LR-1A Pogo 15e

Assembly Manual

E-flite®
ADVANCING ELECTRIC FLIGHT

Notice

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, Inc. For up to date product literature, visit http://www.horizonhobby.com.

Meaning of Special Language

WARNING: Procedures, which if not properly followed, create the likely probability of physical property damage AND may lead to a dangerous condition or cause death or serious injury to the user, OR procedures, which if not followed, create the high probability of superficial injury.

⚠ WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassemble, use with incompatible components or augment product in any way without the approval of Horizon Hobby, Inc. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Table of Contents

Introduction

Congratulations on buying the LR-1A Pogo airplane. You have purchased what is arguably one of the most fun airplanes in the marketplace today. Originally designed as a fast sport flyer to bring an adrenaline rush to the mid to advanced pilots, the project quickly advanced to an even greater purpose. Working with legendary designer Jerry Small we developed the airplane into the standard for the upcoming Electric Formula One racing class from the NMPRA (National Miniature Pylon Racing Association).

Jerry designed a unique cowl system that includes all the graceful curves of the front of the fuselage into one piece that stretches back to the mid canopy point. This allows for very easy maintenance, easy mounting of equipment, and great cooling for the EP power system. We also elected to use mini servos throughout to save weight and expense; for the same reasons there is only one aileron servo.

Power for your airplane can be anything from our Power 15 motor on a 3S setup and a 10 x 10E prop (prop clearance limits anything longer) to a full blown race setup with our new Power 25 1250Kv on 4S and an 8 x 8E prop turning about 15,000 rpm. The sport setup will put you in the 80 mph range while the race setup has been clocked at about 115 mph.

The airplane is a smooth flyer and goes exactly where you point it. Make sure all your friends pick up one of these kits then challenge each other to some impromptu racing for bragging rights at your local field. You'll have a blast!

Product Support

For technical assistance with this product, please contact the appropriate Horizon Product Support office. See page 36.

Specifications

Wingspan:	49.0 in (1244mm)
Length:	36.3 in (922mm)
Wing Area:	375 sq in (24.19 sq dm)
Weight w/ Battery:	3.10–3.35 oz (1.40–1.50 kg)
Weight w/o Battery:	2.60–2.75 lb (1.18–1.25 kg)

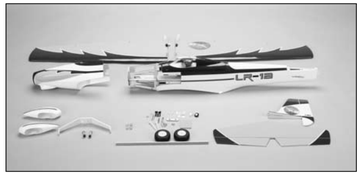
Contents of Kit/Parts Layout

Replacement Parts

EFL420001	Fuselage with Canopy
EFL420002	Main Wing Set
EFL420003	Tail Set (Horizontal and vertical stabilizers)
EFL420004	Landing Gear with Axles
EFL420005	Wheel Pant Set - Painted
EFL420006	7mm EP Standoff Set
EFL420007	Cowl – Painted
EFL420008	Wing Tube
EFL420012	Hardware Bag - Complete
EFL420013	Landing Gear Axles Only (2)
EFL420014	Wing Mounting Bolts (2)

Not Shown/Included (available separately)

EFL420009	Cowl – All White
EFL420010	Wheel Pants Set – All White
EFL420011	Fuselage Hatch (Canopy) - Clear



⚠ Warnings

Read and follow all instructions and safety precautions before use. Improper use can result in fire, serious injury and damage to property.

COMPONENTS

Use only with compatible components. Should any compatibility questions exist please refer to the product instructions, the component instructions or contact Horizon Hobby, Inc.

FLIGHT

Fly only in open areas to ensure safety. It is recommended flying be done at AMA (Academy of Model Aeronautics) approved flying sites.

PROPELLER

Keep loose items that can get entangled in the propeller away from the prop, including loose clothing, or other objects such as pencils and screwdrivers. Especially keep your hands away from the propeller as injury can occur.

BATTERIES

⚠ ***Notes on Lithium Polymer Batteries***

Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-MH batteries used in RC applications. Always follow the manufacturer's instructions when using and disposing of any batteries. Mishandling of Li-Po batteries can result in fire and explosion causing serious injury and damage.

SMALL PARTS

This kit includes small parts and should not be left unattended near children as choking and serious injury could result.

E-tips

During the course of building your LR-1A Pogo we suggest you use a soft base for the building surface. Such things as a foam stand, large piece of bedding foam or a thick bath towel will work well and help protect the model from damage during assembly.

LR-1A Pogo 15e Safe Operating Recommendations

- Inspect your model before every flight to make certain it is airworthy.
- Be aware of any other radio frequency user who may present an interference problem.
- Always be courteous and respectful of other users of your selected flight area.
- Choose an area clear of obstacles and large enough to safely accommodate your flying activity.
- Make certain this area is clear of friends and spectators prior to launching your aircraft.
- Be aware of other activities in the vicinity of your flight path that could cause potential conflict.
- Carefully plan your flight path prior to launch.
- Abide by any and all established AMA National Model Aircraft Safety Code.

Important Information Regarding Warranty Information

Please read our Warranty and Repair Policy section on Page 36 before building this product. If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Using the Manual

This manual is divided into sections to help make assembly easier to understand, and to provide breaks between each major section. In addition, check boxes have been placed next to each step to keep track of its completion. Steps with a single circle (❍) are performed once, while steps with two circles (❍ ❍) indicate the step will require repeating, such as for a right or left wing panel, two servos, etc.

Remember to take your time and follow the directions.

Covering Colors

HANU870	White
HANU884	Cub Yellow
HANU885	Midnight Blue

Recommended Radio Equipment

You will need a minimum 4-channel transmitter, receiver and four servos. You can choose to purchase a complete radio system. If you are using an existing transmitter, just purchase the other required equipment separately. We recommend the crystal-free, interference-free Spektrum™ DX6i 2.4GHz DSM® 6-channel system. If using your own transmitter, we recommend the JR SPORT™ MN48 Mini servos.

If you own a Spektrum radio, just add a DSM2™ receiver and three JR SPORT MN48 mini servos. We show the installation of the AR6200 receiver in the manual.

Transmitter

SPM6600	DX6i 6-Channel Full Range w/o Servos MD2

Or Purchase Separately

SPMAR6200	DSM2 AR6200 6-Channel Receiver Ultralite

Servos

JSP20040	MN48 Mini Servo (3)

Or

SPMSH5000	SH5000 High-Speed Mini Servo (3)

Additional Items

JSP98100	3-inch (76mm) Servo Extension (2)

Required Tools and Adhesives

Tools & Equipment

Drill	Epoxy brush
Felt-tipped pen	Flat blade screwdriver
Low-tack tape	Hook and loop strap
Light machine oil	Hook and loop tape
Long nose pliers	Mixing cup
Mixing sticks	Needle nose pliers
Paper towels	Pencil
Pin vise	Phillips screwdriver: #1, #2
Rubbing alcohol	Ruler
Sandpaper	T-pins
Side cutter	Square
Straight edge	Toothpicks

Open end or box wrench: 10mm
Hobby knife with #11 blade
Hex wrench or ball driver: 2.5mm, 3/32-inch, 3mm
Drill bit: 1/16-inch (1.5mm), 5/64-inch (2mm), 1/8-inch (3mm), 5/32-inch (4mm)

Adhesives

30-minute epoxy	Thin CA
Medium CA	Threadlock

Recommended Sport Setup

Motor:	Power 15 Brushless 975Kv Outrunner (EFLM4015A)
Speed Control:	40A Pro Switch-Mode BEC BL ESC (EFLA1040)
Battery:	3200mAh 3S 11.1V 30C Li-Po Battery (EFLB32003S30)
Spinner:	2-inch Aluminum Spinner (EFLSP200)
Propeller:	10 x 10E (APC10010E)

Recommended Racing Setup

Motor:	Power 25 BL 1250Kv Outrunner (EFLM4025B)
Speed Control:	60A Pro Switch-Mode BEC BL ESC (EFLA1060)
Battery:	2500mAh 4S 14.4V 30C Li-Po Battery (EFLB25004S30)
Spinner:	2-inch Aluminum Spinner (EFLSP200)
Propeller:	8 x 8E (APC08080E)

Optional Accessories

EFLA110	Power Meter
EFLC505	Intelligent 1- to 5-Cell Balancing Charger

Hinging the Ailerons

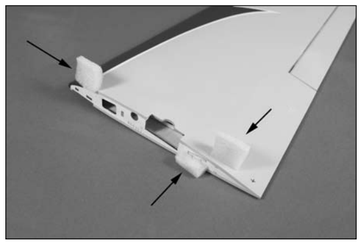
Required Parts

Left wing panel with aileron
Right wing panel with aileron

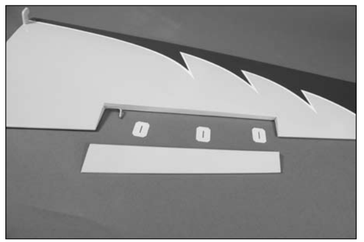
Required Tools and Adhesives

T-pin	Thin CA
Pin vise	Drill bit: 1/16-inch (1.5mm)

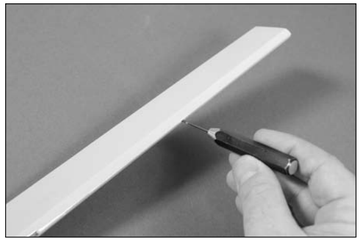
❍❍ 1. Remove the foam protectors from the wing.



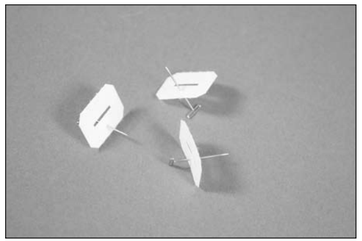
❍❍ 2. Remove the aileron from the wing panel.



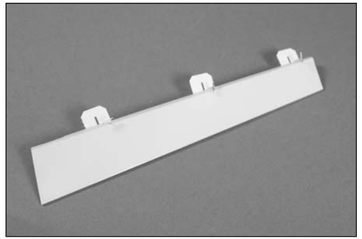
❍❍ 3. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill a hole in the center of each hinge slot. Drill holes in both the aileron and wing at this time. This creates a tunnel for the CA to wick into, making a better bond between the hinge and surrounding wood.



