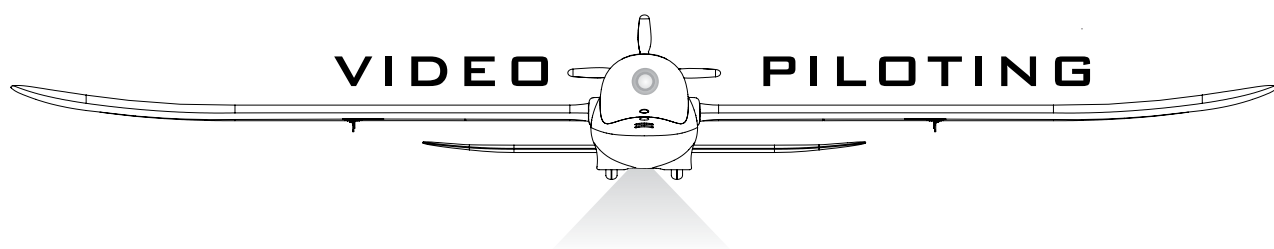


# UNIVERSEYE PENGUINS

## 天镜-企鹅

### USER MANUAL



**FINWING**  
精翼科技

Finwing Technology info: [www.finwinghobby.com/](http://www.finwinghobby.com/) [finwing@yeah.net](mailto:finwing@yeah.net)

## Specifications :

### Universeye\_penuins <天镜\_企鹅> Specially Designed For FPV and UAV Hobby



WINGSPAN

1720mm/67.7inch



LENGTH

1230mm/48.5inch



WING AREA

36dm/3.9ft2



ARF WEIGHT

0.98KG/34.6oz



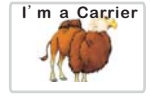
STATIC THRUST

1.5-1.9kg



BRUSHLESS SYSTEM

M2220/M2815



I'm a Carrier

PAYLOAD.

500-900G/17.7-31.8oz.

Wingspan: 1720MM/67.7inch

Length: 1230MM/48.5inch

Wing Area: 36dm/3.9ft2 ([Mainwing Area](#))

Motor: Brushless motor M2220 Kv1350 or M2815 Kv1280

ESC: 40A for M2220 or 60A for M2815

Servo: 3pcs 17g servo+ 1pcs 9g servo

Battery: Li-Po 11.1V 2400 mAh for M2220 and 5000mAh for M2815

ARF Weight: 0.98kg/34.6oz. ARF is the weight including almost ready to fly, not battery and your extra FPV devices

Static Thrust: Motor M2220 1.5Kg/53.0oz. Motor M2815 1.95kg/69oz.




Payload: 500-900G/17.7-31.8oz (Payload is the extra weight it can carry besides the standard ARF weight)

Material: EPO Wing and fuselage/ Wooden rib reinforcement/ aluminum alloy pipe/ Carbon Fiber Pipe

## Universeye\_penuins-Brushless System Testing Data-Record by Finwing

		
M2220/KV1350	9050/ 3BLADE	M2815/ KV1280

BRUSHLESS MOTOR	BATTERY	PROPELLER	STATIC THRUST	MAX. CURRENT
M2220/KV1350	LIPO 11.1V 2200mAh	9050/ 3BLADE	1500G (53.0oz.)	30A
M2815/KV1280	LIPO 11.1V 2200mAh	9050/ 3BLADE	1900G (67.2oz.)	50A

		
M2220/KV1350	9060/ 2BLADE	M2815/ KV1280

BRUSHLESS MOTOR	BATTERY	PROPELLER	STATIC THRUST	MAX. CURRENT
M2220/KV1350	LIPO 11.1V 2200mAh	9060/ 2BLADE	1400G (49.5oz.)	40A
M2815/KV1280	LIPO 11.1V 2200mAh	9060/ 2BLADE	1950G (69.0oz.)	75A

- Above testing voltage is based on fully charged (12.4V-12.5V) li-poly battery.
- M2220 Recommended battery capacity at least >2400mAh 30C Discharge 60C Burst  
Flight weight less than 1600g, power is enough/ 20-30%throttle for high altitude Gliding is good
- M2815 Recommended battery capacity at least >5000mAh/ ESC: 60A  
Flight weight less than 2000g, pwer is enough/20-30%throttle for high altitude Gliding is good

