

Apprentice RTF

Assembly Manual



Specifications

Wingspan:

58 in (1475mm)

Length:

37 in (940mm)

Wing Area:

525 sq in (33.7 sq dm)

Weight w/o Battery:

32-35 oz (910-1000 g)

Weight w/Battery:

40-45 oz (1135-1275 g)



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Introduction

The E-flite® Apprentice RTF is a 15-size high wing trainer, constructed of lightweight, durable Z-Foam™. The Apprentice ready-to-fly trainer comes with everything needed to go from purchase directly to the field. This includes the full-range Spektrum™ technology DX5e radio with 2.4GHz interference-free technology and AR500 full-range receiver which will provide you with years of flying. No building is required for this model. Simply charge and install the battery, mount the wing and tail, install the landing gear and go flying.

The Apprentice is powered with a 15-size brushless motor that provides excellent power and performance. This trainer has a flat-bottom wing that produces gentle flight characteristics. This trainer enables the pilot to learn how to fly through buddy-box training and progression to aerobatics, as the skills of the pilot allow. The Apprentice is capable of flying mild aerobatics including inverted flight, performing loops, and rolls. This model is equipped with tricycle landing gear allowing better ground handling over tail-dragger aircraft. This landing gear setup is durable and will also allow takeoffs and landings on maintained grass runways. This is a high-quality trainer with an excellent setup, taking the pilot from beginner to basic aerobatics all from this one-box purchase. Go from **buy** to **fly** with the Apprentice.

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 that 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.

Contents of Kit/Parts Layout

EFL2726	Wing Set
EFL2727	Fuselage
EFL2728	Tail Set
EFL2729	Cowl
EFL2730	Pushrod Set
EFL2731	Nose Gear
EFL2732	Main Landing Gear
EFL2733	Spinner
EFL2734	Motor Mount
EFL2735	5mm Prop Adapter
EFLA1030	30 Amp Pro Switch-mode BEC Brushless ESC
EFLB1040	3200mAh 3S 11.1v 15C Li-Po Battery
EFLC3010	3 Amp 12V balancing Li-Po charger
EFLM7215	BL15 outrunner, 840 kV motor
EFLP11080E	11 x 8 Electric Propeller
EFLR7130	12g sub micro servo (used on ailerons)
EFLR7140	13g sub micro servo (used on elevator)
EFLR7150	37g standard servo (used on rudder)
SPM5500	DX5e Radio system
SPMAR500	AR500 DSM2 Full-Range Receiver



Required Tools and Adhesives

Tools & Equipment

EFLA250 Parkflyer Tool Assortment, 5-piece

Or Purchase Separately

Phillips screwdriver: #1
Adjustable wrench
Ruler

Optional Accessories

EFLA110	Power Meter
EFLC3005	Celectra™ 1- to 3-Cell LiPo Charger
EFLC505	Intelligent 1- to 5-Cell Balancing Charger
EFLB32003S	3200mAh 3S 11.1V 20C LiPo Battery
EFLP11080E	11x8 Electric Prop
SPM6805	Trainer Cord
DYN4055	12-Volt, 10-Amp Power Supply

Note on Lithium Polymer Batteries

Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-MH batteries used in RC applications. All manufacturer's instructions and warnings must be followed closely. Mishandling of LiPo batteries can result in fire. Always follow the manufacturer's instructions when disposing of Lithium Polymer batteries.



Important Warranty Information

Please read our Warranty and Liability Limitations section on Page – 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.

Charging the Flight Battery

Your Apprentice can be ready to fly in as little time as it takes to charge the flight battery. Since this takes approximately 60 minutes, let's get the battery charging right away so it's on charge while you're assembling your new Apprentice. That way you can start flying as soon as possible.

Required Parts

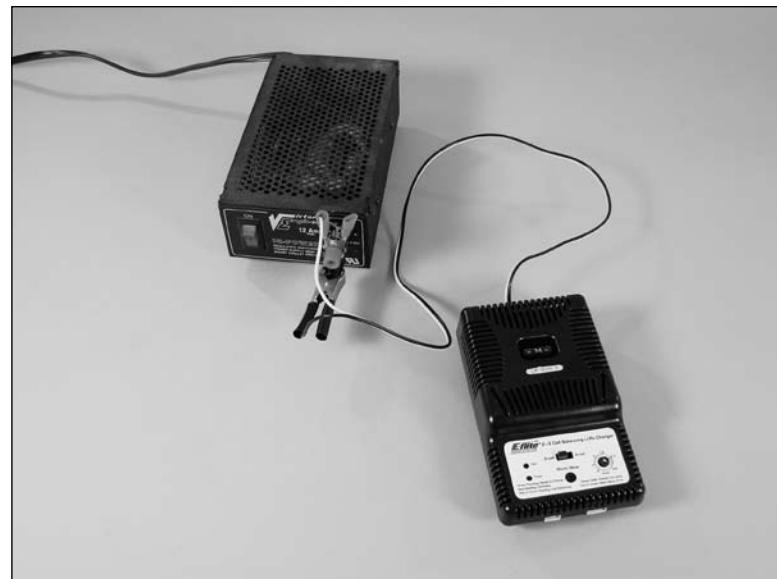
Charger

3200 3S 11.1V LiPo battery

Power supply or 12-volt battery (not included)

Note: The battery charger can be connected to a power supply or 12-volt battery. For the pictures in this manual we will show the use of a power supply.

- 1. Connect the charger to a 12-volt battery or 12-volt power supply. Connect the red lead to the positive (+) terminal of the power supply or battery. Connect the black lead to the negative (-) terminal of the power supply or 12-volt battery. Once your charger has been correctly powered up, there will be an approximate 3-second delay and then you will hear an audible "beep" and the green (ready) LED will flash.



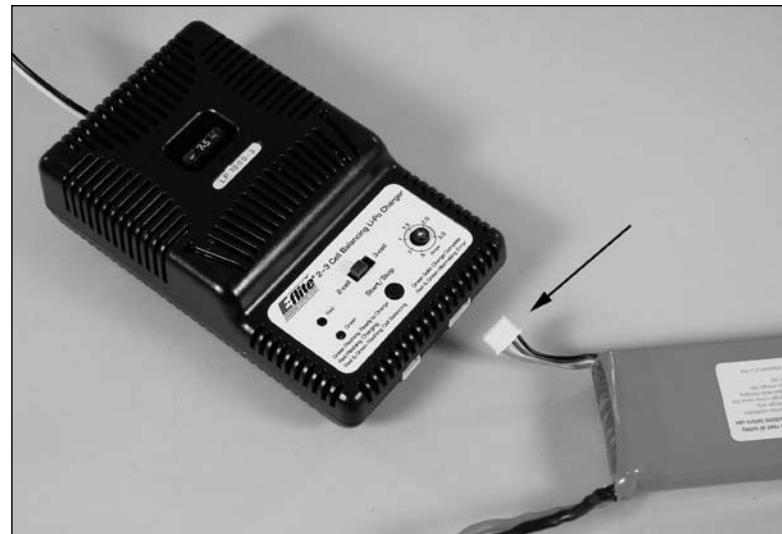
- 2. Select the proper number of cells that you will be charging. Your Apprentice includes a 3-cell flight pack, so set the charger to 3 cells.



- 3. Set the charge rate for your battery to 3 amps.

Warning: Selecting a charge rate higher than 1x battery capacity may cause a fire. If the battery capacity is 3000mAh, then set your charger no higher than 3 amps.

- 4. Locate the balance charge lead on the battery pack. The charge lead of a 3-cell LiPo battery will plug into the larger 4-pin port on the bottom right of the charger. A 2-cell pack will need to plug into the 3-pin port on bottom left of the charger. Once the battery is properly plugged into the correct port, it will beep 3 times if it is a 3-cell, and twice if it is a 2-cell pack. Once this is done, you are ready to proceed to charge the battery pack.



- 5. Push the start button to begin the charging process. Once this is done, the charger will make an audible beep that matches the cell count, and then the red (charge) LED will begin to flash. Do not adjust the current once the charger has begun to charge.

Note: At times, the green LED may also flash during the charging process, indicating that the charger is balancing one or more of the cells at the same time it is charging the battery pack. When this is occurring, the red and green LEDs will both be flashing. It will not always be necessary for the cells to be balanced.

- 6. When the battery pack is fully charged, you will hear an audible beep for about 3 seconds, and the green LED will be solid. Always unplug the battery from the charger immediately upon completion. Failure to do so could cause a fire.

Note: Lithium Polymer batteries, commonly known as LiPos, are not quite like other batteries.

First, they do not develop any sort of memory characteristics due to partial use or partial charging. They can be used as little or as much as needed, then charged back up to capacity without any loss in performance.

Second, they do have one quirk that should be explained. If a LiPo battery is discharged to a voltage less than about 3.0V per cell (9.0 volts total for the battery in the Apprentice), then it will be permanently damaged and cannot be restored. The electronic speed control in the Apprentice is pre-set to a cutoff voltage that will not allow the battery to drain less than this amount.