❍❍ 4. Place a T-pin in the center of each of the three hinges. This will center the hinges when installed in the aileron.



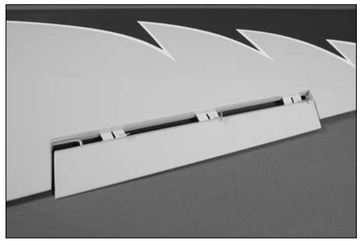
❍❍ 5. Place the hinges in the aileron as shown.



E-tips

A nylon tube has been installed in the aileron to accept the torque rod. It is not necessary to glue the torque rod into the aileron.

❍❍ 6. Slide the aileron back into position. Make sure the torque rod enters the nylon tube installed in the aileron.

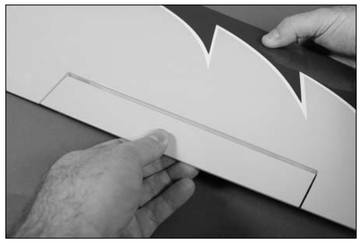


E-tips

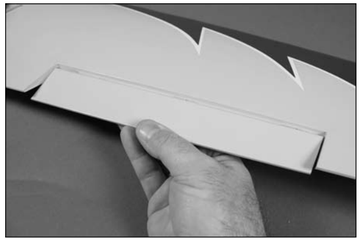
When gluing the hinges, do not use CA accelerator. The CA must be allowed to soak into the hinge to provide the best bond between the hinge and surrounding wood.

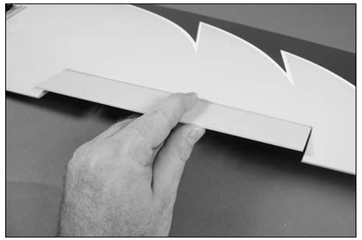
❍❍ 7. Press the aileron tightly against the wing. Center the aileron in the opening and check that it can move freely without binding at the root or tip. Wick thin CA into the top and bottom of all three hinges.

❍❍ 8. Once the CA has fully cured. Gently pull on the aileron to make sure the hinges are secure. If any hinges are loose, reapply CA to the hinge.



❍❍ 9. Flex the aileron through its range of motion a number of times to break in the aileron hinges.





❍ 10. Repeat Steps 1 through 9 to hinge the remaining aileron.

Joining the Wing Panels

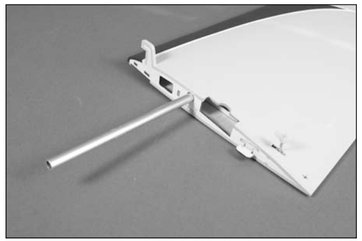
Required Parts

Left wing panel — Right wing panel
Aluminum wing tube

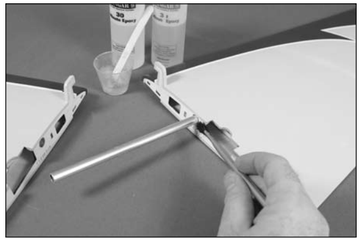
Required Tools and Adhesives (optional)

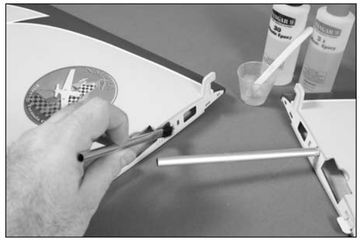
30-minute epoxy — Mixing cups
Mixing sticks — Paper towels
Rubbing alcohol — Epoxy brush

❍ 1. Slide the aluminum wing tube into one of the wing panels. The tube will only slide in half-way. Do not force the tube to slide further than it will easily slide.

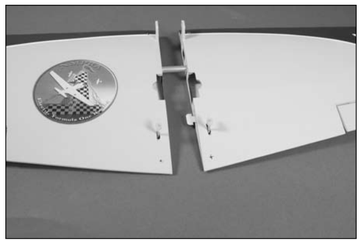


❍ 2. Mix 1/2-ounce (15ml) of 30-minute epoxy. Use an epoxy brush to apply a thin layer of epoxy on the root of both the left and right wing panels as shown.

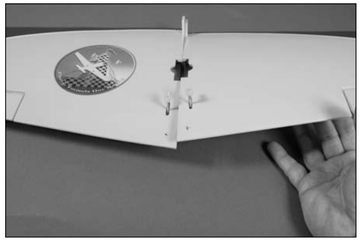




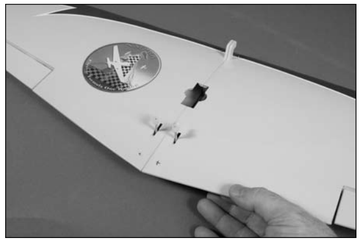
❍ 3. Slide the remaining wing panel onto the aluminum wing tube.



❍ 4. The tab from the right wing panel will key into the left wing panel. Rotate the panels as shown to insert the tab from the right panel into the left panel.



❍ 5. Rotate the panels so they are in alignment. Use a paper towel and rubbing alcohol to remove any excess epoxy from the wing. Set the wing aside until the epoxy fully cures.



Installing the Aileron Servo

Required Parts

Wing assembly	Aileron servo mount
Metal clevis (2)	Aileron servo with hardware
Transmitter	Receiver
2mm nut (2)	Battery
Silicone keepers (2)	Nylon pushrod keeper (2)
2mm x 12mm sheet metal screw (4)	
Aileron linkage wire, $4^3/_4$-inch (120mm) (2)	

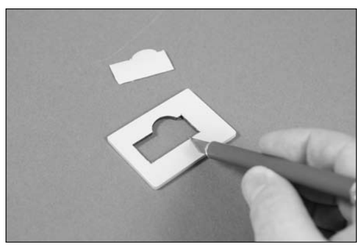
Required Tools and Adhesives

Low-tack tape	Hobby knife with #11 blade
Pin vise	Ruler
Drill bit: 1/16-inch (1.5mm), 5/64-inch (2mm)	
Thin CA	Felt-tipped pen
Needle nose pliers	Flat blade screwdriver
Side cutter	Phillips screwdriver: #1

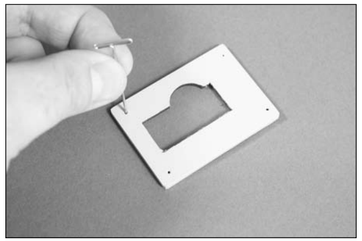
E-tips

When cutting the covering make sure not to cut into the underlying wood and weaken the underlying structure. Another option is to use a soldering iron or hot knife to melt the covering, rather than cutting, to avoid damaging the stabilizer.

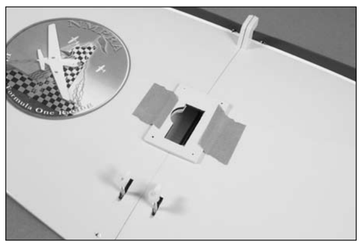
❍ 1. Use a hobby knife with a #11 blade to remove the covering from the inside of the aileron servo mount as shown.



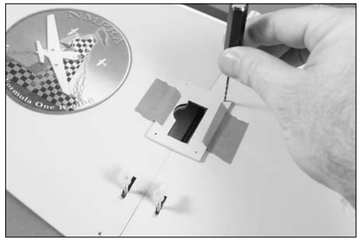
❍ 2. Use a T-pin to poke holes through the covering in the locations for the mounting screws at each corner of the mount.



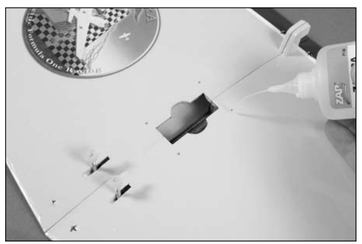
❍ 3. Position the aileron servo mount on the wing. Align the opening in the mount with the opening in the wing. Use low-tack tape to hold the mount to the wing.



❍ 4. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill the holes through the mount and into the wing. Use care not to drill holes through the bottom of the wing.

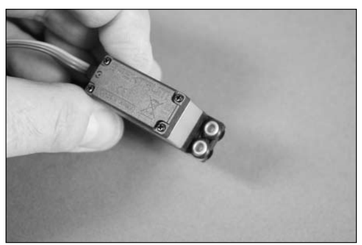


❍ 5. Place 2–3 drops of thin CA in each hole to harden the surrounding wood. This harder surface makes the screws more secure when installed.



❍ 6. Use a #1 Phillips screwdriver to install the four 2mm x 12mm sheet metal screws to secure the mount to the wing.

❍ 7. Follow the instructions provided with the servo to install the rubber grommets and brass eyelets in the servo mounting tabs.



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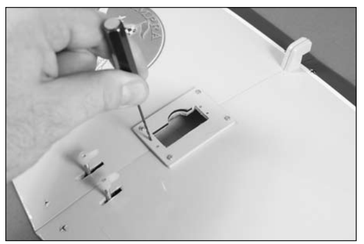
E-tips

Install the rubber grommets and eyelets in the rudder and elevator servos at this time as well.

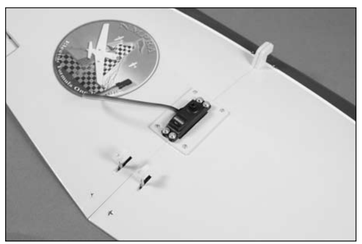
❍ 8. Place the aileron servo in the mount with the output of the servo facing the leading edge of the wing. Use a felt-tipped pen to transfer the locations for the servo mounting screws onto the mount.

❍ 9. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill the holes through the mount and into the wing. Use care not to drill holes through the bottom of the wing.



❍ 10. Place 2–3 drops of thin CA in each hole to harden the surrounding wood. This harder surface makes the screws more secure when installed.

