

# Mini CP

FLYBARLESS SERIES



## User Handbook

### Specifications:

Main Rotor Dia. : 241mm

Tail Rotor Dia. : 42mm

Overall Length: 220mm

Gyro: Three-axis

All-up Weight: 45g (Battery included)

Standard transmitter: DEVO-8S

Optional transmitter: DEVO-6/7/10/12

Receiver: RX2632V-D

Main Brush Motor: 1220FC

Tail Brush Motor: 0615R

Servo: wk-02-4

weight: 2.42g

speed: 0.12sec/60° (3.0~4.5V)

dimension: 16.5×6.8×15.7mm

Battery: 3.7V 240mAh Li-Po

### Features:

- 1) The flybarless design characterizes low power loss and great improvements in efficiency.
- 2) Sophisticated 3-Axis gyro flybarless stabilization system automatically adjusts the controls for stable flight .
- 3) Highly developed low voltage drive system provides a green, environmentally friendly and safe power solution.
- 4) Mini size helicopter for indoors, providing 5-6 minutes of flight time after a full charge.
- 5) Telemetry of Temperature and voltage, and program upgrading online become available when working with DEVO-8S.

# Contents

<b>01. Foreword</b> .....	1	<b>08. Servo setup and adjustment</b> .....	10
<b>02. Safety matters needing attention</b> .....	1	8.1 Specification and function of servo .....	10
2.1 Important Statement .....	1	8.1.1 Specification of servo .....	10
2.2 Safety matters needing attention .....	1	8.1.2 Basic function of servo .....	10
(1) Far away from obstacles and people .....	1	8.2 Connection and adjustment of servos .....	10
(2) Keep away from humidity .....	1	8.2.1 Connection of servos .....	10
(3) Proper operation and maintenance .....	1	8.2.2 Adjustment of servos .....	10
(4) Avoid flying alone .....	1	8.2.3 Matters needing attention .....	10
(5) Safety operation .....	2	<b>09. Steps of flight</b> .....	11
(6) Keep away from high-speed rotating parts .....	2	9.1 Installation of battery pack .....	11
(7) Protect from heat .....	2	9.2 Turn on the power .....	11
2.3 Attention before flight .....	2	9.2.1 Turn on the power .....	11
<b>03. Definition of Helicopter Orientation</b> .....	3	9.2.2 Matters needing attention .....	11
<b>04. Standard equipment</b> .....	3	9.2.3 Trouble shooting a flashing receiver.....	12
<b>05. Transmitter setup</b> .....	4	LED after connecting the power cable	
5.1 DEVO-8S(standard radio) setting .....	4	9.3 Adjustment before flight .....	12
5.2 DEVO-6/7/10/12(optional radio) settings .....	7	9.3.1 Adjustment of swashplate .....	12
<b>06. Setup of the RX2632V-D receiver</b> .....	8	9.4 Adjustment of Main rotor blades.....	13
6.1 RX2632V-D receiver features .....	8	9.4.1 Color decal (tracking tape) .....	13
6.2 Function of receiver .....	8	9.4.2 Inspection and gravity center .....	13
6.3 Testing Mode setting .....	8	adjustment of main rotor blades	
6.4 Guideline of Receiver use .....	9	9.4.3 Tracking inspection .....	13
6.5 Channel connection of receiver .....	9	9.4.4 Adjustment of blade tracking .....	14
6.6 Matters needing attention .....	9	<b>10. Flight over</b> .....	14
<b>07. Instruction for GA006 Charger</b> .....	9	<b>Appendix 1 – Flight control</b> .....	15
7.1 Instruction for GA006 Charger .....	9	<b>Appendix 2 – Flight practice</b> .....	16

1 Flight practice for the beginner .....	16
1.1 Matters needing attention.....	16
1.2 Steps .....	16
2 Advanced practice .....	17
2.1 Frog-hopping practice .....	17
2.2 Practicing controlled take off and landing .....	17
2.3 Practicing square flight .....	17
2.4 Figure eight practice .....	17
2.5 Aerobatic flight.....	18



## 01

## Foreword



## 02

Safety matters  
needing  
attention**Dear customer:**

Thank you for purchasing a Walkera radio control aircraft product. In order to quickly and safely master the operation of the Mini CP RC helicopter, please read the user handbook carefully and then keep it in a safe place for future consultation and reference.

Mini CP with spread spectrum technology features impressive power, stable flight, immediate response and strong anti-jamming characteristics.

**2.1 Important Statement**

- (1) This product is not a toy. It is a piece of complicated equipment which harmoniously integrates engineering materials, mechanics, electronics, aerodynamic and high frequency radio. Correct installation and adjustment are necessary to avoid accidents taking place. The owner must always operate in a safe manner. Improper operation may result in serious property damage, bodily injury or even death.
- (2) We accept no liability for damage and consequent damage arising from the use of these products, as we have no control over the way they are maintained, used and operated.
- (3) This product is suitable for experienced RC Helicopter pilots aged 14 years or more. All minors must be accompanied by a responsible adult when flying.
- (4) The flight field should be legally approved by the local government. We accept no liability for any safety duties or fines arising from operation, usage or mis-control after the sale of the products.
- (5) We consign our distributors to offer technical support and service after sale. Please contact the local distributors for problem resolution caused by usage, operation, maintenance, etc.

**2.2 Safety matters needing attention**

RC helicopter flight is a high risk hobby, whose flight should be kept far away from other people. Mis-assembled or broken main frame, defective electronic equipment, and/or problematic radio system will lead to unforeseen accidents such as bodily injury or property damage. The pilot **MUST** pay attention to the flight safety and **UNDERSTAND** his responsibility for accidents caused by his carelessness.

**(1) Far away from obstacles and people**

An RC helicopter in flight has risk of uncertain flight speed and direction which is potentially dangerous. When flying, please keep your RC helicopter far away from people, high buildings, high-tension lines, etc, and avoid operating in rain, storms, thunder and lightening.

**(2) Keep away from humidity**

RC helicopter should be kept away from humidity and vapor because its complex, precise electronic components and mechanical parts may be damaged.

**(3) Proper operation and maintenance**

Please use Walkera original spare parts to upgrade, modify or maintain your helicopter in order to ensure its safety. Please operate your helicopter within the range of functions permitted. It is forbidden to use it outside of the safety laws or regulations.

**(4) Avoid flying alone**

At the beginning of learning about radio-controlled flight there are some difficulties to overcome. Please avoid flying alone. Invite experienced pilots to guide you (two of the most effective methods to practice are via a PC flight simulator and/or under the supervision of a skilled pilot).





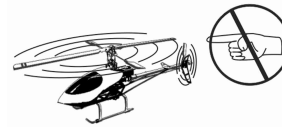
## (5) Safe operation

Please fly your helicopter according to your physical status and flight skills. Fatigue, listlessness and mis-operation will increase the possibilities of accidental hazard.



## (6) Keep away from high-speed rotating parts

Please keep the spinning blades of both main rotor and tail rotor away from the pilot, people and other objects.



## (7) Protect from heat

An RC helicopter is made from metal, fiber, plastic and electronic components, etc. Please keep away from heat and sunshine in order to avoid distortion, even damage, caused by high temperatures.



