

Century Helicopters

HUMMINGBIRD v.3

Instruction Manual



SPECIFICATIONS

Engineered for ultimate performance. Light weight, durable, powerful design featuring fiber reinforced composite structures.

MOTOR SIZE:	370
MAIN ROTOR DIAMETER:	520mm
LENGTH:	485mm
WEIGHT:	155g (without electronics)

Century Helicopter Products

Designed and Developed in USA

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Section 1

Your New Hummingbird v³ Helicopter Getting Started

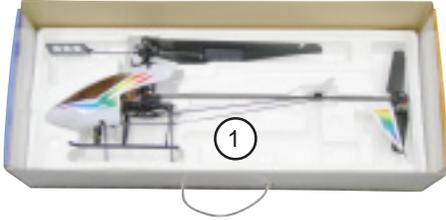
CHECKING OVER THE MODEL

Thank you for choosing the Hummingbird v.3 helicopter! Before beginning, check the kit contents as shown. This is a good time to check the "required items" section and make sure everything necessary is on hand for assembly.

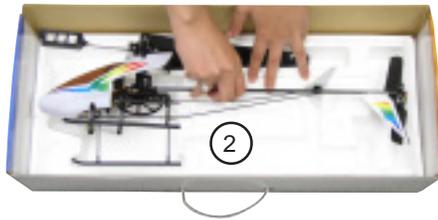
Required Items

- Items needed to fly the Hummingbird
- 1x Radio (4 channels)
- 1x Receiver (4 channels)
- 2x Micro servos
- 1x Century micro gyro
- 1x Hummingboard mixer/speed control
- 1x Battery (8.4V or 9.6V)
- 1x Wall charger (NiMH type)

1. Open package to check contents.



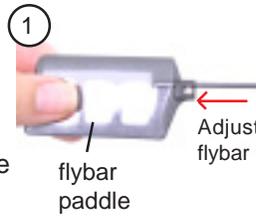
2. Remove helicopter carefully.



INITIAL MECHANICAL ADJUSTMENTS

The Hummingbird flybar and main blades must be set properly after removing from the package.

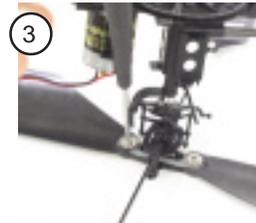
1. Slide the flybar until it is centered in the rotor head having equal length on each side.



2. Tighten the two set screws in the flybar control arms to secure the flybar using the supplied allen key. Flybar paddles must be parallel to each other and the ground when the swashplate is level. Make sure the bolt head in each paddle faces upwards.



3. Adjust the blade tension on the main rotor grips to be equal using a phillips head screwdriver. The tightness should be snug but should also allow the blades to move. Setting the blades too tight may contribute to vibration.

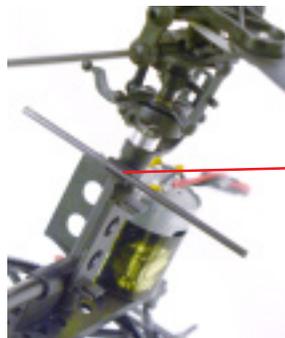


4. Remove the canopy and set aside. You will not need the canopy until the end of the setup process.



USING ADHESIVES TO SECURE THE MODEL

Check over the landing gear area and other loosely fit areas of the helicopter. If needed secure any loose connections using the adhesive of your choice. Using CA (cyanoacrylate) glue is very effective but difficult to debond for maintainance. Household white glue, although not as strong, works well and is easier to dissassemble later.



Warning!

Only use double sided servo tape for mounting your electronics such as servos, receiver, mixer board and gyro. Gluing the electronics may harm them and make future maintainance impossible.

Only glue items when their positions are final for operation as the glue may be difficult to debond.

CHARGING THE BATTERY

Before operating the Hummingbird the battery must be charged. The "Bird Seed" is the recommended battery for the Hummingbird .