Tail Installation

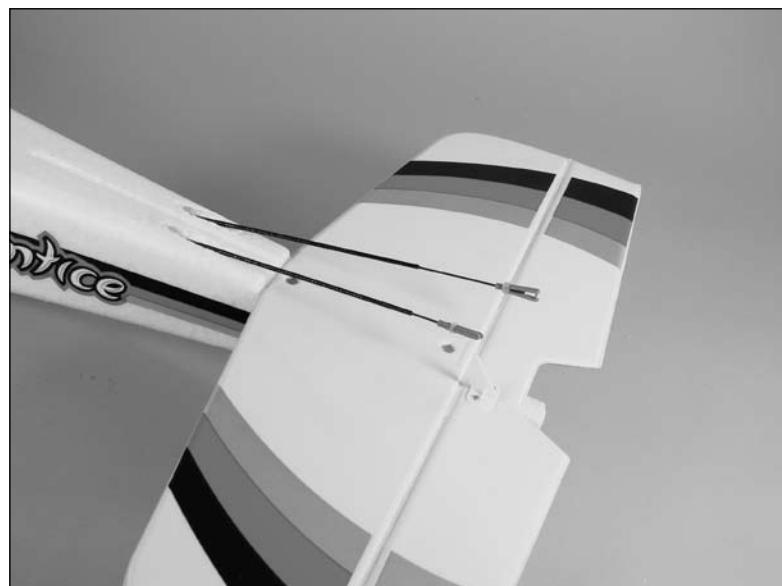
Required Parts

Fuselage Assembly	Stabilizer/Elevator
Fin/Rudder	
2.5mm x 12mm sheet metal screw (2)	

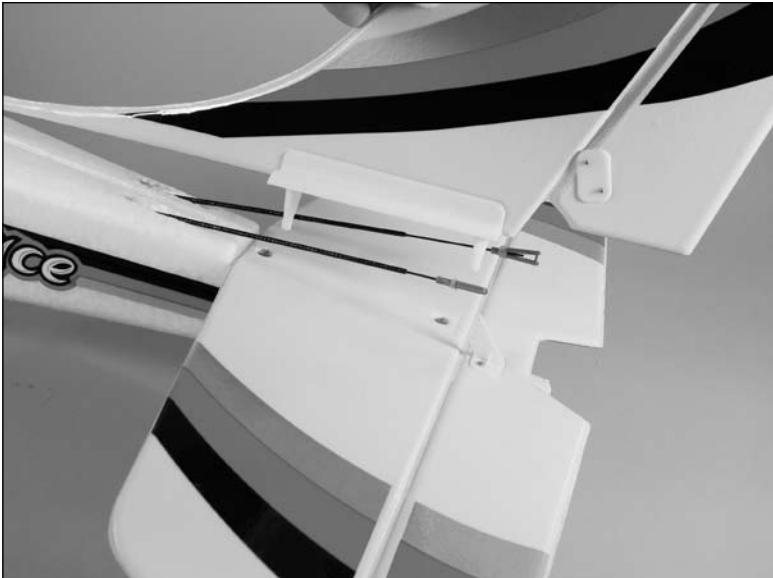
Required Tools

Phillips screwdriver: #1

- 1. Position the stabilizer on the fuselage. Align the holes in the stabilizer with the holes in the rear of the fuselage. The decals on the stabilizer will face toward the top of the fuselage.



- 2. Slide the pins on the bottom of the fin through the holes of the stabilizer and into those in the fuselage. Make sure to seat the fin completely down on the horizontal stab. You might need to push the fin down with some slight pressure to fully seat it.



- 3. Use a #1 Phillips screwdriver to install the two 2.5mm x 12mm sheet metal screws that secure the tail assembly to the fuselage. Tighten the screws until they stop. Do not overtighten as you may crack the plastic.



- 4. Connect the elevator pushrod clevis to the elevator control horn in the hole that is farthest away from the elevator. Make sure to slide the silicone retainer onto the clevis to keep the clevis from popping off of the control horn.



- 5. Connect the rudder pushrod clevis to the rudder control horn in the hole that is farthest away from the rudder. Make sure to slide the silicone retainer onto the clevis to keep the clevis from popping off of the control horn.



Note: For new pilots, we recommend installing the clevis for both the elevator and rudder pushrods in the outer-most hole on the control horn.

Landing Gear Installation

Required Parts

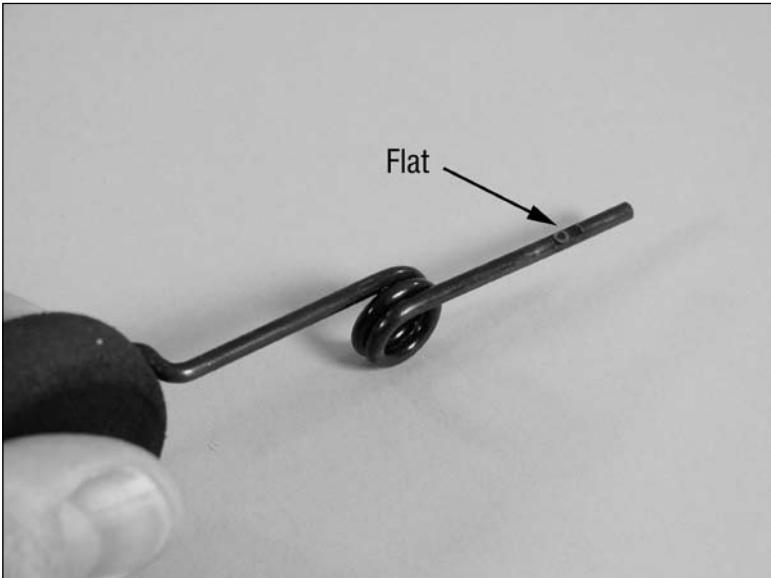
Fuselage Assembly
Main gear w/wheels

Nose gear w/wheel

Required Tools

Phillips screwdriver: #1

- 1. Locate the flat area on the nose gear. This area will be where the screw will be positioned in the following step.

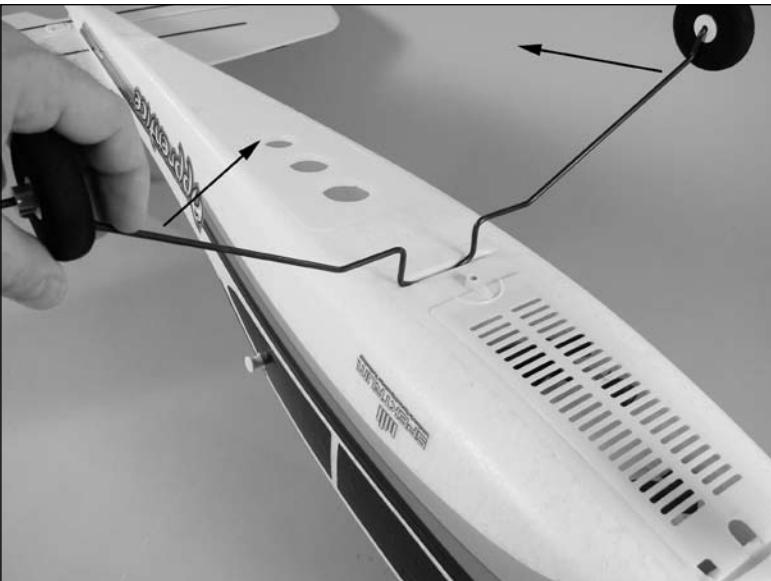


- 2. You will need to back out the screw in the nose wheel steering arm before sliding in the nose gear wire. Slide the nose gear into the nose gear bracket. Use a #1 Phillips screwdriver to tighten the screw that secures the nose gear. Make sure the screw is tightened against the flat area as indicated in Step 1.



Note: You may need to push the cowling out of the way slightly to access the screw. The cowl material is flexible enough to bend a little during this step without damage.

- 3. Locate the main gear and press it into the slot in the fuselage that is behind the battery compartment on the bottom of the fuselage. You may need to flex the landing gear wire inwards towards itself to get it to fully seat inside the slot.

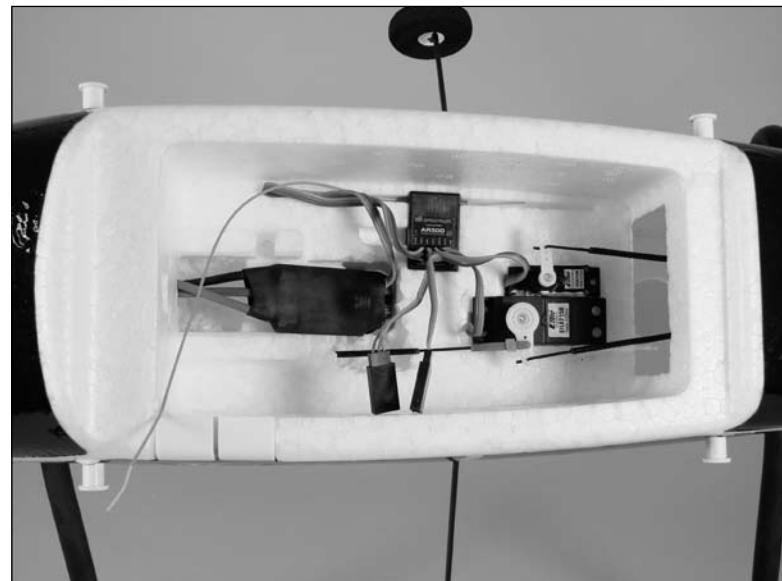


Checking the Receiver

Required Parts

Fuselage Assembly

- 1. Check that the servos and speed control are plugged into the receiver properly. The speed control is plugged into the slot marked "THRO", the smaller servo in the slot marked "ELEV", the larger servo in "RUDD" and the connector that has the two leads for the ailerons into the slot marked "AILE."



Wing Installation

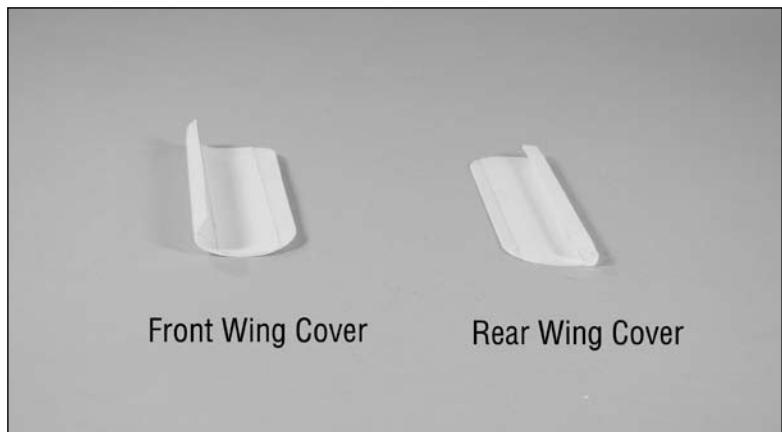
Required Parts

Wing panel (right and left)	Wing cover, front
Wing cover, rear	Rubber band (8)
Fuselage assembly	

- 1. Align the carbon wing tube with the socket in the opposite wing panel. Slide the two panels tightly together.



- 2. Locate the front and rear wing covers. The front cover has a rounded edge, while the rear has a squared edge.