### CONCLUSION :

#### Static Thrust Testing:

- Propeller9050 3Blade performed more efficiency (energy saving) than Propeller 9060 2 Blade

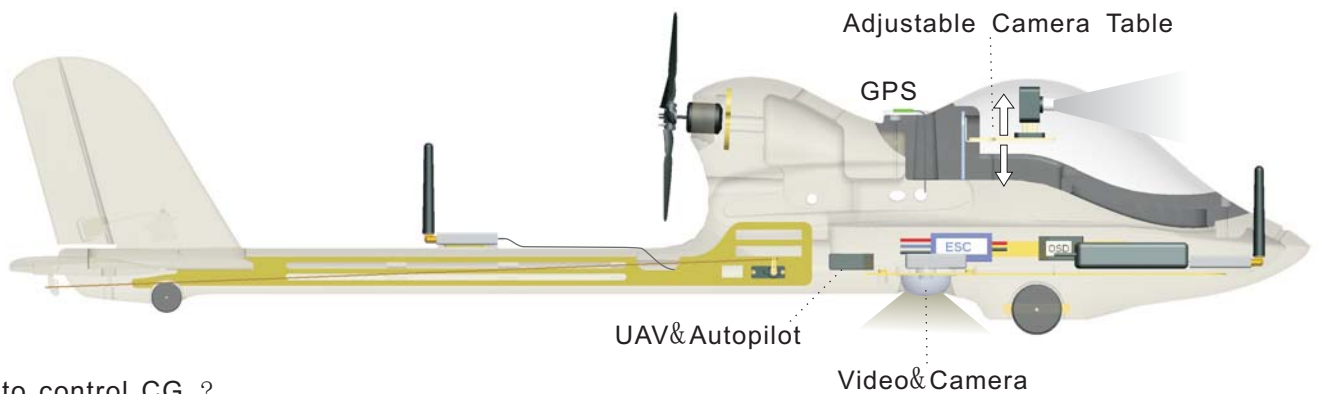
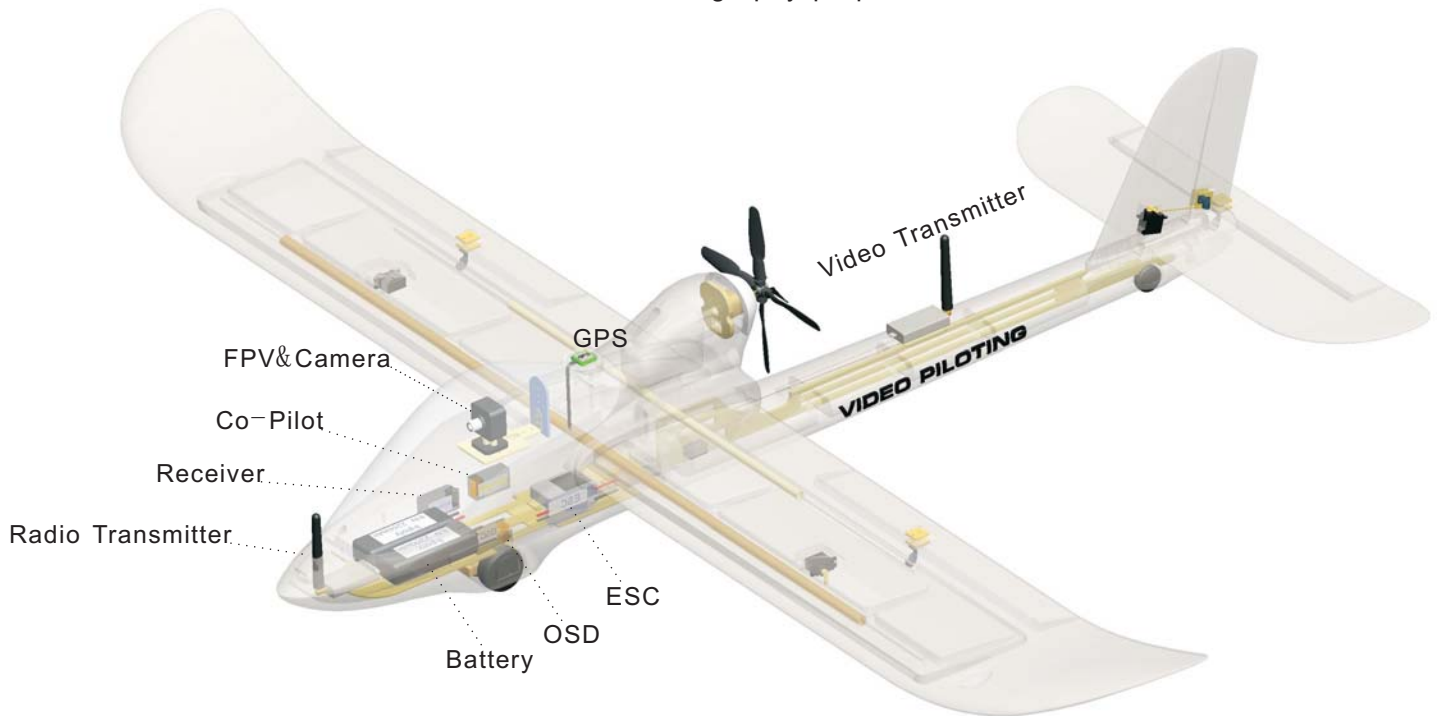
#### After Flight Testing:

