www.freewing-model.com

Freewing 90mm EDF JET

ZEUS SPORT JET USER MANUAL

Wingspan: 1200mm
Length: 1450mm
Empty Weight: 2820G[w/o Battery]



MADE IN CHINA

EN 1~13

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Freewing Zeus introduction

Thank you for purchasing our Freewing 90mm EDF new sport jet, the ZEUS 90 !

Before you assemble this ZEUS 90 model jet, please carefully read the instructions and follow the correct process for assembly and adjustment. If you encounter problems during assembly and debugging, please first resolve them by referring to the instructions. If the problem persists, please contact the distributor or directly contact us.

Freewing ZEUS is a new design, large-sized electric EPO sport jet. It uses the color scheme of blue, grey and white. The shape and details are quite different from our existing sport jet. The new low drag shape and efficient inlet design can enable the new ZEUS to achieve our design goals very well.

Structure

Zeus fuselage is divided into two sections: front and rear, which can effectively reduce packaging volume, save resources, and reduce environmental pollution. By using plastic structural components, interface adapter plates, and screws, the front and rear fuselage can be quickly connected. The main wing and fuselage adopt the QUICK II screw-less portable install structure which can achieve rapid assembly without screws and glue. The QUICK series locking structure will bring you a brand new and ultimate user experience. For example, components such as the horizontal tail and vertical tail continue to use the previous screw fastening structure. However, the optimization of these parts in the design process makes it easier for us to assemble them.

Strength

The main wing is made of 25x EPO raw material and further strengthened with built-in carbon fiber tubes. Its overall rigidity has been greatly improved compared to previous similar models, and it can fully meet the application requirements of 5KG level turbojet engines. The vertical tail and fuselage are continued to be made of 35x EPO raw materials, reinforced by built-in carbon fiber tubes. The mixed use of different raw materials not only achieves higher strength but also effectively controls its weight.

ZEUS PNP version is equipped with a 90mm 12 blade EDF power system (# E72216) and a 6S/8S 120A ESC, making it become one of the fastest aircraft in the Freewing history. The reverse thrust function of ESC can make the jet stop faster after landing. All the control surfaces of Zeus are controlled by 7pcs 17G metal gear servos. The front cabin door and front wheel steering are controlled by one 9G MG servo each. In addition, the main wing, tail wing, and fuselage are all connected directly to the control box through adapter plates and ribbon cables, making the battery compartment more tidy and providing a better experience!

Since the birth of the Stinger64, the first Freewing sport jet in 2009, until today's 90 level Zeus sports jet, continuous optimization and accumulation of experience have enabled us to create this great electric EPO sports jet. The powerful thrust to weight ratio of the Freewing Zeus sports jet will bring you fast throttle acceleration response and unparalleled top speed. The relatively small wing load gives it excellent low-speed performance, making landing easier to control. The Zeus sport jet has excellent longitudinal and lateral static stability, making it easy to maintain the jet's posture during flight movements, reducing the complexity of operation, and enabling better learning and experiencing exciting stunt actions.

Thank you again! I hope this product can bring you more beautiful flight time!

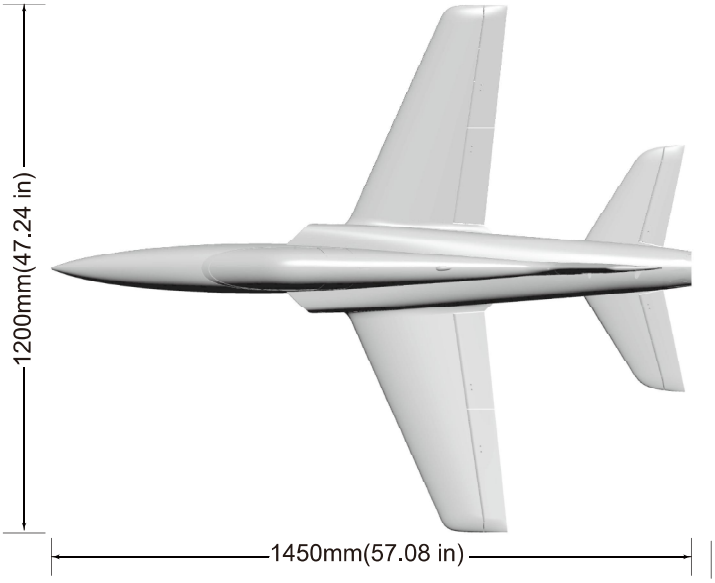
⚠ **NOTE:** This is not a toy. Not for children under 14 years. Young people under the age of 14 should only be permitted to operate this model under the instruction and supervision of an adult. Please keep these instructions for further reference after completing model assembly.

Note:

1. This is not a toy! Operater should have a certain experience, beginners should operate under the guidance of professional players.
2. Before install, please read through the instructions carefully and operate strictly under instructions.
3. Cause of wrong operation,Freewing and its vendors will not be held responsible for any losses.
4. Model planes' players must be on the age of 14 years old.
5. This plane used the EPO material with surface spray paint, don' t use chemical to clean, otherwise it will damage.
6. You should be careful to avoid flying in areas such as public places,high-voltage-intensive areas,near the highway, near the airport or any other place where laws and regulation clearly prohibit.
7. You cannot fly in bad weather conditions such as thunderstorms,snows....
8. Model plane's battery, don't allowed to put in everywhere. Storage must ensure that there is no inflammable and explosive materials in the round of 2M range.
9. Damaged or scrap battery should be properly recycled, it can't discard to avoid spontaneous combustion and fire.
10. In flying field, the waste after flying should be properly handled,it can't be abandoned or burned.
11. In any case, you must ensure that the throttle is in the low position and transmitter switch on, then it can connect the lipo-battery in aircraft.
12. Do not try to take planes by hand when flying or slow landing process. You must wait for landing stop, then carry it.

