

# Flyzone™ A6 Intruder, Voodoo, & Sabre Strike

## FF to R/C Conversion Instructions

Hobbico® Flyzone EP FF airplanes have been around for years, with exciting new models being added constantly. The recent interest shown by R/C modelers in micro R/C airplanes inspired us to offer a kit that transforms these micro free flyers into high performance micro R/C airplanes. This R/C conversion package and the following instructions make the conversion as painless as possible and eliminates any guesswork. The R/C conversion power package can be used on any airplane weighing 5 to 9 oz [141 to 255g] with a wingspan between 20 and 30 inches [508 and 760mm]. A conversion radio package is also available and includes the radio gear you will need in conjunction with the conversion power package.

### PARTS NECESSARY

- 1/16" [1.6mm] Scrap balsa sheet
- RC Conversion power package (GPMG0780)
- Great Planes® ElectriFly™ Conversion Radio Pak (GPML0098) High or (GPML0099) Low
- Futaba® single conversion crystal (FUTL62\*\*)
- 1/16" [1.6mm] Scrap balsa sheet
- Carbon Fiber Strips (DAVR2030)
- 1/8" [3.2mm] x 3/4" [19mm] Hardwood dowel

### CONVERSION POWER PACKAGE (GPMG0780)

This power system includes a 180-size motor, propeller, matched speed control, 8-cell, 300 mAh NiMH battery, pushrod, hinge material and control horns. Coupled with the suggested radio system it will fly airplanes with wingspans between 20 and 30 inches [508 and 760mm] and weighing 5 to 9 oz [141 to 255g].

- 8-cell 300 mAh, NiMH battery (GPMP0065)
- Great Planes C-5 Speed Control (GPMM2000)
- 180-size Motor (GPMG0290)
- Plastic propeller (HCAQ3260)
- (2) .039" x 14" [0.9mm x 356mm] Steel pushrod
- (2) .020" ABS control horns
- 1" x 3/4" CA Hinge material

### CONVERSION RADIO PACKAGE (GPML0098 High) (GPML0099 Low)

The suggested radio system is a 2-servo setup for a total of three-channel control with the included speed control. The receiver suggested is a Great Planes ElectriFly 4-channel receiver with two Hobbico CS-5 servos. The conversion radio package includes all of these items.

- Great Planes 4-channel ElectriFly receiver (GPML0044) Low or (GPML0045) High
- (2) Hobbico CS-5 nano servos (HCAM0090)

### TOOLS REQUIRED

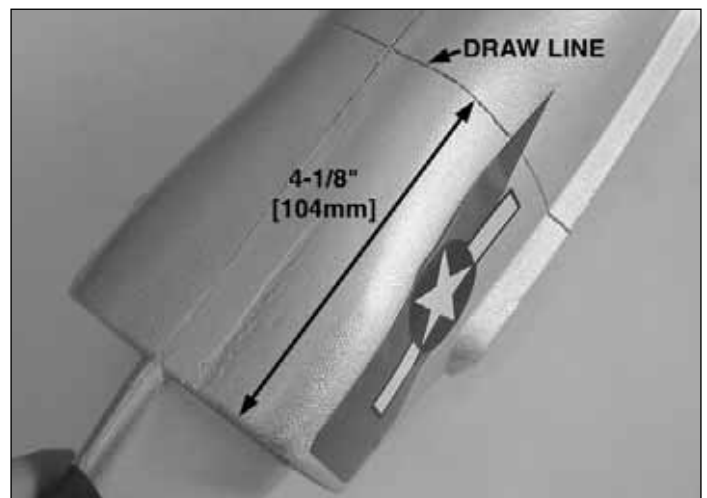
- Ruler
- Hobby knife
- 6-minute epoxy
- Foam-safe CA
- Scissors
- Solder
- Pen
- 400-grit sandpaper
- Mixing sticks
- Drill and 1/16" [1.6mm] drill bit
- Soldering Iron
- 3/32" [2.3mm] drill bit (or sharpened tube)

### CONSTRUCTION

- 1. Remove the FF A6 Intruder EP's parts from its packing box carefully.