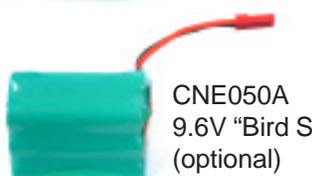
The charger supplied will plug in to any standard electrical wall outlet in your home. The charge time is approximately 90 minutes. Frequently check the battery temperature. The battery should be warm but not HOT when fully charged.



CNE051
"Bird Seed"
Charger
(110V USA)
CNE051A
"Bird Seed"
Charger
(220V Europe)



CNE050
8.4V "Bird Seed"



CNE050A
9.6V "Bird Seed"
(optional)



Avoid squeezing the ends of the battery as this can cause an electrical short. A shorted battery cannot be safely used.

Do not leave charging battery unattended. Do not overcharge. The battery is NiMH and comes partially charged. Do not completely drain a NiMH battery.

Section 2

Connection And Diagnostics For The Electronic Components

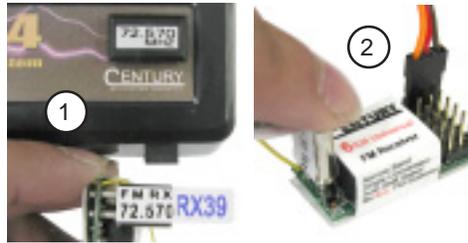
TESTING AND PREPARATION OF RADIO EQUIPMENT

PLEASE DON'T SKIP THIS SECTION

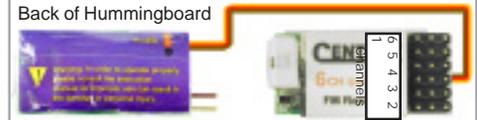
Before modifying or installing any radio gear, please take a few minutes to test everything as shown. Time spent becoming familiar with the equipment and testing all the components can prevent difficulty.

1. Install the crystals into the transmitter and receiver. Be certain that the channel frequency matches.

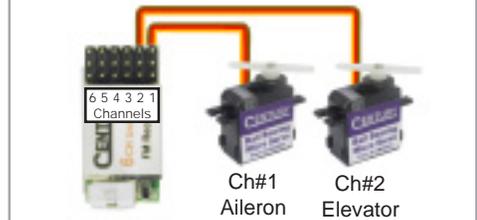
2. Note that all electronics plug into the receiver with the wires as pictured (orange wire faces receiver label). Follow the diagram for each electronic connection. Once the electronics system is connected and the transmitter is turned on, follow this step-by-step process to check your equipment.



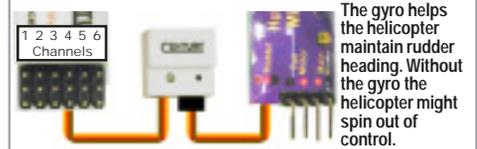
Throttle Connection



Servo Connections



Rudder & Gyro Connections



The gyro helps the helicopter maintain rudder heading. Without the gyro the helicopter might spin out of control.

Motor Connections



The mixer speed controller controls the amount of power transferred to the main and tail motors in proportion.

IMPORTANT:

All connections shown in this manual work for Futaba, Hitec & Century radio systems. If you have any other radio system please consult your radio instructions for channel numbering. (some equipment may differ in appearance.)

STEP-BY-STEP COMPONENT TEST

- *The transmitter must be on before powering the model. Always power off the model before the transmitter.
1. Turn on the transmitter - Does the green LED turn on?
 2. Plug the "Bird Seed" battery into your mixer board and wait for the flashing LEDs on the mixer board and the gyro to stop flashing.
 3. Move the right hand stick on the transmitter left to right - does the aileron servo move?
 4. Move the right hand stick forward and back - does the elevator servo move?

