

MIGLET *ARF*

МИГЛЕТ

INSTRUCTION MANUAL



Wingspan: 28 in [710 mm]
Wing Area: 209 sq in [13.4 dm²]
Weight: 12 – 13 oz [340 – 370 g]
Wing Loading: 8.3 – 8.9 oz/sq ft [25 – 27 g/dm²]
Length: 15 in [380 mm]
Radio: 3-channel minimum with elevon mixing, 2 micro servos,
micro receiver

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.



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

TABLE OF CONTENTS

INTRODUCTION	2
AMA	2
SAFETY PRECAUTIONS	2
LITHIUM BATTERY HANDLING & USAGE	3
DECISIONS YOU MUST MAKE	3
Radio Equipment & Electronics	3
Motor	4
Electronic Speed Control (ESC)	4
ADDITIONAL ITEMS REQUIRED	4
Adhesives & Building Supplies	4
Optional Supplies & Tools	4
IMPORTANT BUILDING NOTES	4
ORDERING REPLACEMENT PARTS	4
COMMON ABBREVIATIONS	5
METRIC CONVERSIONS	5
METRIC/INCH RULER	5
KIT INSPECTION	6
KIT CONTENTS	6
BEFORE YOU BEGIN	7
ASSEMBLE THE AIRPLANE	7
Install the Wing Tips & Ducted Fan Unit	7
Install the Servos	8
Install the Electronics	10
GET THE MODEL READY TO FLY	12
Check the Control Directions	12
Set the Control Throws	12
Balance the Model (C.G.)	13
PREFLIGHT	13
Identify Your Model	13
Charge the Batteries	13
Range Check	13
AMA SAFETY CODE (excerpts)	14
CHECK LIST	14
FLYING	14
Takeoff	14
Flight	15
Landing	15

INTRODUCTION

Welcome to the exciting world of EDF (Electric Ducted Fan) airplanes. What you have in your hands could be called a completely new generation of EDF airplanes and fans. Historically, ducted fan airplanes have been complex and costly. Only pilots with extensive experience knew how to handle them. When designing this EDF, Great Planes set out to make EDF planes that anyone can fly, while still delivering the performance associated with them. What you have in your hands is a fan/airplane design that only requires a 370 BB brushed motor and a single 910mAh LiPo battery to push the plane to straight-and-level speeds over 55 mph, and more than 65 mph after a short dive. This MiGLET ARF can also climb at angles over 50 degrees and land at only 18 mph. The airplane handles like a high-performance machine at high speeds and control throws, but it is as easy to fly as any low wing airplane

at low speeds and control throws. Another great feature is the extreme ease of launch as the fan thrust increases airspeed immediately as the plane leaves the pilot's hand. The MiGLET ARF will change the way you think about EDF airplanes, fan units and motors. This is the first design of many to come for the Great Planes 370 EDF unit. Build the airplane per the instructions and enjoy. **Note:** This model is also available with the flying wing only (370 EDF unit not included, GPMA1868).

For the latest technical updates or manual corrections to the MiGLET ARF visit the Great Planes web site at www.greatplanes.com. Open the "Airplanes" link, then select the MiGLET 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
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 MiGLET ARF should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the MiGLET ARF, 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 correctly install all R/C and other components so that the model operates correctly on the ground and in the air.

5. 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.

6. 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.

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.

LITHIUM BATTERY HANDLING & USAGE

WARNING!! Read the entire instruction sheet included with this battery. Failure to follow all instructions could cause permanent damage to the battery and its surroundings, and cause bodily harm!

- ONLY use a LiPo approved charger. NEVER use a NiCd/NiMH peak charger!
- NEVER charge in excess of 4.20V per cell.
- ONLY charge through the "charge" lead. NEVER charge through the "discharge" lead.
- NEVER charge at currents greater than 1C.
- ALWAYS set charger's output volts to match battery volts.
- ALWAYS charge in a fireproof location.
- NEVER trickle charge.
- NEVER allow the battery temperature to exceed 150° F [65° C].
- NEVER disassemble or modify pack wiring in any way or puncture cells.
- NEVER discharge below 2.5V per cell.

- NEVER place on combustible materials or leave unattended during charge or discharge.
- ALWAYS KEEP OUT OF REACH OF CHILDREN.

DECISIONS YOU MUST MAKE

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

Radio Equipment & Electronics

The MiGLET ARF requires a transmitter that supports elevon mixing, a micro receiver, one 6" [152 mm] servo extension, and two micro servos (9 g or less). If you already have a transmitter you are going to use to fly the MiGLET ARF, you can get the receiver and servos separately:

- Futaba® R114F 4-channel FM micro receiver w/o crystal (low band – FUTL0442, high band – FUTL0443)
- Futaba FM single conversion receiver crystal for R114F (low band – FUTL62**, high band – FUTL63**)
- (2) Futaba S3110 micro servo 7.7 g (FUTM0046)
- (1) 6" [152 mm] servo extension with "J" connector (FUTM4506)

Or, you can purchase a complete system (including transmitter) specially packaged for park flyers. If purchasing a complete system, the Futaba 3FR Skysport single-stick radio is suitable. It comes with a micro receiver and two Futaba S3108 micro servos. The transmitter is also equipped with a rechargeable NiCd battery pack:

- Futaba 3FR Skysport single-stick radio system including transmitter, receiver, and servos (FUTJ53**)
- (1) 6" [152 mm] servo extension with "J" connector (FUTM4506)

Note: The Futaba S3108M and S3110M have the same specifications as the above mentioned servos, but are equipped with the Futaba micro plug. These are suitable for the MiGLET ARF, however a receiver with micro plugs such as the Futaba R124F (low band – FUTL0438, high band – FUTL0439) and a micro plug servo extension (FUTM4508) must also be used.