- 2. Carefully separate the canopy from the fuselage using a hobby knife.



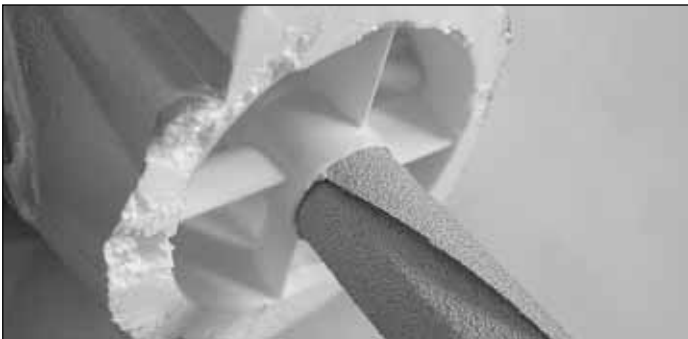
- 3. Draw a line at the bottom of the fuselage 4-1/8" [104mm] away from the duct entry. Continue this line around the fuselage as shown above.



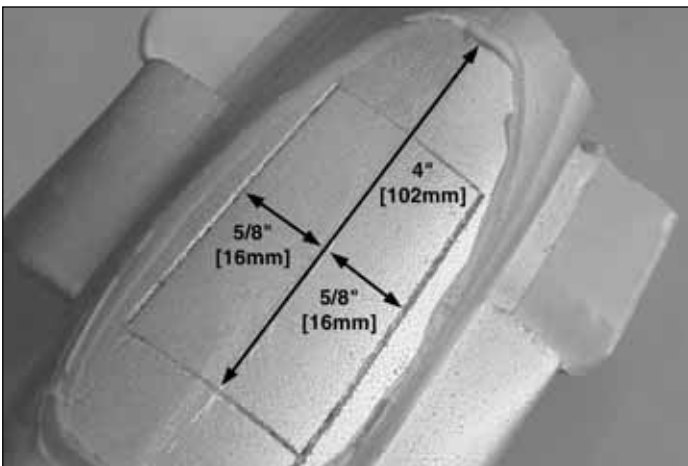
❑ 4. Use a hobby knife with a sharp #11 blade to cut the fuselage in two at the lines. Also, cut the motor wires with a wire cutter.



❑ 5. Remove the motor from its housing using a hobby knife and then discard it.



❑ 6. Sand the inner side of the housing until the new motor fits in. The fit should be snug.



❑ 7. Draw a line perpendicular to the fuselage axis approximately 4" [102mm] from the aft edge of the canopy.

Draw two lines parallel to the fuselage 5/8" [16mm] away from the centerline.



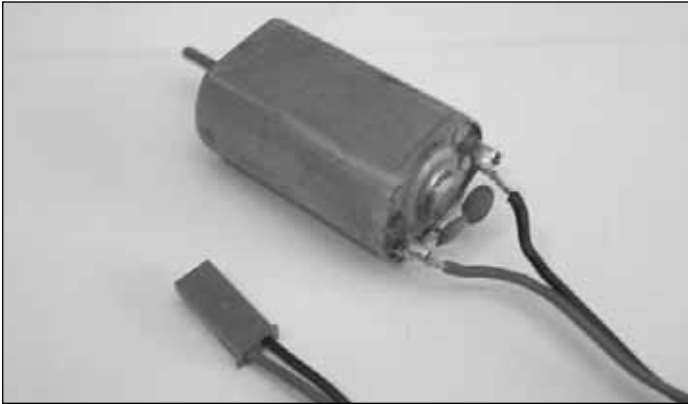
❑ 8. Using the lines as guides, cut the top of the fuselage open, being careful not to cut into the duct. This will be the battery compartment. Check the image above for reference.