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Product Basic information



Standard Version

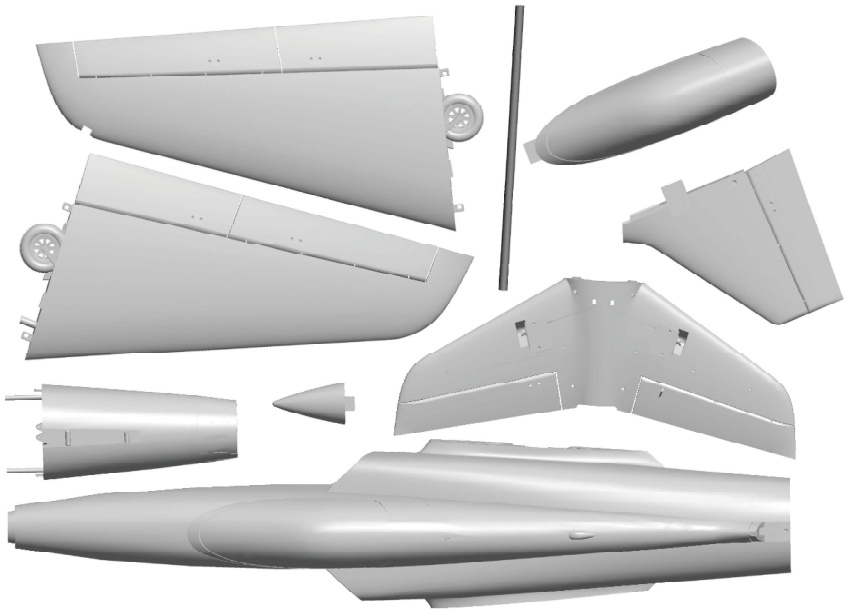
Wingload: 150 g/dm²
Wing Area: 24 dm²
Servo:9g Hybrid digital servo (2pcs)
17g MG digital servo (7pcs)
Motor: 3668-1960KV I/R Motor
ESC: 120A with 8A UBEC
(Thrust Reverse Function)
Ducted fan: 90mm 12-blade fan
Weight: 2820g (w/o Battery)

Other features

Material: EPO
Aileron: Yes Elevator: Yes
Flaps: Yes Rudder: Yes
Landing gear: Electric landing gear
Cabin door:Yes
Li-Po Battery: 6S 5000-6000mAh

⚠ Note: The parameters in here are derived from test result using our accessories. If use other accessories, the test result will be different. Any problem since of using other accessories, we are not able to provide technical support.

Package List



Different equipment include different spareparts. Please refer to the following contents to check your sparepart list.

No.	Name	PNP	ARF Plus
1	Fuselage	Pre-installed all electronic parts	Pre-installed servo
2	Nose cone	Pre-installed all electronic parts	Pre-installed servo
3	Main wing	Pre-installed all electronic parts	Pre-installed servo
4	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo
5	Vertical tail	√	√

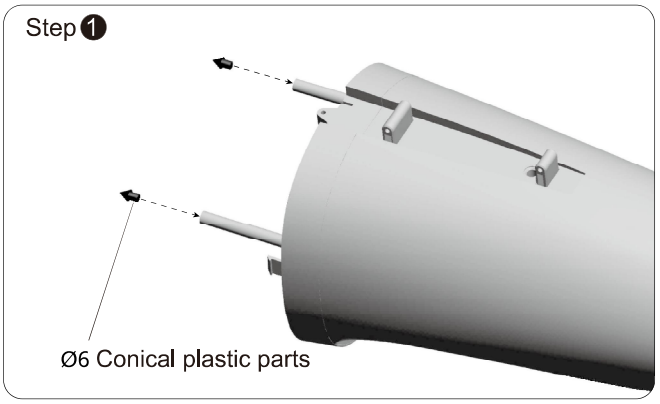
No.	Name	PNP	ARF Plus
6	Cockpit	√	√
7	Non-slip mat	√	√
8	Pushrod	√	√
9	Screw bag	√	√
10	Manual	√	√