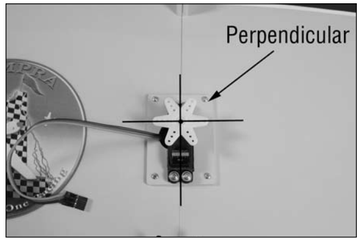
❍ 11. Place the servo back into the mount. Use a #1 Phillips screwdriver to install the four screws included with the servo to secure the aileron servo in position.



E-tips

When using a computer radio, it is recommended to start with a new model that has been reset to remove any sub-trims or programming.

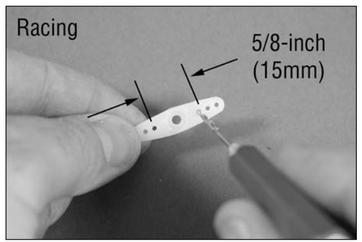
❍ 12. Use the radio system to center the aileron servo. Install the servo horn so it is perpendicular to the servo center line as shown. The servo horn has an odd number of splines, so rotate it until the arms are aligned, rather than using the sub-trim function from the radio.

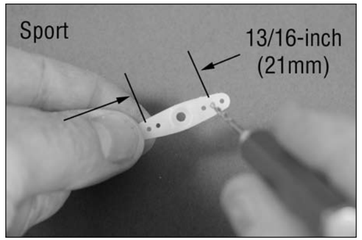


E-tips

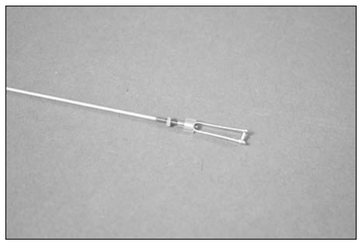
When installing the aileron linkage there are two locations we suggest. One is for racing, making the aircraft smoother and easier to control. The other position is for general sport flying which makes the aircraft more responsive.

❍ 13. Remove the servo horn from the servo. Use side cutters to remove any unused arm from the horn. Use a pin vise and 5/64-inch (2mm) drill bit to enlarge the appropriate holes in the horn as shown.

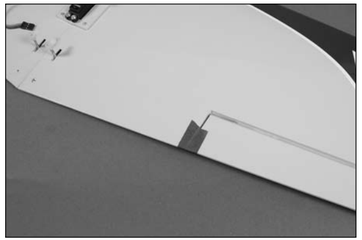




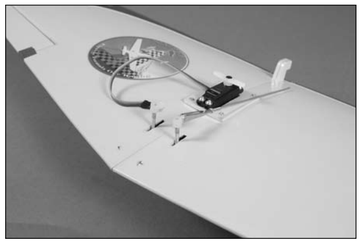
❍❍ 14. Slide a silicone keeper on the metal clevis. Thread the nut on the $4^{3}/_{4}$-inch (120mm) linkage wire back so the metal clevis can be installed. The threads on the linkage should just be visible between the forks of the clevis.



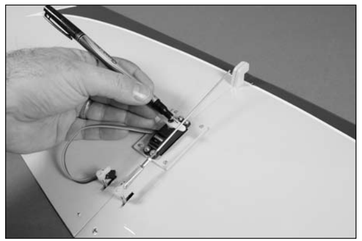
❍❍ 15. Use a piece of low-tack tape to keep the aileron centered when installing the linkage.



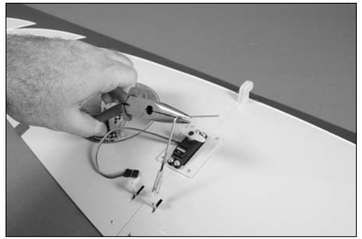
❍❍ 16. Use a flat blade screwdriver to open the forks of the clevis enough to connect it to the aileron control horn.



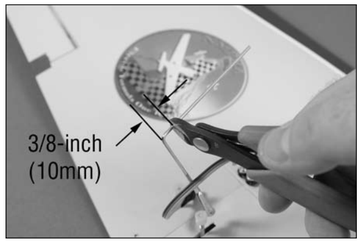
❍❍ 17. Use a felt-tipped pen to mark the linkage wire where it crosses the appropriate hole in the servo horn.



❍❍ 18. Use needle nose pliers to bend the pushrod wire 90-degrees at the mark made in the previous step.

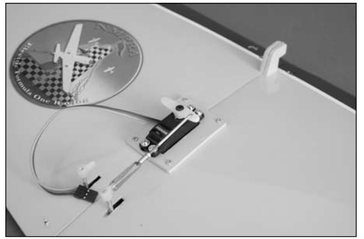


❍❍ 19. Use side cutters to trim the wire 3/8-inch (10mm) from the bend as shown.

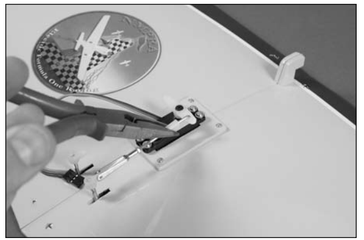


E-flite LR-1A Pogo 15e ARF Assembly Manual

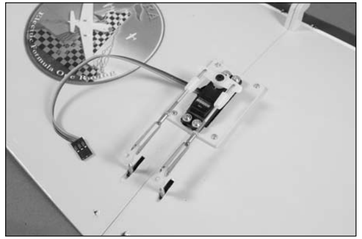
❍❍ 20. Insert the linkage wire into the appropriate hole in the servo horn for your particular flying application.



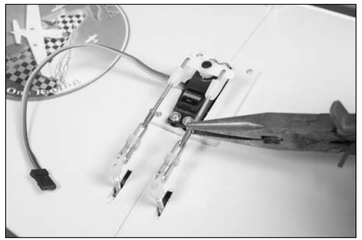
❍❍ 21. Secure the linkage to the servo horn using a nylon pushrod keeper. Slide the keeper on the bend of the wire under the horn, then use pliers to snap the rear portion of the keeper onto the linkage wire.



❍ 22. Repeat Steps 14 through 21 to install the remaining linkage.



❍ 23. Remove the low-tack tape from the ailerons. Use the radio to check the operation of the ailerons. Adjust the clevises if necessary so both ailerons are centered when the servo is centered. Use pliers to tighten the nut against the clevis to prevent the clevis from changing positions in flight. Slide the silicone keepers over the forks of the clevis to keep them from accidentally opening in flight.



❍ 24. Disconnect the power and servo from the receiver and turn the transmitter off at this time.

Hinging the Elevators

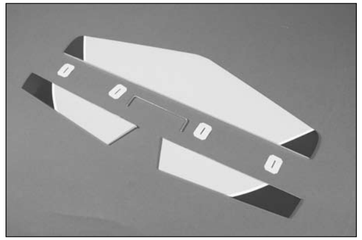
Required Parts

Stabilizer and elevator assembly

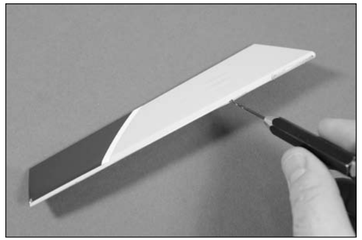
Required Tools and Adhesives

Pin vise	Drill bit: 1/16-inch (1.5mm)
Sandpaper	Toothpicks
30-minute epoxy	Low-tack tape
Square	Felt-tipped pen
Thin CA	T-pins
Mixing cups	Mixing sticks
Paper towels	Rubbing alcohol
Ruler or straight edge	

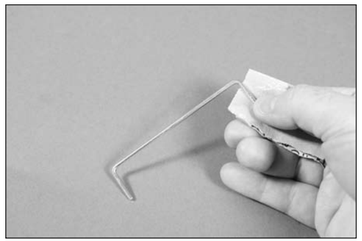
❍ 1. Remove the stabilizers from the elevator. Also, remove the elevator joiner connecting the elevators.



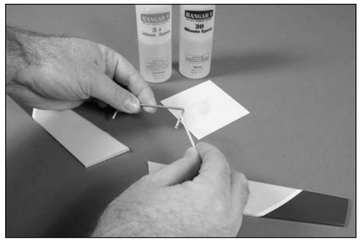
❍ 2. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill a hole in the center of each hinge slot. Drill holes in both the elevators and stabilizer at this time. This creates a tunnel for the CA to wick into, making a better bond between the hinge and surrounding wood.



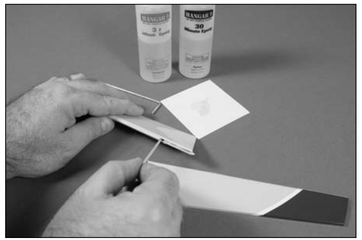
❍ 3. Use sandpaper to roughen the ends of the joiner wire. This provides a surface for the epoxy to bond to when the joiner is installed.



❍ 4. Mix a small amount of epoxy. Use a toothpick to apply the epoxy to the joiner where it contacts the elevators.



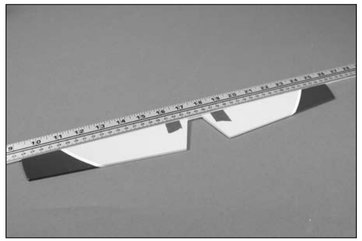
❍ 5. Use a toothpick to apply epoxy into the hole for the joiner wire and to the exposed wood where the joiner wire fits the elevators.



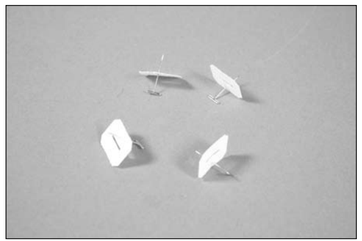
E-tips

Steps 6 through 13 can be performed while the epoxy is curing on the joiner wire.

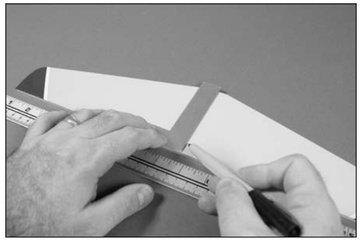
❍ 6. Insert the joiner wire into both elevator halves. Use low-tack tape to keep the joiner wire in position while the epoxy cures. Use a straight edge to make sure the elevator halves are in alignment with each other.