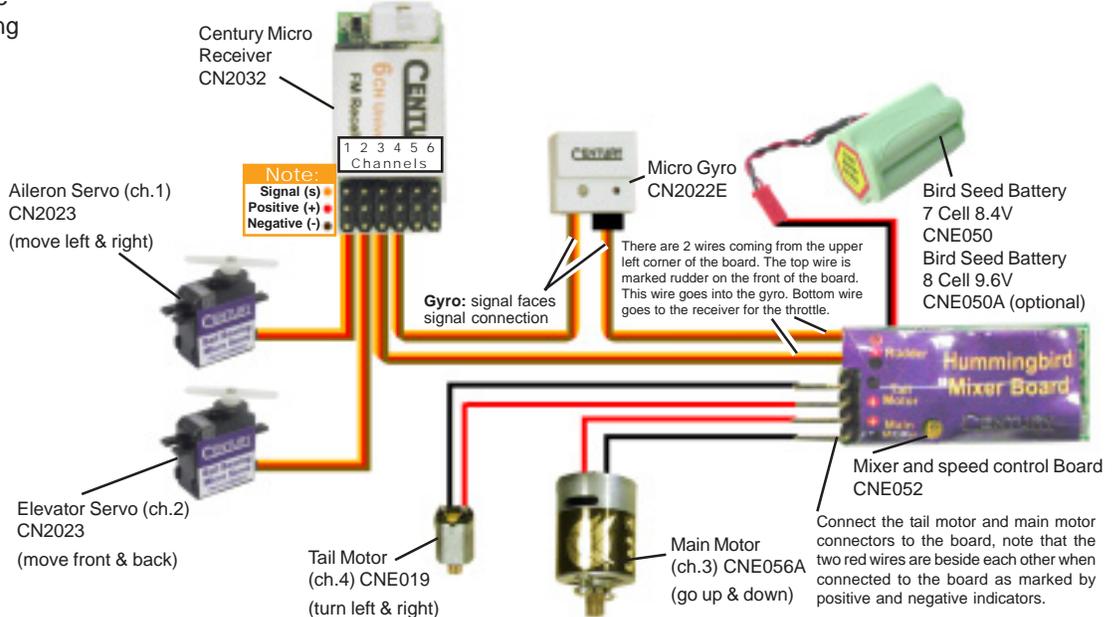
ELECTRONIC CONNECTION OVERVIEW

This diagram represents the overall connections for wiring the Hummingbird correctly. This diagram includes the separate connections pictured above.

IMPORTANT:

If you have the Century Lightning 4 channel radio please refer to the wiring diagram provided with the radio system.

Warning!
Keep electronics from becoming exposed to glue, moisture or extreme temperatures to ensure proper operation.



MODIFYING THE SERVOS FOR INSTALLATION

1. A long half arm may have to be created by cutting a full or cross arm.

2. After testing the radio equipment the servos will be in their center position. Remove the servo retaining screw and servo wheel. Replace the wheel with one of the long half arms. See section 3 step 7 for the final positions.

3. Some servo arms require widening the hole in the arm in order for them to accept the Hummingbird's pushrods using a #55 drill bit [1.34mm or 0.052"].



Section 2a

Modification And Diagnostics Of The Electronic Components (continued)

MODIFYING THE SERVOS FOR INSTALLATION

4 & 5. (optional) Trim both servo mounting flanges from each servo.

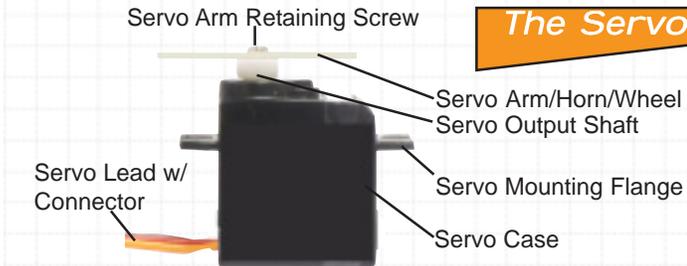
6. (optional) Cut the protruding portions from the bottom of the servo case as pictured. This will allow the best fit in the model. Note that the cut is made on the far end from the servo lead.

7. (optional) After modifying the servo it should appear as pictured.