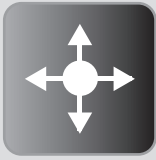
## 2.3 Attention before flight

- (1) Ensure the battery packs of both transmitter and receiver are fully charged (saturated).
- (2) Ensure both the throttle stick and the throttle trim of your transmitter stay at the lowest positions before operation.
- (3) Please strictly obey the order of turn-on and turn-off before operation. When starting your flight, please turn on your transmitter first, and connect the power cable of your helicopter last.  
When finishing your flight, please disconnect the power cable of your helicopter first, and turn off your transmitter last.
- (4) An incorrect order of connection may cause your helicopter to lose control. Please cultivate the correct habit of turn-on and turn-off.
- (5) Ensure the directions and actions in which servos execute transmitter commands are correct and smooth with respect to inputs. Never operate the helicopter with a broken servo as it will result in further damage to the product or people.
- (6) Check there are no missing or loose screws and nuts, no incorrectly assembled or damaged parts. Carefully check the main blades have no defects, especially the position close to the main blade connector. Broken or mis-assembled parts will have a negative effect on the flight performance, and will cause unforeseen potential dangers.
- (7) Check all the connections between ball linkages and balls. Loose linkages and balls should be replaced. Loose connections between linkages and balls will have a negative effect on the flight performance possibly resulting in a loss of control.
- (8) Make sure the connections between the power cables of the battery pack and motors are solid. Continuous vibration and drastic 3D actions may loosen the batteries or cables in flight, possibly resulting in a loss of control.



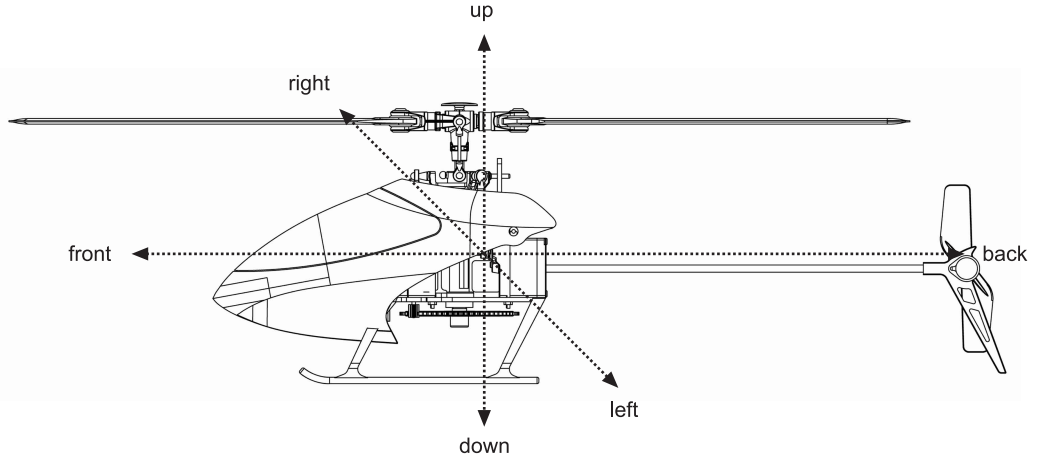
# 02

**Safety matters  
needing  
attention**



## 03

### Definition of Helicopter Orientation



## 04

### Standard equipment



▲ Helicopter



▲ Transmitter



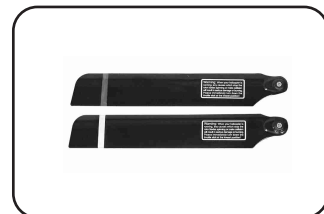
▲ Li-polymer battery pack



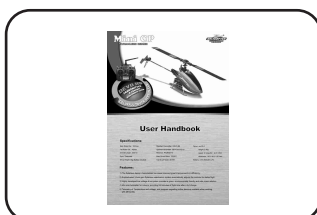
▲ Tool kit



▲ Wall adapter /Power supply



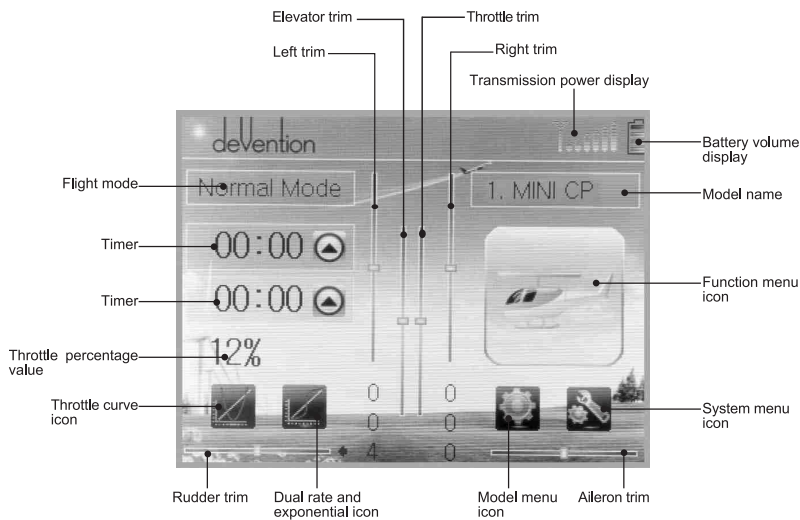
▲ Main rotor blades



▲ User Handbook

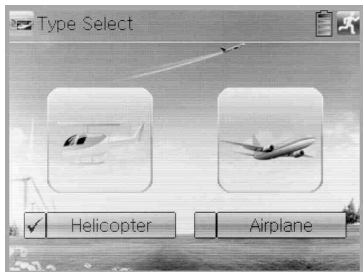
5.1 DEVO-8S(standard radio) setting

5.1.1 Boost Screen



5.1.2 Model Selection

Touch the shortcut icon to enter Mode Menu, and then click the icon to enter the interface of Model Select. Select the desired item, and then click the icon to exit.



5.1.2 Model Selection



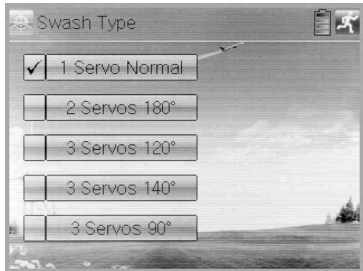
5.1.3 Model Name

5.1.3 Model Name

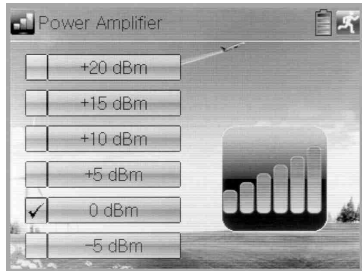
Touch the shortcut icon to enter Mode Menu, and then click the icon to enter the interface of Model Name. Then name the above selected item as "MINICP". Touch the icon to exit.

5.1.4 Swash Type

Touch the shortcut icon to enter Mode Menu and then click the icon to enter the interface of Swash Type. Choose "1 Servo Normal", and then click the icon to exit.



5.1.4 Swash Type



5.1.5 Power Amplifier

5.1.5 Power Amplifier

Touch the shortcut icon to enter Mode Menu, and then click the icon to enter the interface of Power Amplifier. Select the item "0dBm". Click the icon to exit.



05

Transmitter  
setup

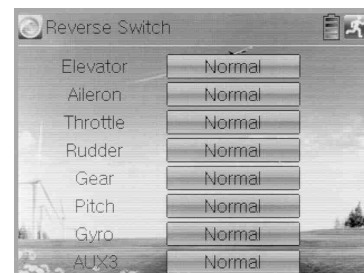


## 05

Transmitter  
setup

## 5.1.6 Reverse Switch

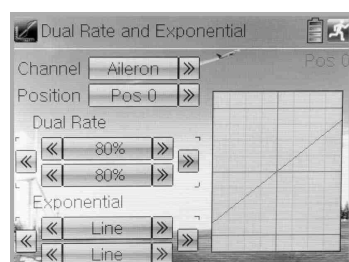
Touch the icon to enter Function Menu, and then click the icon to enter the interface of Reverse Switch to set as below, and then click the icon to exit.