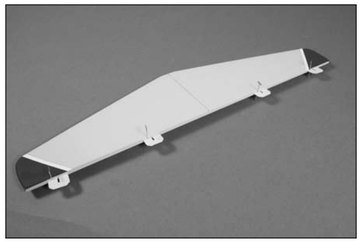
❍ 7. Place a T-pin in the center of each of the four hinges. This will center the hinges when installed in the stabilizer.



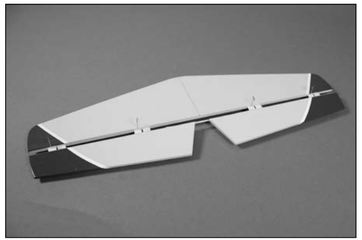
❍ 8. Use a ruler to determine the center of the stabilizer. Use a square and felt-tipped pen to mark the center line on the top of the stabilizer. This will help in aligning the stabilizer on the fuselage later.



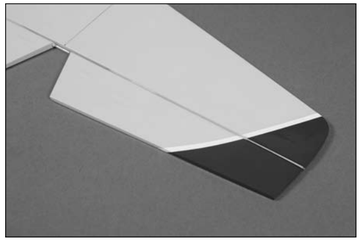
❍ 9. Place the hinges in the stabilizer as shown.



❍ 10. Slide the elevators in position on the stabilizer.

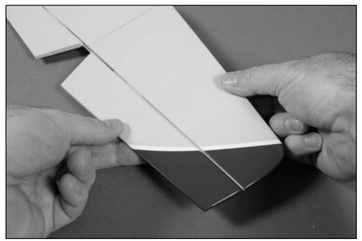


❍ 11. Make sure the tips of the elevators are aligned with the tips of the stabilizer.

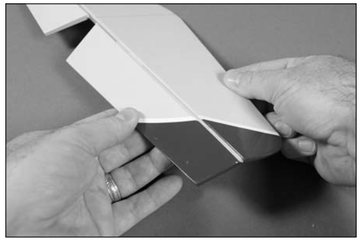


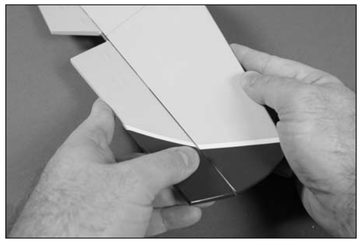
❍ 12. Press the elevators tightly against the stabilizer. Apply thin CA into the top and bottom of all three hinges.

❍ 13. Once the CA has fully cured. Gently pull on the elevator to make sure the hinges are secure. If any hinges are loose, reapply CA to the hinge.



❍ 14. Flex the elevator through its range of motion a number of times to break in the hinges.





Tail Wheel Installation and Hinging the Rudder

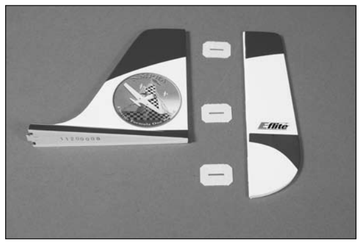
Required Parts

Rudder and fin assembly
Tail wheel assembly
2mm x 12mm sheet metal screw
Tail wheel bracket

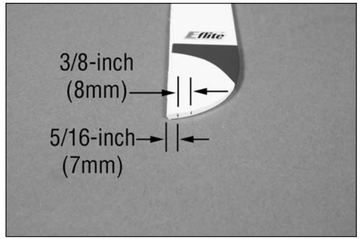
Required Tools and Adhesives

Pin vise	Drill bit: 1/16-inch (1.5mm)
Thin CA	Medium CA
T-pins	Phillips screwdriver: #1
Side cutter	Hobby knife with #11 blade
Felt-tipped pen	Medium CA
Ruler	

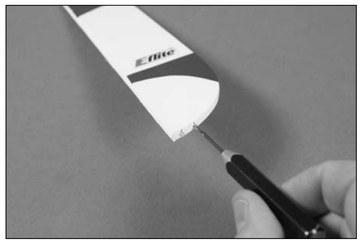
❍ 1. Separate the rudder from the fin. Set the hinges aside at this time.



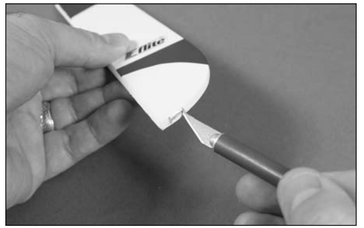
❍ 2. Use a felt-tipped pen to mark the bottom of the rudder in preparation for the tail wheel assembly. The first mark is 5/16-inch (7mm) behind the leading edge of the rudder. The second mark is 3/8-inch (8mm) behind the first mark.



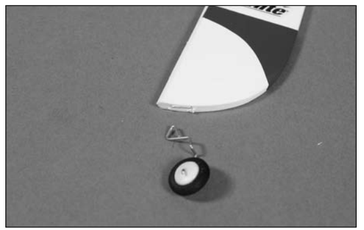
❍ 3. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill holes at the marks made in the previous step. Make the holes 1/4-inch (6mm) deep.

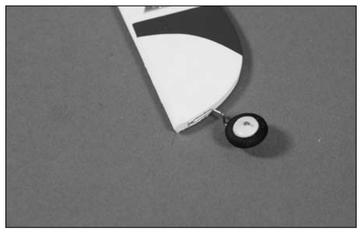


❍ 4. Use a hobby knife with a #11 blade to cut a slot that connects with the two holes so the tail wheel assembly can be inserted into the bottom of the rudder.



❍ 5. Check the fit of the tail wheel assembly into the slot. The wire will fit flush to the bottom of the rudder as shown. Once fit, use medium CA to glue the tail wheel bracket in the slot.



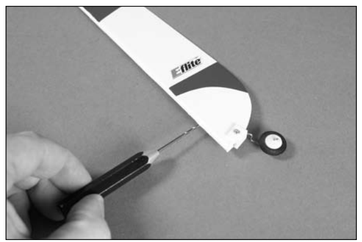


❍ 6. Position the bracket over the tail wheel assembly. With the bracket pressed tightly against the bottom of the rudder, use a pin vise and 1/16-inch (1.5mm) drill bit to drill a hole through the rudder using the hole in the bracket as a guide.

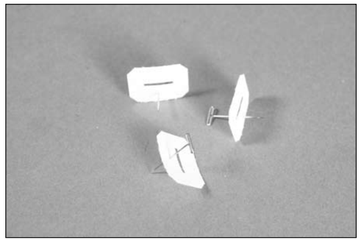
❍ 7. Use a #1 Phillips screwdriver to install the 2mm x 12mm sheet metal screw that holds the bracket in position.

❍ 8. Use side cutters to trim the excess screw on the opposite side of the bracket.

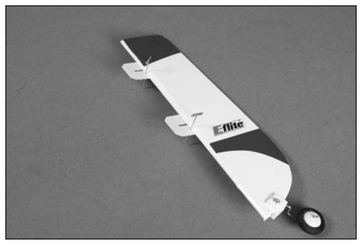
❍ 9. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill a hole in the center of each hinge slot. Drill holes in both the rudder and fin at this time. This creates a tunnel for the CA to wick into, making a better bond between the hinge and surrounding wood.



❍ 10. Place a T-pin in the center of each of the three hinges. This will center the hinges when installed in the rudder.



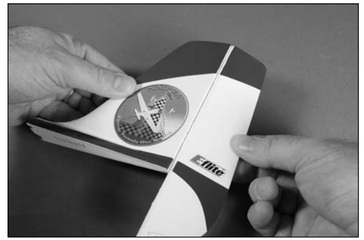
❍ 11. Insert two of the hinges in the rudder at this time. The third hinge will be installed later.



❍ 12. Press the rudder tightly against the fin. Remove the T-pins and apply thin CA into the top and bottom of both hinges.

❍ 13. Once the CA has fully cured. Gently pull on the rudder to make sure the hinges are secure. If any hinges are loose, reapply CA to the hinge.

❍ 14. Flex the rudder through its range of motion a number of times to break in the hinges.



❍ 15. Insert the last hinge in position so it does not get lost. Do not glue the hinge at this time.

Motor and Speed Control Installation

Required Parts

Fuselage assembly
Electronic speed control (ESC)
Motor (Power 15 or Power 25)
3mm x 10mm socket head bolt (4)
3mm x 18mm socket head bolt (4)
3mm lock washer (4)
Aluminum spacer, 5/16-inch (7mm) (4)

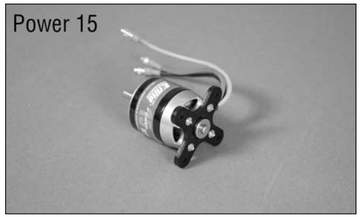
Required Tools and Adhesives

Threadlock
Hex wrench or ball driver: 2.5mm
Hook and loop tape
Phillips screwdriver: #1, #2

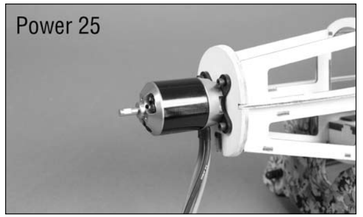
E-tips

Always use threadlock on metal-to-metal fasteners to prevent them from vibrating loose.

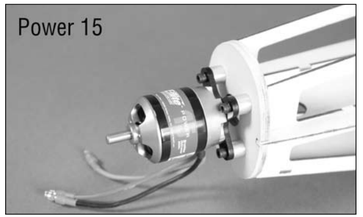
❍ 1. Use a #2 Phillips screwdriver to attach the X-mount to the motor using the screws provided with the motor.



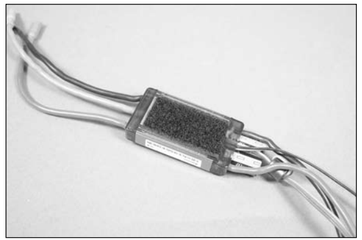
❍ 2. Attach the motor to the firewall using four 3mm x 10mm socket head screws and four 3mm lock washers. Tighten the screws using a 2.5mm hex wrench or ball driver.