- 9050 3Blade propeller is very good to this airplane
- M2815 makes the airplane fly faster and more power than motor M2220, and strong battery required  
Flight weight is less than 1.5kg, we recommended Motor M2220 for stable flight(max.1.6kg)  
flight weight is up to 1.9kg, we recommended motor M2815 for strong flight (Max.2.0kg)

# Airplane Construction

What is FPV Camera: Camera for Video piloting purpose.

What is Video Camera: Camera for Aerial Photography purpose.



How to control CG. ?

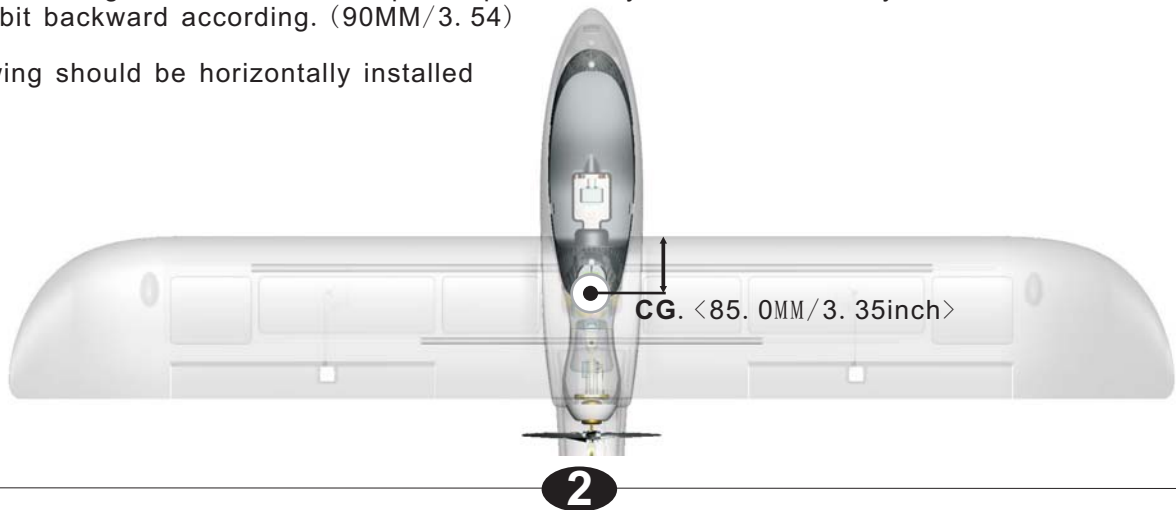
CG. 85MM (3. 35inch) Please set CG. at 85MM initially