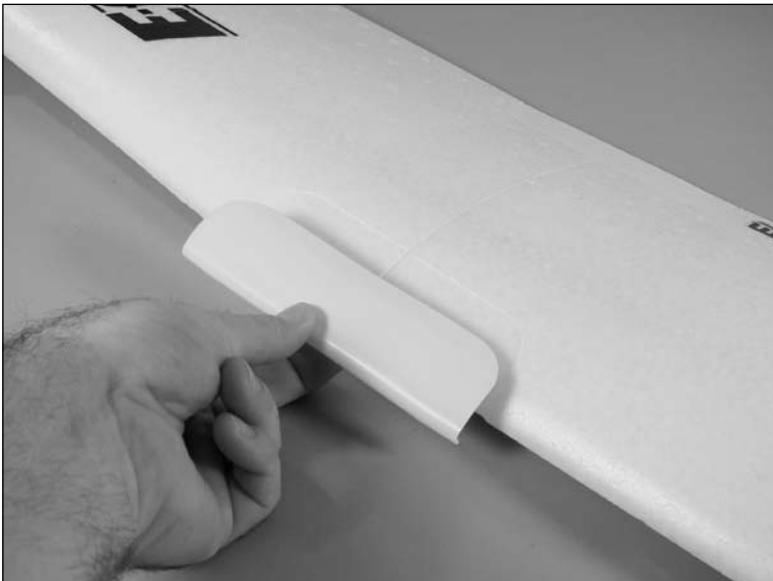


Hint: You may want to practice the next steps before removing the backing from the adhesive tape on the wing covers. The adhesive will stick as soon as it touches the wing surface.

- 3. Remove the backing from the adhesive tape on the front wing cover.



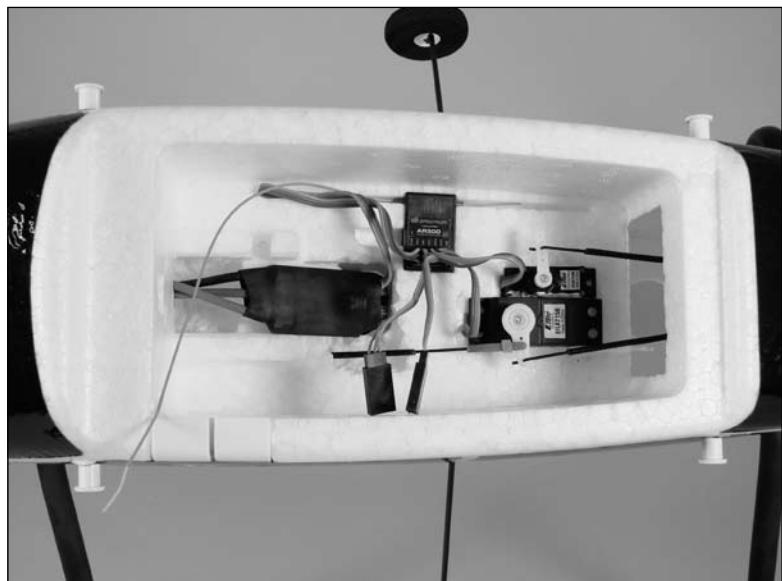
- 4. Make sure the two wing panels are pressed tightly together with no gap between them. Position the front wing cover in the notch at the front of the wing. Press the cover down to secure its position on the wing.



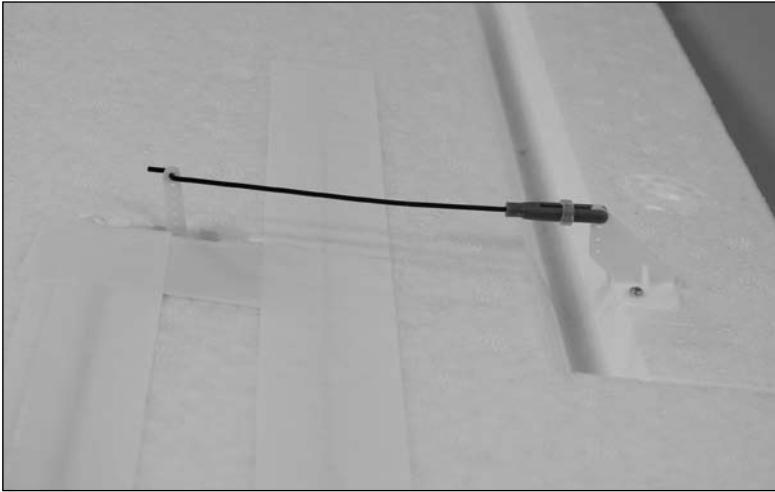
- 5. Repeat the previous step to install the rear wing cover.



- 6. Install the included Y-harness by plugging it into the Aile port of the receiver.



- 7. Connect the aileron pushrod clevis to the aileron control horn in the hole that is farthest away from the aileron. Make sure to slide the silicone retainer onto the clevis to keep the clevis from popping off of the control horn. Connect both the right and left aileron linkages at this time.



- 8. Connect the wires from the aileron servos to the Y-harness coming from the receiver.



- 9. Install the first two rubber bands. They should cross as shown in the image below.



- 10. The next two rubber bands will go directly from the front to the rear of the fuselage, over the wing.



- 11. Install the last four rubber bands using the Steps 9 and 10 as a guide. You will install two across (as in step 9) and then two in line (as in step 10), and then two across (as in step 9) and then two in line (as in step 10), and so on until there are no more rubber bands.



Battery Installation

Required Parts

Assembled airframe
3200 3S 11.1 V LiPo battery (charged)

- 1. Turn the battery hatch keeper 90 degrees to release the hatch.



- 2. Open the hatch from the rear of the fuselage as shown. The front of the hatch is hinged so it will not detach from the fuselage and get lost.



- 3. Slide the battery into the battery compartment. The connector will face the back of the airplane.



- 4. Ensure the battery is slid all the way into the front of the battery compartment. Use the hook and loop straps to secure the battery in the fuselage.



- 5. Close the hatch from the rear of the fuselage. Turn the battery hatch keeper 90 degrees to secure the hatch.



Installing the Transmitter Batteries

Required Parts

Transmitter

AA battery (4)

- 1. Check to make sure the transmitter power switch is in the "OFF" position.



- 2. Slide the cover from the battery compartment.



- 3. Remove the battery cover and set it aside so it does not get lost.



- 4. Install the four AA batteries. Note the polarity of the batteries during their installation.



- 5. Slide the battery cover back into position on the back of the transmitter.



Note: The installation of the batteries is also covered in your radio manual. Please read through the radio manual to familiarize yourself with the operation of your radio system.

Removing the Propeller

Required Parts

Fuselage assembly

Required Tools

Adjustable wrench

Important: Before performing any maintenance to the motor, make sure the battery has been unplugged and removed from your model to prevent injury. Also remove the propeller when checking the radio system to prevent any personal injury if the motor were to start.

- 1. Remove the spinner cone from the spinner. It should snap away from the backplate with a little force.



- 2. Use an adjustable wrench to remove the nut from the propeller adapter. Set the nut aside so it does not get lost.



- 3. Remove the washer and set it aside with the nut and spinner cone.



- 4. Remove the spinner backplate and set it with the nut, spinner cone and washer.



- 5. Slide the propeller from the propeller adapter. The installation of the propeller is the reverse of the previous steps. Make sure the nut is tightened properly so the propeller does not depart from your model during flight.



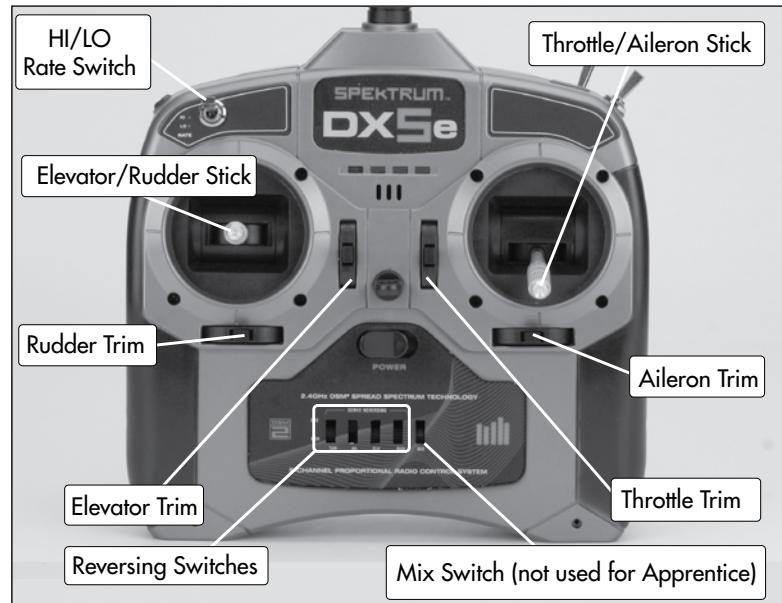
Note: Once the radio system has been checked, the propeller can then be installed. Refer to the section "Installing the Propeller" later in this manual for details.

Control Functions

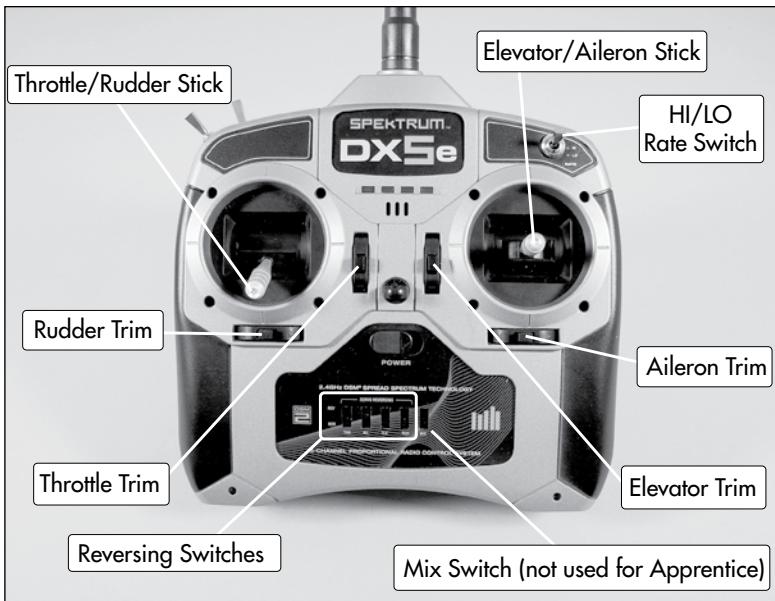
Required Parts

Transmitter

- The following images to identify the controls for both the Mode 1 and Mode 2 versions of your Apprentice.



