E-flite®
ADVANCING ELECTRIC FLIGHT

CARBON-Z YAK 54

Instruction Manual
Bedienungsanleitung
Manuel d'utilisation
Manuale di Istruzioni

BNF™
BIND-N-FLY SPEKTRUM DSM TECHNOLOGY

PLUG-N-PLAY®

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 and click on the support tab for this product.

Meaning of Special Language:

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a 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 disassembly, 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.

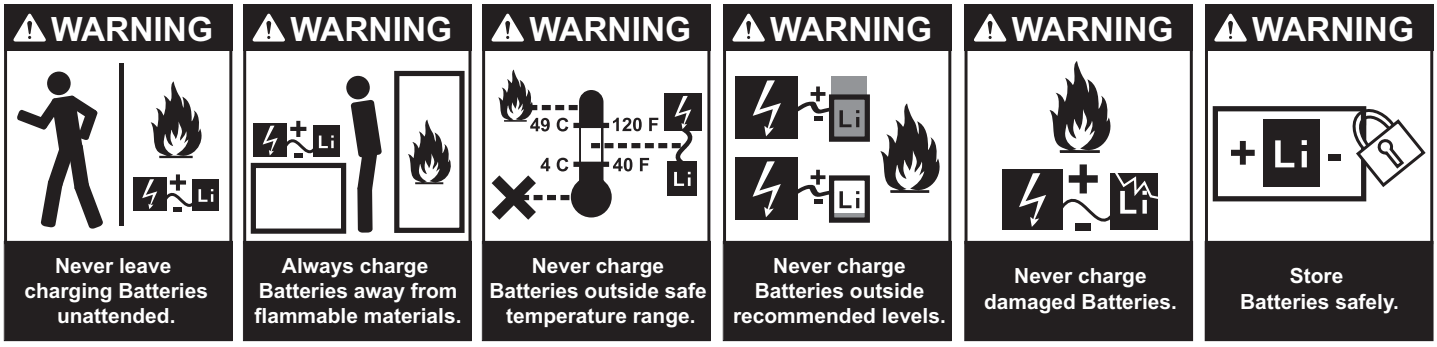
Safety Precautions and Warnings

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

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

Age Recommendation: Not for children under 14 years. This is not a toy.

- Never operate your model with low transmitter batteries.
- 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 in the street or in populated areas for any reason.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) 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.
- Never lick or place any portion of your model in your mouth as it could cause serious injury or even death.



Battery Warnings and Guidelines

The Battery Charger (EFLC3015) included with the Carbon-Z Yak 54 BNF has been designed to safely charge the Li-Po battery.

⚠ **CAUTION:** All instructions and warnings must be followed exactly. Mishandling of Li-Po batteries can result in a fire, personal injury, and/or property damage.

- Do not cover the warnings on the back of the battery with hook and loop strips.
- By handling, charging or using the included Li-Po battery you assume all risks associated with lithium batteries.
- If you do not agree with these conditions, return your complete Carbon-Z Yak 54 model in new, unused condition to the place of purchase immediately.

- DO NOT USE A Ni-Cd OR Ni-MH CHARGER. Failure to charge the battery with a compatible charger may cause fire resulting in personal injury and/or property damage.
- If at any time the battery begins to balloon or swell, discontinue use immediately. If charging or discharging, discontinue charging and disconnect. Continuing to use, charge or discharge a battery that is ballooning or swelling can result in fire.
- Store the battery at room temperature in a dry area for best results.
- When transporting or temporarily storing the battery the temperature range should be from 40–120° F. Do not store battery or model in a car or direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Li-Po cells should not be discharged to below 3V each under load.

In the case of the Li-Po battery used for the Carbon-Z Yak 54, you will not want to allow the battery to fall below 3V per cell during flight.

The Carbon-Z Yak 54 is a semi scale 3D performer designed by Quique Somenzini. It features a new construction process that brings foam constructed airplanes onto the same playing field as balsa. Carbon-Z material comes from a process that combines foam with carbon fiber reinforcements, making it stronger than balsa but with no additional weight.

The foam outer material is designed to survive minor crashes with minimal damage. However, in the event of a crash, the Carbon-Z Yak 54 is designed to be easy to repair. Minor dents to the foam outer surface can be repaired easily in the field. The aircraft is also modularly designed to make replacement of damaged sections easy. The resulting product is a great flying plane that will spend more time in the air and less time in the workshop. The Carbon-Z Yak 54 will be tuned to specifications recommended by Quique Somenzini himself. All components, from the servos to the motor, have been selected and tuned to optimize the plane's performance.

Table of Contents

Carbon-Z Yak 54 Features	Bind-N-Fly Version	Plug-N-Play Version
Motor BL25 Brushless Outrunner, 1000Kv	**Installed**	**Installed**
ESC E-flite® Pro 60A brushless with Switch-Mode BEC	**Installed**	**Installed**
Receiver Spektrum™ AR600 DSM2™ 6-channel sport receiver *	**Installed**	**Sold Separately**
Battery 4S 14.8V 2800mAh 30C Li-Po	**Included**	**Sold Separately**
Charger Variable rate 3-to 4-cell Li-Po balancing fast charger	**Included**	**Sold Separately**
Transmitter Full range DSM2 aircraft transmitter *	**Sold Separately**	**Sold Separately**

** Recommended for Plug-N-Play Version*

Carbon-Z Yak 54 Specifications	
Wingspan	**48 in (1220mm)**
Length	**48.5 in (1232mm)**
Weight (RTF)	**3.75-3.81 lb (1700-1730 g)**

To register your product online, go to www.e-fliterc.com

BNF BIND-N-FLY

Charging the Flight Battery

Your E-flite Carbon-Z Yak 54 comes with a DC balancing charger and 4S Li-Po battery. You must charge the included Li-Po battery pack with a Li-Po specific charger only (such as the included charger). Never leave the battery and charger unattended during the charge process. Failure to follow the instructions properly could result in a fire. When charging, make certain the battery is on a heat-resistant surface. Charge the battery pack while you are assembling the aircraft. You will need the flight battery to confirm proper aircraft operation in future steps.