Sometimes It may subject to change a little bit, the adjust range is 80-90MM for your reference

if your airplane is a little bit nose up with CG. 85MM, please adjust it to 80MM

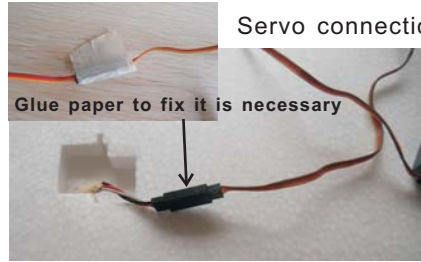
Remarks: pay attentions to the horizontal wing, if the horizontal wing has been installed pitch down. This may cause nose up and leads to the CG. To be moved a lit bit forward accordingly. (80MM/3. 15inch) if the horizontal wing has been installed pitch up, this may cause nose heavy, and the CG. Would be moved a lit bit backward according. (90MM/3. 54)

Horizontal wing should be horizontally installed



# Assembly

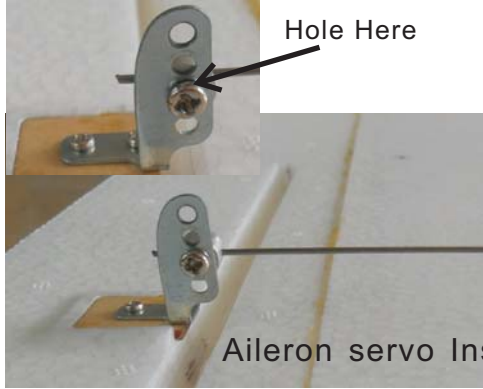
## Mainwing intallation



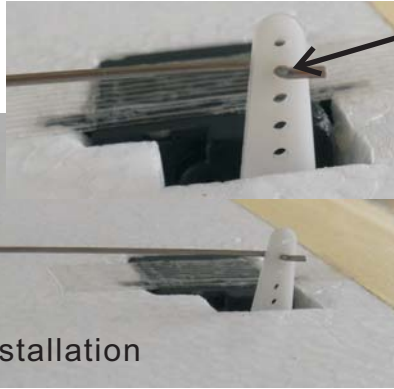
Servo connection with extension cable



Install 17g Servo



Hole Here



Hole Here

Aileron servo Installation



Fix Aileron servo horn

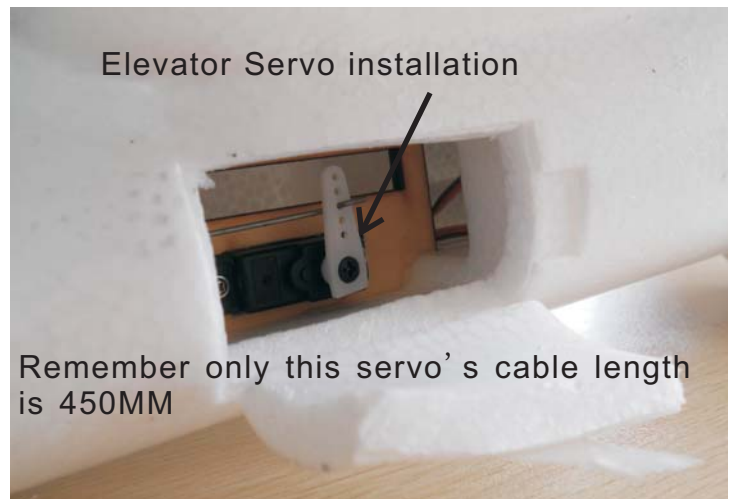
## Rudder servo and Servo horn Installation



## Elevator servo Horn Installation



Fuselage left Side door open Available



Elevator Servo installation

Remember only this servo's cable length is 450MM



# Assembly

Be sure that the Motor Mount is here  
Glue on the back of Motor mount is required

Be sure that these at right Position  
With little Glue on it is necessary



Be sure that Two Wheels is here

Be sure that the woden Ring is here

Glue on both side of Fuselage, expecially the Left side should be have more Glue and the right side fuselage with less Glue check it out carefully before finally closing the fuselage, make sure that no parts missing



If your motor is M2815, make sure that the 3MM thickness wooden ring has been install correctly.  
If your motor is M2220, make sure that the 2MM thickness wooden ring has been install correctly.