## 5.1.7 Dual Rate and Exponential

Touch the icon to enter Function Menu, and then touch the icon to enter the interface of Dual Rate and Exponential.

Below are the set values for each point, and then click to exit.



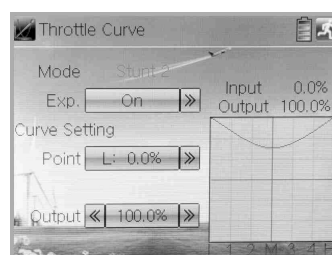
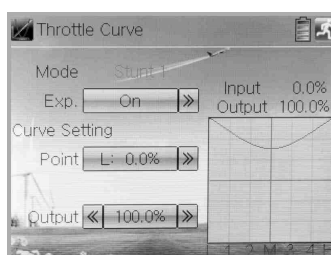
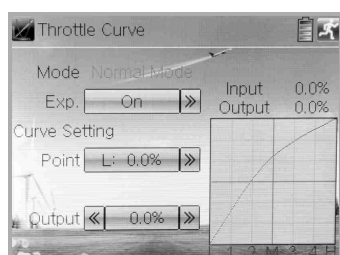
Channel	Elevator		Aileron		Rudder
Position	Position0	Position1	Position0	Position1	Position0
Servo range	80%	100%	80%	100%	100%
Parameter curve	Beeline	Beeline	Beeline	Beeline	Beeline

## 5.1.8 Throttle Curve

Touch the shortcut icon to enter Function Menu, and then click the icon to enter the interface of Throttle Curve while an enquiry dropdown is shown "All Servos Hold?". If click OK, all the servos will be locked at the current status; if click Cancel, all the servos will be unlocked at the current status.

Below are the set values for each point, and then click to exit.

Flight mode	point output	L	M	H
Normal Flight		0.0%	70.0%	100.0%
Stunt 1		100.0%	75.0%	100.0%
Stunt 2		100.0%	75.0%	100.0%



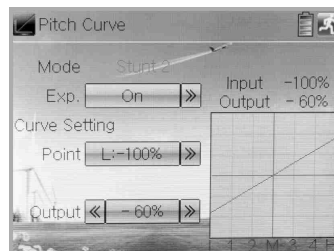
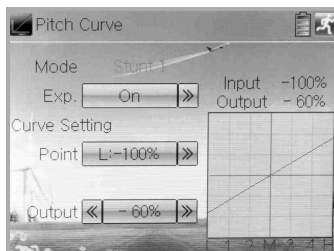
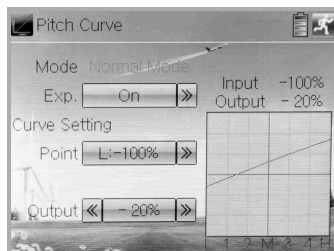
## 5.1.9 Pitch Curve

Touch the icon to enter Function Menu, and then click to enter Pitch Curve. A dropdown pops up "All Servos Hold?". Click OK for all the servos will be locked at the current status; click Cancel for unlocked.

Below are the set values for each point, and then click to exit.

Flight mode	point output	L	M	H
Normal Flight		-20%	+20%	+56%
Stunt 1		-60%	0%	+60%
Stunt 2		-60%	0%	+60%

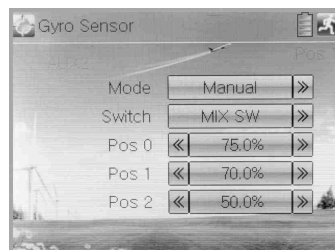




## 5.1.10 Gyro sensor

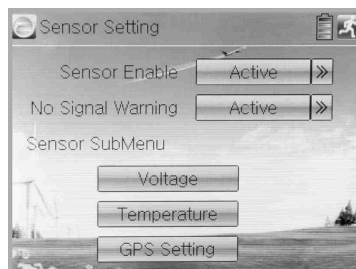
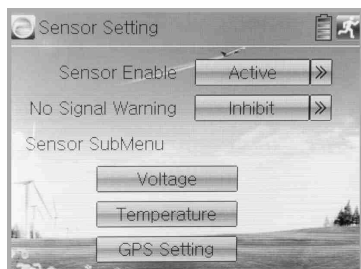
Touch the icon to enter Function Menu, and then touch the icon to enter the interface of Gyro Sensor.

Below are the set values for each point, and then click to exit.

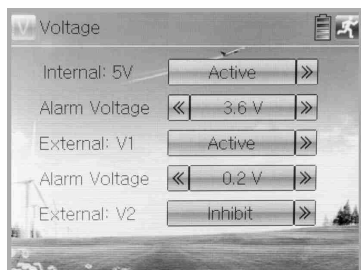


## 5.1.11 Sensor setting

Sensor setting: Touch icon to enter system menu, and Touch system sensor icon to enter Sensor Setting interface. Touch Sensor Enable to expand navigation mark, there are Active and Inhibit two options. Touch Active to expand the navigation mark, there include NO Signal Warning, and Sensor Submenu. And Touch No signal Warning to expand the navigation mark, there are Active and Inhibit for option. Touch Active, it will alarm when there is signal lose.

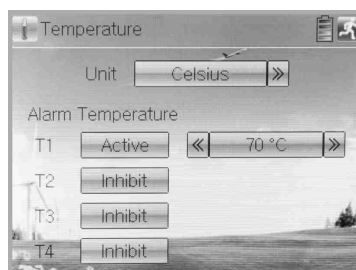


Touch Voltage in sensor setting menu to enter voltage sensor interface. Touch Internal 5V to expand navigation mark, there are Active and Inhibit for option. Touch Active to activate the function. There will be one Alarm Voltage navigation mark under it. Touch left side to reduce the setting value and right side to increase.



Touch External V1 to expand the navigation mark, there are active and inhibit for option. Touch Active to start the function and the navigation mark Alarm voltage will be shown and Touch left side to reduce the setting value and right side to increase.

Touch Temperature in Sensor setting interface to enter temperature sensor Interface. And Touch Unit to expand the navigation mark, there are Celsius and Fahrenheit for option. Touch either of them to choose.



Touch Inhibit after T1 mark, it will be Active instead of Inhibit. And the navigation mark Alarm Temperature will show and Touch left side of navigation mark to reduce the setting value and right side to increase.





# 05

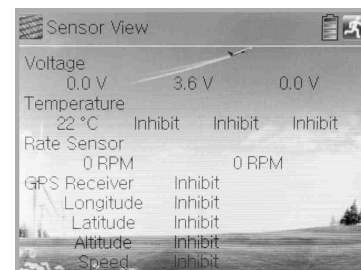
## Transmitter setup



## 05

Transmitter  
setup

Touch icon  to enter into System Menu and touch Sensor View icon  to enter Sensor View interface.



## 5.1.12 Save

Turn off the DEVO-8S power, and all the setting data will be automatically saved.