Mode 1 Transmitter



Mode 2 Transmitter

Centering the Control Surfaces and Checking Control Direction

Required Parts

Assembled airframe

Flight battery

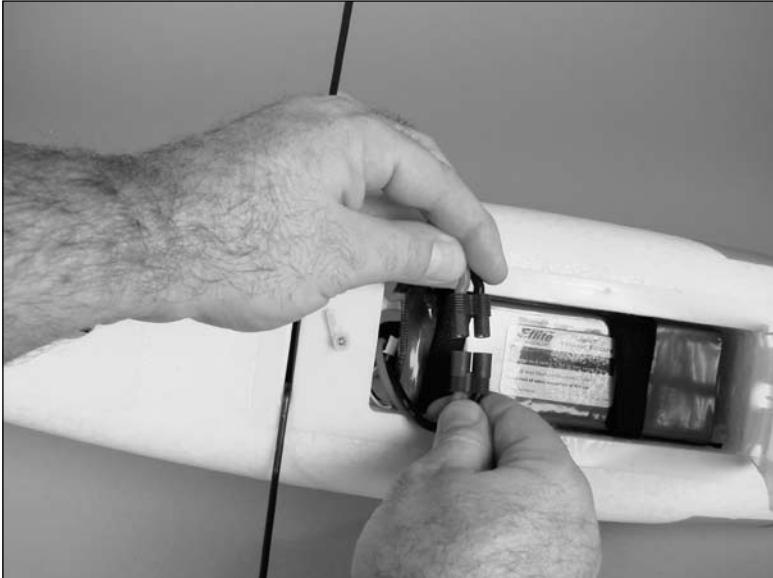
Transmitter

Note: This section is designed to help you become acquainted with the operation of the radio in correlation to the model. If a flight control moves in the incorrect direction we will instruct you how to change it in the next section. As always, read through the radio manual which explains the features of your radio system.

- 1. Turn the radio on using the power switch on the front of the transmitter and check that the throttle stick is at its lowest position. The throttle stick needs to be in the idle/off position, otherwise the speed control will not arm in the next step. The DX5e transmitter features digital trims, so they should be centered when the transmitter is powered on.



- 2. Plug the EC3 connector on the flight battery into the speed control. You will hear a series of beeps or tones when you plug the battery in. During this process it is normal for the prop to pulse slightly as the ESC powers up. Please ensure you are not in line with the prop or in front of it during power up.



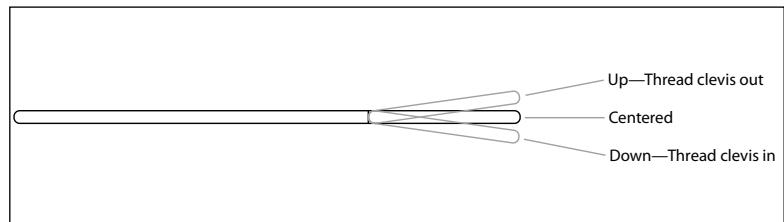
Important: Always use extreme caution around the propeller when the motor battery is plugged in. A spinning propeller can cause serious damage or injury. It is always best to stay behind the propeller and keep it away from loose objects when the battery and speed control are connected.

When the battery is connected, you will hear one low long tone to indicate startup, then the respective number of medium-length mid tones to indicate the cell count or a musical tone, followed by three rising tones to indicate the controller is armed. For more information on your speed control, refer to the included instructions.

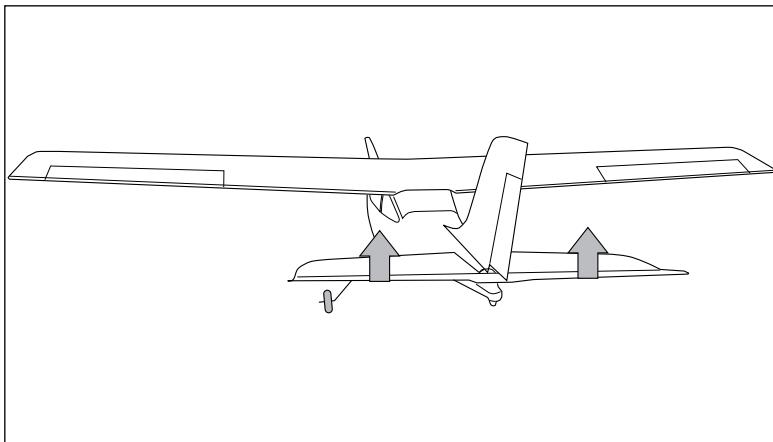
Note: The following steps will ensure your flight controls are centered for the first flight.

Checking the Elevator (Mode 2)

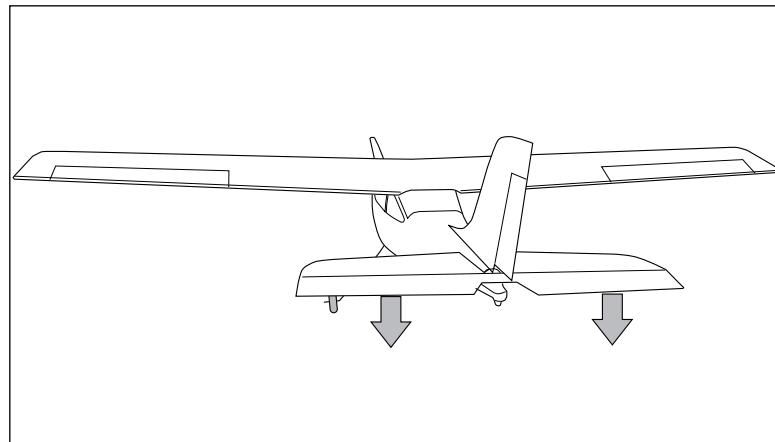
- 3. Center the elevator stick. This is the right stick on the transmitter. The elevator should not be deflected up or down, but should be flat with the horizontal stabilizer when viewed from the side. If the elevator is deflected up or down you will need to push the silicone keeper back off the clevis, onto the pushrod. This will enable you to open the clevis up and remove it from the control horn. Once removed, screw the clevis in or out to get the elevator to line up with the stab.



- 4. Check the movement of the elevator with the radio system. Pulling the elevator/aileron stick (right stick on the Mode 2 transmitter) back will make the airplane elevator move up.



- 5. Check the movement of the elevator with the radio system. Pushing the elevator/aileron stick forward will make the airplane elevator move down on the Mode 2 transmitter.

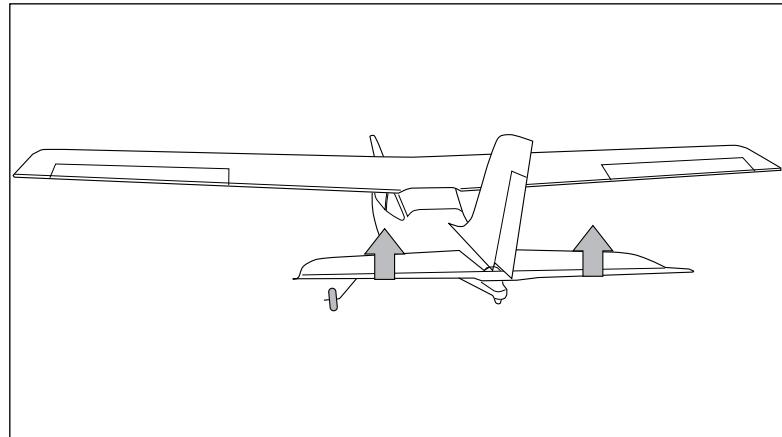


Checking the Elevator (Mode 1)

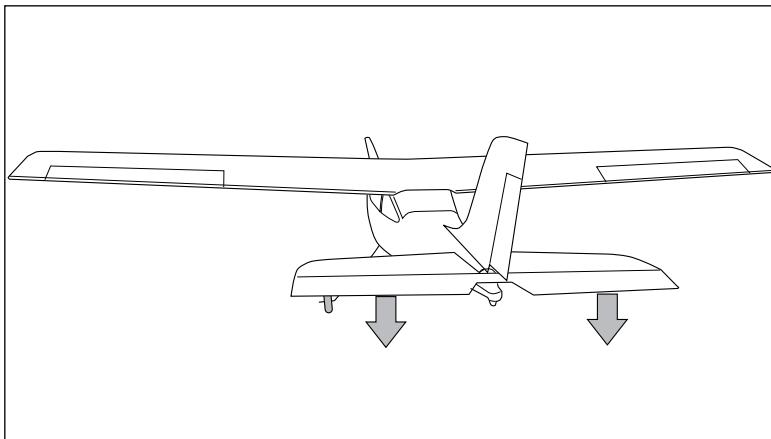
- 3. Center the elevator stick. This is the left stick on the transmitter. The elevator should not be deflected up or down, but should be flat with the horizontal stabilizer when viewed from the side. If the elevator is deflected up or down you will need to push the silicone keeper back off the clevis, onto the pushrod. This will enable you to open the clevis up and remove it from the control horn. Once removed, screw the clevis in or out to get the elevator to line up with the stab.



- 4. Check the movement of the elevator with the radio system. Pulling the elevator/rudder stick (left stick on the Mode 1 transmitter) back will make the airplane elevator move up.

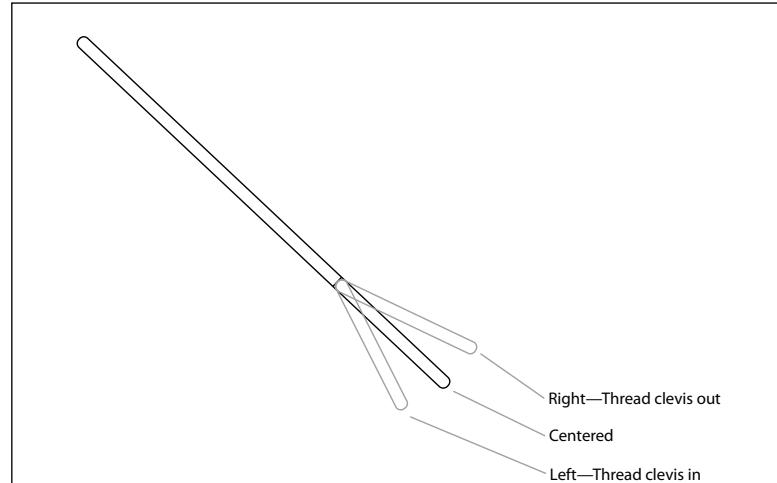


- 5. Check the movement of the elevator with the radio system. Pushing the elevator/rudder stick forward will make the airplane elevator move down on the Mode 1 transmitter.