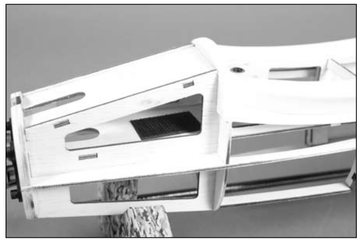


Note: When installing the Power 15 you will be required to place the 5/16-inch (7mm) aluminum spacers between the mount and firewall and use the 3mm x 18mm socket head bolts to provide the correct spacing for the cowling.

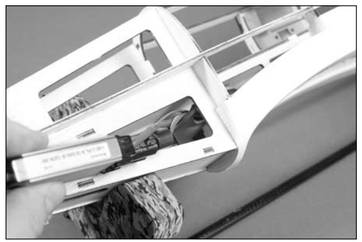


❍ 3. Attach a piece of hook and loop tape to the bottom of your speed control. Place the mating piece of tape inside the fuselage as shown.



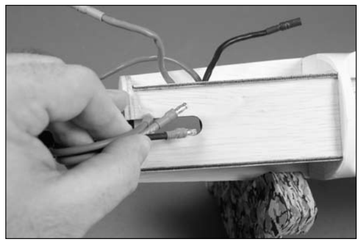


❍ 4. Slide the speed control into the fuselage with the battery wires going in first.



❍ 5. Position the speed control in the fuselage and make sure it is secure. If the speed control is positioned too far rearward, it may interfere with the bolts for the landing gear. Check that it is far enough forward so this does not happen.

❍ 6. Pass the leads from the motor through the slot in the fuselage and out the same side of the fuselage as the wires from the speed control.



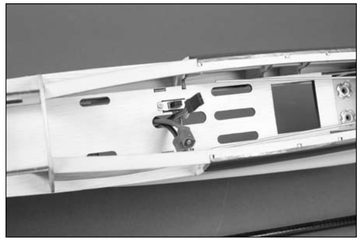
E-tips

Matching the colors between the ESC and motor when they are connected results in the correct motor direction if using all E-flite components.

❍ 7. Connect the wires from the motor to the wires of the speed control.

❍ 8. Tuck the wires neatly in the fuselage so they don't interfere with the operation of the motor or installation of the cowling.

❍ 9. Mount the switch from the speed control in the fuselage using the hardware from the speed control. You will need to use a #1 Phillips screwdriver to install the two screws.



Cowling Installation

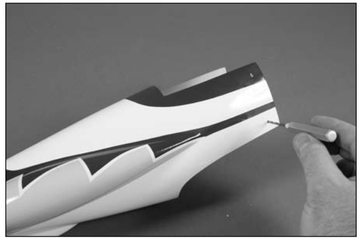
Required Parts

Fuselage assembly Cowling
Canopy
2mm x 6mm sheet metal screw (4)
Spinner backplate with adapter

Required Tools and Adhesives

Low-tack tape Thin CA
Pin vise Phillips screwdriver: #1
Drill bit: 1/16-inch (1.5mm), 1/8-inch (3mm)

❍ 1. Use a pin vise and 1/8-inch (3mm) drill bit to drill the four holes in the cowl for the mounting screws. Indentations in the cowl show where these holes should be drilled.



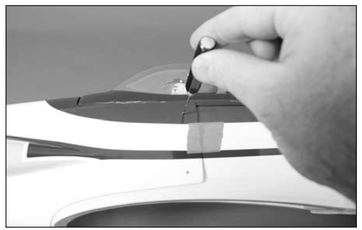
❍ 2. Slide the cowl on the fuselage. You will need to flex the cowl to fit it over the wing fairing on the bottom of the fuselage.

❍ 3. With the canopy in position, align the trim lines from the cowl to those on the fuselage. Use two pieces of low-tack tape to hold the cowl in position on the fuselage.

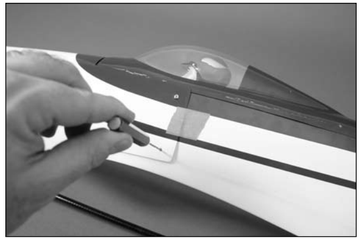
❍ 4. Slide the propeller adapter and spinner backplate on the motor shaft.

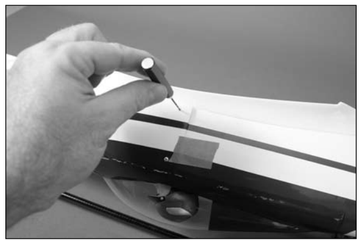
❍ 5. Check that the cowl is aligned with the spinner backplate. There should also be a 5/64-inch (2mm) gap between the backplate and cowl. You may need to remove the tape and adjust the position of the cowl for proper alignment.

❍ 6. Once aligned, use a pin vise and 1/16-inch (1.5mm) drill bit to drill through the top two holes in the cowl and into the fuselage.

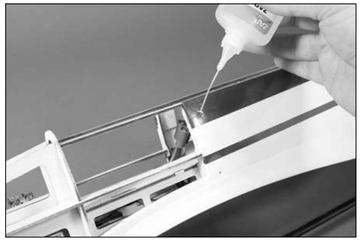


❍ 7. Install two 2mm x 6mm sheet metal screws using a #1 Phillips screwdriver to hold the position of the cowl. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill the remaining two holes for mounting the cowl.





❍ 8. Remove the cowl from the fuselage. Place 2–3 drops of thin CA in each hole to harden the surrounding wood. This harder surface makes the screws more secure when installed.



❍ 9. The cowl can now be secured to the fuselage using the four 2mm x 6mm sheet metal screws. Tighten the screws using a #1 Phillips screwdriver.

Propeller and Spinner Installation

Required Parts

Fuselage assembly
Propeller nut — Propeller washer
Propeller — Spinner cone with screw
Spinner backplate with adapter

Required Tools and Adhesives

Hex wrench or ball driver: 3/32-inch
Open end or box wrench: 10mm

E-tips

Always balance your propeller. An unbalanced propeller can cause vibrations to be transmitted into the airframe, which could damage the airframe or other components as well as produce unwanted flight characteristics.

❍ 1. Slide the spinner backplate and adapter on the motor shaft. Then position the propeller on the adapter as shown.

❍ 2. Install the propeller washer and nut on the adapter. Use a 10mm box wrench or open end wrench to tighten the propeller nut.

❍ 3. Position the spinner cone. Make sure the opening in the spinner cone does not contact the propeller. Use a 3/32-inch hex wrench or ball driver to tighten the screw that secures the spinner cone.

Wing and Stabilizer Installation

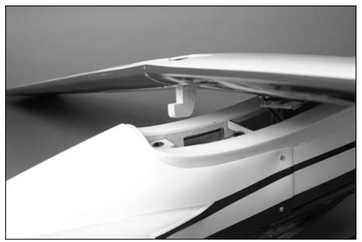
Required Parts

Wing assembly — Fuselage assembly
Wing bolt plate — 4mm washer (2)
4mm x 30mm machine screw (2)

Required Tools and Adhesives

30-minute epoxy — Phillips screwdriver: #2
Epoxy brush — Ruler
Felt-tipped pen — Mixing cups
Mixing sticks — Paper towels
T-pin — Low-tack tape
Rubbing alcohol — Hobby knife with #11 blade

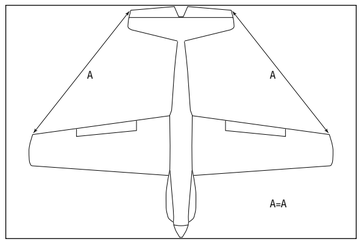
❍ 1. Attach the wing to the fuselage by sliding the tab on the wing under the plate inside the fuselage.



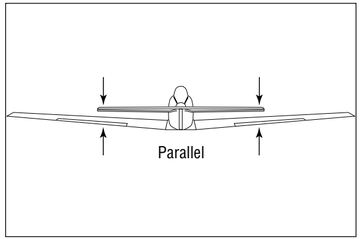
❍ 2. The rear of the wing is secured using two 4mm x 30mm machine screws, two 4mm washers and the wing bolt plate. Thread the first screw partially to get the parts in alignment. Install the second screw and tighten them both using a #2 Phillips screwdriver.

❍ 3. Place the stabilizer in position. Use a T-pin at the rear of the stabilizer and tape at the front so it can be positioned. The line drawn earlier will help in setting the initial alignment.

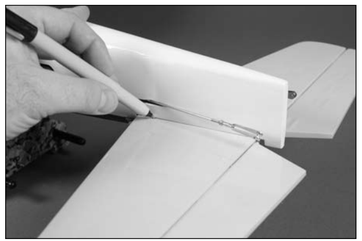
❍ 4. Measure from each wing tip to corresponding stabilizer tip. These measurements must match exactly for the stabilizer to be in alignment. Remove the tape and move the stabilizer if necessary.



❍ 5. Step back from the model 3–6 feet (1–2 meters) and view the model from the rear. Check that the wing and stabilizer are parallel with each other. You might need to lightly sand the stabilizer saddle to bring the wing and stabilizer into alignment.



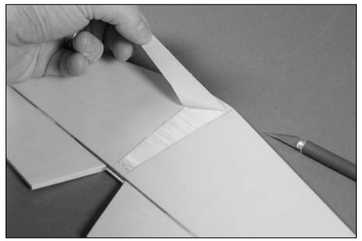
❍ 6. After the stabilizer has been aligned, trace the outline of the fuselage on the bottom of the stabilizer using a felt-tipped pen.



E-tips

When cutting the covering make sure not to cut into the underlying wood and weaken the stabilizer. Another option is to use a soldering iron or hot knife to melt the covering, rather than cutting, to avoid damaging the stabilizer.

❍ 7. Remove the stabilizer from the fuselage. Use a hobby knife with a new #11 blade to trim the covering 1/16-inch (1.5mm) inside the line drawn in the previous step.



❍ 8. Mix 1/2 ounce (15ml) of 30-minute epoxy. Lightly brush epoxy on the stabilizer saddle.

❍ 9. Lightly brush epoxy on the exposed wood on the bottom of the stabilizer.