An 11.1V 910mAh lithium-polymer battery pack and suitable charger are also required. Although there are different battery packs and chargers available that will work with the MiGLET ARF, the economical choices recommended by Great Planes are:

- Great Planes 11.1V 910mAh LiPo (GPMP0605) battery pack
- Great Planes ElectricFly™ DC peak charger (GPMM3010)

Motor

If you have purchased the version of the MiGLET ARF that includes the HyperFlow™ EDF unit, a 370 BB brushed motor is also included so you will not need to purchase a motor. If you purchased the MiGLET ARF without the EDF unit and motor, or if you plan to install an optional brushless motor, consult the Hyperflow EDF manual. This manual is available at our web site at www.greatplanes.com, and contains performance charts and motor requirement data that will be useful in choosing a brushless motor.

Electronic Speed Control

An ESC (Electronic Speed Control) with BEC (Battery Eliminator Circuitry) is required. The BEC allows both the motor and the radio system to be powered by the same battery (thus eliminating the on-board receiver battery). The Great Planes ElectriFly C-25 Mini Brushed ESC (GPMM2025) is recommended for use with the 370 BB brushed motor.

If using a brushless motor, be sure to choose an ESC designed specifically for brushless motors and one that is capable of handling the current draw of your application.

ADDITIONAL ITEMS REQUIRED

Adhesives & Building Supplies

The only adhesive required to build the MiGLET ARF is 6-minute epoxy or foam-safe CA glue. Either one works well.

- Great Planes Pro™ Epoxy 6-Minute Formula
4 oz. [113 g] (GPMR6042)
- Great Planes Pro Foam Safe CA- Thick Glue
1 oz. [28 g] (GPMR6072)
- Clear tape

This manual also refers to using a 3/8" [9.5 mm] brass tube for cutting holes in foam, 1/16" [1.6 mm] and 3/64" [1.2 mm] drill bits.

- K&S Round Brass Tube 3/8" (K+SR5135)
- Hobbico Pin Vise 1/16 Collet w/6 Bits (HCAR0696)

Optional Supplies & Tools

Here is a list of optional tools that will help you build the MiGLET ARF.

- 2 oz. [57 g] Spray CA activator (GPMR6035)
- 4 oz. [113 g] Aerosol CA activator (GPMR6034)
- CA applicator tips (HCAR3780)
- Epoxy brushes (GPMR8060)

- Mixing sticks (GPMR8055)
- Mixing cups (GPMR8056)
- Rotary tool such as Dremel® Moto-Tool®
- Rotary tool reinforced cut-off wheel (GPMR8020)
- Servo horn drill (HCAR0698)
- AccuThrow™ Deflection Gauge (GPMR2405)
- CG Machine™ (GPMR2400)
- Hobbico Flexible 18" Ruler Stainless Steel (HCAR0460)

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**, and 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.

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes MiGLET 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 Hobbico web site at www.hobbico.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.

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.

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

Replacement Parts List

- GPMA1868MiGLET Flying Wing Only
- GPMA2749Canopy MiGLET
- GPMG0311370 Motor
- GPMG3910Hyperflow 370 EP DF w/o Motor
- GPMG3911Hyperflow 370 EP DF w/ Motor
- GPMG3940Hyperflow 370 EP DF Rotor Blade
- GPMG3941Hyperflow 370 EP DF Misc. Parts
(Tail Cone, Intake, Stator, Spacer)
- GPMG3942Hyperflow 370 EP DF Outer Duct
- GPMG3943Hyperflow 370 EP DF Rotor Adapters
& Screws

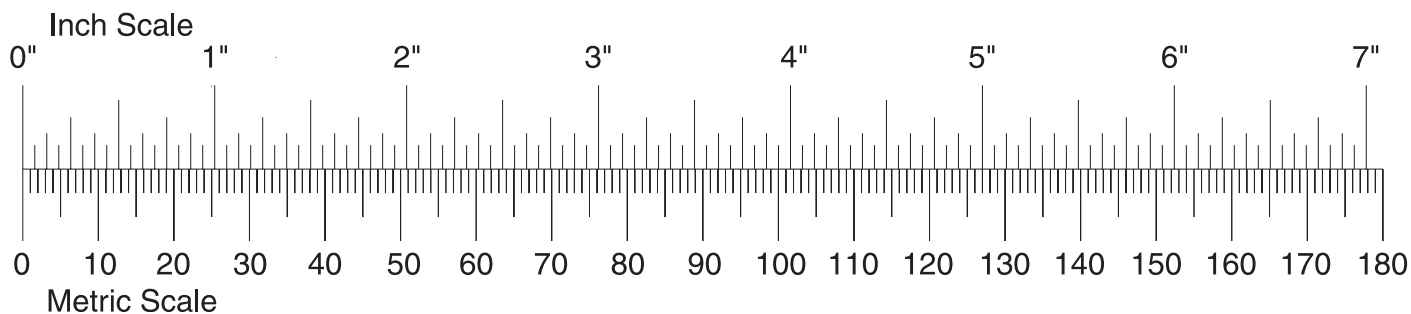
COMMON ABBREVIATIONS

- Fuse = Fuselage
- LE = Leading Edge
- TE = Trailing Edge
- " = Inches
- mm = Millimeters
- ESC = Electronic Speed Control

METRIC CONVERSIONS

1" = 25.4 mm (conversion factor)