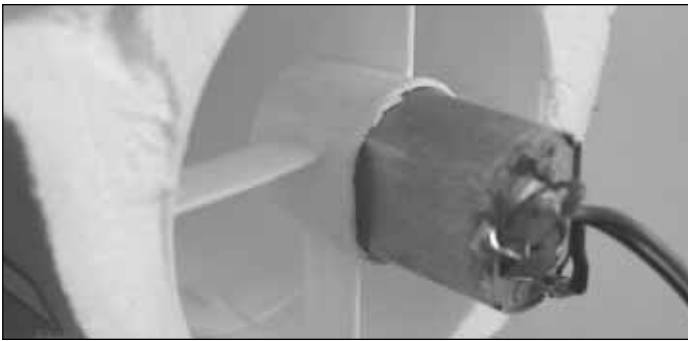
❑ 9. Use a 1/4" [6mm] drill bit to drill a hole as shown above. This hole is for the SC battery wire.



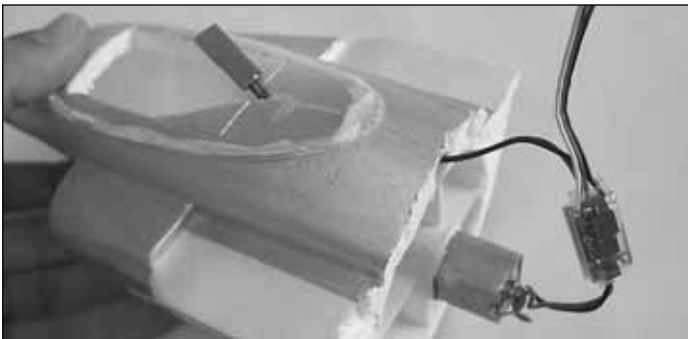
❑ 10. Locate the motor and two capacitors. Solder one leg of each one of the capacitors to a motor power tab and the other to the motor case.



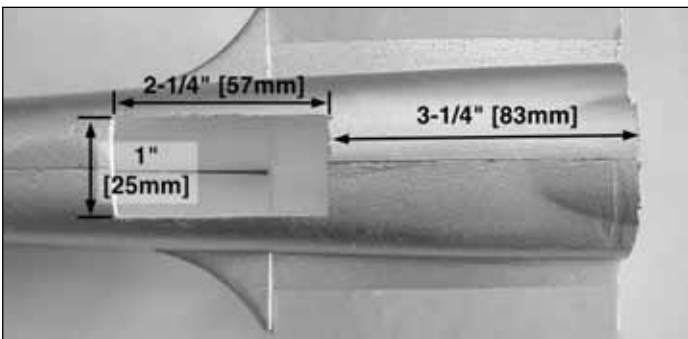
□ 11. Locate the speed control. Cut the connector on the motor end of the speed control and solder it to the motor. The red wire goes to the motor tab with the red dot. Make sure the wires are 1-3/4" [44mm] long.



□ 12. Insert the motor into the housing. Apply some epoxy or CA to glue the motor in place. Also, re-install the fan blade on the motor axle by applying some CA onto it.

