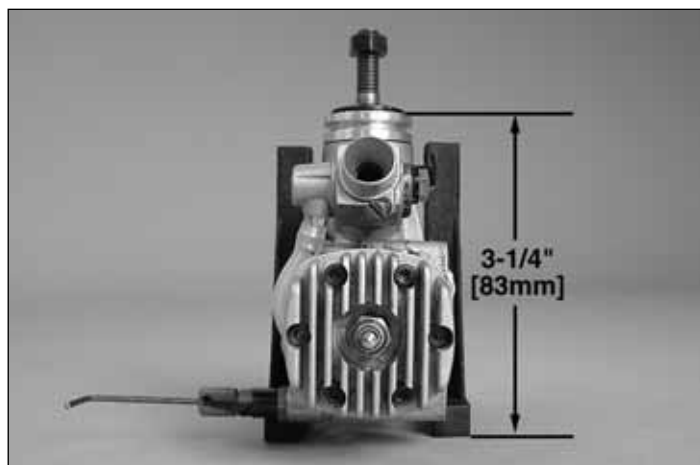
3-1/4" [83mm]

❏ 2. Position your engine on the engine mount so that the distance from the back of the mount to the front of the thrust washer is 3-1/4" [83mm]. Drill a 3/32" [2.4mm] hole through each of the mounting holes of the engine into the engine mount. Mount the engine to the mount with four 3 x 15mm self tapping screws and 3mm flat washers.

❏ 3. On the side of the engine mount are reference marks. Align the marks that are in line with the engine mounting rails with the lines on the firewall. Align the center of the engine with the lines on the firewall. Tack glue the mount to the firewall.

❏ 4. When positioning your engine, be sure the engine is centered, but also be sure it is positioned so that the muffler will be centered over the fiberglass cutout on the left side of the fuselage. When you are satisfied with the position of the engine, mark the location of the holes in the engine mount onto the firewall.

❏ 5. Remove the engine mount from the firewall. Drill four 1/8" [3mm] holes though the firewall on each of the four marks.

❏ 6. Install a 3mm blind nut on the back side of the firewall in each of the four holes.

❏ 7. Mount the engine mount to the firewall with four 3 x 19mm screws, 3mm lock washers and 3mm flat washers.
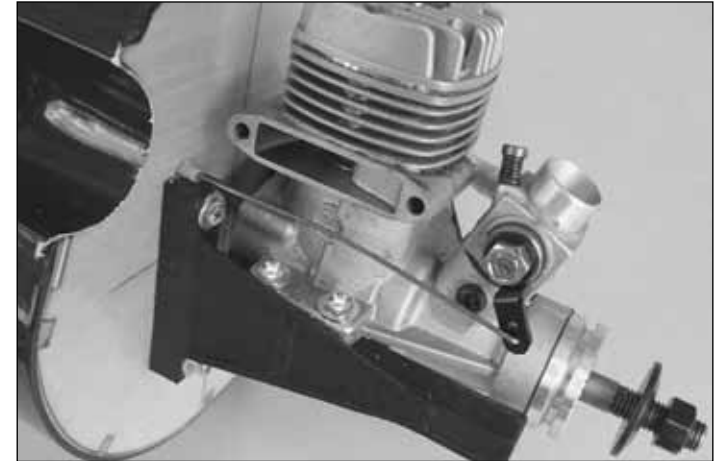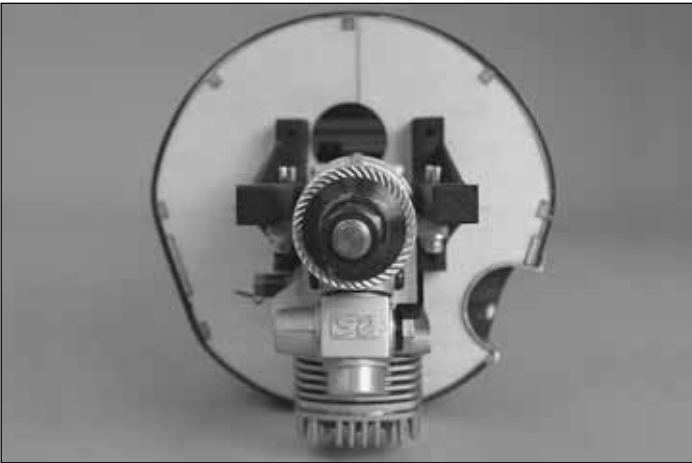
❏ 8. Drill a 3/32" [2.4mm] hole through the firewall, in line with the throttle arm on the carburetor. Slide the white nylon guide tube into the hole in the firewall, feeding it back to the throttle servo. Cut the tube to length.