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

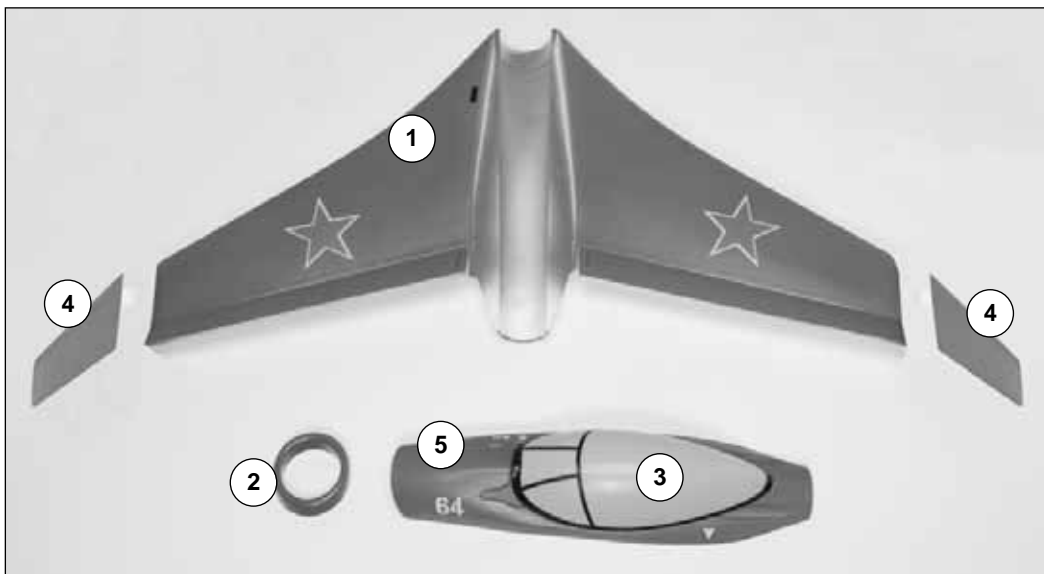


KIT INSPECTION

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 on this page.

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

Kit Contents Photographed

1. Wing
2. Intake Ring
3. Canopy
4. Wing Tips (L&R)
5. Duct Channel Top

Kit Contents (Not Photographed)

- Ducted Fan Unit w/370 BB Motor (GPMA1866 only)
- Elevon Pushrods (4)
- 90° Pushrod Connectors (2)
- Black Control Horns w/ Backplates (2)
- Hook & Loop Material
- Heat-Shrink Tubing (2)

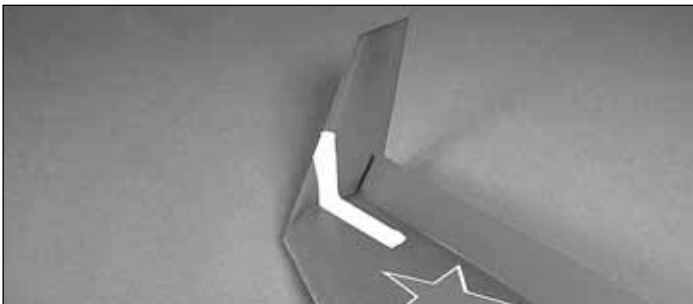
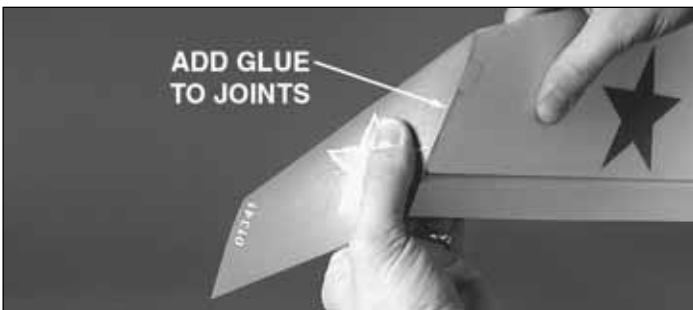
BEFORE YOU BEGIN



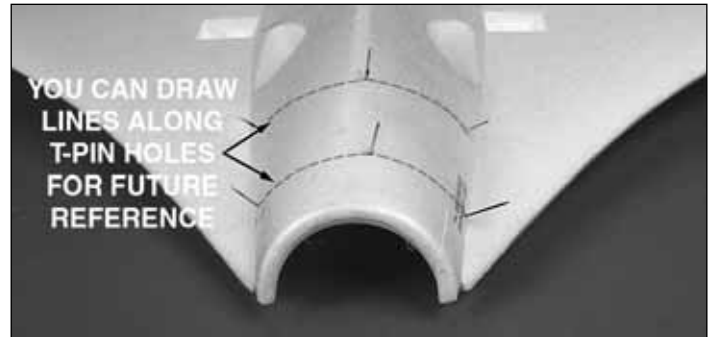
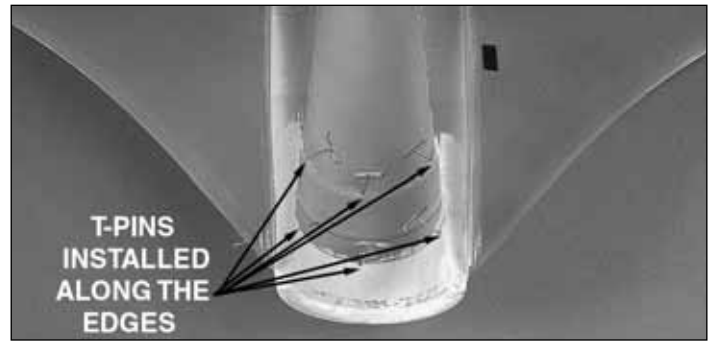
Before building the model, please follow the assembly and break-in instructions that can be found in the manual that accompanies the ducted fan unit. If you plan to substitute a brushless motor into the ducted fan unit, do so before gluing the unit into the aircraft. The EDF manual includes information about brushless motor usage.

ASSEMBLE THE AIRPLANE

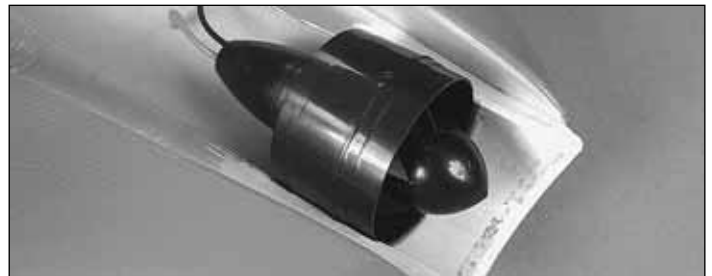
Install the Wing Tips & Ducted Fan Unit



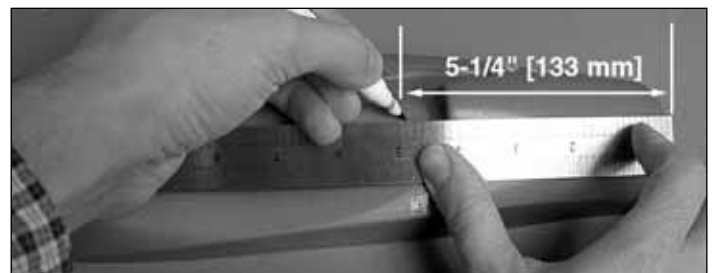
1. Glue the **wing tips** to the wing using foam-safe CA glue or epoxy. Be careful when gluing the tips as any excess will be difficult to clean up from the foam wing. Do not use alcohol to clean away epoxy. Alcohol will remove the paint from the foam. Use tape to hold the tips in place while the glue cures. Make sure to test the tape to insure it will not remove the finish. When the glue has cured, apply a fillet of glue along the top of the wing at the wing tips and let it cure undisturbed.