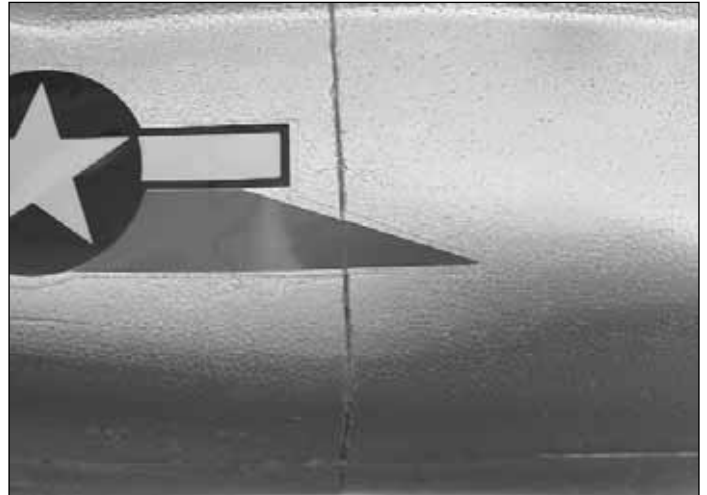


□ 13. Slide the SC battery wire into the hole drilled in step 9. Apply some double-sided tape to the flat side of the SC.

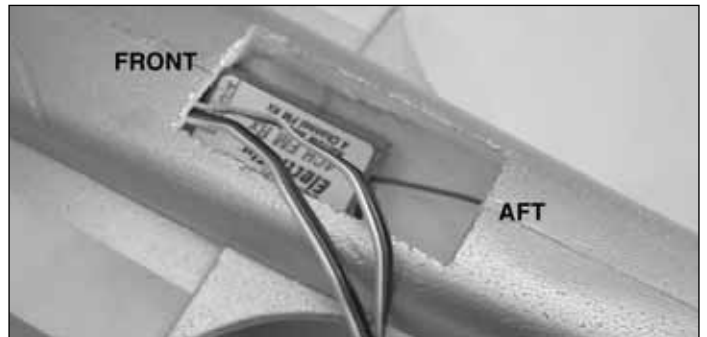


□ 14. Locate the aft fuselage and cut a rectangular opening 1" x 2-1/4" [25mm x 57mm] 3-1/4" [83mm] away from the cut end of the fuselage. Remove the FF battery.

□ 15. Cut a small slot in the aft fuse where the SC battery wire comes out of the hole in the forward fuselage. Also in the aft fuselage, enlarge the hole the FF battery wires used to go through.



□ 16. Slide the SC throttle wire through the FF battery hole just enlarged. Secure the SC into the aft portion of the fuselage with the double-sided tape. Apply epoxy or foam safe CA to the aft portion of the fuselage and glue it to the forward portion. Make sure the fuselage halves are aligned.

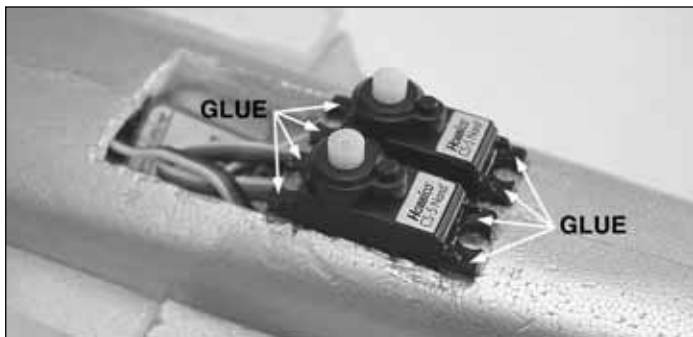


□ 17. Connect the servo wires to the receiver and slide the receiver in place as shown above. Connect the servos to channel 1 and 2 and set up an elevon mix in your transmitter. Make a small hole in the aft area of the fuselage and route the antenna wire out of the fuselage. **Warning:** Let any excess antenna wire hang at the back of the fuselage. Do not coil it up inside the fuselage and do not cut it to length.



□ 18. Cut a 1/8" [3mm] piece of balsa 1/8" [3mm] wide by 1" [25mm] long. Glue it 7/8" [22mm] in front of the aft edge

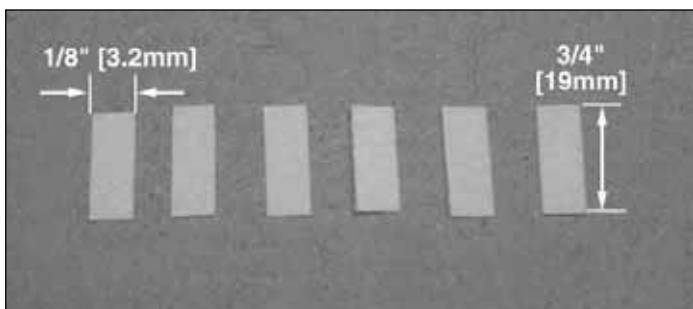
of the cut out. Make sure the servo wires are under the wood piece before you glue it in place.