8. Before entering section 3 you will need to remove the pushrods from the swashplate of the helicopter.



Carefully remove ball link from swashplate ball. Too much force may break the plastic balls.



The Servo

Section 3

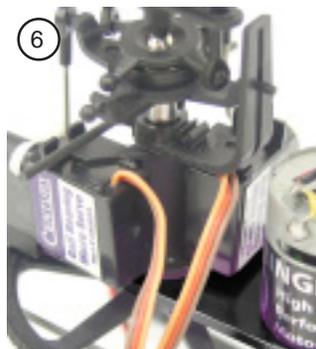
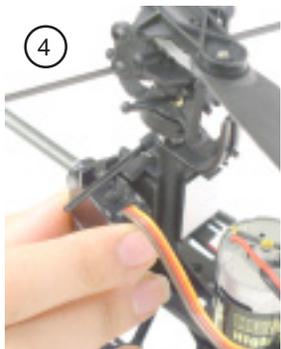
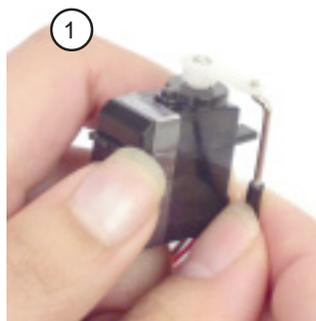
Servo and pushrod setup and installation

MOUNTING YOUR SERVOS

1. Insert the pushrod into the hole on the servo arm farthest from the output (10-12mm from center).

2. Place servo tape on the mounting surface before mounting the servo.

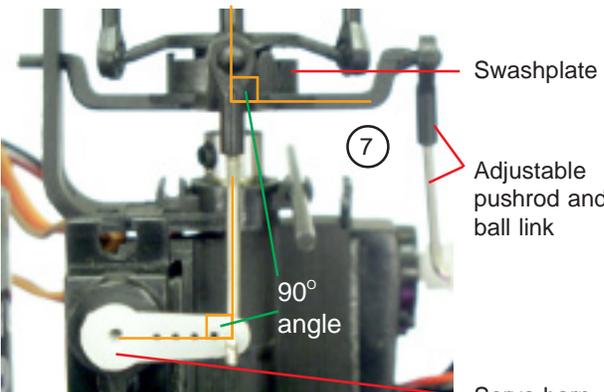
3. Position servo so that the arm can travel freely and the pushrod is straight up and down.



4. Once the mounting position of the servo is determined carefully mount the servo to the mast tower. If the servo has a label on the same side that will mount with double sided tape, peel off the label and clean the surface using rubbing alcohol.

5. After mounting the servo place the plastic ball link on the corresponding control ball on the swashplate. Only use the large opening on the ball link. (see below)

6. There are only 2 servos needed. When mounted they should appear as pictured.



7. Turn the radio on with all sticks and trims centered **except for throttle**. Make sure the throttle is in the lowest position. Use servo horns that have a hole 10-12mm out from the servo pivot center and place it as pictured (parallel to swashplate and frame). Verify also that flybar paddles, swashplate & servo horns are parallel to each other and also 90 degrees to the main shaft. You can adjust the lengths of the pushrods by twisting the ball links clockwise to shorten the length and counterclockwise to increase the length.

Ball Links

The correct side of the ball link to mount has a larger opening than the other side and also has a lip in the plastic around the opening.

⊗ Ball link closed end

⊙ Ball link open end with lip



INSTALLING ELECTRONICS TO YOUR HUMMINGBIRD

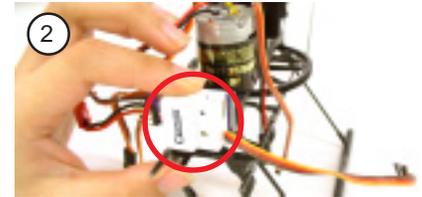
The electronics used to operate the Hummingbird helicopter install with servo tape. This will securely mount the electronic components to the frame of the helicopter for proper operation. Be sure that the diagram on page 3 reflects the wiring connections that you make to the mounted model. (note: the below photos are an example layout)

Warning!