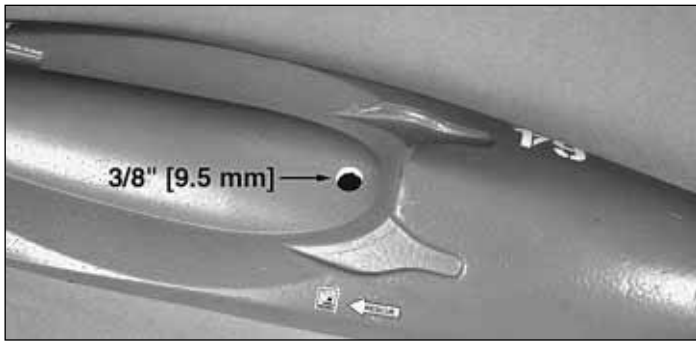
2. After your model is assembled, the only way to remove the ducted fan unit for repair or replacement is to cut it out from the bottom. Because of this, we suggest marking the location of the ducted fan unit on the underside of the fuselage. You can do this by pushing T-pins through the inside of the fuse along the edges of the fan housing. The holes left on the underside of the fuselage from the T-pins can be connected with a drawn line for future reference. If at any time you need to remove the fan unit, use a hobby knife to cut along the holes left by the T-pins to extract the unit out of the bottom of the fuselage.



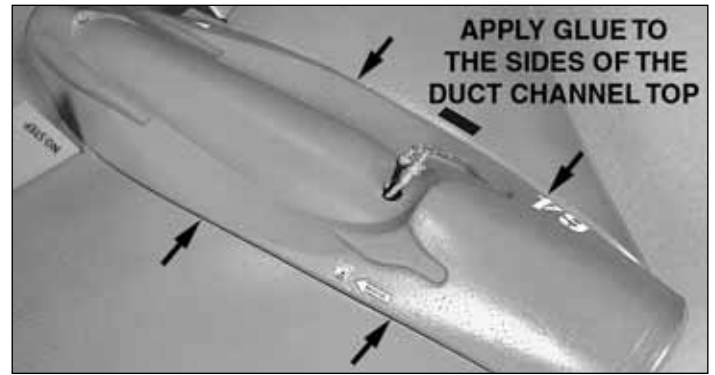
3. Mix up approximately 3/8 oz [11 g] of epoxy to glue the ducted fan unit into the fuselage duct channel. Coat the recessed area in the fuselage where the fan unit will be installed with a thin coat of epoxy. Press the fan unit into place and wipe away any excess epoxy with a dry paper towel.



4. Make a mark 5-1/4" [133 mm] from the front in the center of the **duct channel top**.



5. Drill a 3/8" [9.5 mm] hole at the mark you made. A drill bit or hobby knife can be used. However, we suggest following the **"Expert Tip"** below.



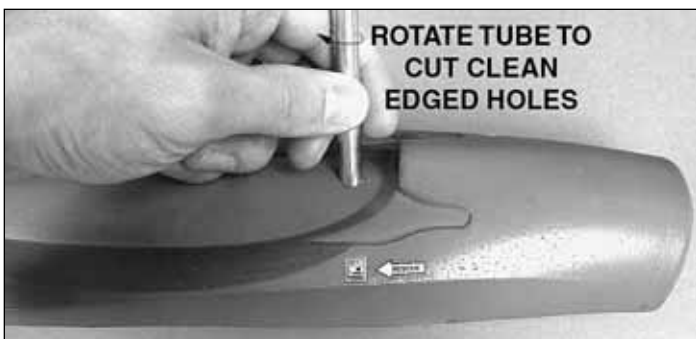
6. Feed the ducted fan motor leads through the hole you made in the duct channel top. Glue the duct channel top to the fuselage with epoxy or foam-safe CA glue. Be sure to apply glue to the top sides of the duct channel top. Allow the glue to cure undisturbed.

EXPERT TIP

HOW TO CUT HOLES IN FOAM

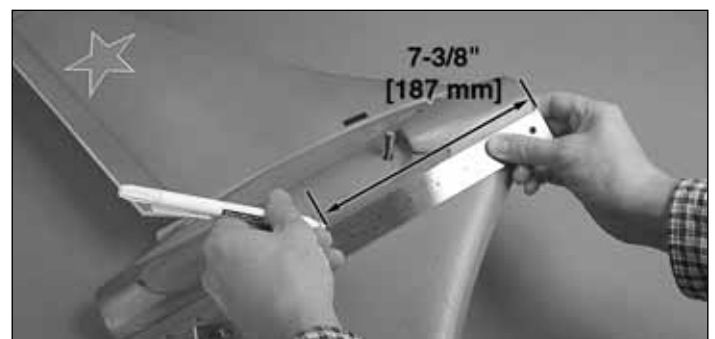


A. Locate a brass or aluminum tube with a diameter of the size hole you wish to make. Use a rotary tool with a cut-off wheel to bevel a sharp edge onto one end of the tube. If you do not have a rotary tool, a hobby knife can also be used to carve the **INSIDE** of the tube until the edge is sharp.