□ 19. Install the servos as shown above. Apply a drop of CA on each mounting arm to glue them in place.



□ 20. Locate the stab. Draw a line 1/2" [13mm] forward of where the elevator hinge line is and cut the elevators out with a sharp #11 blade.



□ 21. Cut six hinges out of the CA Hinge material 1/8" [3mm] wide by 3/4" [19mm] long.

□ 22. Fit the elevators to the stab and mark the location of the three hinges on both the elevators and the stab. Cut a slot 1/8" [3mm] wide, 3/8" [9.5mm] deep at the marks. Use the image below for reference.



□ 23. Apply some foam safe CA to half of each hinge. Slide three CA hinges in place in the elevator. Let the CA cure.



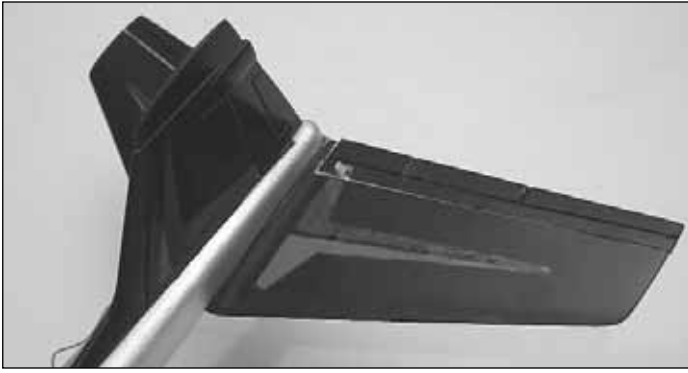
□ 24. Mark the location of the two elevator control horns as shown above.



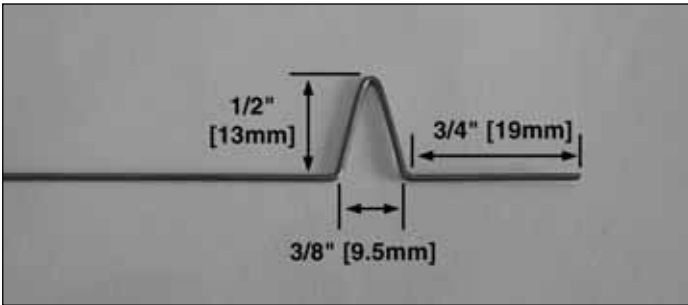
□ 25. Cut a slot in the elevators at the mark. Glue the control horns in place with foam-safe CA or epoxy. The control horns should be facing the upper side of the elevators.



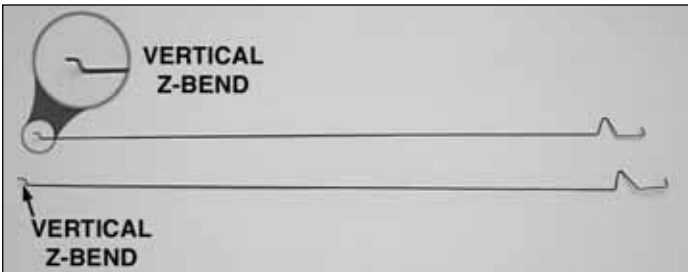
□ 26. Apply foam safe CA or epoxy to the elevators' hinges and slide them into the stab. Let the glue cure. There must be at least a 1/16" [1.6mm] gap between the surfaces.