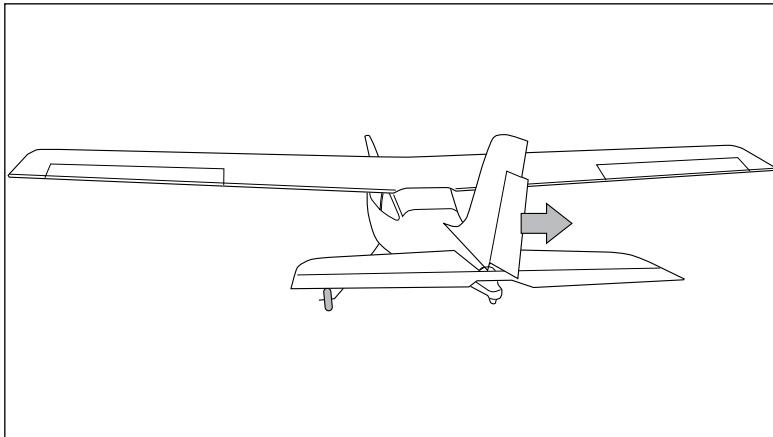


Checking the Rudder (Mode 1 and 2)

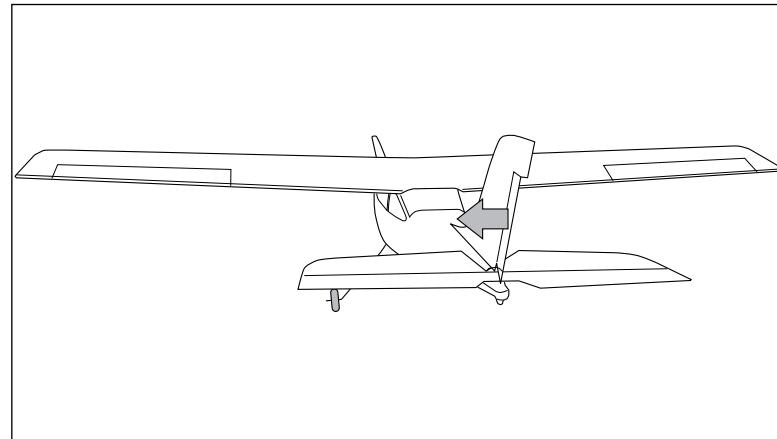
- 6. **Mode 1** (Rudder/Elevator on left stick): Center the rudder stick. Thread the clevis in or out on the rudder pushrod until the rudder is aligned with the fin as shown.
Mode 2 (Rudder/Throttle on left stick): Confirm the rudder stick is in the down/throttle off position. Thread the clevis in or out on the rudder pushrod until the rudder is aligned with the fin as shown.



- 7. Check the movement of the rudder using the transmitter. When the rudder/throttle stick (left side of the transmitter) is moved right, the rudder should also move right.



- 8. Check the movement of the rudder using the transmitter. When the left stick is moved left, the rudder should also move left.

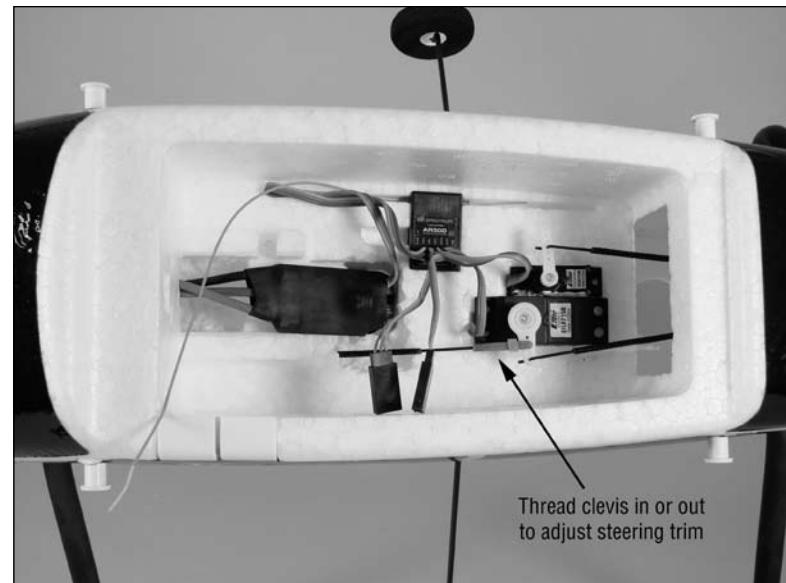
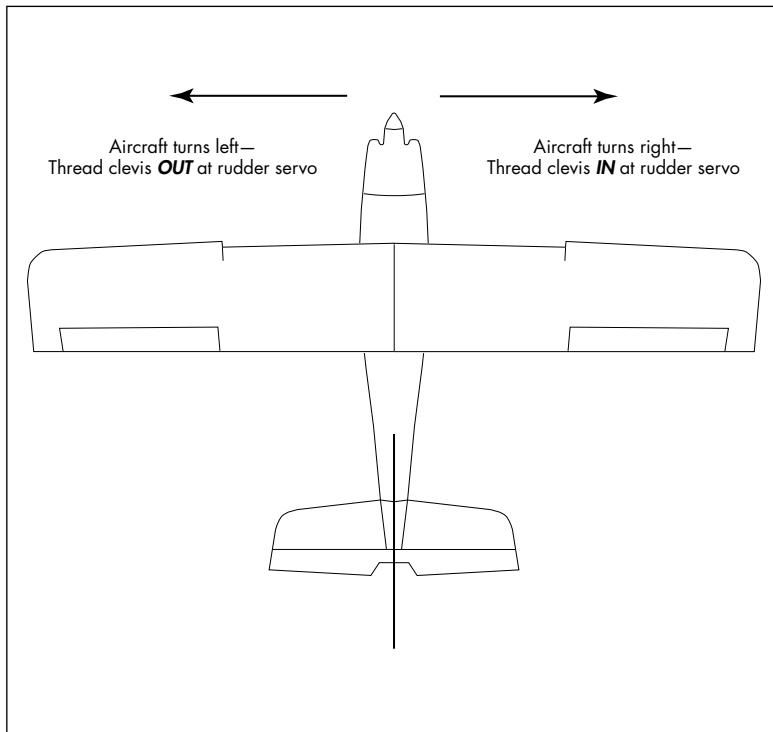


Important: When operating a Mode 2 transmitter (rudder/throttle on left stick), be very careful that the left stick is not moved forward when checking the rudder. Moving the rudder stick forward will result in the propeller spinning.

Checking the Steering Trim (Mode 1 and 2)

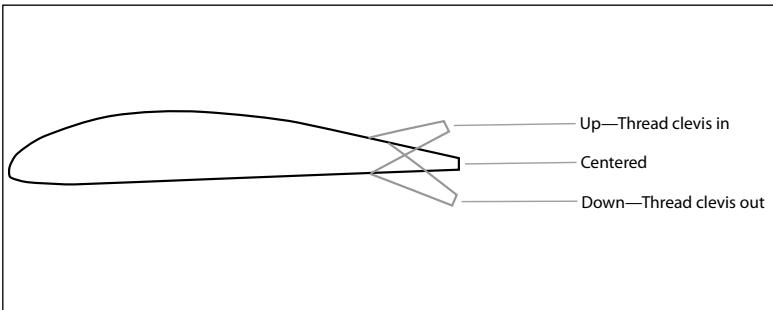
Note: Checking the steering trim must be done after the aircraft has been flown and the rudder trimmed for straight flight at the transmitter. The steering trim is a mechanical adjustment and should **never** be corrected using the rudder trim at the transmitter.

- 9. Once the rudder has been trimmed for straight flight, you can now adjust the steering trim of your Apprentice. Taxi the aircraft to determine if it turns left or right when the rudder stick is centered. ***Do not change the rudder trim at the transmitter.*** If the aircraft turns right, thread the clevis **IN** at the rudder servo, which will shorten the steering linkage. If the aircraft turns left, thread the clevis **OUT** at the rudder servo, which will lengthen the steering linkage. Adjust until the aircraft will taxi in a straight line without any rudder control inputs.

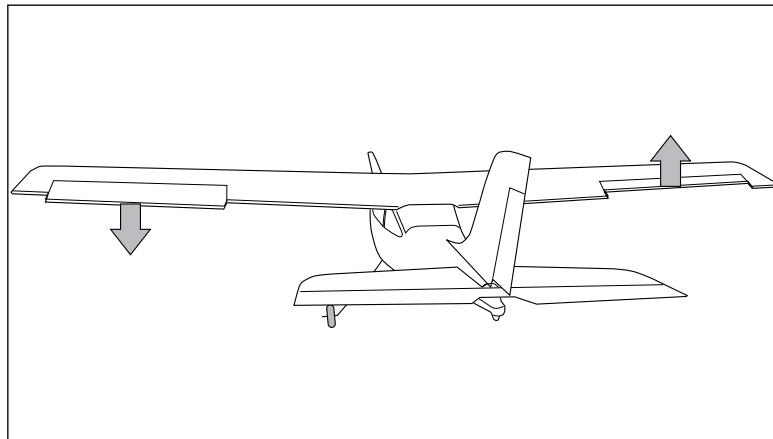


Checking the Ailerons (Mode 1 and 2)

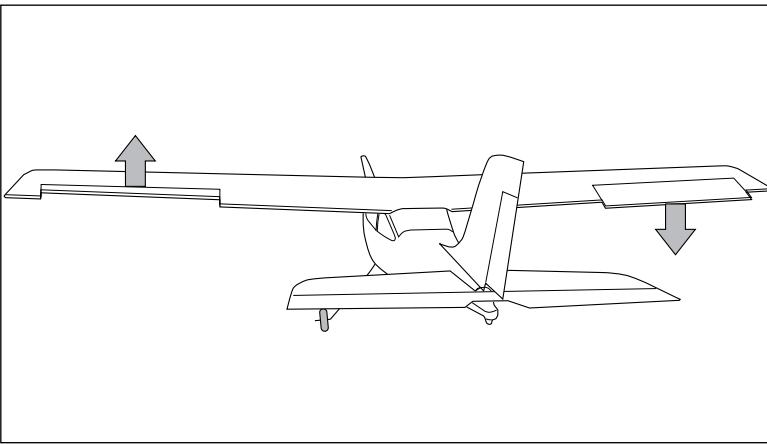
- 10. Center the aileron stick. Thread the clevis in or out on the aileron pushrod until the ailerons are aligned with the wing as shown.