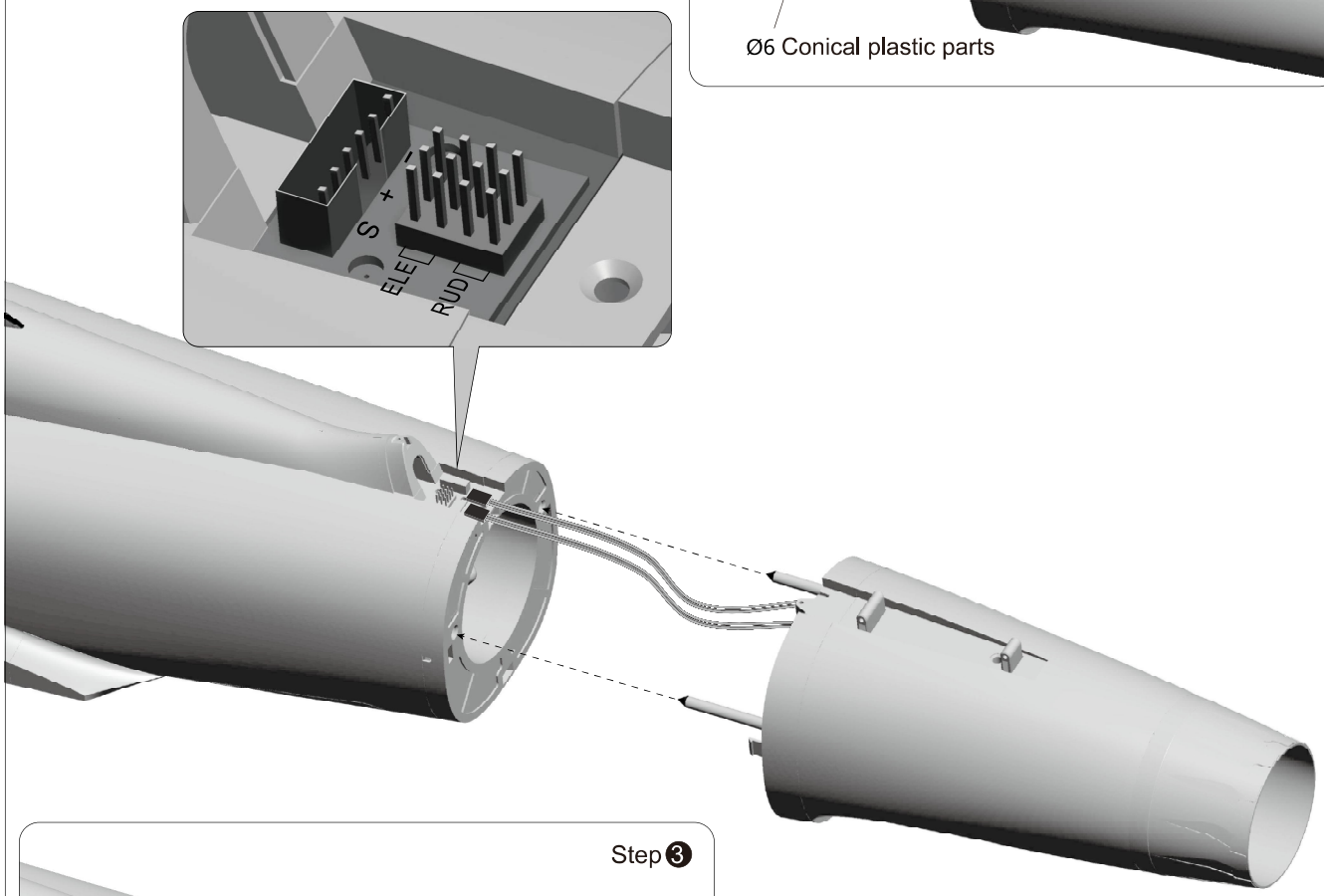
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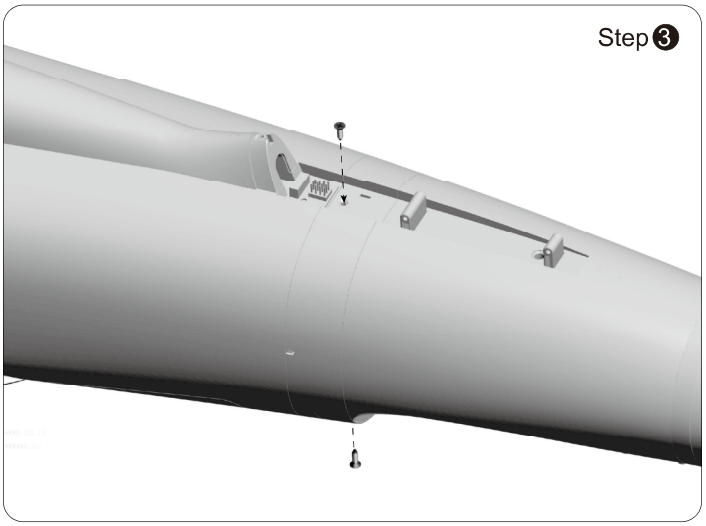
Install Fuselage

As the photo show:
1. Install Ø6 conical plastic parts onto carbon tube;
2. Insert the elevator servo extension wire of tail fuselage into the ELE interface of PCB control board;
3. Install the rear fuselage on the fuselage and fix it with screws.

Screw (KA3X10mm 2pcs)