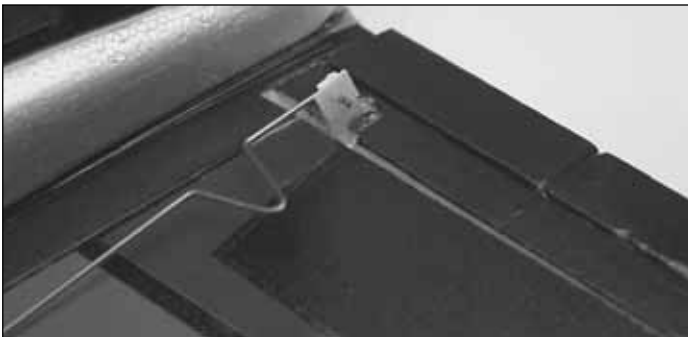
□ 27. Remove the protecting film on the double-sided tape on the stab and on the fuselage and press the stab in place.



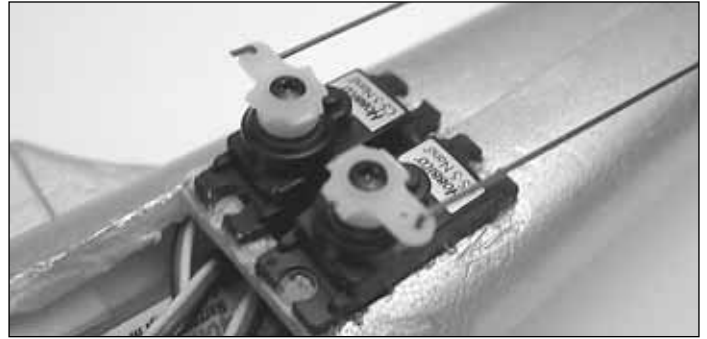
□ 28. Bend one end of both .035" [0.9mm] pushrod wires as shown above. Cut the other end of one of both pushrod wires 10" [254mm] long to make both elevon pushrods.



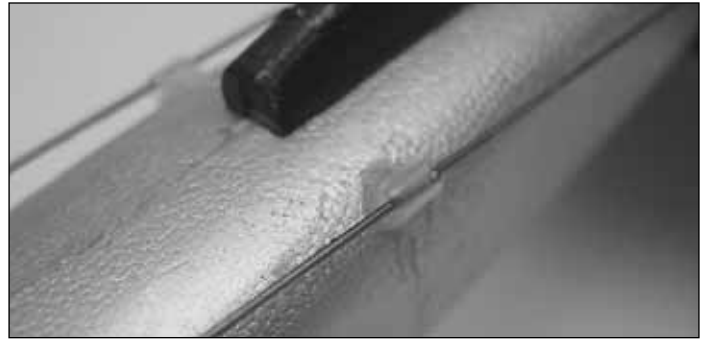
□ 29. Slide a small tube 1/4" [6mm] long (such as an ink pen tube) on each pushrod. Make a "Z-bend" at the long end of both pushrods as shown above. Also, bend both short ends of the pushrod. The Z-bends are 90° to the work surface.



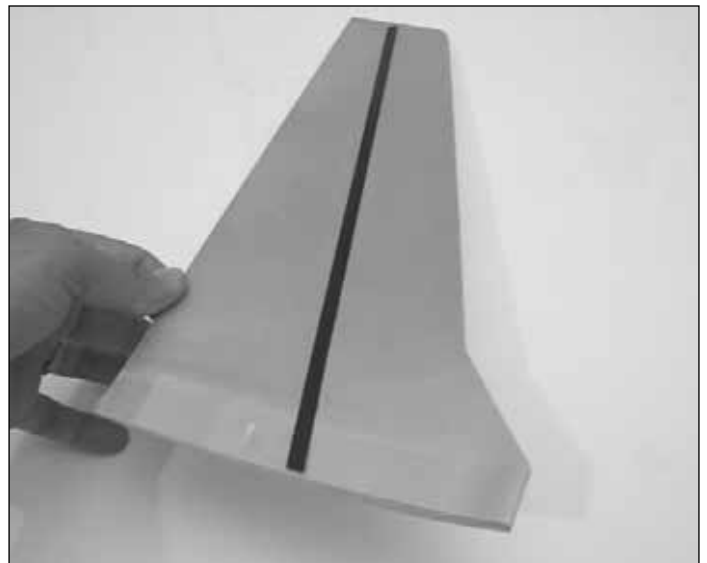
□ 30. Cut a small portion of the leftover CA Hinge material and make a small hole in it. Place it against the control horn as shown above. Use a drop of medium CA on the CA Hinge material to glue it to the pushrod. Make sure you do not glue the CA hinge material to the control horn.