❍ 10. Secure the stabilizer on the fuselage using tape and a T-pin. Use a paper towel and rubbing alcohol to remove any excess epoxy. Allow the epoxy to fully cure before proceeding. Once cured, remove the T-pin and tape from the stabilizer.

❍ 11. Once the epoxy has fully cured, remove the wing from the fusealge.

Rudder and Fin Installation

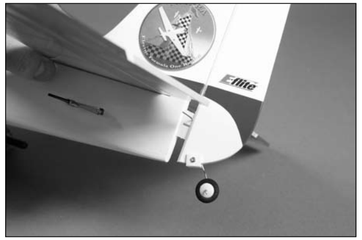
Required Parts

Fuselage assembly
Rudder and fin assembly

Required Tools and Adhesives

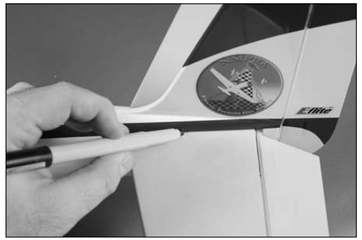
30-minute epoxy	Epoxy brush
Square	Felt-tipped pen
Mixing cup	Mixing sticks
Paper towels	Rubbing alcohol
Low-tack tape	Thin CA
Hobby knife with #11 blade	

❍ 1. Slide the rudder and fin into position on the fuselage. Make sure to guide the hinges into the slot at the rear of the fuselage.



❍ 2. The fin keys into the fuselage at the front. It fits tightly against the stabilizer when installed.

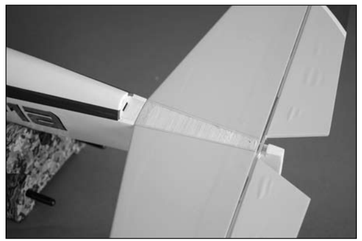
❍ 3. Use a felt-tipped pen to trace the outline of the fin on the top of the stabilizer.



E-tips

When cutting the covering make sure not to cut into the underlying wood and weaken the stabilizer. Another option is to use a soldering iron or hot knife to melt the covering, rather than cutting, to avoid damaging the stabilizer.

❍ 4. Use a hobby knife with a new #11 blade to trim the covering 1/16-inch (1.5mm) inside the line drawn in the previous step.



❍ 5. Mix 1/2 ounce (15ml) of 30-minute epoxy. Lightly brush a thin layer of 30-minute epoxy on the exposed wood of the stabilizer.

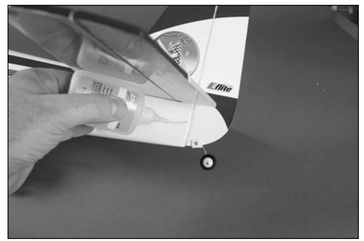
❍ 6. Brush a thin layer of epoxy on the bottom of the fin as shown.

❍ 7. Position the fin back on the fuselage. Use a paper towel and rubbing alcohol to remove any excess epoxy.

❍ 8. Use a square to make sure the fin is aligned with the stabilizer.

❍ 9. Use low-tack tape to keep the fin in alignment with the stabilizer until the epoxy fully cures.

❍ 10. Apply thin CA into both sides of the bottom hinge to secure its position.



Servo and Receiver Installation

Required Parts

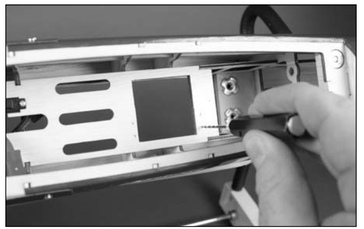
Fuselage assembly	Servo with hardware (2)
Receiver	Servo extension, 3-inch (76mm)

Required Tools and Adhesives

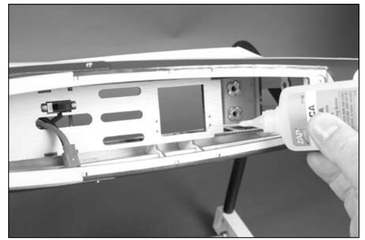
Pencil	Thin CA
Pin vise	Drill bit: 1/16-inch (1.5mm)
Hook and loop tape	Scissors
Phillips screwdriver: #1	

❍❍ 1. Remove the canopy hatch from the fusealge. Place the elevator servo in the fuselage with the output shaft to teh front of the fuselage. Slide the servo to the left. Use a pencil to transfer the positions for the mounting screws on the servo tray.

❍❍ 2. Remove the servo from the fuselage. Use a pin vise and 1/16-inch (1.5mm) drill bit to drill the four holes for the servo mounting screws.

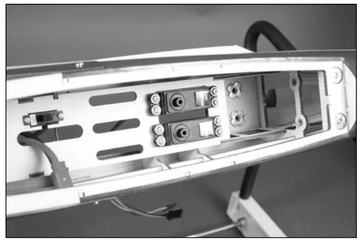


❍❍ 3. Place 2–3 drops of thin CA in each hole to harden the surrounding wood. This harder surface makes the screws more secure when installed.



❍❍ 4. Place the servo in the fuselage. Use a #1 Phillips screwdriver and the screws provided with the servo to secure it in the fuselage.

❍ 5. Repeat Steps 1 through 4 to secure the rudder servo in the fuselage. The rudder servo is on the right side of the fuselage.



❍ 6. Use hook and loop tape to install the receiver in the fuselage. Plug a 3-inch (76mm) servo extension in the throttle channel of the receiver. Plug the leads from the rudder and elevator servos into the receiver at this time. Plug the lead from the speed control into the 3-inch (76mm) servo extension. Route the servo leads so they are neatly tucked under the servo tray and won't interfere with the operation of the aileron servo.

❍ 7. Secure the remote receiver in the fuselage using hook and loop tape.

Rudder and Elevator Linkage Connections

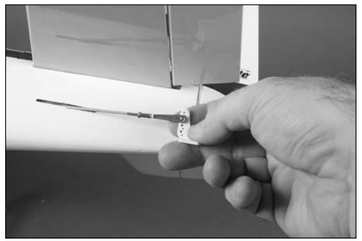
Required Parts

Fuselage assembly	Nylon control horn (2)
Transmitter	Control horn backplate (2)
Battery	Nylon pushrod keeper (2)
Silicone keeper (2)	
2mm x 12mm sheet metal screw (4)	

Required Tools and Adhesives

Pin vise	Drill bit: 5/64-inch (2mm)
Felt-tipped pen	Long nose pliers
Side cutter	Square or straight edge
Ruler	Phillips screwdriver: #1

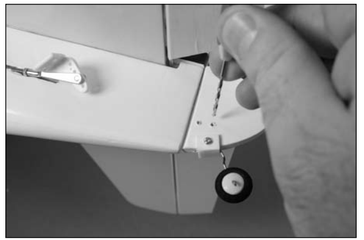
❍❍ 1. Connect a nylon control horn to the clevis of the rudder pushrod wire. The clevis attaches to the hole one-in from the end of the horn as shown.



❍❍ 2. Position the horn on the rudder so the holes in the horn align with the rudder hinge line.

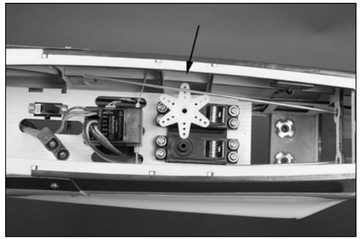
❍❍ 3. Use a felt-tipped pen to transfer the location of the control horn mounting screws to the rudder.

❍❍ 4. Use a pin vise and 5/64-inch (2mm) drill bit to drill the two locations for the control horn mounting screws.

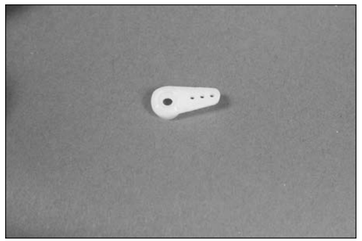


❍❍ 5. Secure the control horn to the rudder using two 2mm x 12mm sheet metal screws and a control horn backplate. Tighten the screws using a #1 Phillips screwdriver.

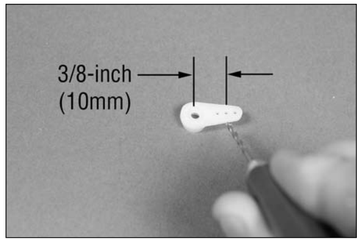
❍❍ 6. Use the radio system to center the rudder servo. Install the servo horn so it is perpendicular to the servo center line. The servo horn has an odd number of splines, so rotate it until the arms are aligned, rather than using the sub-trim function from the radio. Use a felt-tipped pen to mark the arm that aligns with the rudder pushrod.



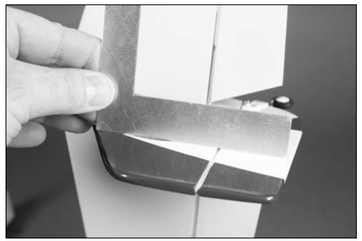
❍❍ 7. Remove the horn and use a side cutter to remove the arms from the servo horn that will not be used.



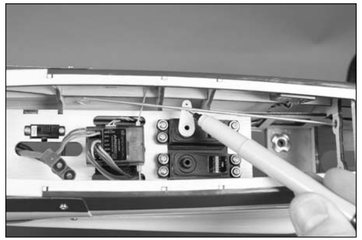
❍❍ 8. Use a pin vise and 5/64-inch (2mm) drill bit to enlarge the hole in the servo arm that is 3/8-inch (10mm) from the center of the servo horn.



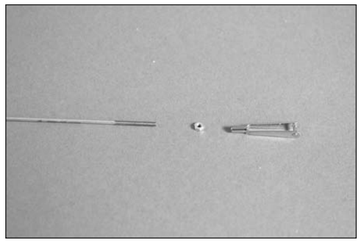
❍❍ 9. Use a square of straight edge to make sure the rudder is in alignment with the fin.