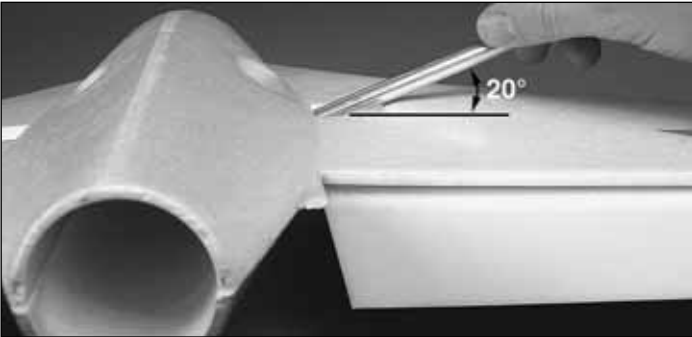
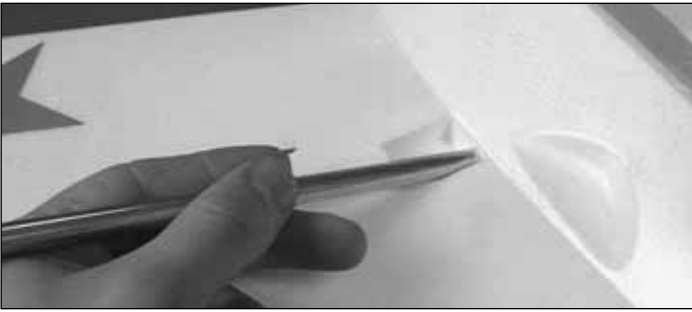


B. Press the tube into the foam and twist. The sharp end will cut a clean hole through the foam without tearing.

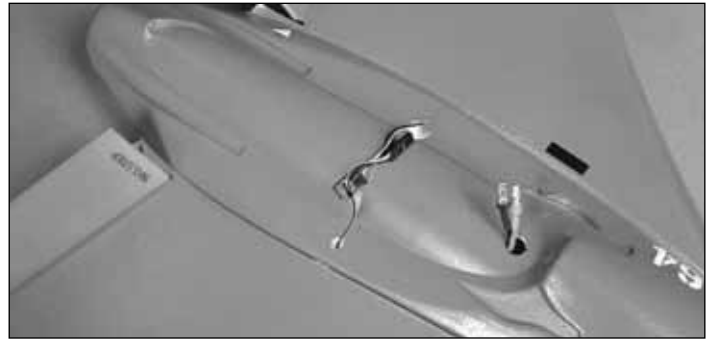
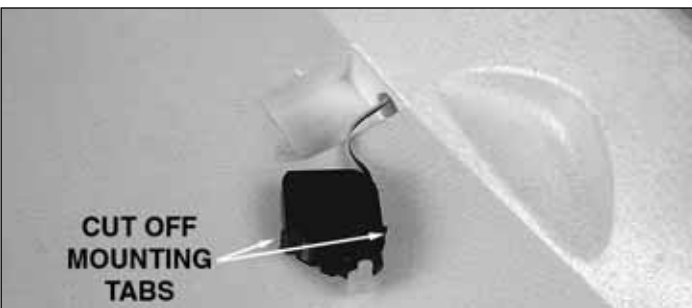
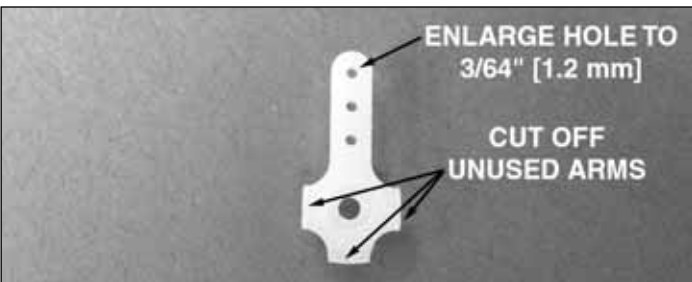
Install the Servos



1. Measure back 7-3/8" [187 mm] from the front of the duct channel top and make a mark on both sides of it as shown in the pictures above.



❑ 2. Drill a 3/8" [9.5 mm] hole in the forward inside corner of each servo bay for the servo leads to pass through. The holes should be approximately 1-1/2" [38 mm] deep and at an angle of about 20° in relation to the underside of the wing. Finish the holes for the servo leads by cutting downward at the marks you made from the top side of the duct channel top. Make sure these holes are close to the center of the duct channel top as shown but not entering the duct channel.



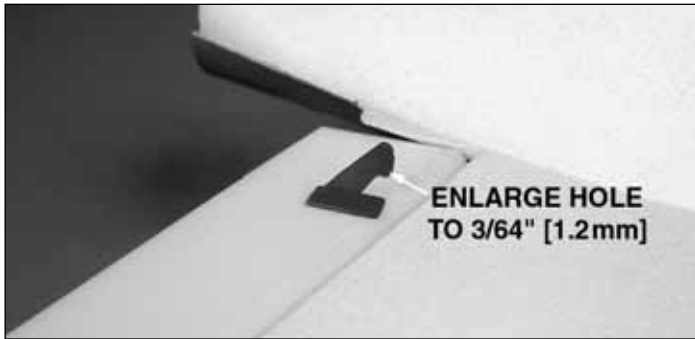
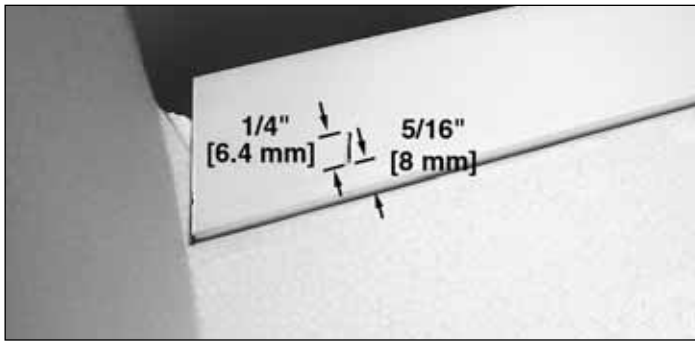
❑ 3. Cut off three arms from the four-arm servo horns included with the servo and enlarge the outer hole with a 3/64" [1.2 mm] drill bit. Center the elevon servos with your radio system and install the arms at a right angle to the servo case as shown. Cut the mounting tabs from the servos and feed the servo leads through the holes you made.



❑ 4. Glue the elevon servos into the servo bays.