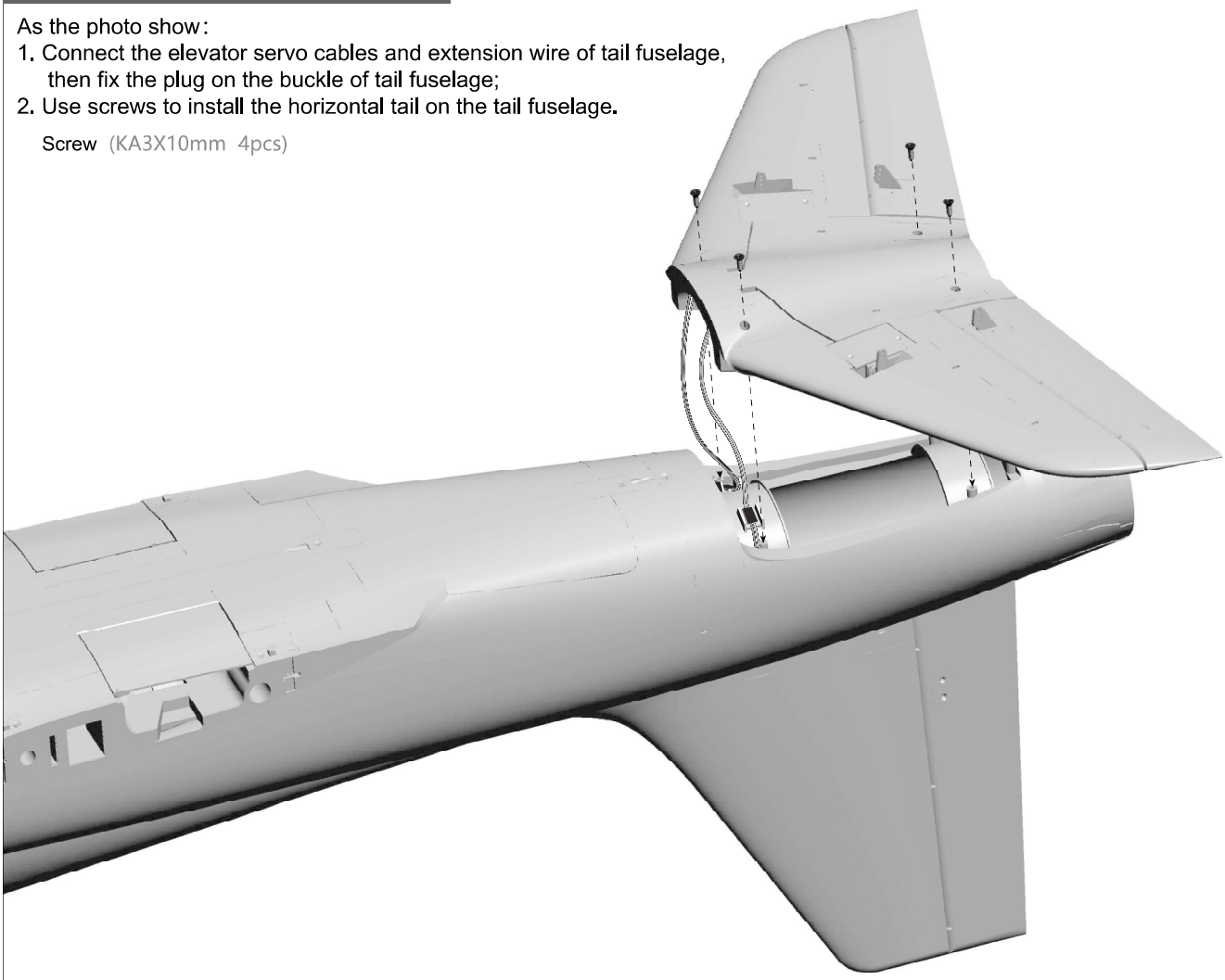


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Install horizontal stabilizer

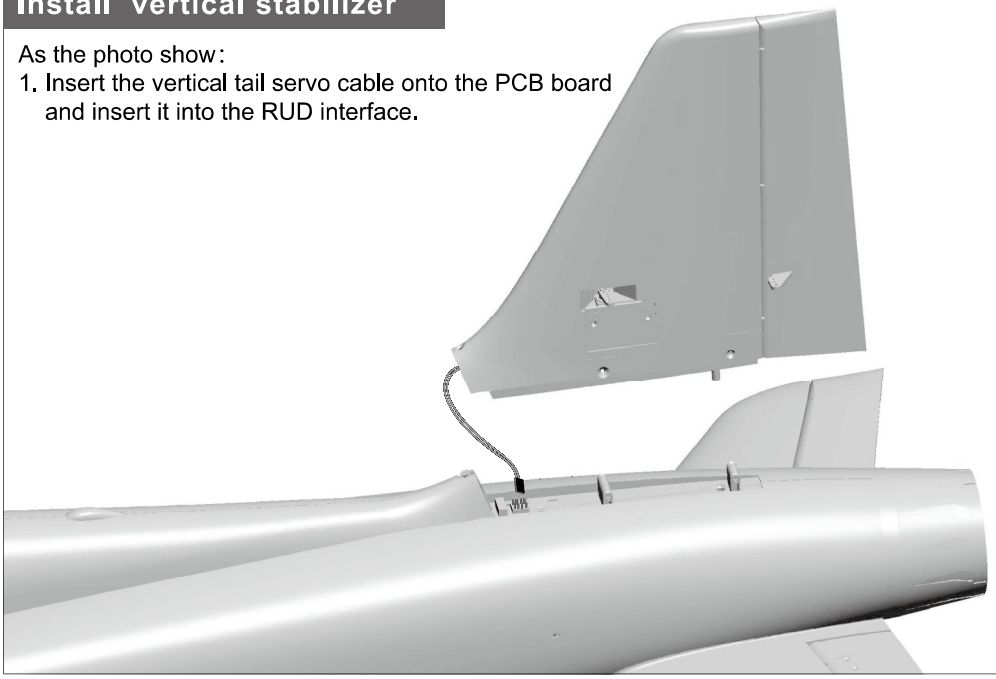
As the photo show:
1. Connect the elevator servo cables and extension wire of tail fuselage, then fix the plug on the buckle of tail fuselage;
2. Use screws to install the horizontal tail on the tail fuselage.