DC Li-Po Balancing Charger Features

- Charges 3-to 4-cell lithium polymer battery packs
- Variable charge rates from 500mAh to 3-amp
- Simple single push-button operation
- LED charge status indicator
- LED cell balance indicator
- Audible beeper indicates power and charge status
- 12V accessory outlet input cord

Specifications

- Input power: 12V DC, 3-amp
- Charges 3- to 4-cell Li-Po packs with minimum capacity of 500mAh

4S 14.8V 2800mAh Li-Po Battery Pack

The E-flite 4S Li-Po battery pack features a balancing lead that allows you to safely charge your battery pack when used with the included E-flite Li-Po balancing charger.

⚠ **WARNING:** Failure to use the proper charger for a Li-Po battery can result in serious damage, and if left charging long enough, will cause a fire. ALWAYS use caution when charging Li-Po batteries.

⚠ **WARNING:** Selecting a charge rate higher than 1x (one times) the battery capacity may cause a fire.

The Battery Charging Process

1. Charge only batteries that are cool to the touch and are not damaged. Look at the battery to make sure it is not damaged e.g., swollen, bent, broken or punctured.
2. Attach the input cord of the charger to the appropriate power supply (12V accessory outlet).
3. When the Li-Po charger is correctly powered up, there is an approximate 3-second delay, then an audible "beep" and the green (ready) LED will flash.
4. Turn the control on the Amps selector so the arrow points to the charging rate required for the Battery. (See chart, for example the Yak 54 2800mAh Li-Po battery will charge at 3.0 amps.) DO NOT change the charge rate once the battery begins charging.
5. Move the cell selector switch to 3-cell or 4-cell for your battery.
6. Connect the Balancing Lead of the Battery to the 3-cell (4 pins) or 4-cell (5 pins) Charger port.
7. The green and red LEDs may flash during the charging process, when the charger is balancing cells. Balancing prolongs the life of the battery.
8. When the battery is fully charged, an audible beep will sound for about 3 seconds, and the green LED will shine continuously.
9. Always unplug the battery from the charger immediately upon completion of charging.

⚠ **CAUTION:** Overcharging a battery can cause a fire.

Battery Capacity	Maximum Charge Rate
500-1000mAh	500mA
1000-1500mAh	1A
1500-2000mAh	1.5A
2000-2500mAh	2.0A
3000mAh +	3.0A

Low Voltage Cutoff (LVC)

When a Li-Po battery is discharged below 3V per cell, it will not hold a charge. The Carbon-Z Yak 54 Electronic Speed Control protects the flight battery from over-discharge using Low Voltage Cutoff (LVC). Before the battery charge decreases too much, LVC removes power from the motor. Power to the motor pulses, showing that some battery power is reserved for flight control and safe landing.

When the motor pulses, please land the aircraft immediately and recharge the flight battery.

Disconnect and remove the Li-Po battery from the aircraft after use to prevent trickle discharge. Fully charge your Li-Po battery before storing it.

During storage make sure battery charge does not go below 3V per cell.

Note: The speed control is programmed for 4S LVC.

General Assembly and Maintenance Tips

Note: This checklist is not a replacement for the content included in this manual. Although you can use it as a quick start guide, we strongly suggest reading through this manual completely before proceeding.

First Flight Preparation

✓	Activity	BNF	PNP
	Remove and inspect contents	◆	◆
	Begin charging flight battery	◆	◆
	Assemble Carbon-Z Yak 54	◆	◆
	Install the landing gear	◆	◆
	Install the stab	◆	◆
	Install rudder and elevator push rod	◆	◆
	Install the wings	◆	◆
	Install receiver		◆
	Connect servos to receiver or Y-harness	◆	◆
	Install fully charged battery	◆	◆
	Bind the receiver to a transmitter, if applicable	◆	◆
	Perform the Control Direction Test with the transmitter	◆	◆
	Adjust flight controls and transmitter	◆	◆
	Adjust battery for center of gravity (CG) see installing the flight battery.	◆	◆
	Perform a radio system Range Check	◆	◆
	Find a safe and open flying field	◆	◆
	Plan flight for flying field conditions	◆	◆

Maintenance After Flying

✓	Activity	BNF	PNP
	Disconnect flight battery from ESC (Required for Safety)	◆	◆
	Turn off transmitter (Required for Safety)	◆	◆
	Remove flight battery from aircraft	◆	◆
	Recharge flight battery	◆	◆
	Clean aircraft (wipe off dirt, etc.)	◆	◆
	Repair or replace all damaged parts	◆	◆
	Carefully disassemble and store aircraft	◆	◆
	Store flight battery apart from aircraft and monitor the battery charge	◆	◆

Transmitter and Receiver Binding

Binding is connecting a transmitter to an aircraft receiver wirelessly or electronically so the aircraft receiver recognizes the transmitter GUID (Globally Unique Identifier) code. Binding is necessary for proper operation.