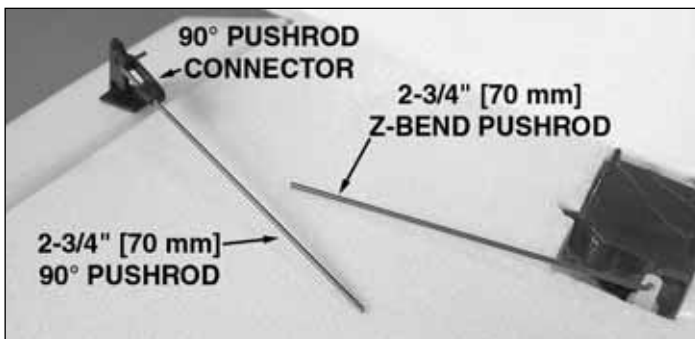
❑ 5. Use a straightedge in line with the servo horns to mark the locations for the elevon control horns.



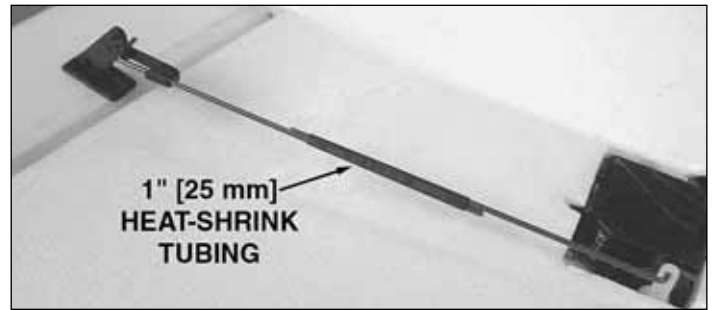
❑ 6. Cut a slit at the marks on the elevons 1/4" [6.4 mm] long 5/16" [8 mm] from the leading edge of the elevons. Enlarge the lowest hole in the elevon control horns with a 3/64" [1.2 mm] drill bit. Insert the control horns into the slits in the elevons.



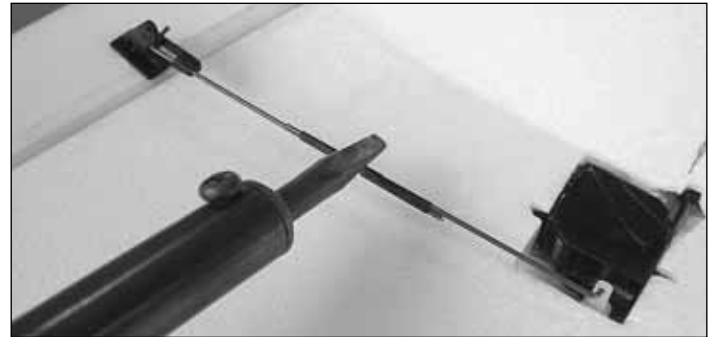
❑ 7. Press the control horn backplates over the tabs on the tops of the elevons. Add a couple drops of foam-safe CA glue to secure the backplates to the tabs and to the elevons. Trim off the excess control horn tabs protruding above the backplates.



❑ 8. Locate the two 2-3/4" [70 mm] Z-bend pushrods and connect them to the outer holes in the elevon servo horns. Connect the 2-3/4" [70 mm] 90° pushrods to the lowest holes in the elevon control horns and secure each one with a 90° pushrod connector.



❑ 9. Slide a 1" [25 mm] piece of heat-shrink tubing onto one of the pushrods. Overlap the pushrod ends and join them together with the heat-shrink tubing.



❑ 10. While holding the elevons in the neutral position, carefully use a soldering iron to shrink the tubing around the pushrod ends. Do this by moving the iron tip back and forth quickly across the tubing until it has shrunk tight on the pushrods. **Do not use a heat gun or micro torch to shrink the tubing as it will melt the foam near the pushrods.** Add a drop of CA glue to each end of the tubing to secure it to the pushrods.

Install the Electronics

The instructions that follow are written to accommodate the Futaba R114F receiver, Great Planes 11.1V 910mAh LiPo battery pack, and Great Planes C-25 ESC. Other brand receivers and battery packs may fit, but you will need to confirm that the canopy top secures properly onto the fuselage with the equipment installed.

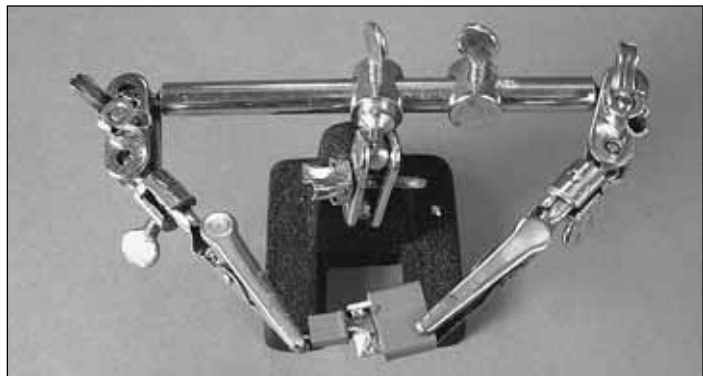
❑ 1. Cut a piece of hook and loop material to a length of 4-1/4" [108 mm].

EXPERT TIP

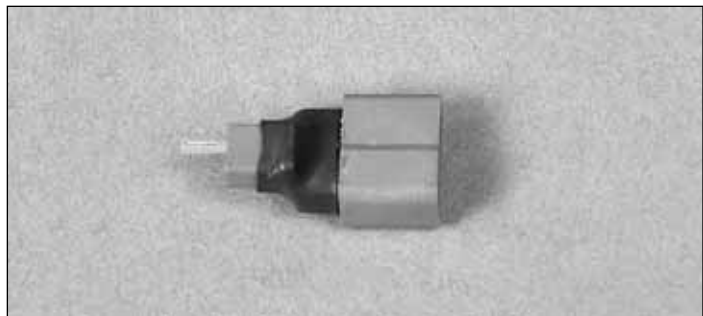
MAKE A BATTERY CONNECTOR ADAPTER



A. The example shows you how to make an adapter to go from a W.S. Deans Micro Plug to a female W.S. Deans Ultra Plug.



B. Spread the ends of the micro plug apart so that they align with the soldering tabs on the female ultra plug (the device shown in the picture is the X-Acto® Extra Hands Double Clip, XACR4214). Join the two connectors together with solder, being sure that excess solder will not create a short between the solder tabs. **Confirm that you are joining the connectors together with the correct polarities (red to red, black to black)! Use your battery pack and ESC as a guide.**



C. Cut a 3/8" [9.5 mm] long piece of 3/8" [9.5 mm] diameter heat-shrink tubing. Use a heat gun or lighter to shrink the tubing around the soldering tabs of your battery connector adapter.