Screw (KA3X10mm 4pcs)



Install vertical stabilizer

As the photo show:
1. Insert the vertical tail servo cable onto the PCB board and insert it into the RUD interface.

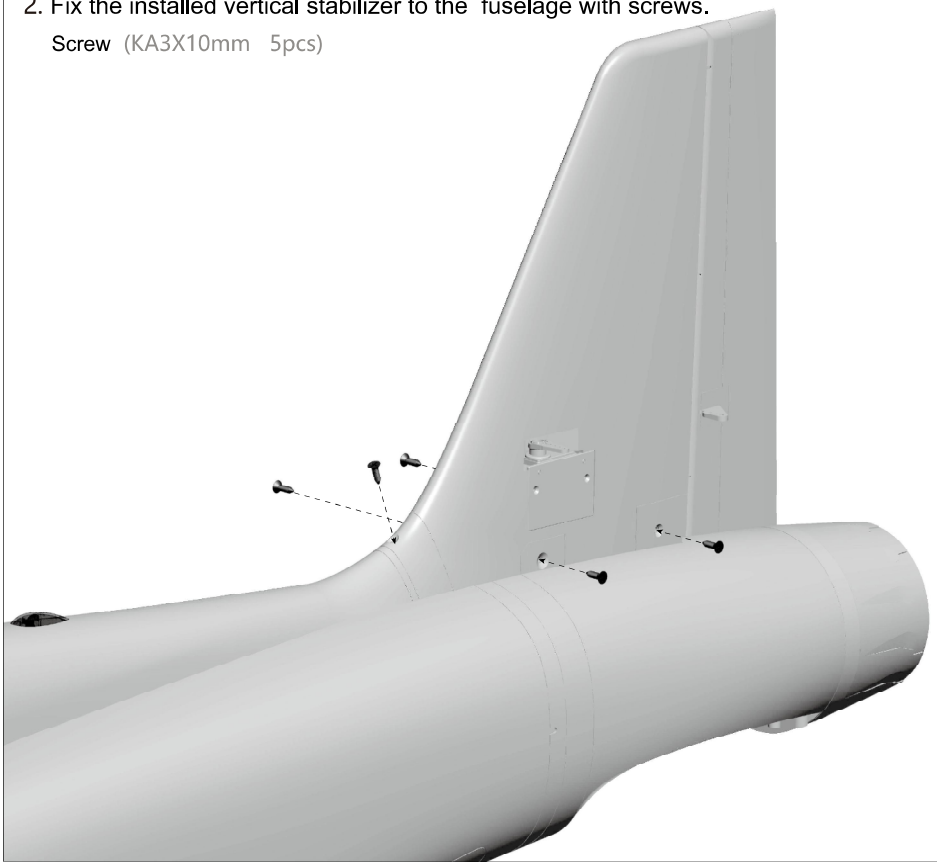


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Install vertical stabilizer

2. Fix the installed vertical stabilizer to the fuselage with screws.

Screw (KA3X10mm 5pcs)



Install Main Wing

As the photo show:

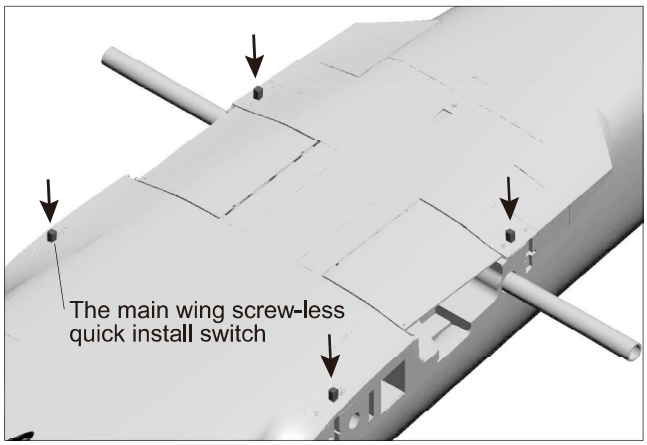
1. Press the main wing screw-less quick install switch to unlock it❶;

❶ Two different status diagrams of the main wing screw-less quick install switch: (The working mode is to press the button to the bottom and release it. The button pops up to the highest position, which is the unlocked status.Once the button is pressed to the bottom again and released, but the button does not pop up, which is the locked status)

Unlock status

As shown in the following photo:

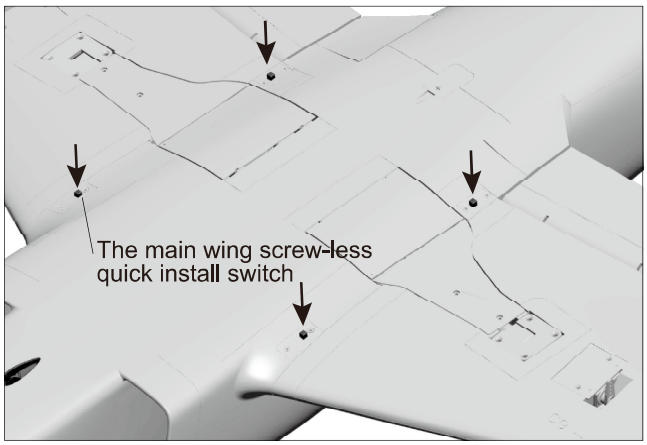
Press the main wing screw-less quick install switch to the bottom and release it. The button pops up to the highest position, indicating that the main wing has been unlocked and can be easily removed and installed.