Only use double sided servo tape for mounting your electronics. Gluing the electronics may harm them and make future maintenance impossible.



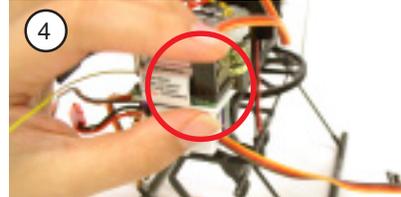
1. Mount the mixer board.



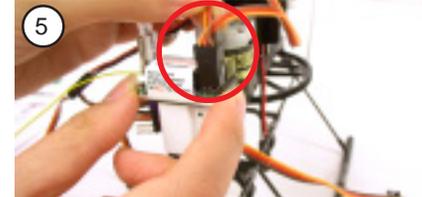
2. Mount the gyro (mount the gyro with the word "Century" oriented as pictured).



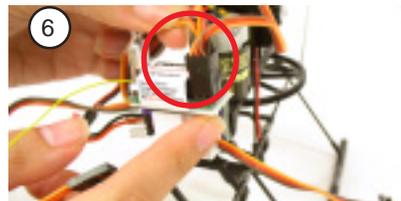
3. Mount the receiver.



4. Plug in channel 1 for aileron servo.



5. Plug in channel 2 for elevator servo.



6. Plug in channel 3 for throttle (mixer board).



7. Plug mixer rudder lead into gyro (signal wires must face each other).



8. Plug gyro into channel 4 for rudder.

ROUTING THE ANTENNA

To provide the best possible reception for the model, the Hummingbird comes with a plastic tube for routing the antenna. Put a small hole in one end and pull the antenna all the way through leaving about 2 to 3 inches of slack. Wrap the antenna around the tube. After the antenna is almost completely wrapped around the plastic tube place a hole at the other end of the tube to secure the end of the antenna.

Place a hole here using a thumb tack.



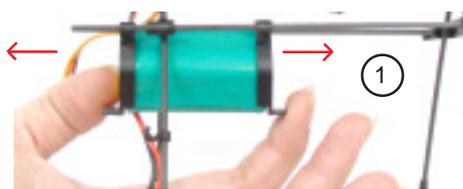
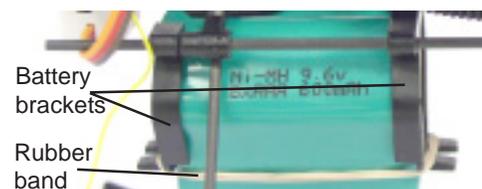
Place a hole here using a thumb tack.

MOUNTING THE BATTERY

The Hummingbird uses a NiMH battery. Both 8.4V and 9.6V Bird Seed batteries will work and fit in the provided battery brackets using a rubber band.

1. The battery slides back and forth on it's supports so you can adjust the center of gravity on the helicopter.

2. To test your results hold the helicopter by the flybar as pictured. Move the battery to have the helicopter sit level or very slightly nose heavy.



Helpful Hint

BREAKING IN THE 370 MOTOR

- Items required:
- 1x cup of water
- 2x D-cell batteries
- 1x series 3-volt D cell battery holder (example: Radio Shack part number 270-386A)
- 1x (Optional) female connector



First remove the main motor by locating and removing the two mounting screws under the main chassis. Immerse the motor in a cup of water. Connect the motor to the 3 volt battery holder Red wire to red wire black wire to black wire. (Tip—a female connector can be attached to the battery box for quick connection to the motor). Install batteries and Run motor for four minutes to a maximum of five minutes. Remove motor from water immersion and dry. Place one drop of light oil (CN2024T Tri-Flow oil) on each brass bushing for lubrication. Reinstall motor checking carefully for smooth gear mesh. (This procedure is only required to be performed once and only on a new motor).

Warning: Breaking in the motor is not "required" Manufacturer is not responsible for problems related with motor break-in.