## 5.2 DEVO-6/7/10/12(optional radio)settings

## 5.2.1 Type:Helicopter

## 5.2.2 Swash type:1 Servo Normal

## 5.2.3 Reverse switch settings

DEVO-6		DEVO-7		DEVO-10		DEVO-12	
Elevator	Normal	ELEV	NORM	Elevator	Normal	Elevator	Normal
Aileron	Normal	AILE	NORM	Aileron	Normal	Aileron	Normal
Throttle	Normal	THRO	NORM	Throttle	Normal	Throttle	Normal
Rudder	Normal	RUDD	NORM	Rudder	Normal	Rudder	Normal
Gyro	Normal	GEAR	NORM	Gear	Normal	Gear	Normal
Pitch	Normal	PITCH	NORM	Pitch	Normal	Pitch	Normal
		GYRO	NORM	Gyro	Normal	Gyro	Normal
				AUX3	Normal	AUX3	Normal
				AUX4	Normal	AUX4	Normal
				AUX5	Normal	AUX5	Normal
						AUX6	Normal
						AUX7	Normal

## 5.2.4 Dual Rate and Exponential

Channel	Elevator		Aileron		Rudder
Position	Position0	Position1	Position0	Position1	Position0
Servo range	80%	100%	80%	100%	100%
Parameter curve	Beeline	Beeline	Beeline	Beeline	Beeline

## 5.2.5 Throttle Curve

Flight mode	point output	L	M	H
Normal Flight		0.0%	70.0%	100.0%
Stunt 1		100.0%	75.0%	100.0%
Stunt 2		100.0%	75.0%	100.0%

## 5.2.6 Pitch Curve

Flight mode	point output	L	M	H
Normal Flight		-20%	+20%	+56%
Stunt 1		-60%	0%	+60%
Stunt 2		-60%	0%	+60%

## 5.2.7 Gyro Sensor

Mode	Manual
Switch	MIX SW
Pos 0	75.0%
Pos 1	70.0%
Pos 2	50.0%

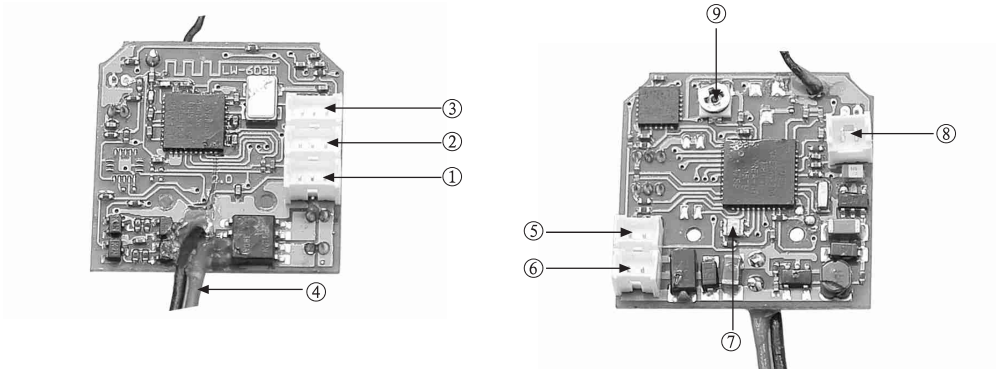
6.1 RX2632V-D receiver features

- (1) The RX2632V-D receiver uses 2.4GHz spread spectrum technology with automatic scanning, code paring and LED bind indication functions.
- (2) The use of a high performance receiver dramatically reduces the possibility of signal loss and ensures the accuracy and reliability of signal reception.
- (3) 6-channel output makes multiple functions with fine control available.
- (4) Elevator/Aileron gyro sensitivity can be adjusted precisely and specific to meet your operation habit.



06

Setup of the RX2632V-D receiver



6.2 Function of receiver

S/N	Name for short	Full name	Function
1	ELEV	Elevator servo	Connects to the elevator servo and receives the control signal of elevator servo.
2	AILE	Aileron servo	Connects to the aileron servo and receives the control signal of aileron servo.
3	PIT	Pitch servo	Connects to the PIT servo and receives the control signal of PIT servo.
4	BATT.	Power cable	Connects to the battery(3.7V)
5	MAIN MOTOR	Main motor	Connects to the main motor and receives the control signal of main motor.
6	TAIL MOTOR	Tail motor	Connects to the tail motor and receives the control signal of tail motor.
7	LED	LED	Displays the status of receiving signal.
8	SENSOR	Temperature sensor	connect temperature sensor and measure motors temperature.
9	ELE/AILE G.	Elevator/Aileron gyro sensitivity adjust knob	Adjusts the Elevator/Aileron gyro sensitivity, changes the flight effect.

6.3 Testing Mode setting

Switch MIX to position 2 and make sure the gyro setting position 2 value  $\leq 50.0\%$  . Meanwhile, the LED light starts to flash in red and green color alternatively, it enters into testing mode. Please test the helicopter by making the swash plate level through the servos and mechanic structure, and do PIT adjustment. Switch MIX to position 0 to enter into flight mode. Flight is prohibited under testing mode.

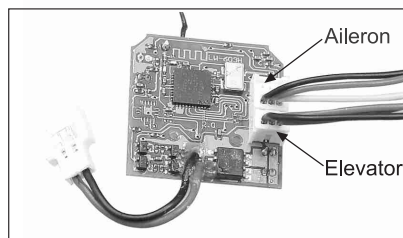


## 06

Setup of the  
RX2632V-D  
receiver

## 6.4 Guideline of Receiver use

- (1) Status of LED indicator of receiver: quick flash means the signal is being received; solid lighting means the signal has been received; slow flash means no signal has been received.
- (2) Elevator/Aileron gyro turning knob: CW rotating toward (+) increases the Elevator/Aileron gyro sensitivity and CCW rotating toward (-) decreases the Elevator/Aileron gyro sensitivity.
- (3) Clear fix ID in receiver: Insert plug terminal into ELE channel on receiver to clear fix ID memory and disconnect plug terminal when the indicator on receiver start to flash.
- (4) Upgrade receiver: please plug the three-colored wire (black, red and blue) terminal into ELE channel on receiver, meanwhile plug the other three-colored wire (black, red and yellow) terminal into Aileron channel (the fix ID will probably be cleared after upgrading). Please refer to illustration:



## 6.5 Channel connection of receiver

S/N	Receiver terminal	Connection method	Wire direction
1	ELEV	Connects to the plug of elevator servo signal wire	The white wire is facing right
2	AILE	Connects to the plug of aileron servo signal wire	The white wire is facing right
3	PIT	Connects to the plug of pitch servo signal wire	The white wire is facing right
5	MAIN-MOTOR	Connects to the plug of main motor signal wire	The red wire is facing right
6	TAIL-MOTOR	Connects to the plug of tail motor signal wire	The red wire is facing right
8	Temperature sensor	Connects to the plug of temperature sensor signal wire	The red wire is facing left

## 6.6 Matters needing attention

- (1) All the signal wires should be connected in a correct way. Misconnection will result in failure to receive signal, even damage to receiver.
- (2) Use special adjustment pen to rotate the Elevator/Aileron gyro sensitivity in order to avoid damaging knobs.
- (3) The helicopter must be placed in horizontal level when matching code.
- (4) Please strictly follow the sequence of "power on the transmitter first, then connect the battery". Turn on the transmitter, then connect the battery with receiver within 10 seconds, the red light on receiver begins to flash. The red light will get a solid light 1-3 seconds, after the transmitter finishes pairing with receiver, the red light will flash again. If the red light get a solid light and a mechanical BEEP sound can be heard from the servo, it means the receiver have received the signal from the transmitter and their codes match successfully.