Note: The Carbon-Z Yak 54 BNF requires a DSM2 full range (high power) transmitter. Any JR or Spektrum DSM2 transmitter can bind to the Spektrum AR600 receiver. Due to the aerobatic nature of the Carbon-Z Yak 54, we recommend using a transmitter with adjustable exponential and dual rates. Please visit www.bindnfly.com for a complete list of compatible transmitters.

Note: When using a Futaba transmitter with a Spektrum module,you may need to reverse the throttle channel.

⚠ **CAUTION:** ALWAYS power on the transmitter before connecting the flight battery to the aircraft ESC. ALWAYS disconnect the flight battery from the aircraft ESC before powering off the transmitter.

Additional Binding Information

Before each flight, power on the transmitter and wait about 5 seconds before powering on the ESC. The transmitter scans and secures two radio frequencies for aircraft control. When the flight battery is connected too quickly for the transmitter to make frequency selection, the transmitter and receiver may not connect. When there is no connection, leave the transmitter powered on, disconnect the flight battery then reconnect the flight battery to the receiver.

✓	Binding Procedure Reference Table
	1. Read transmitter instructions for binding to a receiver (location of transmitter's Bind control).
	2. Make sure transmitter is powered off.
	3. Install a bind plug in the receiver Batt/Bind port.
	4. Connect the flight battery to the ESC.
	5. Turn the ESC switch on to power the receiver. The receiver LED will begin to flash rapidly.
	6. Power on the transmitter while holding the transmitter bind button or switch. Refer to your transmitter's manual for binding button or switch instructions.
	7. The receiver light will go from flashing rapidly to flashing slowly. After 5–10 seconds the light will become solid indicating the receiver is bound to the transmitter.
	8. Remove the bind plug from the receiver.
	9. Safely store the bind plug (some owners attach the bind plug to their transmitter using two-part loops and clips).
	10. The receiver will keep the binding to the transmitter until a bind plug is put in the receiver Batt/Bind port.

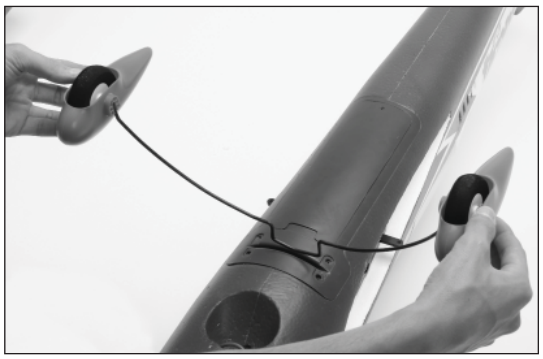
* The throttle will not arm if the transmitter's throttle control and throttle trim are not put at the lowest position.

If you encounter problems, obey binding instructions and refer to transmitter troubleshooting guide for other instructions. If needed, contact the appropriate Horizon Product Support office.

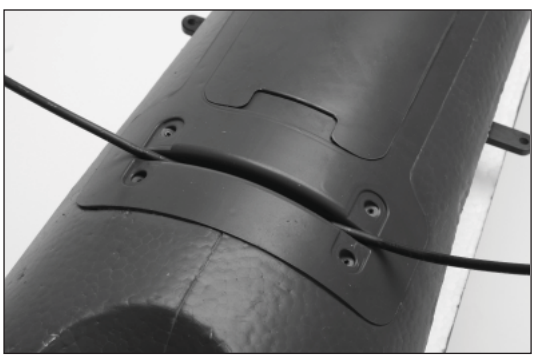
Installing Landing Gear

Note: You may remove fairings for flying the Carbon-Z Yak 54 from a rough runway.

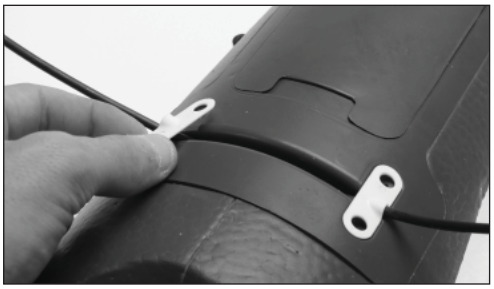
1. Press together landing gear legs and put landing gear support in slot in bottom of fuselage.



2. Release landing gear when support is fully installed in the fuselage slot.



3. Install fairing plates.

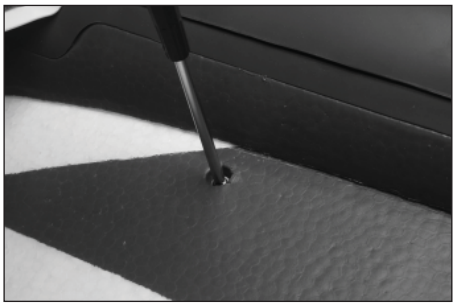


4. Install left (marked "L") and right (marked "R") landing gear fairings on the landing gear supports and fuselage using 4 small screws.

Installing Wings

1. Put the wing tube in the round hole in the wing slot of the fuselage.
2. Put left wing on the wing tube.
3. Move the wing on the tube into the slot in the fuselage while putting the aileron control connector in the fuselage.

4. Secure left wing to fuselage using screws.



5. Install the right wing using the steps above.
6. Attach the 2 aileron connectors to the aileron Y-harness in the fuselage.

Note: There is no difference between the 2 connections on the Y-harness. Left and right servo lead connectors do not have to be connected to a particular side of the Y-harness.

If using flaperon/dual aileron transmitter programming, you can remove the Y-harness. The aileron leads will connect to AILE and AUX1 when using flaperon/dual aileron.