□ 31. Install the pushrods onto the servo arm. Make sure the servo arms are 90 degrees to the servo.



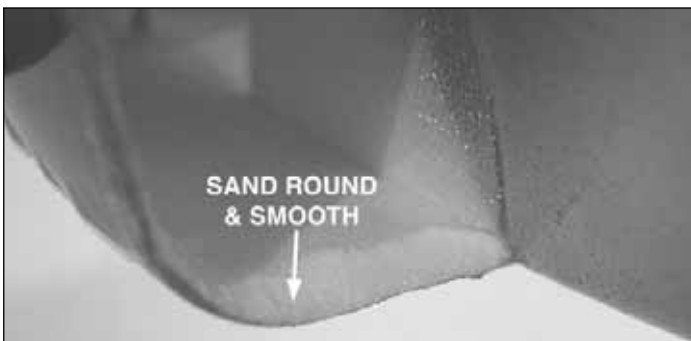
□ 32. Lightly sand the plastic tube on the pushrod and then glue it with foam-safe CA to the fuselage of the airplane to prevent the pushrod from bending under load.



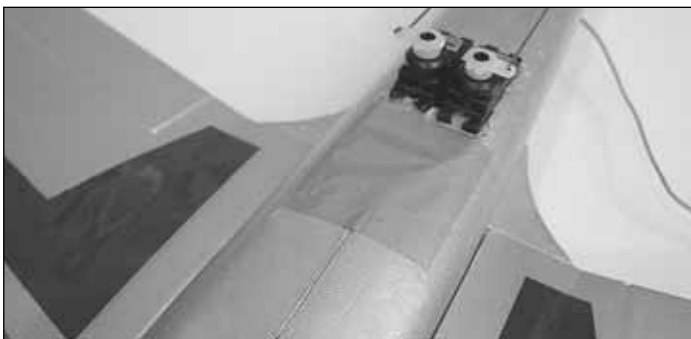
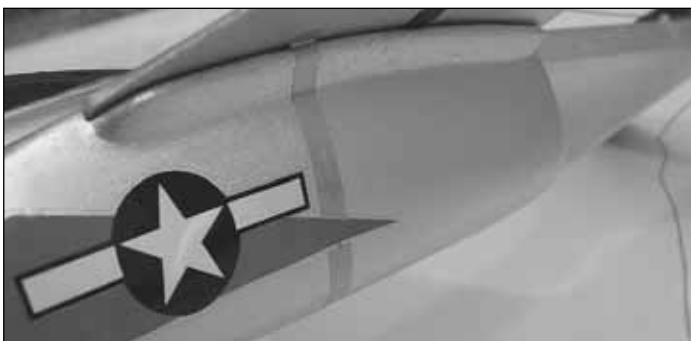
□ 33. Glue a strip of carbon fiber to the bottom of both wings.



❑ 34. Remove the protecting film on the wing's and fuselage's double-sided tape. Apply some foam safe CA to the gluing area and install the wing in place. Let the glue cure.



❑ 35. Sand the inner edge of the inlet smooth. This is important to improve the fan's performance.