- 11. Check the movement of the aileron using the transmitter. When the elevator/aileron stick (Mode 2 transmitter) or throttle/aileron stick (Mode 1 transmitter) is moved right, the right aileron will move up and the left aileron will move down.

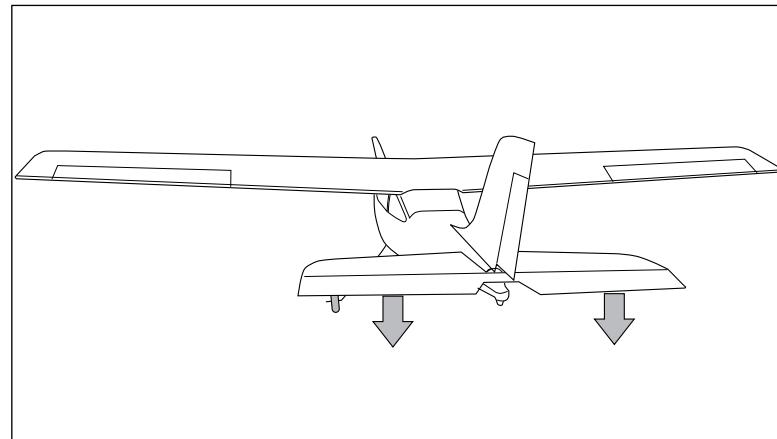


- 12. Check the movement of the aileron using the transmitter. When the aileron/elevator stick (Mode 2 transmitter) or the aileron/throttle stick (Mode 1 transmitter) is moved left, the left aileron will move up and the right aileron will move down.



Reversing Direction of Flight Controls

If you find any control surface moving in the opposite direction of what it should (example shown below), use the **Servo Reversing** feature of the DX5e to fix the problem. Reversing switches for all of the control functions are located on the front of the transmitter below the power switch. Locate the appropriate switch, slide it to the new position, and check to see if the surface in question is now moving in the right direction.



- 13. This completes the radio setup section. You may now power down your airplane and transmitter. To do this follow these steps.
 - A. Unplug the aircraft battery
 - B. Turn transmitter off.

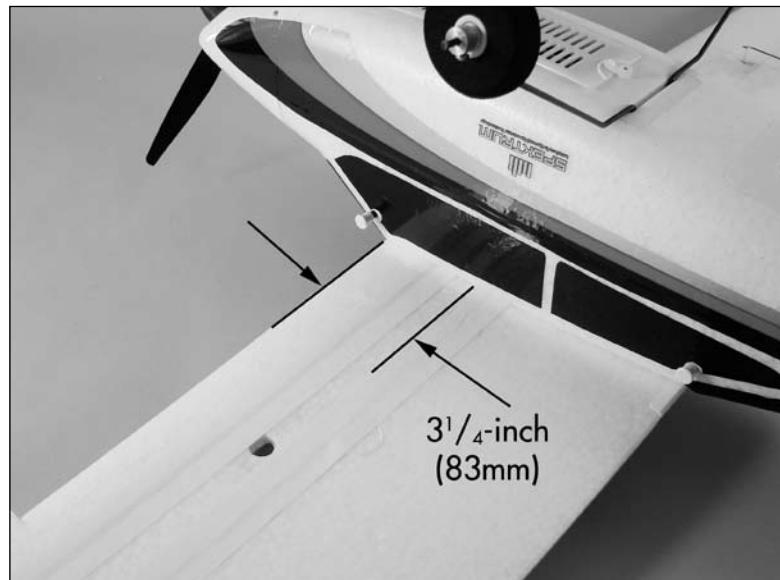
Center of Gravity

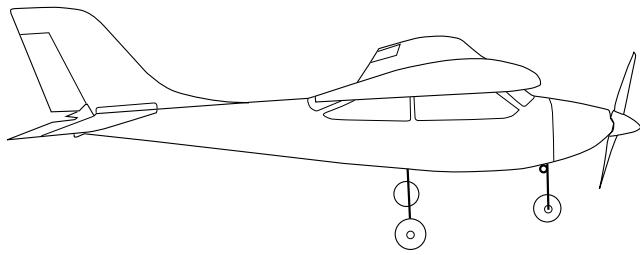
An important part of preparing the aircraft for flight is properly balancing the model.

Caution: Do not inadvertently skip this step!

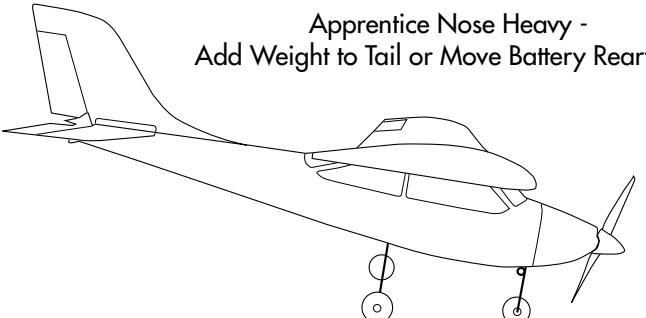
The recommended Center of Gravity (CG) location for the Apprentice is $3\frac{1}{4}$ -inch (83mm) back from the leading edge of the top wing. Mark the location for the Center of Gravity on the bottom of the top wing in the center as shown.

When balancing your Apprentice, support the plane upright at the marks made on the bottom of the wing with your fingers or a commercially available balancing stand. Move the speed control and/or receiver as necessary so the model hangs level or slightly nose down. This is the correct balance point for your model.

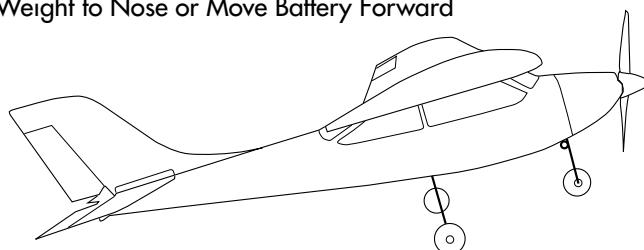




Apprentice Balanced - No Correction Needed



Apprentice Nose Heavy -
Add Weight to Tail or Move Battery Rearward



Apprentice Tail Heavy -
Add Weight to Nose or Move Battery Forward

Range Test Your Radio

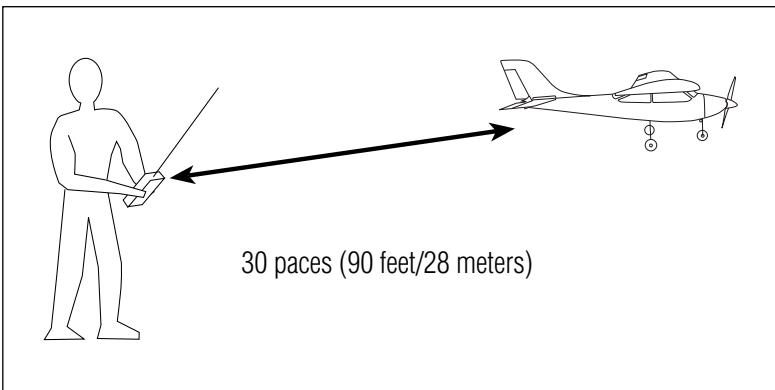
Before each flying session, and especially with a new model, it is important to perform a range check. The DX5e incorporates a range testing system which, when placed in the range check mode with the trainer switch activated and held, reduces the output power, allowing a range check.

- 1. With the model resting on the ground, stand 30 paces (approximately 90 feet) away from the model.
- 2. Face the model with the transmitter in your normal flying position. Pull and hold the trainer switch while toggling the HI/LO Rate Switch four times. The LEDs will flash and the alarm will sound, indicating the system is in range check mode.



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

- 3. You should have total control of the model with the trainer switch pulled at 30 paces (90 feet).



- 4. If control issues exist, call the Horizon Support Team at 1 877 504 0233 or go to **horizonhobby.com** to find a local Spektrum distributor in your country for service.

Flying Your Apprentice

It is strongly recommended for your first flights to search out the assistance of a qualified instructor, who will help you through your first flights and assist you in the basics of Radio Controlled flight. You can find this guidance at your local hobby dealer's store. Your Apprentice is capable of flying in winds up to 15 mph but, for flight training, it is recommended to fly in the lightest wind possible. You will need to ensure your battery is fully charged and the model is set up accordingly for your first flight. Do not attempt to fly the model on a partially charged battery.

Your DX5e can be used with a wide variety of transmitters when using the buddy box feature. The buddy box feature is a very useful tool when learning to fly. It allows the instructor pilot to hold the main transmitter (the DX5e that is included in your Apprentice kit) while you hold another transmitter which is called the slave transmitter. These two transmitters are connected together via a buddy cord (SPM6805) which is called out as an option on page 3 of this manual. Most instructors at your local flying field will have one of these cords available for your use the first time out. While you learn to fly, the flight instructor holds a trainer switch down which gives you (the student) control of the model. When you encounter any issues in flight or become disoriented, the flight instructor releases the switch taking over control of your model in a split second. The end result is that the model is never in any serious danger of crashing due to this great feature. The DX5e is compatible with all JR or Spektrum transmitters when using the buddy box feature.

Setting the Control Throws

Required Parts

Assembled airframe
Transmitter

Charged flight battery

Required Tools and Adhesives

Ruler

Your transmitter and model come out of the box set up and ready to fly. Should you need to replace your fuselage or wing due to a mishap or such, this section will help you reset your control throws to the factory settings.