Refer to this photo for steps 9-12

❏ 9. Mount the throttle servo as shown using the hardware included with your servo.

❏ 10. Install a screw-lock connector into the outer hole in the servo arm.

❏ 11. Install the throttle pushrod wire into the tube. The Z-bend is installed in the throttle arm. Slide the opposite end of the wire into the screw-lock connector. Adjust the servo arm. Then tighten the set screw against the pushrod wire.

❏ 12. Support the throttle pushrod tube with a piece of scrap balsa or plywood.
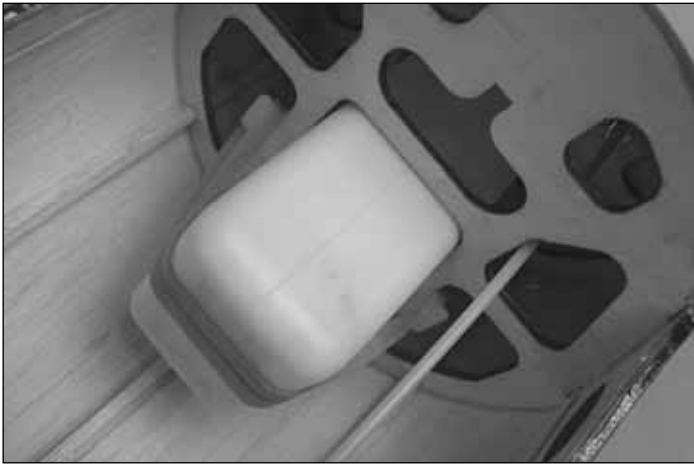
❏ 13. Install the fuel tank into the fuselage with the neck of the tank through the firewall. Hold the tank in place with a rubber band.

❏ 14. Install silicone fuel tubing onto the aluminum tubes from the fuel tank. The line with the fuel clunk will feed to the fuel inlet at the needle valve and the other will attach to the pressure tap on the muffler. If you choose to use some kind of an external fuel valve follow the instructions with your particular brand of fuel valve. You can also install a third line to the tank and use it for filling the tank. The method you use is your choice but make your decision before moving onto the installation of the fuel tank.

Mount the Cowl

❏ 1. Center the cowl ring over the front of the fuselage. Place the ring so that all four of the mounting tabs will be accessible once the cowl is installed on the ring. Take into consideration the placement of the muffler when deciding exactly where the ring is to be placed.

❏ 2. Drill a 1/16" [1.6mm] hole through each of the mounting tabs into the fuselage. Mount the cowl to the firewall with four 2 x 7mm screws and 2mm flat washers.

CUT THIS AWAY

❏ 3. Cut the cowl ring at the muffler cut out.