Installing Rudder

1. Attach the rudder to the hinge rod. Put the screw in the bottom of the hinge rod.

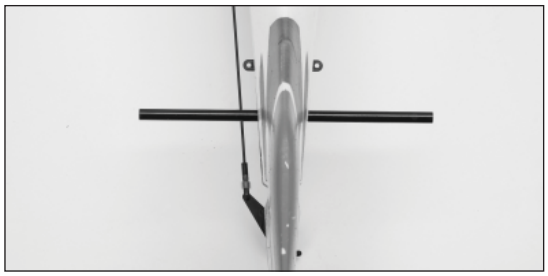
NOTICE: Do not tighten the screw too much. The rudder will not move easily if the screw is tightened too much.

2. Put the rudder linkage clevis in the hole on the control horn.

Installing Horizontal Tail and Pushrods on Control Horns

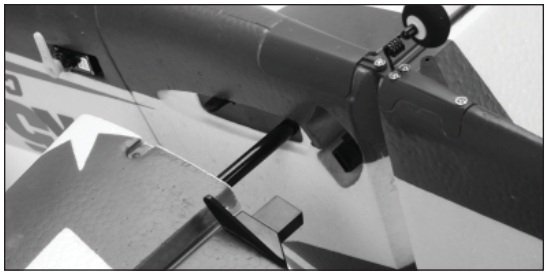
Installing the Horizontal Tail

1. Put the horizontal stabilizer tube in the round hole located in the horizontal stabilizer slot of the fuselage.



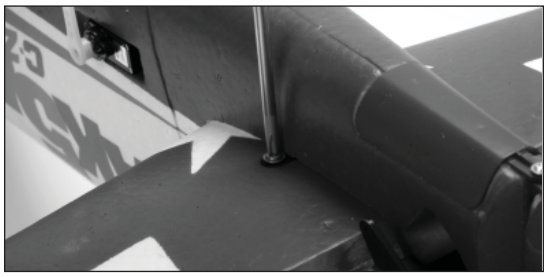
2. Slide the left horizontal stabilizer onto the stabilizer tube.

3. Slide the right horizontal stabilizer onto the stabilizer tube.



Note: Make sure the elevator joiners interlock with each other, allowing both elevators to move together.

4. Secure each horizontal stabilizer with the included machine screws.



Installing Pushrods on Control Horns

⚠ **CAUTION:** The installation positions of the pushrods and clevises directly affect aircraft response. When these are incorrectly connected for the pilot's skill level, unexpected aircraft response to controls can result in unintended crash damage to the aircraft.

Note: The elevator and rudder pushrods come with a nylon clevis already installed and a 90˚ bend already bent.

Elevator Pushrod Installation

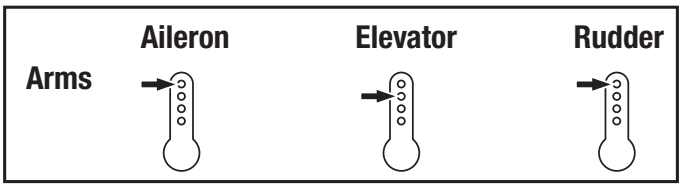
1. Locate the 6 1/2-inch (165mm) pushrod.
2. Carefully spread the clevis and put the clevis pin into the hole in the control horn.

Tip: You can thread the clevis in and out to shorten or lengthen the pushrod. Make sure transmitter trims and sub-trims are centered before making mechanical adjustments.

3. Slide the 90° bend into the third hole from the screw.
4. Snap the 90° pushrod keeper on the pushrod. This holds the pushrod to the servo arm.

Rudder Pushrod Installation

1. Locate the 7 7/8-inch (200mm) rudder pushrod.
2. Carefully spread the clevis apart and slide the pin into the control horn.
3. Slide the 90° bend of the pushrod into the outermost hole on the servo arm.
4. Snap the 90˚ pushrod keeper on the pushrod. This holds the pushrod to the servo arm.



Note: Not to scale.

Installing the Flight Battery

Note: Before flying and after centering control surfaces, rebind the aircraft so control surfaces are neutral when you plug in the flight battery.

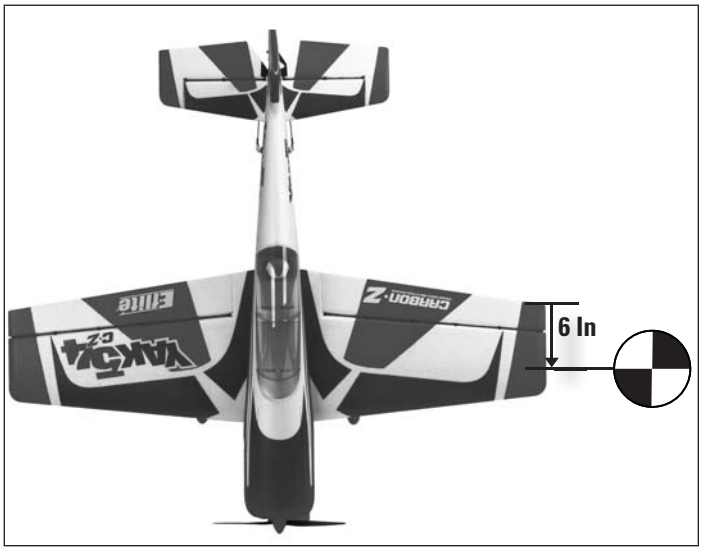
⚠ **CAUTION:** Install receiver and connect the speed control into the throttle channel (for PNP) before installing the flight battery.