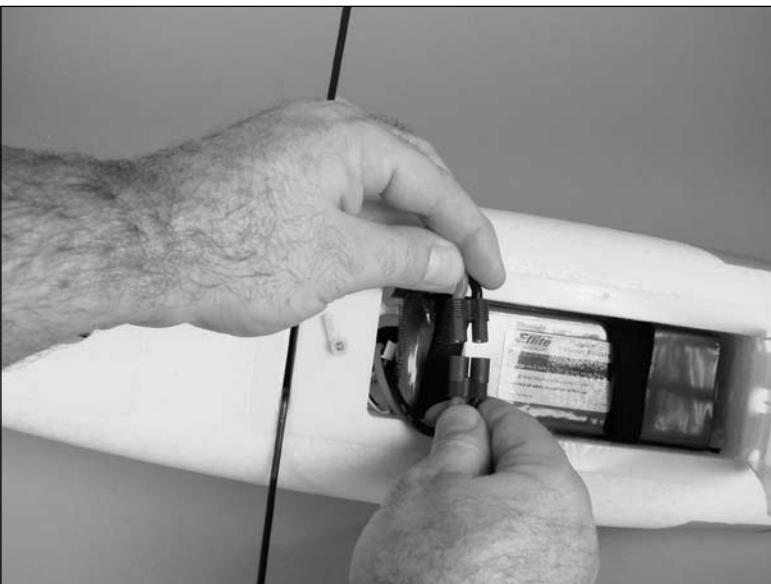
Note: Measurements are taken at the widest point on the surface.

These are general guidelines measured from our own flight tests. You can experiment with different rates to match your preferred style of flying. Adjusting of the control throws on the Apprentice 15e is not as critical as it is on other models. The measurements given in this section are approximations and a place to get close to when replacing parts and resetting control throws. The location of the pushrod or clevis on the servo arm and control horn of the flight control surface are given as they come set from the factory. With this information you should be able to attain settings that will be very close to the originals and deliver the flight performance you have come to expect from the Apprentice.

- 1. Turn the radio on using the power switch on the front of the transmitter and check that the throttle stick is at its lowest position. The throttle stick needs to be in the idle/off position, otherwise the speed control will not arm in the next step. The DX5e features digital trims, so they should be centered when the transmitter is powered on.



- 2. Plug the motor battery into the speed control.



Important: Always use extreme caution around the propeller when the motor battery is plugged in. A spinning propeller can cause serious damage or injury. It is always best to stay behind the propeller and keep it away from loose objects when the battery and speed control are connected.

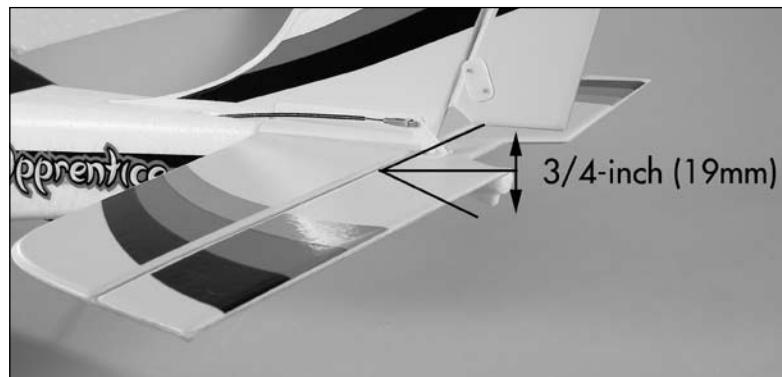
Elevator Throw

- 3. Use a ruler to check the control throws on your elevator. The dimensions are shown below. For your reference the elevator pushrod is set up in the following holes: The outside hole on the elevator control horn and the fourth hole in on the elevator servo arm.

Low Rate: 3/8-inch (9mm) (Up/Down)



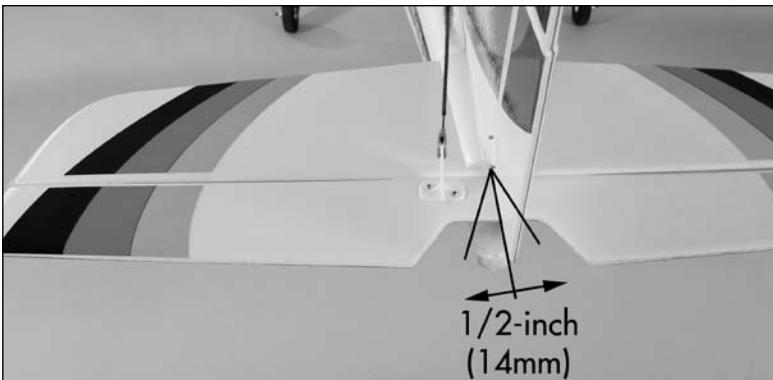
High Rate: 3/4-inch (19mm) (Up/Down)



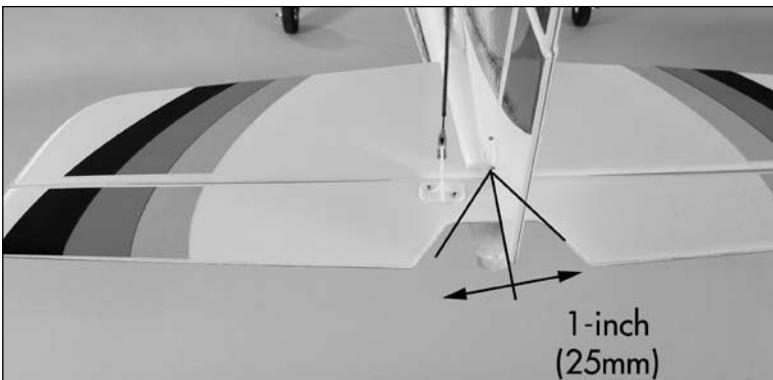
Rudder Throw

- 4. Use a ruler to check the control throws on your rudder. The dimensions are shown below. For your reference the rudder pushrod is set up in the following holes: The outside hole on the rudder control horn and the outside hole on the rudder servo arm.

Low Rate: 1/2-inch (14mm) (Right/Left)



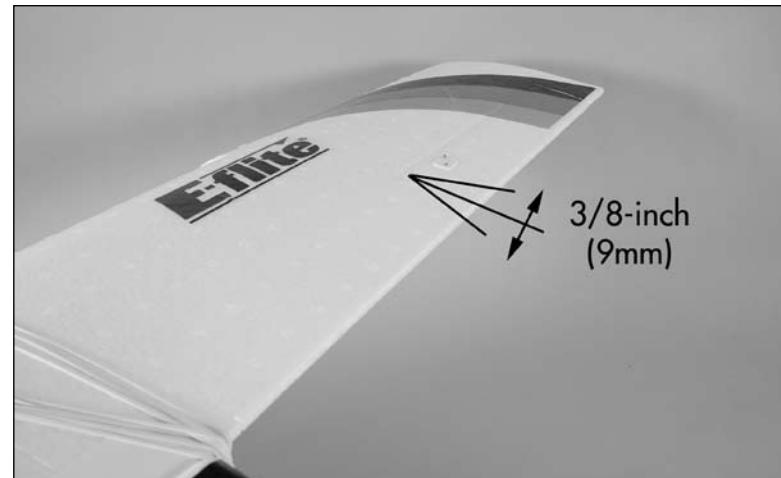
High Rate: 1-inch (25mm) (Up/Down)



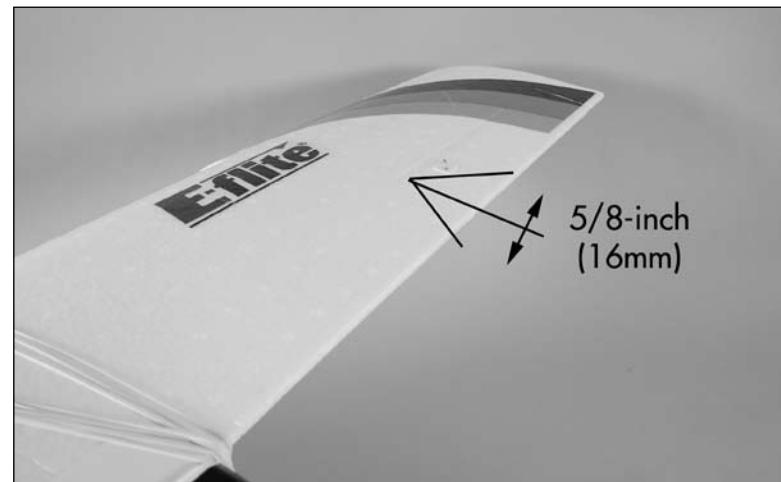
Aileron Throw

- 5. Use a ruler to check the control throws on the ailerons. The dimensions are shown below. For your reference the aileron pushrods are set up in the following holes: The outside hole on the aileron control horn and the outside hole on the aileron servo arm.

Low Rate: 3/8-inch (9mm) (Up/Down)



High Rate: 5/8-inch (16mm) (Up/Down)



- 6. Once all the control throws have been set, make sure to slide the clevis retainers over the clevises to prevent them from opening accidentally.



- 7. For your reference the nose wheel steering pushrod is set up in the following holes: The fixed position hole on the nose wheel steering arm and the outside hole on the rudder servo arm.

Installing the Propeller

Required Parts

Fuselage assembly
Propeller nut
Spinner cone

Propeller
Propeller washer
Spinner backplate

Required Tools

Adjustable wrench

Important: Before performing any maintenance to the motor, make sure the battery has been unplugged and removed from your model to prevent injury.

- 1. Slide the propeller on the propeller adapter.



- 2. Slide the spinner backplate on the propeller adapter.



- 3. Install the washer on the propeller shaft.



- 4. Thread the nut on the propeller adapter. Use an adjustable wrench to tighten the nut. Make sure the nut is tightened properly so the propeller does not depart from your model during flight.



- 5. Snap the spinner cone on the spinner backplate. It should snap on the backplate using a little force.



Warning

An RC aircraft is not a toy! If misused, it can cause serious bodily harm and damage to property. Fly only in open areas, preferably at AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio.

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.

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.

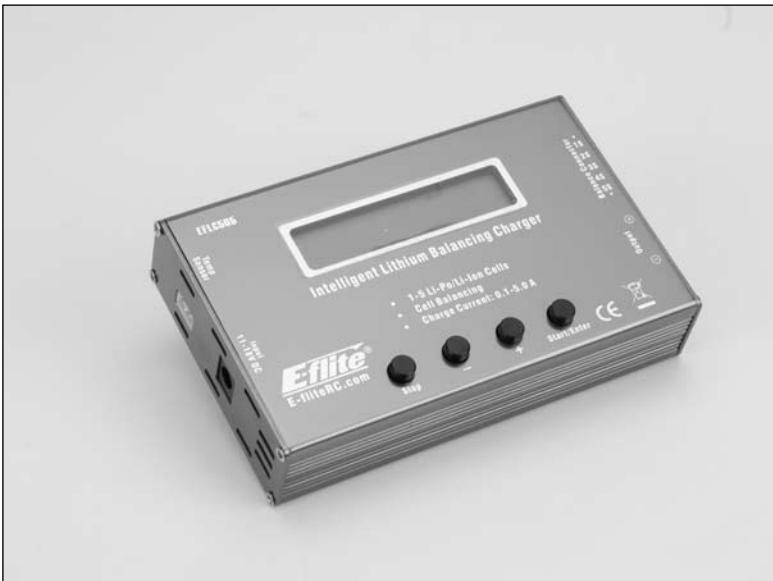


Optional Items for Your Apprentice

As you have selected the world of electric power to begin your RC experience, we thought it would be good to show you some optional equipment that will help you grow and enjoy the world of electric flight. The equipment included with your Apprentice works very well and will serve your needs without hesitation. All of the items shown in this section are available from your local hobby dealer.