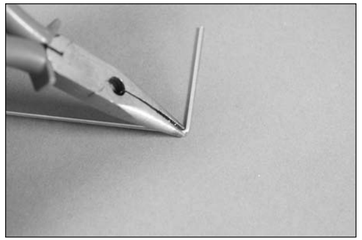
❍❍ 10. With the rudder and rudder servo centered, place the servo horn on the servo. Use a felt-tipped pen to mark the rudder pushrod where it crosses the hole in the arm that was previously enlarged.



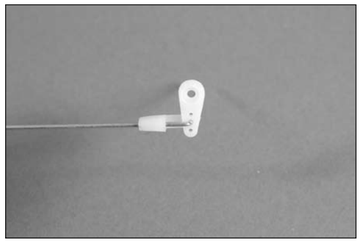
❍❍ 11. Remove the rudder pushrod from the fuselage. Remove the nut and clevis from the pushrod wire. Set the nut and clevis aside for now.



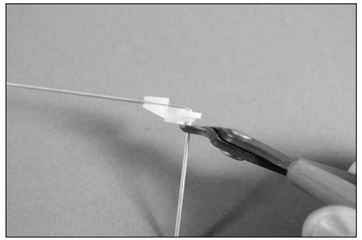
❍❍ 12. Use long nose pliers to bend the pushrod wire 90 degrees at the mark made in Step 10.



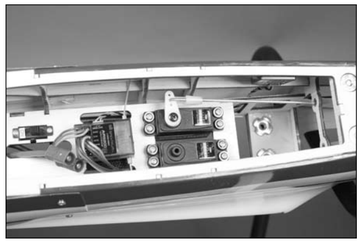
❍❍ 13. Slide the wire through the hole in the servo horn. Use a nylon pushrod keeper to secure the wire to the servo horn.



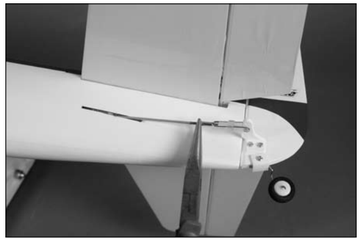
❍❍ 14. Use side cutters to trim the pushrod wire 1/16-inch (1.5mm) from the pushrod keeper.



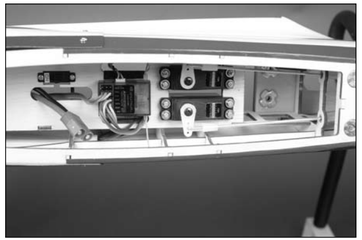
❍❍ 15. Slide the pushrod wire into the tube in the fuselage. With the rudder servo centered, secure the servo horn to the servo using the screw provided with the servo and a #1 Phillips screwdriver.



❍❍ 16. Thread the nut and clevis on the pushrod wire. Connect the clevis to the rudder control horn and check that the rudder is centered. If not, thread the clevis in or out until the rudder is centered. Use pliers to tighten the nut against the clevis to prevent it from moving. Slide silicone keeper over the clevis.



❍ 17 Repeat Steps 1 through 16 to connect the elevator pushrod wire. The positions and measurements for the elevator connections are the same as the rudder.



Battery and Wing Installation

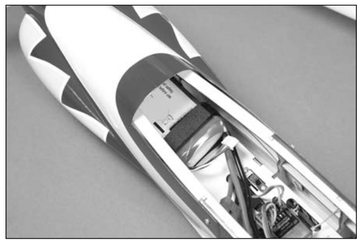
Required Parts

Wing assembly
Fuselage assembly
Motor battery
Servo extension: 3-inch (76mm)
4mm washer (2)
Wing bolt plate
4mm x 30mm machine screw (2)

Required Tools and Adhesives

Phillips screwdriver: #2
Hook and loop strap
Hook and loop tape

❍ 1. Secure the battery in the fuselage using a hook and loop strap. Also, place hook and loop tape on the battery and fuselage where they contact each other to prevent the battery from moving.



❍ 2. Plug the aileron servo extension into the receiver. Route the extension through the servo tray so it can be accessed from the bottom of the fuselage.

❍ 3. Plug the aileron servo lead into the servo extension. Mount the wing following the procedure described earlier in this manual.

Landing Gear Installation

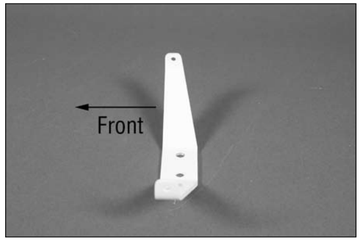
Required Parts

Main wheel (2)
Axle with hardware (2)
Assembled airframe
Aluminum landing gear
1/4-20 x 2-inch nylon bolt (2)

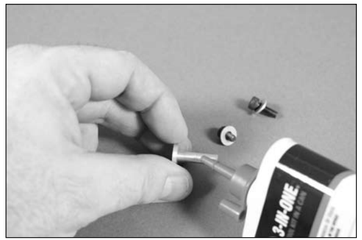
Required Tools and Adhesives

Felt-tipped pen
Drill
Light machine oil
Drill bit: 5/32-inch (4mm)
Threadlock
Flat blade screwdriver
Hex wrench or ball driver: 3mm

❍ 1. Locate the aluminum landing gear. The straight side of the gear faces to the front of the aircraft.



❍❍ 2. Remove the hardware from the axle. Place a drop of light machine oil on the axle to help the wheel roll freely.

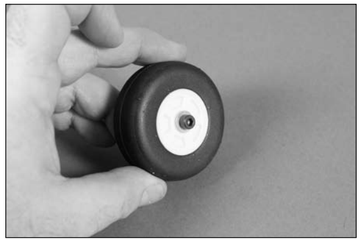


E-tips

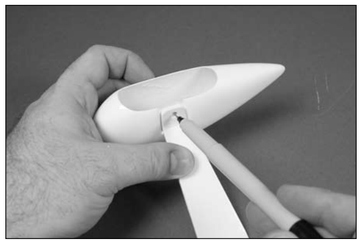
Always use threadlock on metal-to-metal fasteners to prevent them from vibrating loose.

❍❍ 3. Slide the axle into the wheel.

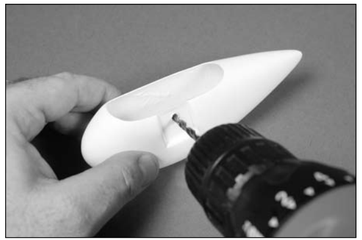
❍❍ 4. Use a 3mm hex wrench or ball driver to secure the wheel using the shorter screw and washer removed from the axle.



❍❍ 5. Position the wheel pant on the landing gear. With the indentation of the wheel pant resting flat on the gear, use a felt-tipped pen to transfer the location for the screw that secures the wheel pant and wheel to the landing gear.



❍❍ 6. Use a drill and 5/32-inch (4mm) drill bit to drill a hole in the wheel pant at the locations marked in the previous step.



❍❍ 7. Slide the wheel into the wheel pant. You may need to flex the pant open slightly to get the wheel to fit.

E-tips

Always use threadlock on metal-to-metal fasteners to prevent them from vibrating loose.

❍❍ 8. Use the longer screw and washer to secure the wheel and wheel pant to the landing gear. Use a 3mm hex wrench or ball driver to tighten the screw.

❍ 9. Repeat Steps 2 through 8 to install the remaining wheel and wheel pant on the landing gear.

❍ 10. Secure the landing gear to the bottom of the aircraft using two 1/4-20 x 2-inch nylon bolts. Use a flat blade screwdriver to tighten the bolts.

Center of Gravity

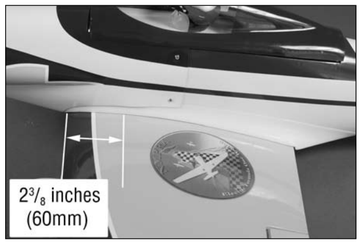
An important part of preparing the aircraft for flight is properly balancing the model.

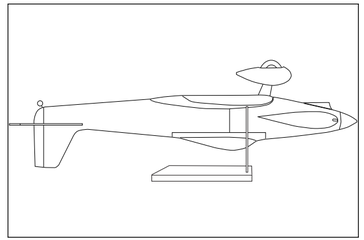
Caution: Do not inadvertently skip this step!

The recommended Center of Gravity (CG) location for your model is $2^3/_8$ inches (60mm) back from the leading edge of the wing as shown with the battery pack installed. Mark the location of the CG on the top of the wing with a felt-tipped pen.

When balancing your model, support the plane inverted at the marks made on the wing with your fingers or a commercially available balancing stand. This is the correct balance point for your model. Make sure your model is assembled and ready for flight before balancing.

Adjust the motor battery as necessary so the model is level or slightly nose down. This is the correct balance point for your model. You should find the CG to be very close with the battery installed as shown in this manual. Mark the location of the battery on the battery tray using a felt-tipped pen so it can be returned to this position if it is removed from your model.





After the first flights, the CG position can be adjusted for your personal preference.

Control Throws

❍ 1. Turn on the transmitter and receiver of your model. Check the movement of the rudder using the transmitter. When the stick is moved right, the rudder should also move right. Reverse the direction of the servo at the transmitter if necessary.

❍ 2. Check the movement of the elevator with the radio system. Moving the elevator stick toward the bottom of the transmitter makes the airplane elevator move up.

❍ 3. Check the movement of the ailerons with the radio system. Moving the aileron stick right makes the right aileron move up and the left aileron move down.

❍ 4. Use a ruler to adjust the throw of the elevator, ailerons and rudder. Adjust the position of the pushrod at the control horn to achieve the following measurements when moving the sticks to their endpoints.

Elevator High Rate

Up	3/8-inch	(10mm)	20% Exponential
Down	3/8-inch	(10mm)	20% Exponential

Elevator Low Rate

Up	1/4-inch	(6mm)	20% Exponential
Down	1/4-inch	(6mm)	20% Exponential

Aileron High Rate

Up	1/4-inch	(6mm)	15% Exponential
Down	3/16-inch	(4.5mm)	15% Exponential

Aileron Low Rate

Up	3/16-inch	(4.5mm)	15% Exponential
Down	5/32-inch	(4mm)	15% Exponential

Rudder High Rate

Right	5/8-inch	(17mm)	30% Exponential
Left	5/8-inch	(17mm)	30% Exponential

Rudder Low Rate

Right	5/8-inch	(17mm)	45% Exponential
Left	5/8-inch	(17mm)	45% Exponential

E-tips

Measurements are taken at the inner or widest point on the control surface.