❏ 4. Place the cowl onto the cowl ring. Position the cowl so the engine crankshaft is centered with the center of the cowl. Once you are satisfied with the placement of the cowl, tack glue the cowl to the cowl ring with a couple of drops of CA and CA accelerator. When the glue hardens remove the cowl and ring from the fuselage.
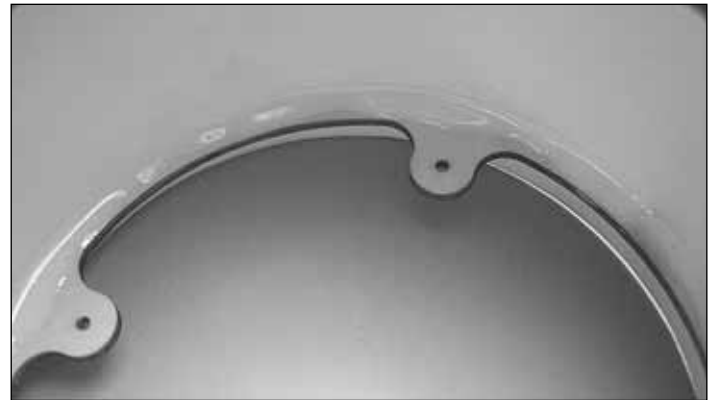
❏ 5. Mix 1/2 ounce [15cc] of epoxy and micro balloons. Apply the mixture to the front of the cowl ring and the fuselage. Allow the mixture to harden.

❏ 6. Make the necessary cut outs in the cowl for the muffler, needle valve etc.

❏ 7. Fuel proof the cowl ring with a fuel proof paint or epoxy.

❏ 8. If you have not already done so, connect the fuel, vent and fill lines to the fuel tank and engine.

Install the Canopy and Tail Cone

❏ 1. If you will be installing a pilot, do this before installing the canopy. Glue the **canopy** to the fuselage with Z-56 Canopy Glue or any good aliphatic glue.
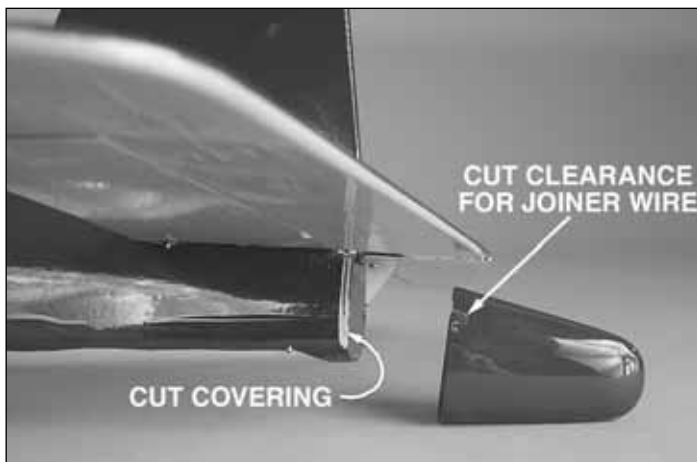
❏ 2. Test fit the **tail cone** to the fuselage. Cut the tail cone to fit over the elevator joiner wire. Cut a small strip of covering from the back of the fuselage to give a gluing surface for the tail cone.

❏ 3. Glue the tail cone to the fuselage.

Install the Radio

Refer to this photograph for the following five steps.
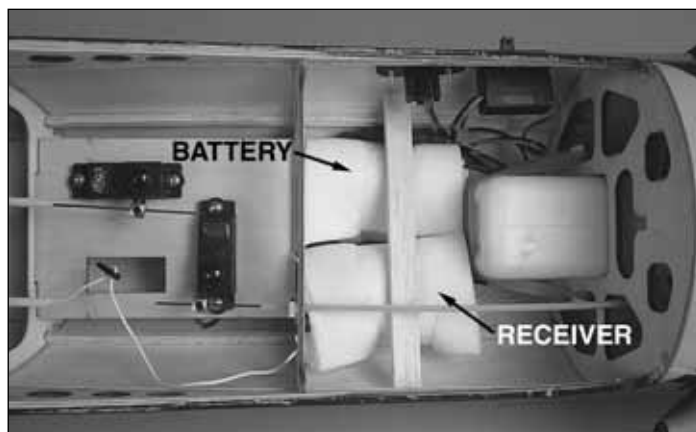
❏ 1. Plug the servos into the proper ports in the receiver. Install a strain relief made from a servo horn as shown in the sketch. Install the antenna through the antenna tube.