## 07

Instruction  
for GA006  
Charger

## 7.1 Instruction for GA006 Charger

- (1) GA006 is suitable for 1 cell (3.7V) Li-ion or Li-polymer battery and can charge 2 pieces of batteries maximum at the same time.
- (2) Please plug the pin of your battery into the jack of the GA006 first and then connect to the power. Otherwise, the LED may not become red and the voltage may be higher than 3.8V. You need to disconnect the USB power supply and reconnect it.
- (3) When USB power supply is well connected and battery is charging, the LED will become red. After your battery is full charged, the LED will not become red.



## 8.1 Specification and function of servo

### 8.1.1 Specification of servo

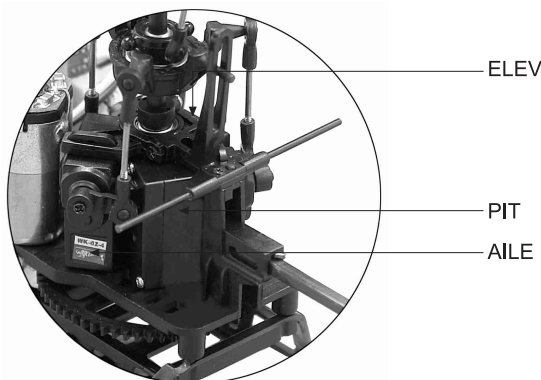
	Weight	Voltage	Speed	Dimension
WK-02-4	2.42g	3.0~4.5V	0.12sec/60°	16.5×6.8×15.7mm

### 8.1.2 Basic function of servo

A servo is an electro-mechanical device that converts a signal from the receiver into mechanical movement. By means of a sensor the accurate control of its direction and speed is possible.

## 8.2 Connection and adjustment of servos

### 8.2.1 Connection of servos



S/N	Receiver terminal	Connection method	Wire direction
1	ELEV	Connects to the plug of elevator servo signal wire	The white wire is facing right
2	AILE	Connects to the plug of aileron servo signal wire	The white wire is facing right
3	PIT	Connects to the plug of pitch servo signal wire	The white wire is facing right

### 8.2.2 Adjustment of servos

Before departure from the factory, all the servos have been correctly adjusted and are locked in the correct position. In general no adjustment is needed.

### 8.2.3 Matters needing attention

- (1) All the plugs should be correctly connected. An incorrect connection will cause the servos not to function or to operate in a direction which is different from the one required.
- (2) Please ensure that the travel extents of the servo bell cranks are all within the permitted maximum range after maintenance, replacement or adjustment of servo linkages. Failure to do this could cause a servo to jam at maximum travel causing loss of control, damage and possibly injury.



# 08

## Servo setup and adjustment



## 09

Steps of  
flight

## 9.1 Installation of battery pack

Install the battery pack into the battery compartment in the direction of the arrow.

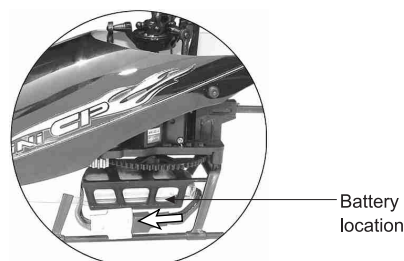


Diagram of battery installation.

## 9.2 Turn on the power

## 9.2.1 Turn on the power



1. Install the battery in the battery compartment.



2. Turn on the power of transmitter.



3. Pull down the throttle stick and throttle trim of transmitter to the lowest position, and then move the elevator trim, aileron trim, and rudder trim at the neutral positions, respectively.



4. Connect the power cable of the helicopter and wait to receive the signal from the transmitter. The helicopter should be placed on flat ground or surface during code pairing (binding). Do not move the transmitter sticks or the helicopter until binding has completed.

## 9.2.2 Matters needing attention

- (1) Please always strictly follow the sequence of "power on the transmitter first, then connect the battery". Turn on the transmitter, then connect the battery to the receiver within 10 seconds, the red light on the receiver will begin to flash. The flashing red light will turn to a solid red light for 1-3 seconds, after the transmitter finishes pairing with the receiver, the red light will flash again. If the red light then turns solid red and a mechanical BEEP sound can be heard from the servos, it means the receiver has successfully received the signal from the transmitter and their codes match.
- (2) If more than 10 seconds passed before the power cable was connected binding will fail. When binding fails, disconnect the battery, turn off the transmitter and repeat step (1).

9.2.3 Trouble shooting a flashing receiver LED after connecting the power cable

Possible causes	Solutions
Code pairing failed.	Turn transmitter off then on and re-connect helicopter power cable.
The throttle trim and throttle stick of transmitter are not at the lowest position.	Pull down the throttle trim and throttle stick to the lowest position and re-code pair.
The transmitter battery is low or empty.	Replace transmitter battery and re-code pair (re-bind).
The helicopter battery is low or empty.	Replace the helicopter battery with a fresh pack and re-code pair.
No function in receiver or transmitter.	Replace faulty receiver or transmitter and re-code pair.

9.3 Adjustment before flight

**Warning:** Disconnect the power cable of main motor before adjustment for the sake of pilot's safety.

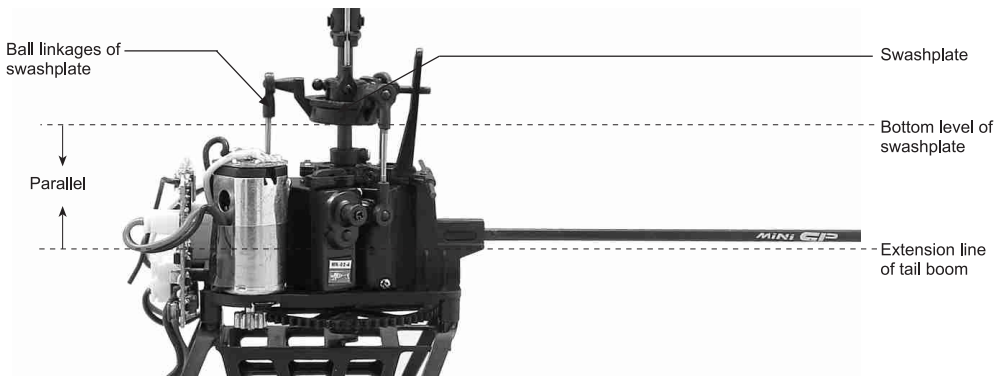
**Matters needing attention:** Before departing the factory, all of the components have been correctly adjusted. Normally it is not necessary to make any adjustment. However, due to disturbance during long-distance transportation, some joints, screws or parts may be loose or even damaged. For safety's sake, please refer to section 2.3 - "attention before flight" and strictly follow the helicopter checks described.

9.3.1 Adjustment of swashplate

Inspection of swashplate

**Warning:** Disconnect the power cable of main motor before adjustment for the sake of pilot's safety.

Place your helicopter on a spacious flat ground. Move the transmitter throttle stick and throttle trim to the lowest position. Move the elevator trim, aileron trim, and rudder trim to the neutral position. Turn on the transmitter first and then connect the power cable of the helicopter. After the LED on the receiver stops flashing and the beeps of the servos are heard, the transmitter and receiver are successfully connected. Next, check if the bottom plane of the swashplate is parallel to the longitudinal axis (front to back) of the helicopter - the extension line of the tail boom. Also check if the plane of the swashplate is parallel to the lateral axis (left to right) of the helicopter.