Lock status

As shown in the following photo:

After installed the main wing, press again the main wing screw-less quick install switch to the bottom and release it. If the button does not pop up, it is the locked status. At this point, pull the main wing outward and can not remove it.

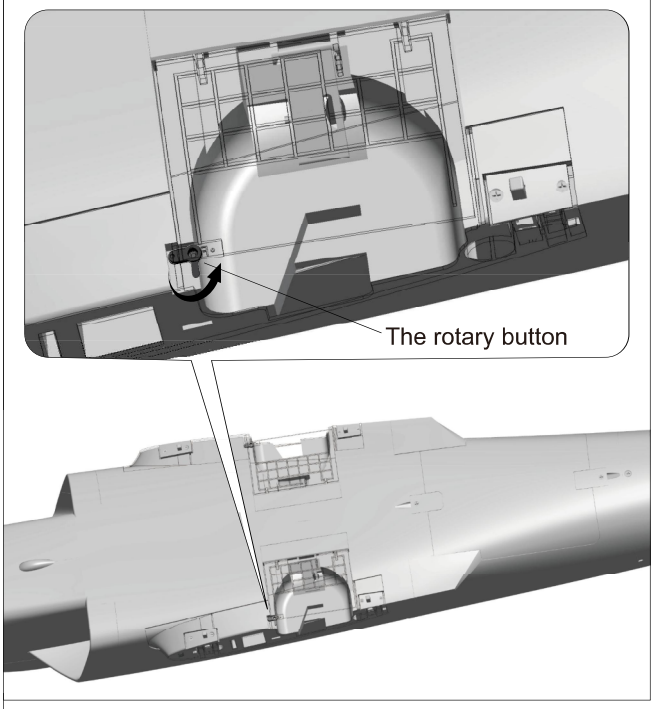


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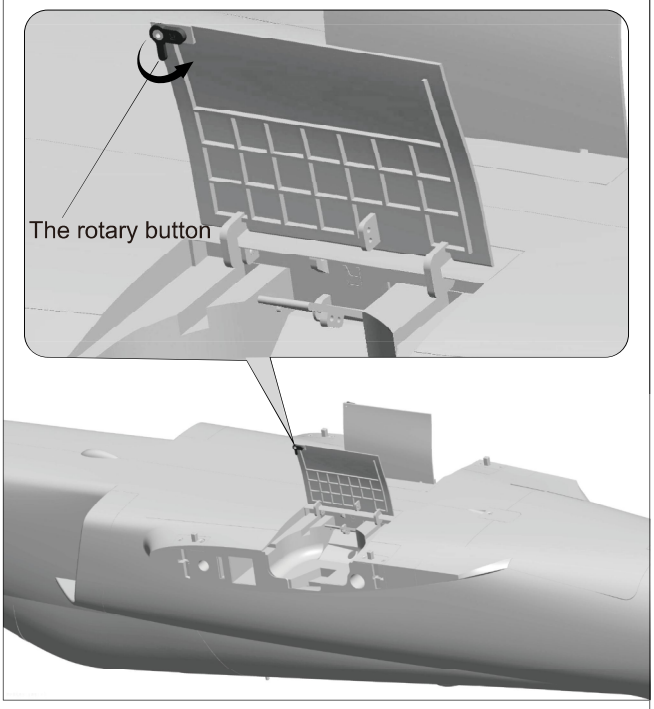
Install Main Wing

2. Pull the rotary button on the rear cabin door❷, open the rear cabin door and adjust the rotary button to the state when installing the main wing❸;

❷



❸

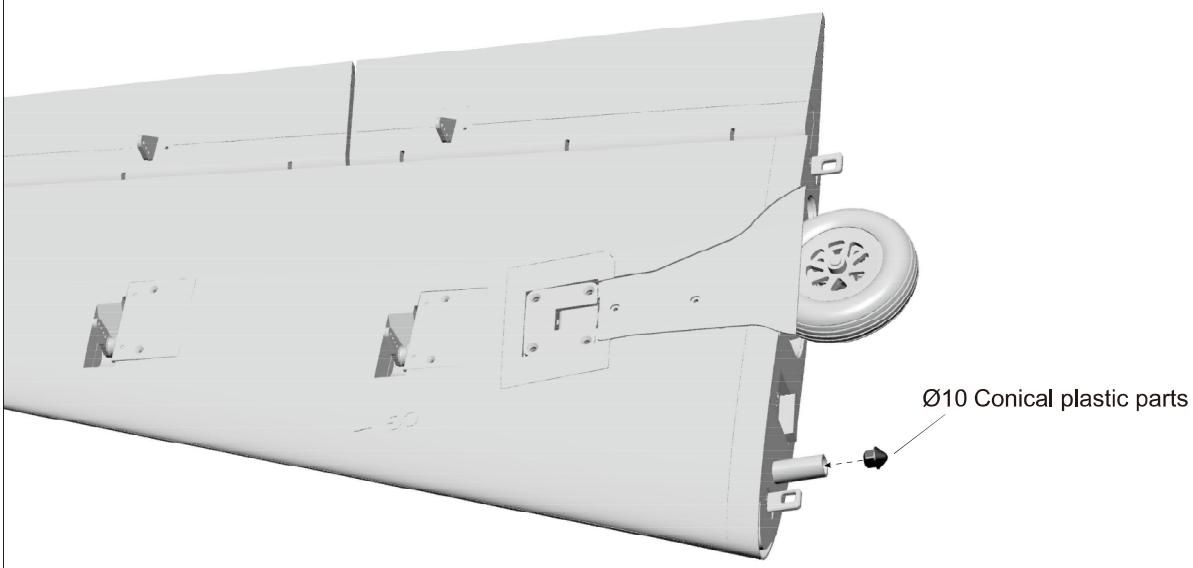


3. Install Ø12 conical plastic parts onto carbon tube;

Carbon tube (Ø12x400mm)