These are general guidelines measured from our own flight tests. Use these for your first test flights. Later you can experiment with higher rates to match your preferred style of flying.

E-tips

Travel Adjust and Sub-Trims are not listed and should be adjusted according to each individual model and preference.

Preflight

Check Your Radio

Before going to the field, be sure your batteries are fully charged per your radio's instructions. Charge the transmitter and motor battery for your airplane. Use the recommended charger supplied with your particular radio system, following the instructions provided with the radio. In most cases, the radio should be charged the night before going out flying.

Before each flying session, be sure to range check your radio. See your radio manual for the recommended range and instructions for your radio system. Each radio manufacturer specifies different procedures for their radio systems. Next, run the motor. With the model securely anchored, check the range again. The range test should not be significantly affected. If it is, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

Double-check that all controls (aileron, elevator, rudder and throttle) move in the correct direction.

Check the radio installation and make sure all the control surfaces are moving correctly (i.e., the correct direction and with the recommended throws).

Check all the control horns, servo horns, and clevises to make sure they are secure and in good condition.

Flying Your LR-1A Pogo 15e

POWER 15 SPORT SETUP

If you followed the suggestions for the sport setup, you'll have adequate control throws to do just about any aerobatic maneuver you want from an airplane that is designed to fly fast. Balance the airplane at the $2^3/_8$ inches (60mm) mark to start with and then you can adjust fore and aft from there by moving the motor battery. The initial CG will provide a very solid feeling airplane that will readily stall with full up elevator which gives good control for landings. We recommend you follow the suggestions on the pushrod attachment in the manual for the racing setup. Using the inner holes at the servo will result in the greatest amount of torque being delivered to the control surface. At these speeds it is good to have a reserve of holding power and extra torque.

Take-off

Use care with a 10-inch propeller mounted, especially off the grass. A smooth application of throttle will result in a fairly straight takeoff run, needing a small amount of right rudder. When the tailwheel is on the ground (before the tail has risen) it provides good authority against any torque-induced yaw … once the tailwheel lifts off the ground be prepared to apply additional right rudder to keep the airplane on a straight path. It takes about 8–10 seconds for the airplane to gain full speed but you don't have to wait for this speed to have fun. With the light wing loading you'll find the LR-1A to be very maneuverable and fun to fly.

POWER 25 1250KV RACING SETUP

This setup is a different animal. It will provide you with many hours of pure adrenaline (at 4 minutes or so per flight). The size of the loops you can do will amaze you. Balance the airplane at the $2^3/_8$ inches (60mm) mark to start with and then you can adjust fore and aft from there by moving the motor battery. The initial CG will provide a very solid feeling airplane that will readily stall with full up elevator which gives good control for landings. We recommend you follow the suggestions on the pushrod attachment in the manual for the racing setup. Using the inner holes at the servo will result in the greatest amount of torque being delivered to the control surface. At these speeds it is good to have a reserve of holding power and extra torque.

Take-off

With the high Kv motor and a small 8-inch propeller, there is a ton of torque coming from your motor so be prepared for this on your first takeoff. The airplane will easily come off the ground at 1/2 throttle so if you stop yourself from going full bore and not apply full power until well airborne, your takeoffs will be easier and a thing of beauty. Same as above, while the tailwheel is on the ground before the tail has risen it provides good authority against any torque-induced yaw, but once the tailwheel lifts off the ground be prepared to apply additional right rudder to keep the airplane on a straight path. With an 8-inch pitch prop it takes a full 15 seconds for the airplane to gain full speed.

Racing tips

The key to going fast and maintaining your speed is to induce the least amount of drag while you are flying the airplane. Every time you move a flight control you increase the drag so use very little control movement to help with this. Get used to using a lot of stick movement on your transmitter (on all axis') and your ability to make smooth corrections and fly a faster line through the air will increase tremendously.

I like to set up my transmitter so almost full elevator stick movement is required to complete a turn around a pylon. Ailerons are set up so a complete full roll takes 2–3 seconds (the distance from one end of a racing course to the other). I usually also set up my rudder so that full right rudder will provide a straight takeoff run with a wide open throttle. I also mix in a little rudder with aileron movement (about 4%); just enough so you can roll from right knife edge to left knife edge and back again without gaining any altitude.

Some tips on passing your racing friends. Stay above their racing line. There is a tremendous amount of what we call bad air (turbulence) right behind and below them. While it might seem cool and exciting to execute a pass below, at these speeds there is rarely any time to correct from turbulence before your beloved racer is in the ground. Take heed!

Landing

Landing your model is identical whether you are using the Sport (Power 15) or Racing (Power 25) setups. With the wing loading just south of 20 ounces per square foot the landing speeds for this airplane are actually very slow … if you can get it to slow down. It is a very clean airplane and if you let the nose drop on approach it will pick up all the speed you just worked so hard to lose. Just go to high rates to make sure you have adequate elevator once you get the airplane slowed down when it is least effective. Plan your approach and be prepared to make a go-around on the first few tries. You'll get the hang of it very quickly.

Range Test Your Radio

Before each flying session, and especially with a new model, it is important to perform a range check. It is helpful to have another person available to assist during the range check. If you are using a Spektrum transmitter, please refer to your transmitter's manual for detailed instructions on the range check process.

Safety Do's and Don'ts for Pilots

- Check all control surfaces prior to each takeoff.
- Do not fly your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
- Do not fly during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your aircraft. Strong winds can cause similar problems.
- Do not take chances. If at any time during flight you observe any erratic or abnormal operation, land immediately and do not resume flight until the cause of the problem has been ascertained and corrected. Safety can never be taken lightly.
- Do not fly near power lines.

Daily Flight Checks

❍ 1. Check the battery voltage of the transmitter battery. Do not fly below the manufacturer's recommended voltage. To do so can crash your aircraft.

E-tips

When you check these batteries, ensure you have the polarities correct on your expanded scale voltmeter.

❍ 2. Check all hardware (linkages, screws, nuts, and bolts) prior to each day's flight. Be sure that binding does not occur and that all parts are properly secured.

❍ 3. Ensure all surfaces are moving in the proper manner.

❍ 4. Perform a ground range check before each day's flying session.

❍ 5. Prior to starting your aircraft, turn off your transmitter, then turn it back on. Do this each time you start your aircraft. If any critical switches are on without your knowledge, the transmitter alarm will sound a warning at this time.

❍ 6. Check that all trim levers are in the proper location.

❍ 7. All servo pigtails and switch harness plugs should be secured in the receiver. Make sure the switch harness moves freely in both directions.

Warranty and Repair Policy

WARRANTY PERIOD

Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

LIMITED WARRANTY

Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for all warranty claims.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any Product by Purchaser must be approved in writing by Horizon before shipment.

DAMAGE LIMITS

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

WARRANTY SERVICES

QUESTIONS, ASSISTANCE, AND REPAIRS

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to a Product Support representative. You may also find information on our website at www.horizonhobby.com.

INSPECTION OR REPAIRS

If this Product needs to be inspected or repaired, please use the Horizon Online Repair Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Repair Request is available at www.horizonhobby.com under the Repairs tab. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for repair. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Notice: Do not ship batteries to Horizon. If you have any issue with a battery, please contact the appropriate Horizon Product Support office.

WARRANTY INSPECTION AND REPAIRS

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon.

NON-WARRANTY REPAIRS

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for inspection or repair, you are agreeing to Horizon's Terms and Conditions found on our website under the Repairs tab.

Country of Purchase	Horizon Hobby	Address	Phone Number/ Email
United States	Horizon Service Center (Electronics and engines)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233 productsupport@horizonhobby.com
	Horizon Product Support (All other products)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233 productsupport@horizonhobby.com
United Kingdom	Horizon Hobby Limited	Units 1-4 Ployters Rd Staple Tye Harlow, Essex CM18 7NS, United Kingdom	+44 (0) 1279 641 097 sales@horizonhobby.co.uk
Germany	Horizon Technischer Service	Hamburger Str. 10 25335 Elmshorn Germany	+49 4121 46199 66 service@horizonhobby.de
France	Horizon Hobby SAS	14 Rue Gustave Eiffel Zone d'Activité du Réveil Matin 91230 Montgeron	+33 (0) 1 60 47 44 70

Compliance Information for the European Union

INSTRUCTIONS FOR DISPOSAL OF WEEE BY USERS IN THE EUROPEAN UNION

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

Age Recommendation: 14 years or over. Not a toy. Not intended for use by children without direct adult supervision.

2010 Official Academy of Model Aeronautics Safety Code

GENERAL

1. A model aircraft shall be defined as a non-human-carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.

2. The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.

3. I will abide by this Safety Code and all rules established for the flying site I use. I will not willfully fly my model aircraft in a reckless and/or dangerous manner.

4. I will not fly my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.

5. I will not fly my model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. I will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.

6. I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.

7. I will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will I operate model aircraft with fuels containing tetranitromethane or hydrazine.

8. I will not operate model aircraft carrying pyrotechnic devices which explode burn, or propel a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they may not be launched from model aircraft. Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Air Show Advisory Committee Document.

9. I will not operate my model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.

10. I will not operate my model aircraft while using any drug which could adversely affect my ability to safely control my model aircraft.

11. Children under six (6) years old are only allowed on a flightline or in a flight area as a pilot or while under flight instruction.

12. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

RADIO CONTROL

1. All model flying shall be conducted in a manner to avoid over flight of unprotected people.

2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.

3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.

4. At all flying sites a line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the line. In the case of airshows demonstrations straight line must be established. An area away from the line must be maintained for spectators. Intentional flying behind the line is prohibited.

5. I will operate my model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.

6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.

7. With the exception of events flown under official AMA rules, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and located at the flightline.

8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.

9. Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's attitude and direction at all times.

10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.

ADVANCING ELECTRIC FLIGHT

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