3MM thickness wooden ring

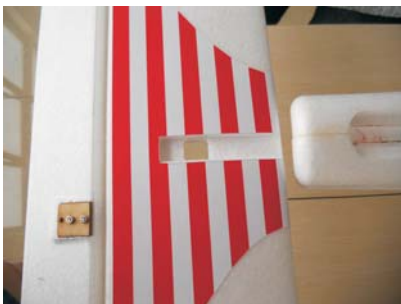
2MM thickness wooden ring



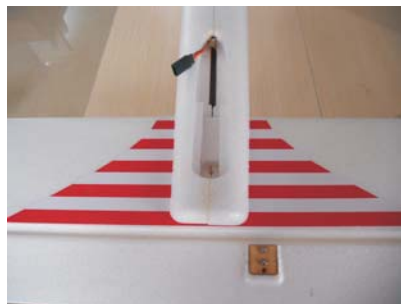
M2815 Motor Mount



M2220 Motor Mount



Insert the horizontal wing



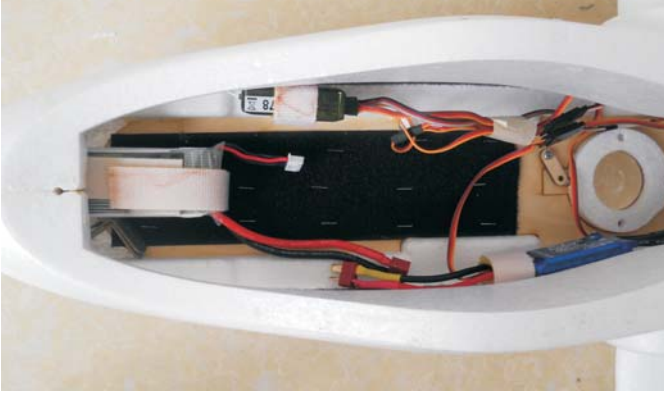
Rudder servo cable connection with Extention cable



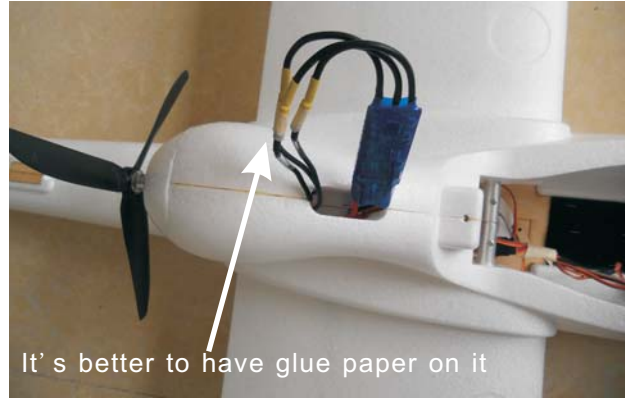
Glue paper to fix it is necessary

# How to fix you devices

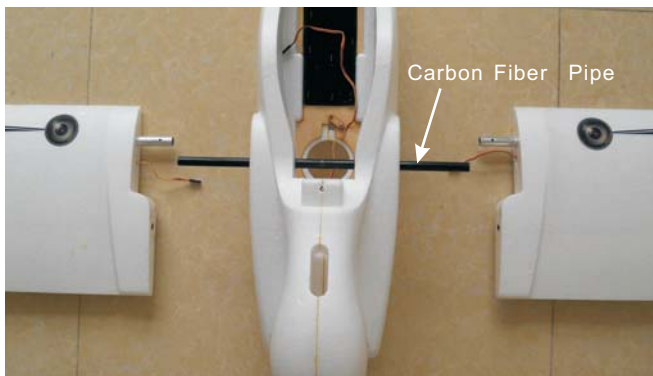
Use Magic Buckle to fix you Battery, Receiver. .