❑ 2. Measure 6" [152 mm] from the front of the duct channel top and stick the "hook" side of the hook and loop material to the channel top.



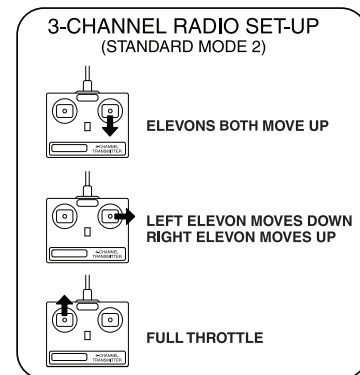
❑ 3. Install the "loop" side of the hook and loop material onto the underside of your receiver, battery pack, and ESC. Install the receiver at the front of the hook material followed by the battery pack and ESC. Test fit the canopy top onto the model. Adjust the electronic components as necessary until the canopy securely "clicks" into place with the magnets. In order to fit the battery connectors underneath the canopy, wrap the connector leads around the pack as shown. We used transparent tape to hold the leads in place.

❑ 4. Connect the servo and ESC leads to the receiver. Depending on the model servos being used, you may need a short servo extension for one of the servo leads. If you need to make a battery connector adapter to connect your LiPo battery pack to the ESC, see the "Expert Tip" that follows.

GET THE MODEL READY TO FLY

Check the Control Directions

- 1. Turn on the transmitter and receiver and center the trims.
- 2. Activate the elevon function on your radio. If you are unsure how to do this, consult your radio manual.
- 3. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the lengths of the pushrods within the heat-shrink tubing and secure them again with CA glue.



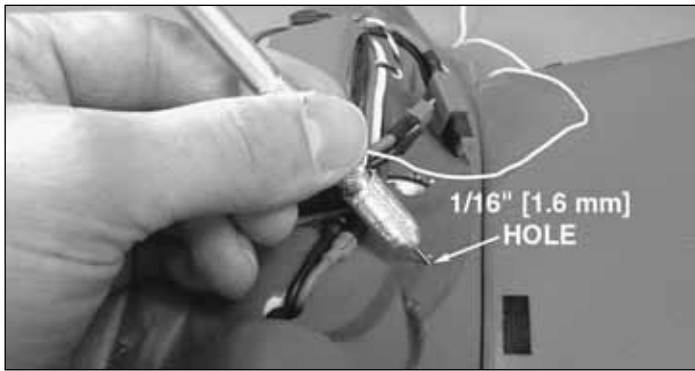
- 4. Make certain that the control surfaces and the throttle respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have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

Set the Control Throws

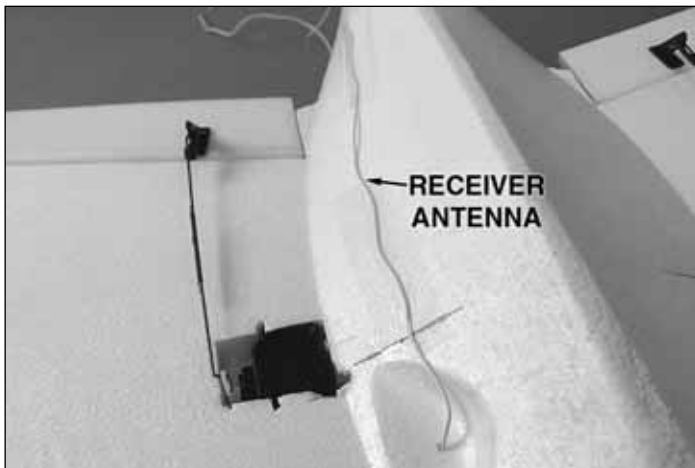


Use a Great Planes AccuThrow (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the **low rate** setting.

Note: The throws are measured at the **widest part** of the elevons.



- 5. Drill a 1/16" [1.6 mm] hole through the fuselage at an angle for the receiver antenna as shown. When drilling the hole, be sure your drill is angled enough to prevent drilling into the duct channel.



- 6. Feed the antenna through the hole to the underside of the fuselage. Use clear tape to secure the antenna to the underside of the plane. Be sure that it does not interfere with the elevons.



- 7. Finish the model by gluing the intake ring to the front of the duct channel.

These are the recommended control surface throws:

	High Rate	Low Rate
ELEVON:	1/2" [13 mm] up 1/2" [13 mm] down	5/16" [8 mm] up 5/16" [8 mm] down
AILERON:	1/2" [13 mm] up 1/2" [13 mm] down	5/16" [8 mm] up 5/16" [8 mm] down

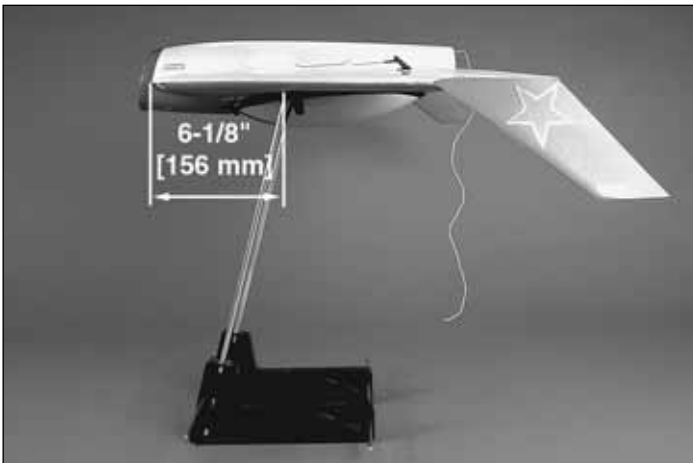
IMPORTANT: The MiGLET ARF has been **extensively** flown and tested to arrive at the throws at which it flies best. Flying your model at these throws will provide you with the greatest chance for successful first flights. If, after you have become accustomed to the way the MiGLET ARF flies, you would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

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, including the receiver and ESC.