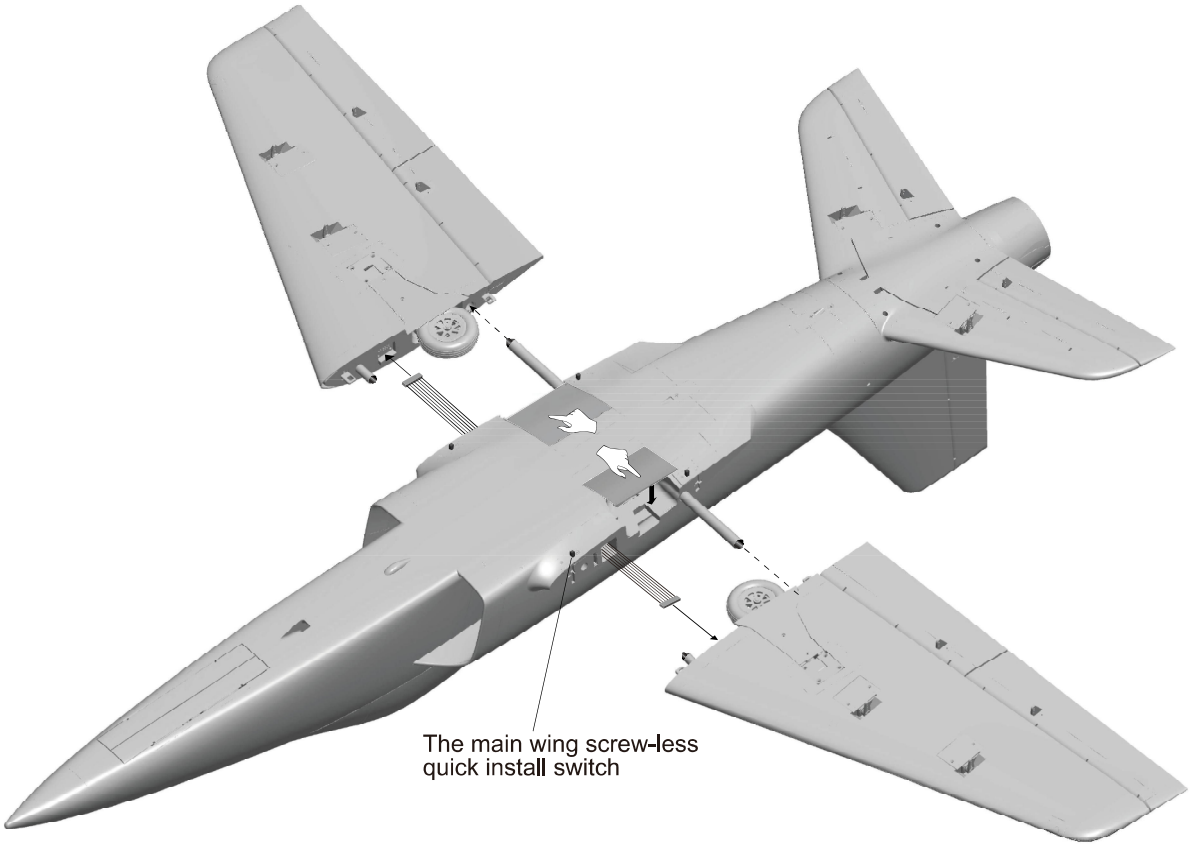
4. Install the Ø10 conical plastic parts onto the carbon tube of left/right main wing;