ESC Connection with Motor



Installation of Main-wing



① →

Insert one of the Main-Wings first

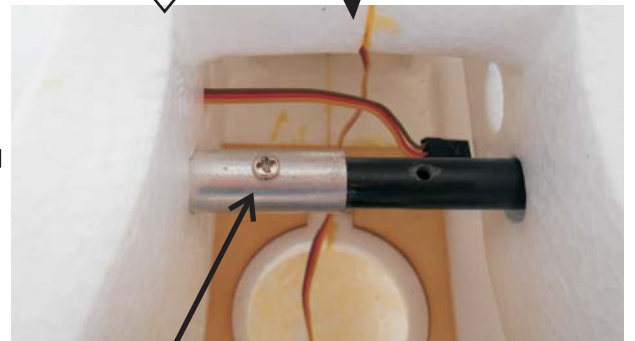


② ↓

Insert another Main-Wings inside



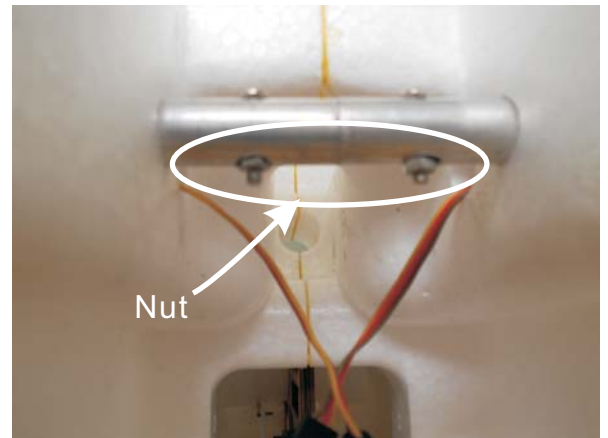
③ ←



Insert one screw to keep the carbon piper irremovable