1. Install the flight battery in the aircraft.
2. Secure the flight battery using the hook and loop straps.

Adjusting Center of Gravity (CG) by Moving the Battery

The CG location is **6-inches (153mm)** forward from trailing edge of the wing tip +/- 1/4inch (6.4mm). This CG location has been determined with the E-flite 14.8V 2800mAh 30C Li-Po battery installed in the middle of the cavity (see picture) and the aircraft positioned upright.

Note: Due to the round wing tips, it is more accurate to measure the CG from the trailing edge. If you want a nose-heavy (forward) or tail-heavy (rear) condition, move the battery forward or to the rear.



Control Surface Direction Test

Aircraft and transmitter binding should be done before the control direction test. Move the controls on the transmitter to make sure aircraft control surfaces move correctly.

Controls in Reverse in Control Direction Test

If controls respond in the opposite direction reverse the direction for operation of flight controls. Refer to your transmitter's instructions for changing direction of transmitter flight controls.

Setting for Control Surface Travel

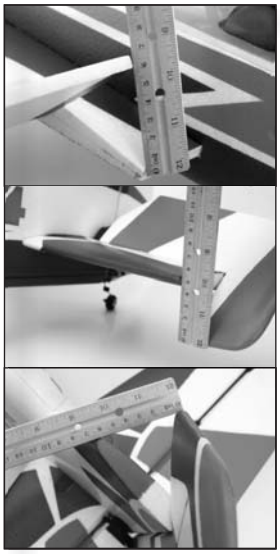
Adjust ATV/travel adjustment on your transmitter until you obtain the following control surface travel. Do not adjust dual rates until you have correctly adjusted the total travel:

Ailerons: 60 to 70mm left and right (both ailerons), measured at the aileron root.

Elevator: 48 to 50mm up and down, measured at the counterbalance leading edge.

Rudder: 60 to 65mm left and right, measured at the counterbalance leading edge.

For information on more advanced programming, please visit www.e-fliterc.com



Control Surface Travel

Exponential Settings

Following are Quique Somenzini's dual rate and exponential settings for intermediate flyers of the Carbon-Z Yak 54. The settings are based on the ATV set in the previous step.

High rate		***Expo***
Elev.	*100% (or 48 mm to 50mm up and down)*	*50%*
Ail.	*100% (or 60 mm to 70 mm left and right both ailerons)*	*60%*
Rud.	*100% (or 60 mm to 65mm left and right)*	*50%*

Low rate		***Expo***
Elev.	*22% (or 15mm up and down)*	*25%*
Ail.	*30% (or 30mm left and right both ailerons)*	*30%*
Rud.	*60% (or 45mm left and right)*	*25%*

Mix: Rudder to Elevator
Full left rudder -2% (up elevator)
Full right rudder -2% (up elevator)

Note: *These control throws were developed by Quique Somenzini for the best performance of the Carbon-Z Yak 54. The small amount of elevator throw on low rate is capable of extreme aerobatics.*

Note: *only switch to high rate when the plane is flying at slow speed. Never fly at high rate at full airspeed. This airplane is very responsive and pilot can easily lose orientation. Get familiar with the plane first and then try high rate.*

Note: *for take off and landings, low rate in all control surfaces is strongly recommended.*

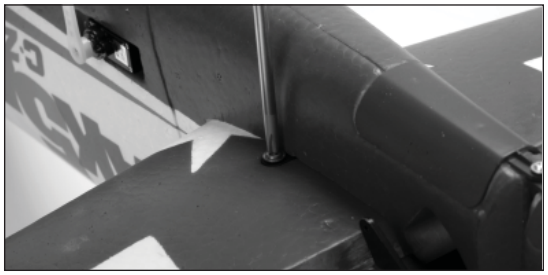
For Quique's advanced setup, visit www.e-fliterc.com.

Removing the Control Surfaces

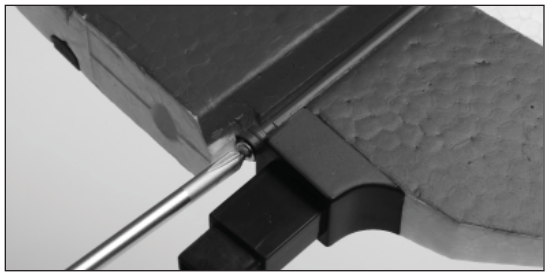
To remove the control surfaces, follow the steps listed below:

Elevator

1. Disconnect the clevis from the control horn.
2. Remove the machine screws located on the bottom of the horizontal stabilizer. Then remove the horizontal stabilizer from the fuselage.

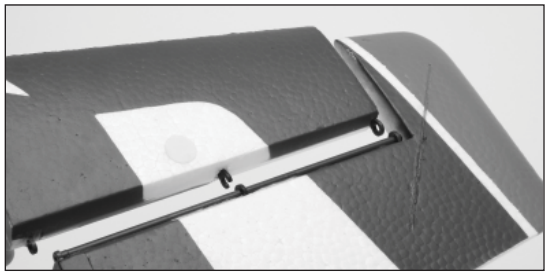


3. Remove the screw located on the hinge line at the root of the horizontal stabilizer.



4. Carefully separate the elevator from the horizontal stabilizer.

Note: The outer hinge is not open.



Note: To reinstall the elevator to the horizontal stabilizer follow the steps listed above in reverse.