❏ 2. Install the radio switch harness and charge jack. We used the Ernst Charge Receptacle (ERNM3001) to the side of the fuselage opposite the muffler.

❏ 3. Plug the switch into the battery. Secure the connectors with a piece of shrink tube or some other method to keep them from coming unplugged.

❏ 4. Wrap the receiver and the battery in 1/4" [6mm] foam. Secure them inside the fuselage with the balsa stick included in the kit.

❏ 5. Turn on the radio system and make any adjustments required to the elevator and throttle pushrods.

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

❏ 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 SETUP
(STANDARD MODE 2)

ELEVATOR MOVES UP

RUDDER MOVES RIGHT

RIGHT AILERON MOVES UP
LEFT AILERON MOVES DOWN

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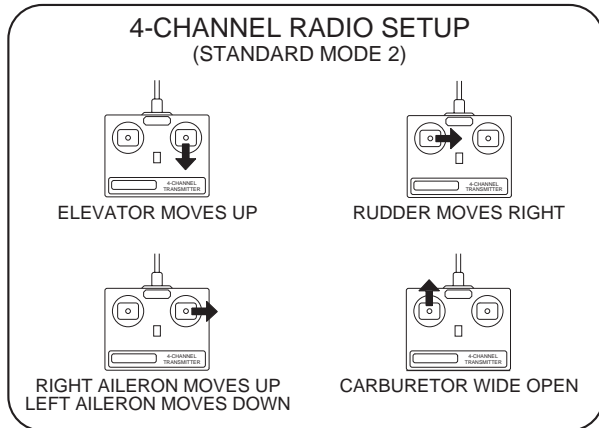
❏ 3. Make certain that the control surfaces and the carburetor respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces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

Set the Control Throws
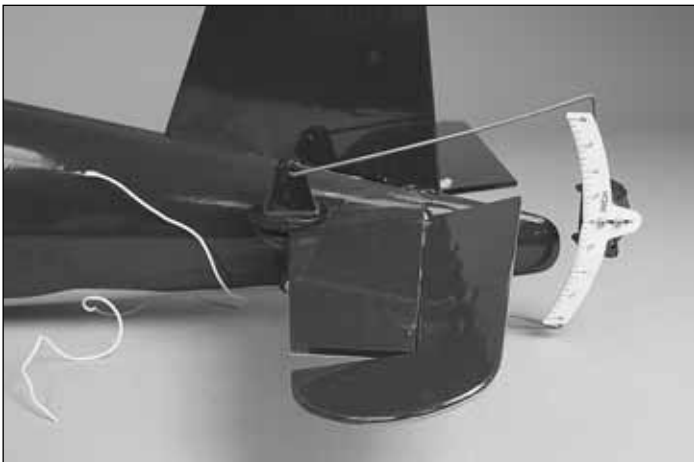
Use a Great Planes AccuThrow (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the low rate setting. **NOTE**: The throws are measured at the **widest part** of the elevators, rudder and ailerons.

These are the recommended control surface throws:

	High Rate	Low Rate
ELEVATOR:	3/8" [9.5mm] up	7/32" [5.5mm] up
	3/8" [9.5mm] down	7/32" [5.5mm] down
AILERONS:	3/8" [9.5mm] up	1/4" [6mm] up
	3/8" [9.5mm] down	1/4" [6mm] down

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

Balance the Model (C.G.)

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

At this stage the model should be in ready-to-fly condition with all of the systems in place.

❏ 1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the top of the wing on both sides of the fuselage. **The C.G. is located 2-1/2" [64mm] back from the leading edge of the wing measured at the fuselage.**

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 1/8" [3mm] forward or 1/8" [3mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but the model may then require more speed for takeoff and make it more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult to control. 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 upside-down on a Great Planes CG Machine, or lift it upside-down at the balance point you marked.