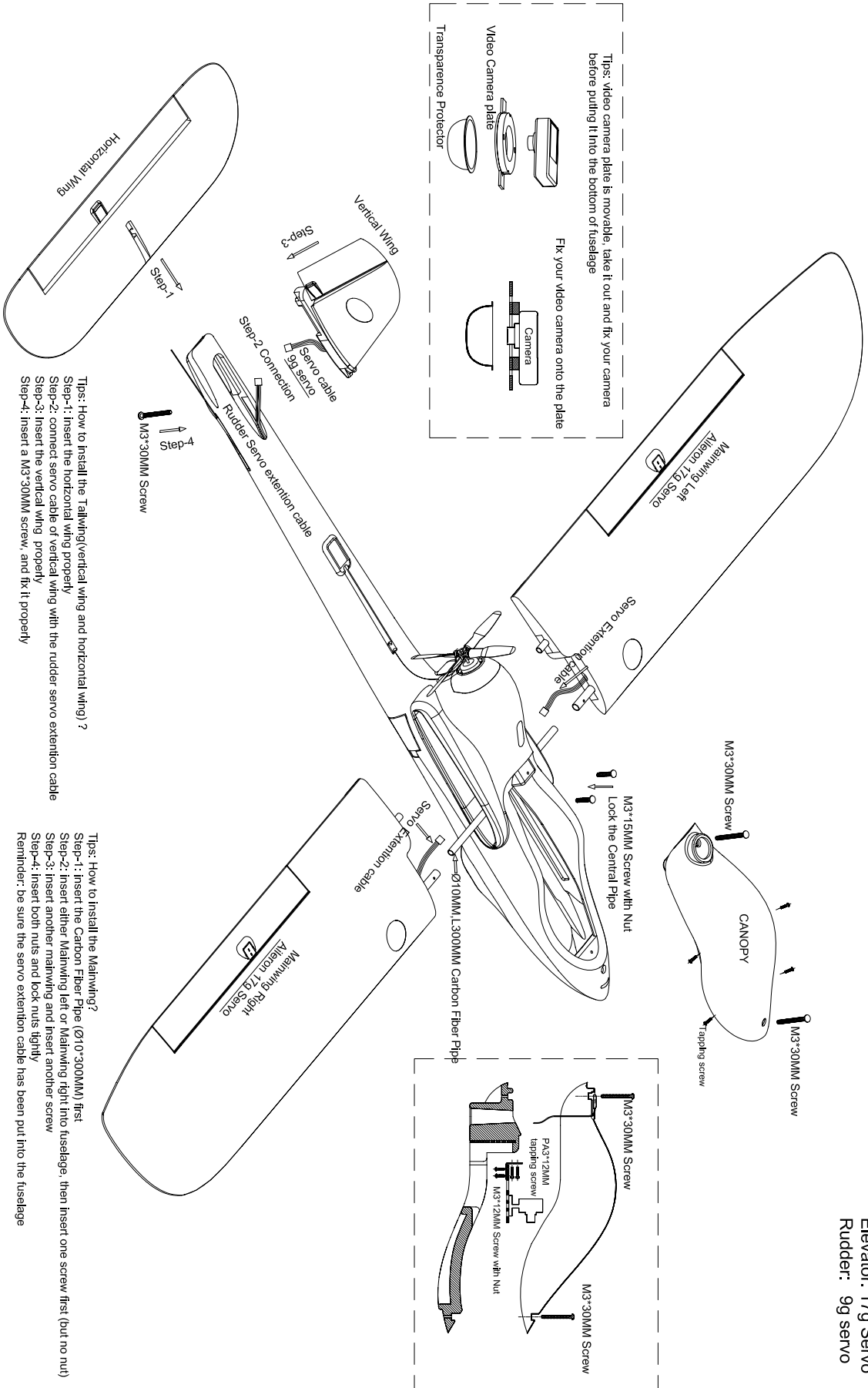
④ ↓

Tighten the screw with Nut



⑤ →

# Assembly Construction-complete

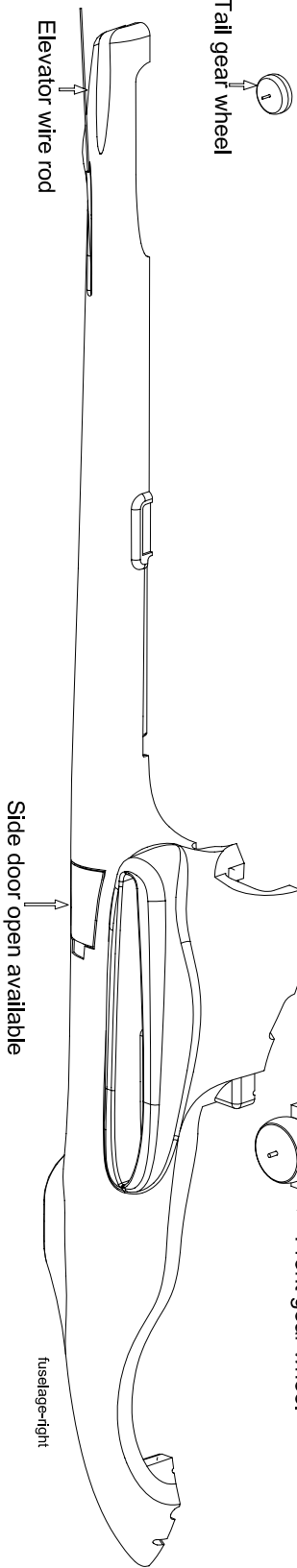
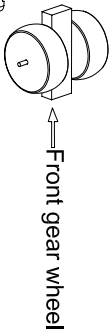
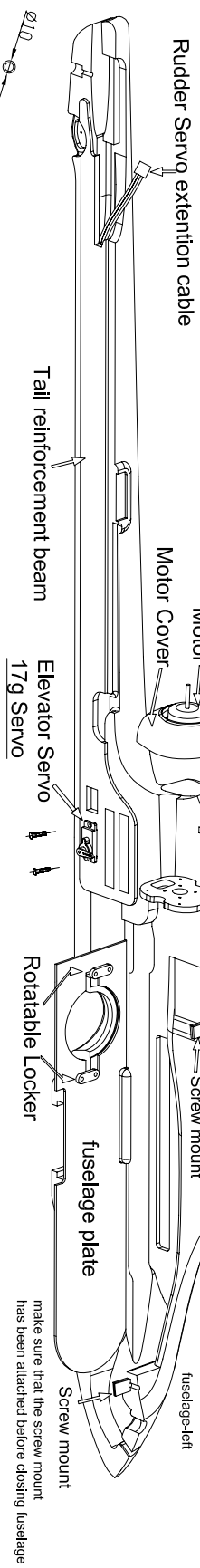
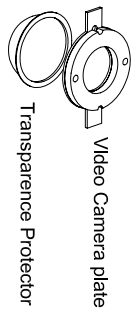
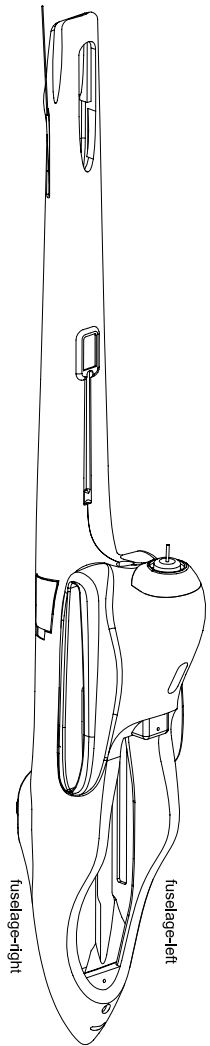