ADJUSTING THE BLADE TRACKING

Tracking refers to trimming the actual pitch of the main rotor blades to be equal. On the first flight, bring the rotor head up to speed without leaving the ground and look at the side or profile of the rotor disk. Only one rotor blade should be visible, if there are two distinctive blades then the tracking must be changed. Observe which blade color is lower and carefully flex the rotor blade needing change into the other blade's path.



TROUBLESHOOTING QUESTIONS AND ANSWERS

Q: Everything is on and connected. Why won't the rotors turn?

- A: -The throttle trim may be set too high try moving the trim to the lowest point.
 -Your gyro may be installed incorrectly make sure the the order of wires is as shown on page 4.
 -Your throttle channel may be reversed.

Q: Why does the helicopter spin like a top?

- A: -It's possible that the rudder channel on your radio is reversed or your gyro is installed upside down. Try mounting the gyro 180 degrees by flipping the direction in which the word Century reads upside down. The tail rotor blades should only come under control of the gyro when the helicopter is moved counterclockwise (nose left).
 -Check the connections to the receiver to make sure connections are correct. If the problem persists take a look at the direction the tail motor turns.
 -The curved portion of the tail rotor should move forward being the "leading edge". If this is not the case please check the polarity of the motor's connection to the mixer board.

Q: Why is there vibration?

- A: -The main blades may be out of track. Refer to the blade tracking information above.
 -Main blades are made as balanced pairs. Replacing only one blade at a time may cause vibration if those blades are not balanced. It is best to replace main blades as a pair.
 -The main shaft may be bent. This can be difficult to notice when the blades are not moving. A bent main shaft can be caused in a crash or a hard blade strike.
 -Vibration can also result from any loosely connected components such as the battery tray or the landing gear. Make sure to secure them and be sure to check the frame and flybar every time you crash or have a hard landing as they may need to be repositioned.

Q: Why won't the helicopter come off the ground?

- A: -Be sure that the gear mesh on the main motor moves smoothly and that the battery is fully charged. Do not fully discharge a NiMH type battery as it will lose it's capacity memory.
 -If you don't think it's the battery it's possible that slightly damaged blades are reducing the possible lift. If there is a part of the blade broken off especially near the tip the helicopter may not lift properly.
 -Check to make sure nothing is rubbing against the main gear possibly slowing its RPM.

Q: Why does the helicopter operate on its own without my command inputs?

- A: -You may be getting hit with interference. RF interference can occur for many reasons. Ordinary household electronics, televisions, cell phones, microwaves, electric tools and other R/C models can add to the field of interference affecting your model. Try turning off unnecessary electronics or find an area where there are less electrical disturbances.

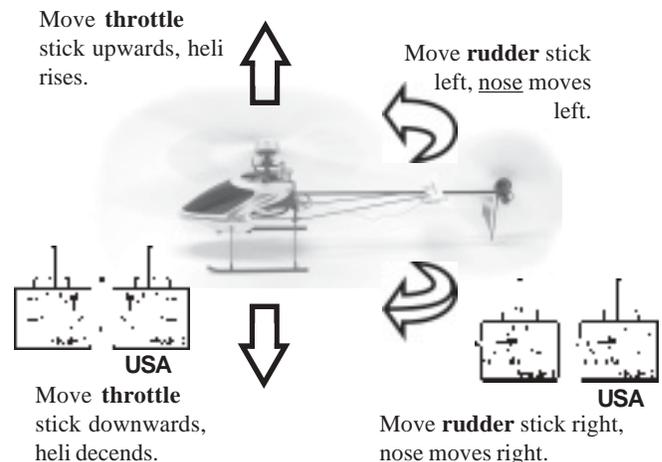
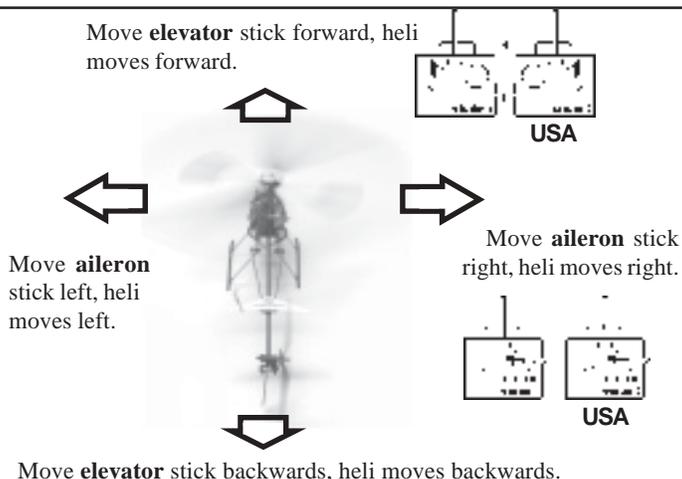
Q: Why does the helicopter still move too far forward or backward even after adjusting the servo arm positions and trims?