❑ 36. Apply some colored tape on the fuselage's glue joints. Use tape to hold the canopy in place. The finished weigh of your airplane should be between 7.7 and 8.3 oz [220 and 235g].

## CONTROL THROWS

Turn your radio on. Center the servo arms. With the sticks in a neutral position, modify the bend in the pushrods for each control surface until the surface is aligned. Adjust the travel of your servos or the position of the pushrods in the servo arm or control horn to obtain the throws specified below.

	<b>Up</b>	<b>Down</b>
<b>Elevator Function</b>	5/32" [4mm]	5/32" [4mm]
	<b>Left</b>	<b>Right</b>
<b>Aileron Function</b>	5/32" [4mm]	5/32" [4mm]

It is important that you set up your airplane to match these throws. Otherwise your airplane will become extremely difficult to control and possibly unflyable.

## CENTER OF GRAVITY LOCATION

The center of gravity range for this airplane is between 1-3/16" [30mm] and 1-9/32" [33mm] from the leading edge of the wing at the fuselage. Move the battery and receiver inside the fuselage to attain a CG within that range. Do not attempt to fly your airplane if your CG is not within the range. Mark the C.G. range on the top of the wing panels, just outside the fuselage. Check the balance by lifting the airplane upside-down, with the eraser-end of two pencils.

## FLYING YOUR A6 INTRUDER

It is recommended that you do the first couple of flights in a place with tall grass. This way your airplane may not get damaged if you crash it.

With all controls centered, add full power to the motor and gently throw the airplane straight and level. Level the wings after the throw and then add some "up" elevator to begin climb. After you have gained some altitude, reduce the throttle to about 50% and fly your airplane around until you get used to the controls. When you decide to land, slowly reduce throttle, align your airplane with the runway and apply some "up" elevator to flare as you get close to the ground.

If you want to fly this airplane slower, you may want to try a smaller battery to reduce the weight, such as a 6-cell, 300mAh NiMH battery.

The foam this airplane is made of is very fragile. For that reason, you should check every critical structural point on this airplane after every flight to ensure that the airplane is safe to fly. Critical points include the flying and control surfaces, the wing attachment points, the motor and servo attachments, etc.

## ADDITIONAL FINE ITEMS

### Hobbico 60 Watt Soldering Iron HCAR0776



*This iron's fast-warming, high-quality mica heating unit provides years of dependable, 110V use. The balanced, anti-roll handle is heat- and impact-resistant, with a ribbed design for fingertip control. Two flat chisel tips are included, along with a table stand.*

### Great Planes® ElectriFly™ Peak Charger GPMM3000



*It's designed specifically for small, lightweight electrics and transmitter batteries, but can be used on any 6-8 cell NiCd or NiMH pack. Plugs into a power supply or cigarette lighter for fast recharges; pulsed current charging protects small packs from overheating.*

*Charging rate adjusts to 200mA (for smaller packs) or 600mA for larger motor and Tx packs; 15mA trickle charge keeps packs topped off for immediate use anytime. Includes 2-pin connector for ElectriFly packs; adapters available separately.*

### Hobbico Deluxe Modeling Knife HCAR0105



*Ideal for cutting, trimming, shaping, slicing and more, the durable aluminum Deluxe Hobby Modeling Knife features a 4-jaw chuck to hold the included #11 blade. The soft, red handle provides a comfortable and secure grip, and its "anti-roll" design lets the knife rest securely on your work surface when not in use. A clear plastic cap is also supplied to cover the blade for additional storage safety.*

### Top Flite® Panel Line Pen TOPQ2510



*Now you can add realistic panel lines and rivet detail to your airplane models as easily as you sign your name! Simpler to use than striping tape and more economical, Top Flite's Panel Line Pen features a durable tip and opaque black ink that create fine, permanent lines. They'll even stand up to CA adhesives and mild cleaners. The result looks better than tape, too – and won't peel off.*