Aileron: 17g Servo  
 Elevator: 17g Servo  
 Rudder: 9g servo

# Assembly Construction-Fuselage

Tips: How to assemble the fuselage ?

- Step-1: Insert following parts into fuselage-left first  
 Insert the elevator servo with tapping screw onto tail reinforcement beam  
 Insert motor mount with glue  
 Insert fuselage plate with glue  
 Insert tail gear wheel and front gear wheel
- Step-2: close fuselage with glue on either fuselage-left and fuselage-right.
- Step-3: hold it tightly for a moment, this is good to glue performance
- Step-4: install motor with APCs PA2.5MM tapping screw.
- Step-5: cover the motor cover (but do not fix it until the propeller has been fixed)
- Step-6: install 9050 3Blade propeller and fix it
- Step-7: fix the motor cover with a little glue or gummed paper
- Step-8: put the transparency protector and video camera plate inside
- Step-9: open the side door which on the fuselage-right  
 install a servo arm for the elevator servo and connect with elevator wire rod





## Flight Advice

1. Do Not Recommend Aerobatic Flight
3. Do not Recommend fly in strong wind day
4. Airplane is relatively less sensitive to wind During high Altitude flight, but should be careful of the side wind during low Altitude flight. High Altitude with 20-30% cruising is quite power saving.
5. Ground running take off, smooth and flat ground is required.
6. Recommended 3S battery (LIPO 11.1V) we did not testing with 4S (LIPO 14.8V) if you want to use 4S battery please test it on the ground first before real flight, testing throttle step by step, with 4S battery will makes motor rotate speed too fast, it's better for you to replace another lower KV motor (900-1000KV)
7. Airplane wing design adopted high lift coefficient design, good at gliding and middle speed with power saving fly but not recommend fast flight or inverted flight
8. if you fly with M2220, its power is less than M2815, so please don't try big attack angle climbing climbing step by step

### keep it straight line level flight

This airplane has been designed and adjusted very good at straight line level flight.

If you found that the airplane have a tendency of a little bit rightward or leftward fly please check as below:

1. check the mainwing, make sure that the mainwing has been install properly, if the mainwing is loose or crooked, please correct it before fly.
2. check the rudder and horizontal wing, make sure that all at right position.
3. please check the motor mount base as shown in the following pictures:

If your motor is M2815, make sure that the 3MM thickness wooden ring has been install correctly.  
If your motor is M2220, make sure that the 2MM thickness wooden ring has been install correctly.

3MM thickness wooden ring



2MM thickness wooden ring



Some times when the airplane has been distorted and bended after serious crash, it's hard to find out what's the problem on earth. You can adjust the rudder and aileron by the transmitter's trim function to correct it (adjust the rudder a little bit left or right)

## Please read the user manual carefully before assembly and fly

Thanks for use finwing Model airplane. This airplane is recommended to play for the intermediate and advance RC hobby pilots.

### Warning:

1. This model airplane is not a toy, not recommended for children under 14 years old, not recommended for the beginner to play without adult experienced person
2. Model crash may happen during flight, it is because different outside environment, speed, unsuitable adjustment of the airplane or other interference
3. Flight conditions: at least 200 square meters flat ground is required.
4. Please don't fly this model airplane in bad weather, raining and windy day is no suitable
5. please take off the battery if you don't fly it, otherwise it may cause accident by other person or interference
6. please remember turn on the transmitter first before connecting the battery, also you must disconnect the battery first before turn off your transmitter.
7. keep away from the blade, it's dangerous

LOOKING FOR SPARE PARTS OR ASK YOUR LOCAL DEALERS FOR MORE DETAILS