Rudder

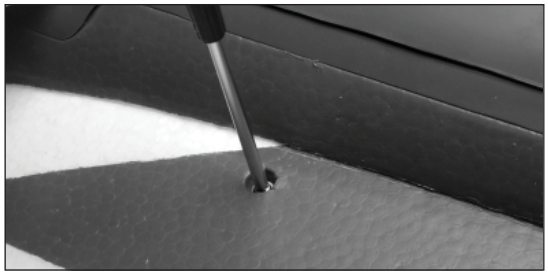
Reverse the steps located in the "Installing Rudder" section for rudder removal.

Ailerons

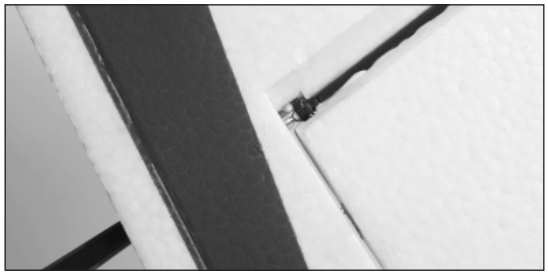
1. Disconnect the ball-link from the control horn.

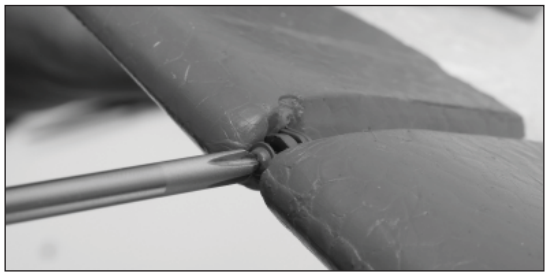
2. Remove the machine screw located on the bottom of the wing. Then carefully remove the wing from the fuselage.

Note: You will need to unplug the aileron servo lead before removing the wing.



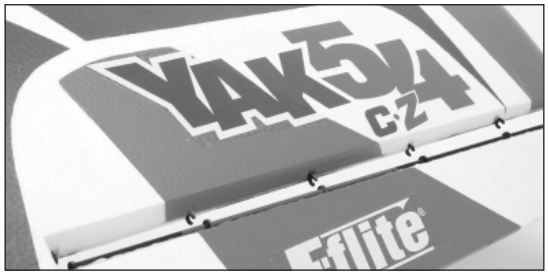
3. Remove the two screws located on the hinge line. One is located at the wing tip and the other at the root.





4. Carefully separate the aileron from the wing.

Note: To reinstall the aileron to the wing, follow the steps listed above in reverse.



Removing Propeller Adapter, Propeller and Spinner

Note: The information on this page is for maintenance of the Yak 54. Spinner, propeller and propeller adapter damage can result from aircraft crashes.

⚠ **CAUTION:** DO NOT handle propeller parts while the flight battery is connected to the ESC. Personal injury could result.

1. Remove the screw in the spinner.

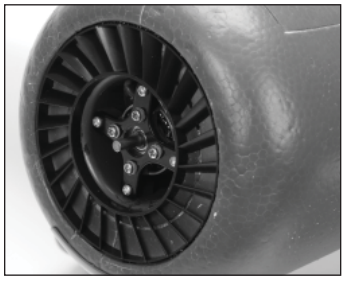
2. Remove the spinner cone.
3. Use an adjustable wrench to loosen and remove the propeller nut.

4. Remove the propeller from the prop adapter collet.

5. Remove the spinner backplate from the prop adapter collet.

6. Remove the swage plate from the prop adapter collet.

7. Remove the prop adapter collet from the motor shaft.



Motor and ESC Removal

Note: The information on this page is for maintenance of the Carbon-Z Yak 54. Damage to these parts can result from aircraft crashes. Installation of the motor is in reverse order of the steps listed below. You must remove the propeller and spinner from the motor (EFLM7300) before removing the motor from the aircraft.

⚠ **CAUTION:** DO NOT handle the motor or ESC while the flight battery is connected to the ESC. Personal injury could result.

1. Remove the battery hatch from the fuselage.
2. Disconnect the 3 motor wires located on the bottom of the fuselage near the ESC.

3. Remove the 4 outermost screws on the "X" mount, and slide the motor out of the nose.

• *Front view of screws on motor mount*

4. To install the motor:

Slide the 4 motor wires through the guide holes and slide the motor all the way into the nose.

Note: When installing the new motor do not attach the "X" mount until last. This will make connecting the 3 motor wires much easier.

5. Plug the 3 motor wires into the ESC, making sure of proper polarity.

Note: Wires are color-coordinated to prevent wrong polarity connection.

7. Attach the "X" mount to the motor with the 4 machine screws provided with the mount. Tip: Use threadlock on the 4 machine screws mentioned in the above step. This will prevent them from coming loose in flight.
8. Secure the motor to the fuselage by installing the 4 screws to the outer holes in the "X" mount.
9. Reinstall the prop and spinner by reversing the steps in the Removing Propeller Adapter, Propeller and Spinner section.

PNP PLUG-N-PLAY

PNP Installation

Installing a Receiver

1. Install your full range receiver in the fuselage using hook and loop tape or double-sided servo tape.
2. Attach the elevator and rudder servo connectors to the appropriate channels of the receiver.
3. Attach the aileron Y-harness to the aileron channel of the receiver.
4. Attach the ESC connector to the throttle channel of the receiver.

Battery Selection and Installation

- We recommend the E-flite 2800mAh 14.8V 30C Li-Po battery (EFLB28004S30).
- If using another battery, the battery must be at least a 30C 2800mAh battery.
- Your battery should be approximately the same capacity, dimensions and weight as the E-flite Li-Po battery to fit in the fuselage without changing the center of gravity a large amount.