Adjustment of swashplate

**Warning:** Disconnect the power cable of main motor before adjustment for the sake of pilot's safety.

**Servo bellcranks must be horizontal at mid throttle. Swashplate must be at center of travel at mid throttle.**

If during the check above it is found that the swashplate is not level with either axis it can be adjusted using the following 2 steps:

- (1) Adjust the servo bellcrank. First disconnect the helicopter power cable and turn off the transmitter. Unscrew the screw in the bellcrank of the servo and remove the bellcrank. Re-turn on the transmitter and re-connect the helicopter power cable in sequence. After code pairing, replace the servo bellcrank so it is horizontal and check the swashplate is now level. If the swashplate is still angled or not at the center of travel, replace and re-tighten the bellcrank screw and move to step (2).
- (2) Adjust the servo ball linkage. Adjust the length of the ball linkages of each servo until the swashplate is level and in the centre of the range of travel.



09

Steps of flight



## 09

Steps of  
flight

## 9.4 Adjustment of main rotor blades

The aim of adjustment is to equalize the weight and centre of gravity of the main rotor blades and to ensure the blades are at the same level when rotating. Correct adjustment of the blades reduces vibration which improves performance and durability.

## 9.4.1 Color decal (tracking tape)

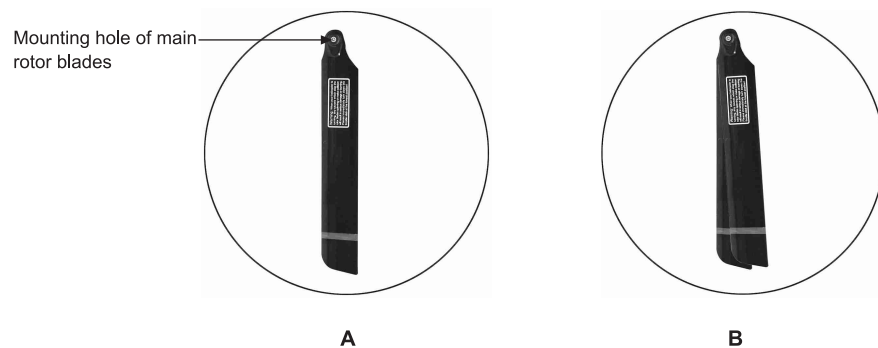
Two different colored blade tracking decals (red and silver) should be placed 6 mm away from the end of each blade tip. The purpose is to identify the position of each spinning blade in the following blade tracking inspection process.

## 9.4.2 Inspection and gravity center adjustment of main rotor blades

- (1) Transverse inspection and adjustment of gravity center. Use a bolt to insert the mounting hole of main rotor blades and screw the bolt cap, and then stretch the main rotor blades in line. Hang the couple of main rotor blades in the air using the bolt as a fulcrum. If the main rotor blades keep in a horizontal line, it means ok; if one end of the main rotor blades is higher than the other one, please move the high end stick to the high direction, or move the low end stick to the high end until balanced.



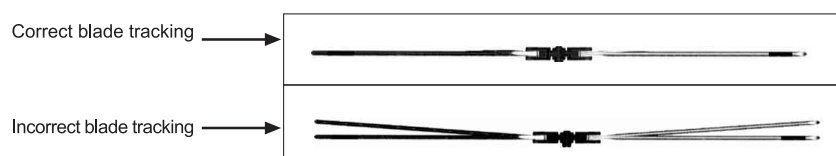
- (2) Longitudinal inspection of gravity center. Shown as below, take the mounting hole of main rotor blades as the fulcrum to vertically hang in the air. If the two main rotor blades are almost superposed, it means normal (shown as Fig. A); otherwise abnormal.



## 9.4.3 Tracking inspection

**Note:** for the sake of safety, please keep the main rotor blades of helicopter at least 3 meters away from the pilot when his inspecting the tracking problem.

Slowly push up the throttle stick of transmitter and ensure both the line of sight of pilot and the main rotor blades are in the same horizontal level. When the main rotor blades are spinning, please observe whether or not the two levels, respectively caused by the red and silver decals, are superposed in the same level. Superposition is correct; otherwise there exists tracking problem and adjustment is required.





## 9.4.4 Adjustment of blade tracking

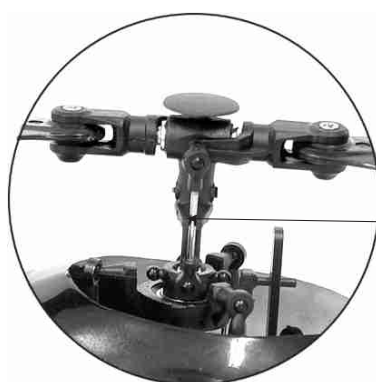
Below are the main causes for incorrect blade tracking:

- (1) The weights of two blades are unequal.
- (2) The gravity center distribution of two blades is unequal.
- (3) The lengths of ball linkages of two blades are set improperly.
- (4) When blades are too loose, blades shake due to gap, or main blade connectors distort.

Please shorten the length of the ball linkage of the higher blades or lengthen ball linkage of lower blades to adjust blade tracking.

If the main rotor blades happen to be normal at low speed; abnormal at high speed, or abnormal at low speed, normal at high speed, please check whether it is loose or distortion. If it is loose, please re-lock tightly. If it is distortion, please replace it immediately. The blades tracking can only be avoided after your repeated precise adjustment.

The lengths of ball linkages of main blades are required to adjust when there exist tracking blades. If the decal color of the high blade is red, please shorten the length of the ball linkage of red blade and/ or prolong the length of the ball linkage of blue blade. If the decal color of the high blade is blue, please shorten the length of ball linkage of blue blade and/ or prolong the length of ball linkage of red blade.



ball linkages of main blades

\*\*\*\*\*



Step 1: disconnect the power cable of helicopter.



Step 2: turn off the transmitter.



Step 3: Remove the battery pack.



09

Steps of flight



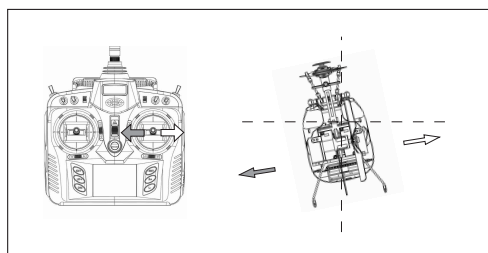
10

Flight over

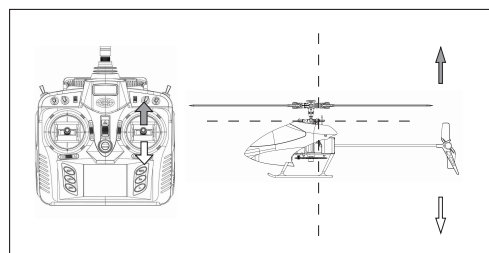


## Appendix 1- Flight control

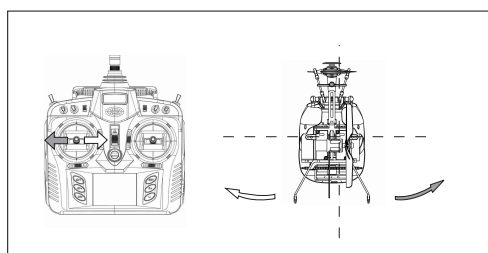
### Mode 1 (throttle stick at right hand)



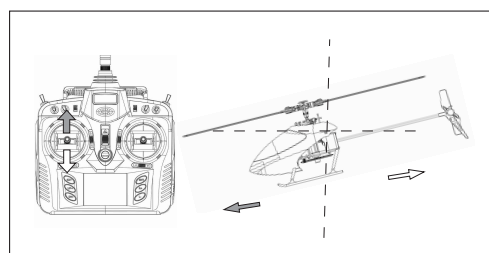
1. When moving the aileron stick left or right, the helicopter accordingly flies left or right.