The charger listed in this section will help you achieve a more versatile charging network for you to operate your electric-powered models.

E-flite 1-to 5-cell LiPo Charger



The E-flite LiPo balancing charger is capable of charging up to 5-cell LiPo packs. Ask for part number EFLC505 from your local hobby dealer. AC to 12V DC power adapter also available (THP1205P).

E-flite 32003S Battery



The E-flite 32003S LiPo battery is a high quality replacement battery that can be charged by the charger listed in this section or the charger supplied with your model. Ask for part number EFLB32003S from your local hobby dealer.

LiPo Battery Pack Information

Warning!

Lithium Polymer (LiPo) batteries are significantly more volatile than other rechargeable batteries used in RC applications. Failure to read and follow these instructions and safety precautions **may result in fire, personal injury and damage to property**. E-flite, Horizon Hobby, Inc., its retailers, and any other representatives, assume absolutely no liability for use of this product or failure to comply with these instructions and precautions.

If you are not prepared to accept complete liability for the purchase and/or use of this product, you are advised to return it new and unused to the place of purchase immediately.

Never ship batteries without the expressed permission of the recipient. Batteries carrying 25% or more charge cannot be shipped safely. Batteries which are damaged cannot be shipped safely. Damage or loss due to unsafe shipping is the legal responsibility of the person who shipped the product.

CAUTION: This product may ignite under certain conditions. Please read all safety precautions before use.

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.

European Union

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Hobby UK
Units 1-4 Ployters Rd
Staple Tye
Southern Way Harlow
Essex CM18 7NS
United Kingdom

Horizon Hobby Deutschland GmbH
Otto Hahn Str. 9a
25337 Elmshorn
Germany

Please call +44 0 1279 641 097 or sales@horizonhobby.co.uk with any questions or concerns regarding this product or warranty.

Usage Guidelines, Warnings and Safety Precautions

- **LiPo batteries may explode if damaged or if disposed of improperly.**
- **Always inspect batteries before charging.**
- **Never** charge or use a LiPo battery or pack that shows any damage or disfigurement of any kind. Swelling is a sign of internal damage. Any breach of protective cover, wiring or plugs is also reason to discontinue use (see Disposal Instructions).
- **Use specific Lithium Polymer charger only. Do not use a Ni-Cd or Ni-MH charger** – failure to do so may cause a fire, which may result in personal injury and/or property damage.
- **Never** charge around or in the area of any flammable or combustible materials.
- **Always** charge LiPo batteries in or on fire-resistant materials or containers.
- **Never** leave battery and charger unattended while in use. **Improper charging or discharging of LiPo batteries could result in fire.**
- **Constantly monitor** the temperature of the battery pack while charging. If the battery becomes hot to the touch, discontinue charging immediately. Disconnect the battery from the charger and observe it in a safe place for at least 15 minutes.
- If at any time you see a battery starting to balloon or swell up, discontinue charging or using immediately.

- **Lithium batteries can still ignite after at least 45 minutes** due to a delayed chemical reaction. If battery is damaged or overheats, observe the battery in a safe area outside of any building or vehicle and away from combustible material.
- **Do not allow children to charge LiPo battery packs.**
- **Do not allow children to use LiPo batteries without adult supervision.**
- **Shorting the wire leads can cause fire.** If you accidentally short the wires, the battery must be placed in a safe area for observation for at least 15 minutes.
- Never store or charge a battery pack where the temperature will go below 32 degrees Fahrenheit or above 130 degrees Fahrenheit. Extreme temperatures will damage the battery pack and may cause a fire. Battery performance may be diminished by less extreme temperatures.
- Any of the following may cause the battery to be damaged resulting in battery swelling, leaking, or fire:
 - Bending, folding or dropping of the battery
 - Damaging the edge seal of the battery
 - Taking apart the battery
 - Mixing cells of differing chemistry, or types, or sizes
 - Mixing cells of different ages

Crash Damage

If there are signs of smoke or overheating, DO NOT go near the battery or equipment until it has been observed from a safe distance for at least 15 minutes. Once it is safe, remove the battery and check for damage. Dispose of damaged batteries appropriately.

Swollen Batteries

Immediately stop using or charging. If the battery is not warm to the touch, move it to an open safe area and observe it for at least 15 minutes. Be VERY CAREFUL when moving the batteries. Do NOT put ANY pressure on the batteries or covering as this may cause fire.

Additional Information & Guidelines

1. Battery temperature the best indicator for safety. The E-flite LiPo battery's temperature should never drop below 32 degrees Fahrenheit or go above 130 degrees Fahrenheit while charging or discharging.
2. Changing plugs is NOT recommended as the process is dangerous and any error can cause immediate fire. Improperly installed plugs can also cause fire due to shorts, reverse polarity or other improper handling which can cause battery damage.
3. Batteries should be stored in a vented, fire-resistant container. Each pack should be stored in its own locked plastic bag within the container. The number of battery packs per container should be extremely limited to avoid chain reactions. Storage temperatures should not fall below 32 degrees F or above 130 degrees F. Damaged batteries must be kept at even more ambient temperatures. High temperatures may cause fire even with undamaged batteries.

Battery Disposal

LiPo batteries require special handling for safe disposal. The following are basic instructions for safe disposal. For more detailed safety, disposal and recycling information please go to: www.rbrc.org or www.earth911.org.

Basic Disposal Instructions

Before discarding any LiPo battery it must be rendered safe. The following steps must be taken to avoid damage or injury to yourself, your property and anyone who comes in contact with the battery.

If the battery is undamaged but no longer useful:

1. Discharge the battery to a maximum of 2.5V using a slow, safe discharge method.
2. Leave battery uncharged and retest after at least 24 hours. Many batteries experience "rebound" and may have more than 2.5V after 24 hours. If the battery is over 2.5V, repeat the procedure until the battery is 2.5V or less.
3. Insulate each wire lead with electrical tape or other appropriate material.
4. Assure that wire leads cannot touch each other by taping them to opposite sides of the battery.
5. Place battery in a sealed plastic bag and place plastic bag in a vented, fire-safe container.
6. Use fire-safe container to deliver battery to a recycling center authorized for Lithium Polymer batteries. Please note that not all battery recycling services include LiPo's. If no LiPo recycling facility is available in your area, contact your state or local Hazmat agency for instructions.
7. If the battery or wiring is damaged please contact your state or local Hazmat facility for instructions. Batteries must be rendered safe before being transported or recycled. Do NOT transport or ship batteries which have more than 2.5V charge OR that show signs of damage without following the instructions given by authorities. Damaged batteries should be rendered as safe as possible and stored in a vented fireproof container until recycled.

Warranty Information

Warranty Period

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

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

(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 goods 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).

Safety Precautions

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. The Product 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 injury.

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 service technician.

Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). 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**. A Service Repair Request is available at www.horizonhobby.com on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

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 Hobby.

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. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards.

If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. ***Please note: non-warranty repair is only available on electronics and model engines.***

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

or

Horizon Hobby UK
Units 1-4, Ployters Road
Staple Tye - Southern Way
Harlow
Essex
CM187NS
United Kingdom

or

Horizon Technischer Service
Otto-Hahn-Str. 9a
25337 Elmshorn
Germany
Telephone: +49 4121 46199 66
Fax: +49 4121 46199 70
Mail: service@horizonhobby.de

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Support Team
4105 Fieldstone Road
Champaign, Illinois 61822

Please call 1 877 504 0233 or visit horizonhobby.com to find our distributor for your country for support with any questions or concerns regarding this product or warranty.

Safety, Precautions, and Warnings

As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.

This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is necessary to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model out into the street or populated areas for any reason.
- Never operate your model with low transmitter batteries.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

2008 Official AMA National Model Aircraft Safety Code

GENERAL

- 1) I will not fly my model aircraft in sanctioned events, air shows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- 2) I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
- 3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully or deliberately fly my models in a careless, reckless and/or dangerous manner.
- 4) The maximum takeoff weight of a model is 55 pounds, except models flown under Experimental Aircraft rules.
- 5) I will not fly my model unless it is identified with my name and address or AMA number on or in the model. (This does not apply to models while being flown indoors.)
- 6) I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.

RADIO CONTROL

- 1) I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
- 2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
- 3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in front of the flight line. Intentional flying behind the flight line is prohibited.

- 4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.)
- 5) Flying sites separated by three miles or more are considered safe from site-to-site interference, even when both sites use the same frequencies. Any circumstances under three miles separation require a frequency management arrangement, which may be either an allocation of specific frequencies for each site or testing to determine that freedom from interference exists. Allocation plans or interference test reports shall be signed by the parties involved and provided to AMA Headquarters.

Documents of agreement and reports may exist between (1) two or more AMA Chartered Clubs, (2) AMA clubs and individual AMA members not associated with AMA Clubs, or (3) two or more individual AMA members.

- 6) For Combat, distance between combat engagement line and spectator line will be 500 feet per cubic inch of engine displacement. (Example: .40 engine = 200 feet.); electric motors will be based on equivalent combustion engine size. Additional safety requirements will be per the RC Combat section of the current Competition Regulations.
- 7) At air shows or model flying demonstrations, a single straight line must be established, one side of which is for flying, with the other side for spectators.
- 8) With the exception of events flown under AMA Competition rules, after launch, except for pilots or helpers being used, no powered model may be flown closer than 25 feet to any person.
- 9) Under no circumstances may a pilot or other person touch a powered model in flight.

Building and Flying Notes

Building and Flying Notes

Building and Flying Notes



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Champaign, Illinois 61822
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