Range Check and Pre-Flying Tips

Range Check your Radio System

After final assembly, range check the radio system with the Carbon-Z Yak 54. Refer to your specific transmitter instruction manual for range test information. It is helpful to have another person assist with the range check and secure the airplane. If assistance is not available, secure the tail of the aircraft before increasing the throttle.

Before Each Flying Session

- **Always make sure the dual rates switch is set to LOW rates for takeoff.** We recommend LOW rates for your initial flights. The Carbon-Z Yak 54 is VERY maneuverable on high rates and requires a lot of experience to handle properly.
- It is recommended to set the timer for 5 minutes before take off.
- Always make sure your Carbon-Z Yak 54 is properly trimmed prior to each flight
- Always make sure the receiver, ESC, and battery are secured in the fuselage.
- Perform a range check according to your transmitter's instructions prior to each flight.
- Always make sure that all controls function per the transmitter input you give. This includes ailerons, rudder, elevator and throttle.
- Always fully charge the transmitter batteries or make sure your transmitter has fresh batteries before you fly.
- Always make sure the servo reversing switches on the transmitter are set correctly.

⚠ **CAUTION:** Always remove the flight battery from the aircraft when you are done flying, or when you are on the way to the flying field.

Flying Tips and Repairs

Flying

Always follow local ordinances when choosing a location to fly. Choose a wide-open space for flying your E-Flite Carbon-Z Yak 54 BNF or PNP. It is ideal for you to fly at a sanctioned flying field, as the Carbon-Z Yak 54 is capable of speeds exceeding 70 mph. If you are not flying at an approved site, always avoid flying near houses, trees, wires and buildings. You should also be careful to avoid flying in areas where there are many people, such as busy parks, schoolyards, or soccer fields.

Note: The Carbon-Z Yak 54 is a high-performance aircraft, designed to handle the stresses of high-energy aerobatic flight. Due to the construction of the Carbon-Z Yak 54, the airframe is capable of handling high G maneuvers.

Takeoff
Choose a large open area with a smooth surface for takeoff. Confirm your transmitter dual rate switch is set to LOW rates for takeoff. Point the nose of the aircraft into the wind.

Landing

Set to Low Rate, start the landing approach by reducing throttle to 1/4 or less to slow the aircraft. Fly the aircraft down to about 1-2 feet above the runway. Slowly reduce power until the throttle is in the off position. Apply up elevator as the aircraft settles to the runway. The Carbon-Z Yak 54 can do a main landing gear landing, or two-point landing, where the aircraft touches down on the main wheels first and the tailwheel is off the ground. The Carbon-Z Yak 54 can also land in three-point attitude when all three wheels touch the runway at the same time.

Repairs

Thanks to the construction of the Carbon-Z Yak 54, repairs to the foam can be made using virtually any adhesive (hot glue, regular CA, epoxy, etc). When parts are not repairable, see the Replacement Parts List for ordering by item number.

Note: The Carbon-Z Yak 54 can be taken apart and put back in the box for storage or transportation.

2010 Official Academy of Model Aeronautics Safety Code

Effective January 1, 2010
GENERAL

1. A model aircraft shall be defi ned 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 fl own 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 fl y my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.
5. I will not fl y 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 fl ying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.
6. I will not fl y my model aircraft unless it is identified with my name and address, or AMA number, inside or affi xed to the outside of the model aircraft. This does not apply to model aircraft fl own 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 fl ight area as a pilot or while under fl ight 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 fl ight 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 profi cient 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.

FREE FLIGHT

1. I will not launch my model aircraft unless I am at least 100 feet downwind of spectators and automobile parking.
2. I will not fl y my model aircraft unless the launch area is clear of all individuals except my mechanic, offi cials, and other fl iers.
3. I will use an effective device to extinguish any fuse on the model aircraft after the fuse has completed its function.

CONTROL LINE

1. I will subject my complete control system (including the safety thong where applicable) to an inspection and pull test prior to flying. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.
2. I will ensure that my flying area is clear of all utility wires or poles and I will not fly a model aircraft closer than 50 feet to any aboveground electric utility lines.
3. I will ensure that my fl ying area is clear of all nonessential participants and spectators before permitting my engine to be started.

Please see your local or regional modeling association's guidelines for proper, safe operation of your model aircraft.

Troubleshooting Guide

Problem	Possible Cause	Solution
Aircraft will not respond to throttle but responds to other controls	• ESC is not armed. •Throttle channel is reversed	• Lower throttle stick and throttle trim to lowest settings. • Reverse throttle channel on transmitter
Extra propeller noise or extra vibration	• Damaged spinner, propeller, motor or motor mount • Loose propeller and spinner parts • Propeller installed backwards	• Replace damaged parts •Tighten parts for propeller adapter, propeller and spinner • Remove and install propeller correctly
Reduced flight time or aircraft underpowered	• Flight battery charge is low • Propeller installed backwards • Flight battery damaged	• Completely recharge flight battery • Remove and install propeller correctly • Replace flight battery and obey flight battery instructions
LED on receiver flashes quickly with bind plug installed and aircraft cannot be controlled by transmitter	•Transmitter too close to aircraft •Transmitter bound to another aircraft • Batteries in transmitter low	• Move powered transmitter a few feet from aircraft, disconnect and connect flight battery to aircraft and re-bind. • Bind transmitter to aircraft receiver • Replace transmitter batteries
Control surface does not move, or is slow to respond to control inputs.	• Control surface, control horn, linkage or servo damage •Wire damaged or connections loose	• Replace or repair damaged parts and adjust controls • Do a check of connections for loose wiring
Controls reversed	• Channels need to be reversed in the transmitter	• Do the Control Direction Test and adjust controls for aircraft and transmitter
Motor loses power Motor power pulses then motor loses power	• Damage to motor, or battery • Loss of power to aircraft • ESC uses default soft Low Voltage Cutoff (LVC)	• Do a check of batteries, transmitter, receiver, ESC, motor and wiring for damage (replace as needed) • Land aircraft immediately and Recharge flight battery
LED on receiver flashes slowly	• Power lost to receiver	• Check connection from ESC to receiver • Check servos for damage • Check linkages for binding