- A: -The helicopter may not have an even center of gravity. You can slide the battery in it's mounting tray to adjust it's center of gravity.
 -You can also combine your battery weight centering with trims and servo arm positions to get any desired combination.

*The mixer board goes through an initialization period (15 seconds or so) where it detects the radio system. If all connections are correct the light will then turn green. During regular operation the Hummingboard will remain solid green but as the battery starts to run out and the voltage drops the helicopter will simply descend. At this time it is best to land immediately.

If the throttle and trims are in high positions you will notice a red light on the mixer board this indicates that you are at maximum throttle.

CONTROL MOVEMENT



Section 7

Replacement Parts



CNE001B
Main Rotor Yoke & Stiffener



CNE002
Rotor Head Links



CNE003
Main Blades



CNE004A
Rotor Hub & Bearings



CNE005
Flybar



CNE006A
Flybar Paddles



CNE007A
Seesaw & Timing Yoke



CNE008B
Swashplate v.3



CNE009A
Cyclic Links & Rods



CNE011B
Main Frame



CNE012A
Battery Support



CNE013
Main Gear & Shaft



CNE014
Landing Gear



CNE015
Rotor Head Bearings



CNE016A
Canopy & Decal



CNE017A
Tail Boom & Gearbox



CNE018A
Fins & Boom Supports



CNE019
Tail Drive Motor



CNE019G
Tail Pinion Gear



CNE020
Tail Gear & Shaft



CNE021
Tail Bearings



CNE022
Tail Rotor Blades



CNE023
Tie Wraps, Tape & Band



CNE024
Main Shaft Collar



CNE050
Battery



CNE051
Charger



CNE052
Mixer Control Board



CNE053
Trainer Pod



CNE054A
Crash Kit



CNE056A
Main Motor



CNE056G
Main Motor Gear



CN2022E
Micro Piezo Gyro



CN2023
BB Micro Servo



CN2032
Micro Receiver

High Authority Tail Motor



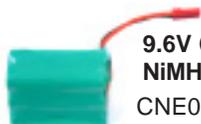
CNE253
\$14.95

RotorTech Carbon Main Blades



CN262302
\$49.95

HUMMINGBIRD v.3 ACCESSORIES



9.6V 600mAh NiMH Battery
CNE050A
\$17.95



Lithium Ion Batteries
CNE057 700mAh 11.1V \$42.50
CNE057A 700mAh 7.4V \$29.95
CNE058 1400mAh 11.1V \$39.95



Main Motor Heat Sink
CNE061
\$5.05



Tail Motor Heat Sink
CNE060
\$4.25

Carbon Fiber Main Blades



CNE062 \$44.00



Carbon Fiber Tail Blades
CNE063 \$26.95



Carbon Fiber Fly Bar Paddle
CNE064 \$26.95



Carbon Fiber Canopy
CNE065
\$39.95



30 Minute Quick Charger
CN2033
\$27.95



Main Blade Holder
CNE059
\$3.35



Lightning Brushless Motor
CNE252
\$52.95



Brushless Speed Controller
PHX-10
\$59.95