❏ 3. If the tail drops, the model is "tail heavy" and the battery pack and/or receiver must be shifted forward or weight must be added to the nose to balance. If the nose drops, the model is "nose heavy" and the battery pack and/or receiver must be shifted aft or weight must be added to the tail to balance. If possible, relocate the battery pack and receiver to minimize or eliminate any additional ballast required. If additional weight is required, nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz. [28g] weight, or GPMQ4646 for the 2 oz. [57g] weight). If spinner weight is not practical or is not enough, use Great Planes (GPMQ4485) "stick-on" lead. A good place to add stick-on nose weight is to the firewall (don't attach weight to the cowl—it is not intended to support weight). Begin by placing incrementally increasing amounts of weight on the bottom of the fuse over the firewall until the model balances. 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: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Use #2 sheet metal screws, RTV silicone or epoxy to permanently hold the weight in place.

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

Balance the Model Laterally

❏ 1. With the wing level, 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 the back cover of this manual 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 Top Flite Precision Magnetic Prop Balancer™ (TOPQ5700) in the workshop and keep a Great Planes Fingertip Prop Balancer (GPMQ5000) in our flight box.

Ground Check

If the engine is new, follow the engine manufacturer's instructions to break-in the engine. After break-in, confirm that the engine idles reliably, transitions smoothly and rapidly to full power and maintains full power— indefinitely. After you run the engine on the model, inspect the model closely to make sure all screws remained tight, the hinges are secure, the prop is secure and all pushrods and connectors are secure.

Range Check

Ground check the operational range of your radio before the first flight of the day. With the transmitter antenna collapsed and the receiver and transmitter on, you should be able to walk at least 100 feet away from the model and still have control. Have an assistant stand by your model and, while you work the controls, tell you what the control surfaces are doing. Repeat this test **with the engine running** at various speeds with an assistant holding the model, using hand signals to show you what is happening. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

ENGINE SAFETY PRECAUTIONS

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

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

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

Use safety glasses when starting or running engines.

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

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

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

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

Make all engine adjustments from behind the rotating propeller.

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

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

AMA SAFETY CODE (EXCERPT)

Read and abide by the following 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

❏ 1. Fuelproof all areas exposed to fuel or exhaust residue such as the cowl ring, 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 screws that hold the carburetor arm (if applicable), screw-lock pushrod connectors, etc.

❏ 7. Make sure all hinges are **securely** glued in place.

❏ 8. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, cowl mounting screws, etc.).

❏ 9. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.

❏ 10. 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.

❏ 11. 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.

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

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

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

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

❏ 16. Tighten the propeller nut and spinner.

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

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

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

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

FLYING

IMPORTANT!!!
Flying a model with too few rubber bands can be dangerous. If the wing momentarily lifts from the fuselage and acts as though a large amount of "up" elevator has suddenly been applied because there are not enough rubber bands or they are too weak, internal structural damage may result. Even worse, the wing could actually detach from the fuselage resulting in a crash. If the model exhibits any tendencies that indicate there are not enough rubber bands, immediately reduce power, land and closely inspect the model for damage. If no damage is found, add more rubber bands.

The Combat Corsair is a great-flying model that flies smoothly and predictably. The Combat Corsair does not, however, 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 <u>ALL</u> 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.

Hand-Launching

For the first flight it is recommended that you get someone experienced in hand-launching models. Set your model on a bench, off of the ground. Start the engine and make all needed adjustments holding the plane on the bench. Carefully carry the plane to the area of your flying field you intend to launch the plane from.

Have an assistant hold the plane from the bottom of the fuselage. Holding the plane level and pointing into the wind, run a few steps and allow the plane to fly out of your hand. There should not be a reason to actually throw the plane. In fact, throwing the plane can be more difficult than letting the plane fly out of your hand. 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.