2. When moving the throttle stick up or down, the helicopter accordingly flies up or down.

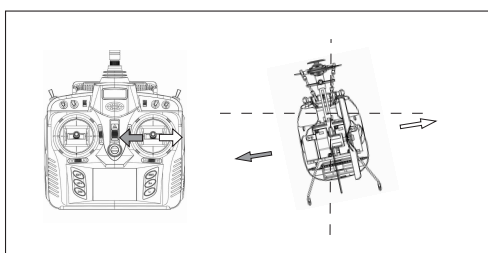


3. When moving the rudder stick left or right, the head of helicopter accordingly rotates to the left or right.

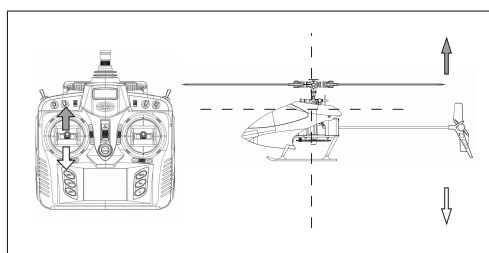


4. When moving the elevator stick up or down, the helicopter accordingly flies forward or backward.

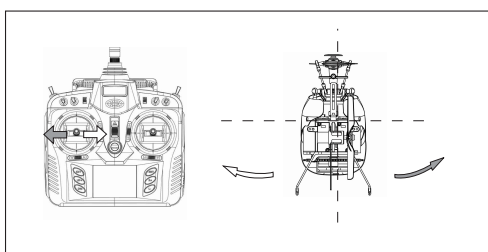
### Mode 2 (throttle stick at left hand)



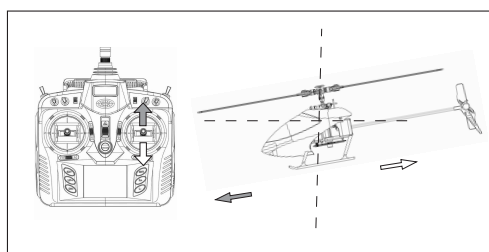
1. When moving the aileron stick left or right, the helicopter accordingly flies left or right.



2. When moving the throttle stick up or down, the helicopter accordingly flies up or down.



3. When moving the rudder stick left or right, the head of helicopter accordingly rotates to the left or right.



4. When moving elevator stick up or down, the helicopter accordingly flies forward or backward.

## 1 Flight practice for the beginner

### 1.1 Matters needing attention

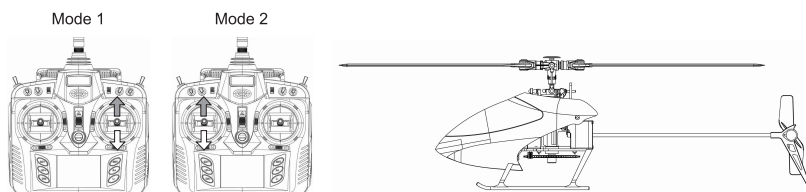
- (1) Beginners should be supervised and guided by skilled pilots when learning.
- (2) For the sake of safety, people should keep at least 5 meters away from the helicopter during practice.
- (3) Choose a spacious open ground without people and obstacles as the flight practice field.
- (4) This is a 3D helicopter. We kindly suggest that the knowledge of flying 2D/ coaxial helicopter is a pre-requisite before flying this model.
- (5) The use of a suitable training gear attachment is recommended while learning.

### 1.2 Steps

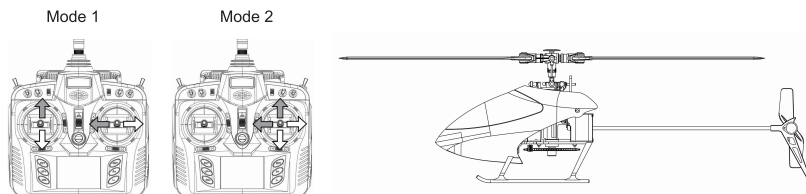
- (1) Practicing throttle control - stationary flight

Start by standing directly behind the helicopter, tail closest to you and head/nose pointing away. Practice taking off from the ground and then by slowly pulling down on the throttle stick, land it softly and horizontally. Repeat this step until the throttle can be finely and carefully controlled.

When hovering, the tail rotor counteracts torque but also pushes helicopter to the left. Don't forget to counteract this effect using cyclic stick to the right and take off slightly inclined. It is important to hover vertically, stabilize helicopter at 1.5m height and then land it.

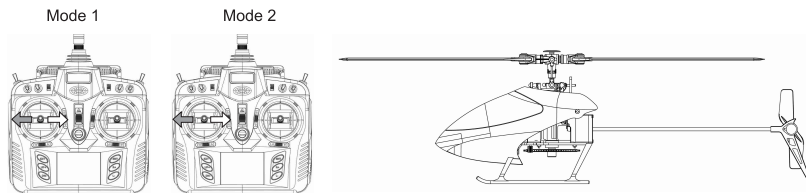


- (2) Practice of aileron and elevator control



First increase throttle and enter a stable hover as practiced in the previous section. Next, use the elevator and aileron sticks to purposely fly the helicopter in a 'cross pattern' forwards, backwards, to the left and to the right. In between each direction, return to hover over the take off point. Continue to repeat this step until it can be completed with ease.

- (3) Practicing rudder control

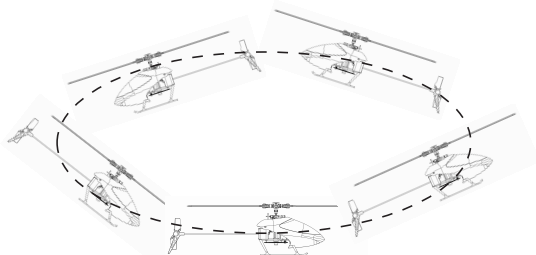


Enter a stable hover as practiced in step one, then practice rotating the head of the helicopter to face left then back to face right and back to facing forwards (away from the pilot). Start with a rotation angle of 30 degrees or less and gradually increase it as you become more comfortable and more experienced.

- (4) Practicing circular flight

After mastering steps (1) to (3) with ease, please draw or mark a large circle on the ground. Fly your helicopter along this circular track until the flight is smooth and controlled.

You may wish to stand inside the circle at first to practice circular flight before needing to control the nose in orientation. Fly circles in both directions and at a constant altitude to be comfortable with this step.



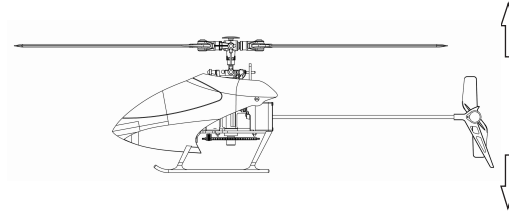
## Appendix 2 – Flight practice



## 2 Advanced practice

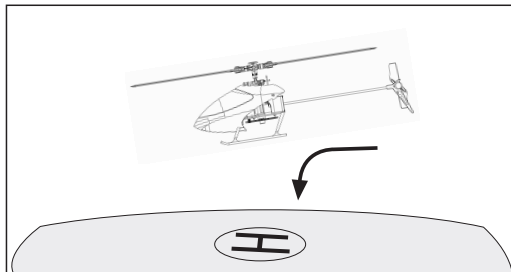
### 2.1 Frog-hopping practice

Repeat the take off and landing action using the throttle stick whilst maintaining a vertical path. Increase your rate of ascent and descent gradually as you become more comfortable with the exercise. Be sure to slow down in time when landing!