Replacement Parts

Here is a list of replacement parts to repair or keep your Carbon-Z Yak 54 flying. These parts are available at your local hobby shop or from Horizon Hobby (www.horizonhobby.com). Please try your local hobby shop first. By supporting them, they will be there when you need them. Or you can call our consumer sales line at 1 800 338 4639.

Number	Description	Notes
EFLA1060	60-Amp Pro Switch-Mode BEC Brushless ESC	*This is the ESC for the Carbon-Z Yak 54*
EFLB28004S30	E-Flite 2800mAh 14.8V 30C Li-Po battery	*Recommended for size, weight and power in Carbon-Z Yak 54 BNF*
EFLC3015	3- to 4-cell 12V DC Li-Po Battery Charger with Balancer	*This is the charger included in the Carbon-Z Yak 54 BNF*
EFLM7300	BL25 Brushless Outrunner Motor, 1000Kv	
EFLM7301	Motor Shaft: BL25 Outrunner	
EFLM7302	Prop Adapter: Carbon-Z Yak 54	
EFLP12525E	12 x 5.25 Prop: Carbon-Z Yak 54	
EFL1008001	Right Wing Panel: Carbon-Z Yak 54	*Includes right wing panel, right aileron, hinges and control horn*
EFL1008002	Left Wing Panel: Carbon-Z Yak 54	*Includes left wing panel, left aileron, hinges and control horn*
EFL1008003	Painted Fuselage: Carbon-Z Yak 54	*Includes fuselage, vertical fin, firewall, canopy, and landing gear mount*
EFL1008004	Horizontal Stabilizer, Right: Carbon-Z Yak 54	*Includes right horizontal stabilizer, right elevator, hinges and control horns*
EFL1008005	Horizontal Stabilizer, Left: Carbon-Z Yak 54	*Includes left horizontal stabilizer, left elevator, hinges*
EFL1008006	Rudder: Carbon-Z Yak 54	*Includes rudder, hinges and control horn*
EFL1008007	Battery Hatch: Carbon-Z Yak 54	*Includes the battery hatch and magnets*
EFL1008008	Radio Hatch: Carbon-Z Yak 54	*Includes the radio hatch*
EFL1008009	Canopy: Carbon-Z Yak 54	
EFL1008010	Wheel Pants: Carbon-Z Yak 54	
EFL1008011	Pushrods with Clevis: Carbon-Z Yak 54	
EFL1008012	Carbon Fiber Wing Tube: Carbon-Z Yak 54	
EFL1008013	Carbon Fiber Stabilizer Tube: Carbon-Z Yak 54	
EFL1008014	Pilot: Carbon-Z Yak 54	
EFL1008015	Landing Gear Plates: Carbon-Z Yak 54	
EFL1008016	Main Landing Gear Wire: Carbon-Z Yak 54	
EFL1008017	Landing Gear Fairings: Carbon-Z Yak 54	
EFL1008018	Main Wheels: Carbon-Z Yak 54	
EFL1008019	Tail Wheel Set: Carbon-Z Yak 54	
EFL1008020	Spinner: Carbon-Z Yak 54	
EFL1008021	Servo Arm: Carbon-Z Yak 54	
EFL1008022	Decal Sheet: Carbon-Z Yak 54	
EFL1008023	Servo Extension Set: Carbon-Z Yak 54	*Includes servo extensions for ailerons, elevator, rudder and ESC*
EFL1008024	Motor Mount with Screws: Carbon-Z Yak 54	*Includes motor mount, motor screws and firewall screws*
EFL1008025	Screw Set: Carbon-Z Yak 54	*Includes all screws for the airframe. Individual parts do not include screws except where noted.*

Note: When replacing servos, we recommend tying a string to the servo lead before removing the servo. This allows you to easily reinstall the servo and lead.

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 her under 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 http://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 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. 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.

Contact Information

Country of Purchase	Horizon Hobby	Address	Phone Number / Email Address
United States of America	Horizon Service Center (Electronics and engines)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233 Online Repair Request visit: www.horizonhobby.com/repairs
	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 infofrance@horizonhobby.com

Compliance Information for the European Union

Declaration of Conformity
(in accordance with ISO/IEC 17050-1)

No. HH2010080903

CE Product(s): Carbon-Z Yak 54 BNF/PNP

Item Number(s): EFL10080/EFL10075
Equipment class: 1

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

EN 301 489-1, 301 489-17 General EMC requirements

European EMC Directive 2004/108/EC:

EN55022 Radio disturbance characteristics
EN55024 Immunity characteristics

Signed for and on behalf of:
Horizon Hobby, Inc.
Champaign, IL USA
Aug. 09, 2010

Steven A. Hall
Vice President
International Operations and
Risk Management
Horizon Hobby, Inc.

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 collections 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.