Take it easy with the Combat Corsair 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.

Landing

To initiate a landing approach, lower the throttle while on the downwind leg. Allow the nose of the model to pitch downward to gradually bleed off altitude. Continue to lose altitude, but maintain airspeed by keeping the nose down as you turn onto the crosswind leg. Make your final turn toward the grass landing area (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 and climb out to make another attempt. When you're ready to make your landing, flare when the model is a foot or so off the deck, shut off the engine and smoothly increase up elevator until it gently touches down.

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

COMBAT MUSTANG
1/12 SCALE AMA EVENT 750, CLASS 2610 ARF

AMA EVENT 750
C●MBAT
CLASS 2610 LEGAL

Wingspan: 38.5 in
Flying Weight: 2 - 2.5 lb)
Length: 35 in
Engine Required: 2-stroke .15-.25 cu in
Radio Required: 3-channel with 3 micro servos

A competitor's streamer enters your sights. Use your Great Planes Combat Mustang's speed and agility to take a deep bite! You can be ready to fly in just 7-10 hours. Easy to assemble and afford, the 1/12 scale Mustang features prebuilt balsa/ply structures that are factory-covered with high-quality, iron-on film. Great Planes also includes a fiberglass cowl, clear canopy, decals, and premium-quality hardware. Your completed model meets all size and scale requirements to compete in AMA Event 750, Class 2610 action. And it's also perfect to keep on hand for spur-of-the-moment sport fun...with an exciting WWII twist! **GPMA1475**

Displacement: 0.152 cu in
Bore: 0.598 in
Stroke: 0.539 in
Practical RPM: 2,500-18,000
Output: 0.41 bhp @ 17,000 rpm
Weight: 5.0 oz

Displacement: 0.249 cu in
Bore: 0.708 in
Stroke: 0.630 in
Practical RPM: 2,500-19,000
Output: 0.84 bhp @ 18,000 rpm
Weight: 8.8 oz
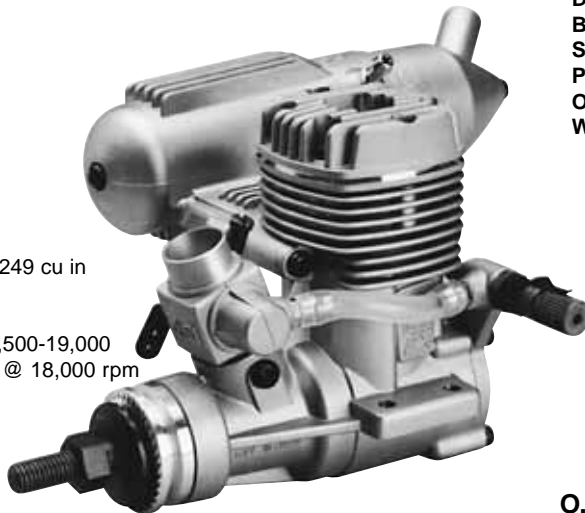
O.S. .25 FX Engine
The economical .25 FX engine has dual ball bearings for durability and smooth operation, plus a low crankcase profile that allows for a proportionately taller, semi-squared head to increase cooling fin area. The needle valve is remotely mounted for pilot safety, and an O-ring and ratchet spring minimizes "creep" due to air leaks and vibration. Muffler is included; glow plug required. **OSMG0525**

O.S.® .15 LA Engine
Powerful, dependable, user-friendly – that describes the .15 LA sport engine. Its dual-needle carb offers fine-tuned throttle control. Also included are a 1-piece crankcase with reinforcing webbing and cooling fins that extend well down onto the upper crankcase. You'll also appreciate the safety and protection of the remote needle, mounted on a nylon backplate. Ratchet springs and O-ring seals help prevent settings "creep." Also includes glow plug and muffler. **OSMG0015**