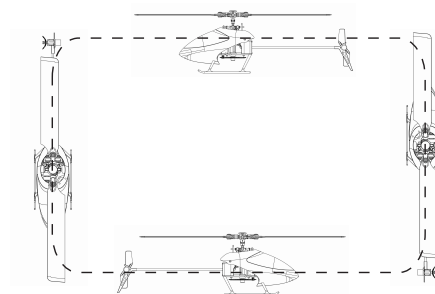
### 2.2 Practicing controlled take off and landing

Mark out an area on the ground as a landing pad to help practice deliberately taking off and landing from a set location. The process of take off and landing should be kept stable and as close to vertical as possible.



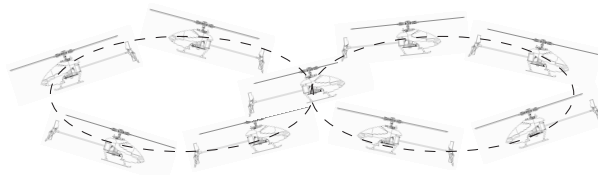
### 2.3 Practicing square flight

Take the takeoff point as the center to draw a square whose side length is about 2 meters. Fly your helicopter along the 4 sides and keep the flight height parallel to the line of sight. Make a 90 degree rotation at each corner of the quadrangle to adjust the flight direction. Train your straight flight skills and 90 degree flight course control. Fly in both directions around the circuit until familiar with the maneuver.



### 2.4 Figure eight practice

Once you have mastered the previous steps you can try flying smooth flat figure eights. Try to maintain the same altitude during the entire flight path. Take care when flying where there is wind as it may cause the helicopter to suddenly rise or fall unexpectedly.



## Appendix 2 – Flight practice

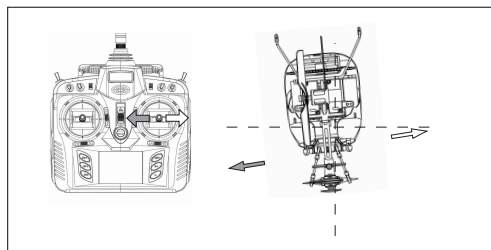


## 2.5 Aerobatic flight

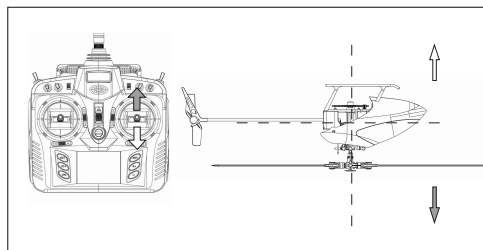
Your Mini CP can perform breathtaking and exciting aerobatic flight such as dives and inverted 3D.

### Inverted flight

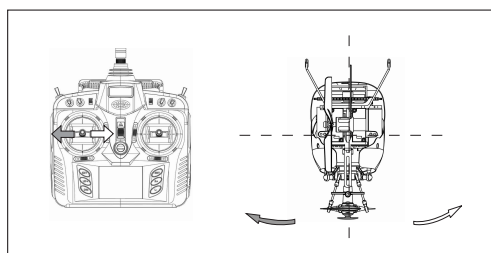
Mode 1 (throttle stick at right hand)



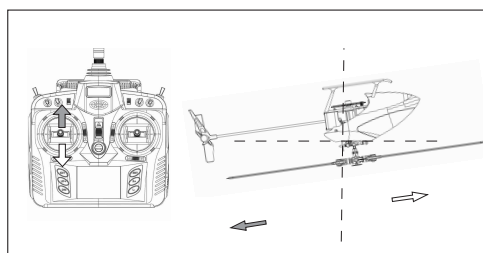
1. When moving the aileron stick left or right, simultaneously your helicopter flies left or right, respectively. Orientation is normal.



2. When moving the throttle stick up or down, simultaneously your helicopter flies down or up respectively. Orientation is inverted.

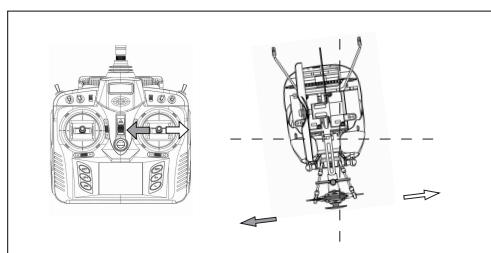


3. When moving the rudder stick left or right, your helicopter simultaneously flies right or left, respectively. Orientation is inverted.

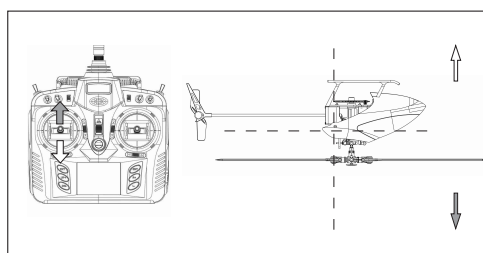


4. When moving the elevator stick up or down, your helicopter simultaneously flies backward or forward, respectively. Orientation is inverted.

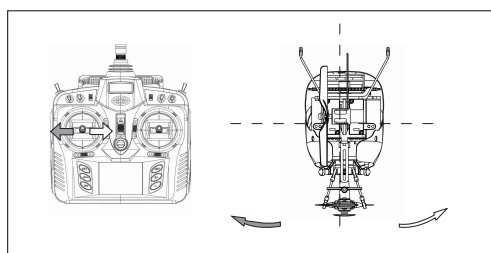
Mode 2 (throttle stick at left hand)



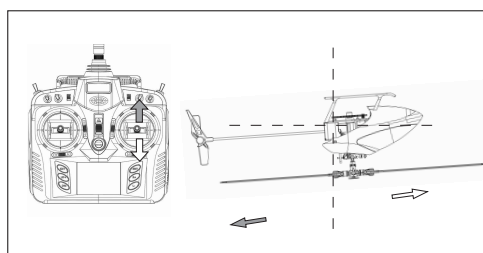
1. When moving the aileron stick left or right, your helicopter simultaneously flies left or right, respectively. Orientation is normal.



2. When moving the throttle stick up or down, your helicopter simultaneously flies down or up, respectively. Orientation is inverted.



3. When moving the rudder stick left or right, the head of your helicopter simultaneously flies right or left, respectively. Orientation is inverted.



4. When moving elevator stick up or down, your helicopter simultaneously flies backward or forward, respectively. Orientation is inverted.



## Appendix 2 – Flight practice



Add.: Taishi Industrial Park, Dongchong Town  
Panyu District, 511475 Guangzhou

Tel.: ( 8620 ) 8491 5115 8491 5116

Fax.: ( 8620 ) 8491 5117

Web: [www.walkera.com](http://www.walkera.com)

Email: [heli@walkera.com](mailto:heli@walkera.com)  
[info@walkera.com](mailto:info@walkera.com)

The specifications of the R/C aircraft  
may be altered without notice.