❑ 1. Use a felt-tip pen or 1/8" [3 mm]-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 6-1/8" [156 mm] back from the leading edge of the wing at the fuselage. We do not recommend deviating from the suggested C.G.



❑ 2. With all parts of the model installed (ready to fly), 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 to balance. If the nose drops, the model is "nose heavy" and the battery pack and/or receiver must be shifted to balance. This model is very weight sensitive. Do not add any weight to achieve the suggested balance point. Instead, shift the battery pack and receiver forward or aft to alter the C.G.

❑ 4. Once the proper position is determined, mark the battery position to insure you place the battery in the same place every flight. If you change the size of the battery, it will be necessary to recheck the C.G. and mark the new position.

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 15 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 motor batteries the night before you go flying, and at other times as recommended by the manufacturer.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter 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.

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 [30 m] away from the model and still have control. Have an assistant stand by your model and, while you work the controls, tell you what the control surfaces are doing. Repeat this test **with the motor running** at various speeds with an assistant holding the model, using hand signals to show you what is happening. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem

first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

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. Check the C.G. according to the measurements provided in the manual.
- 2. Be certain the battery and receiver are securely mounted in the fuse.
- 3. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
- 4. Check the operation of the ducted fan unit prior to each flight.
- 5. Make sure that all servo arms are secured to the servos with the screws included with your radio.
- 6. Place your name, address, AMA number and telephone number on or inside your model.
- 7. If you wish to photograph your model, do so before your first flight.
- 8. Range check your radio when you get to the flying field.

FLYING

IMPORTANT: If you are an inexperienced modeler we strongly urge you to seek the assistance of a competent, experienced R/C pilot to check your model for airworthiness AND to teach you how to fly. No matter how stable or "forgiving" the MiGLET ARF is, attempting to learn to fly on your own is dangerous and may result in destruction of your model or even injury to yourself and others. Therefore, find an instructor and fly only under his or her guidance and supervision until you have acquired the skills necessary for safe and fully controlled operation of your model.

Takeoff

Until you have the MiGLET ARF properly trimmed for level flight, we recommend having an assistant hand-launch the model instead of launching it yourself. Choose a flying site that has a soft, grassy area for landing. This will help minimize the chance of damage when landing.

Turn on the transmitter and plug the battery into the speed control. Turn on the receiver by following the instructions that came with your ESC. Secure the radio tray hatch in place.

IMPORTANT: Confirm that the transmitter operates the controls properly by moving the sticks and watching the surfaces respond.

When ready to launch, the assistant should hold the MiGLET ARF by the finger grips on the underside of the fuse, with the model in front of him and pointed **into the wind**. With the pilot (*that would be you!*) standing behind the plane, fully advance the throttle to start the motor. When the motor is at full power, the hand launcher should gently push the plane into the air at a **level** or **slightly** nose-up attitude. Be certain the model is being launched **into** the wind and be immediately ready to make corrections to keep the airplane flying straight, level and into the wind.

When the model has gained adequate flying speed under its own power, **gently** pull the elevon stick back until the airplane starts a gradual climb. Even experienced flyers tend to pull too hard causing the model to stall, so be gentle on the elevon and don't panic. If you do pull too hard and you notice the model losing speed, release the elevon stick and allow the model to regain airspeed.

Continue a **gradual** climb and establish a gentle turn (away from yourself and others) until the airplane reaches an altitude of 75 to 100 ft [20 to 30m].

Flight

The main purpose of the first few flights is to learn how the model behaves and to adjust the trims for level flight. After the model has climbed to a safe altitude, reduce the throttle slightly to slow the model, yet maintain altitude. The MiGLET ARF should fly well and maintain adequate airspeed at about 1/2 throttle.

Adjust the elevon trim so the model flies level at the throttle setting you are using. It may take a few minutes to get the trims adjusted, but this should be your first priority once at a comfortable altitude. Continue to fly around, executing turns and making mental notes (or having your assistant take notes for you) of what additional adjustments or C.G. changes may be required to fine tune the model so it flies the way you like.

Allow the motor time to cool between flights. Flying with a hot motor will cause a reduction in motor lifespan or failure.

Landing

Begin the landing approach by flying downwind at an altitude of approximately 20 ft [6m]. When the airplane is approximately 50 to 100 ft [15 to 30m] past you, gradually

reduce power and make the "final" 180° turn into the wind, aligning the airplane with the runway or landing area. Do not dive the airplane, as it will pick up too much speed. Instead, allow the airplane to establish a gradual descent. Concentrate on keeping it heading into the wind toward the landing area. When the plane reaches an altitude of about 3 ft [1m], gently apply a little "up elevon" to level the plane, but be careful as too much up elevon will cause it to stall. While holding a slight amount of up elevon the airplane will slow and descend as it loses flying speed, thus touching-down on the ground.

Until you are able to accurately judge how far the MiGLET ARF can glide, it may be helpful to reserve some battery power to run the motor so the plane can be flown back to the landing area.

Best of luck and happy flying!

This model belongs to:	_____
	Name

	Address

City, State Zip	

Phone number	

AMA number	

Make a copy of this identification tag and put it on or inside your model.

**ALSO AVAILABLE FROM
GREAT PLANES**



Great Planes ElectriFly PolyCharge Charger

Simple to set up and use, the PolyCharge is perfect for 1-3 cell LiPo power packs. It's about the size of a business card - and weighs just over 4 ounces! PolyCharge automatically starts charging when the pack is connected, and automatically stops at full charge. Adjusting the charge rate to capacity takes only a moment and a touch on the selector switch. Choose from 250mA, 500mA or 1,000mA rates. A buzzer and blue LED indicate start/stop charge; high/low voltage input; reverse polarity (output), and loose/broken pack connection. Includes alligator clips on a 30" lead for input and a standard red 2-pin connector on output. **GPMM3010**