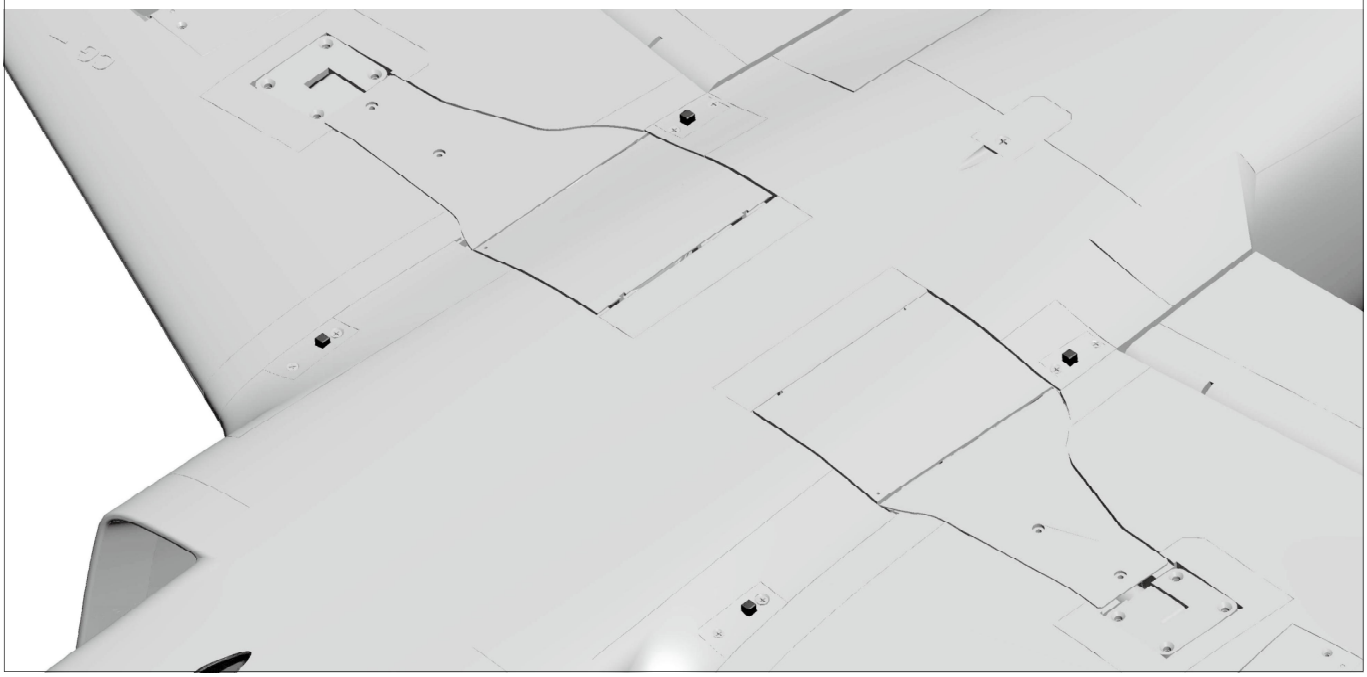
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Install Main Wing

4. Install the carbon tube on the fuselage;
5. Connect the ribbon cable to the side PCB board of the left/right wing;
6. Use your fingers to close the rear cabin door, and then push the main wing into its installation position on the fuselage (Repeat this step for the other main wing);

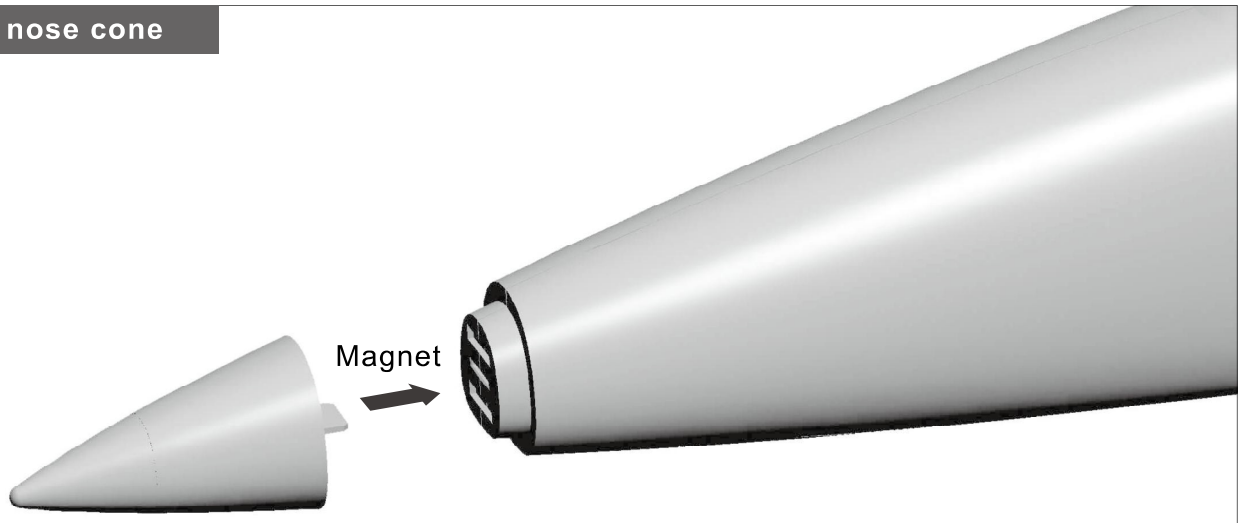


7. Press 4pcs main wing screw-less quick install switch, put it in the locked statu;
8. Shake the main wing and check the main wing screw-less quick install switch to confirm that it is in a locked state, it means the main wing has been locked. At this time, pull the main wing outward and cannot remove it.

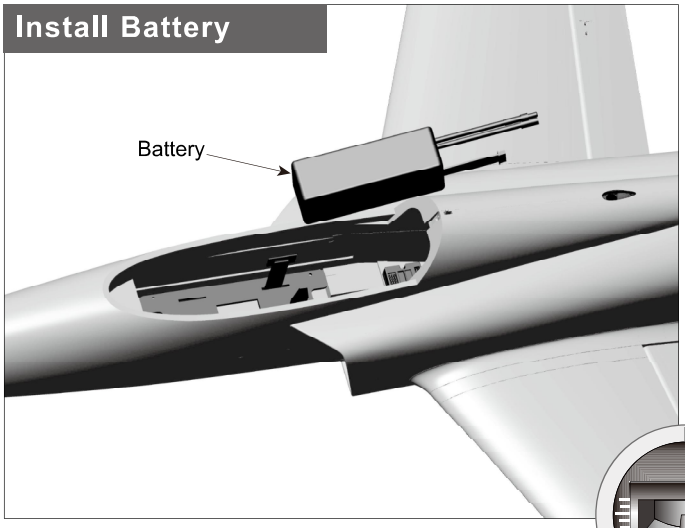


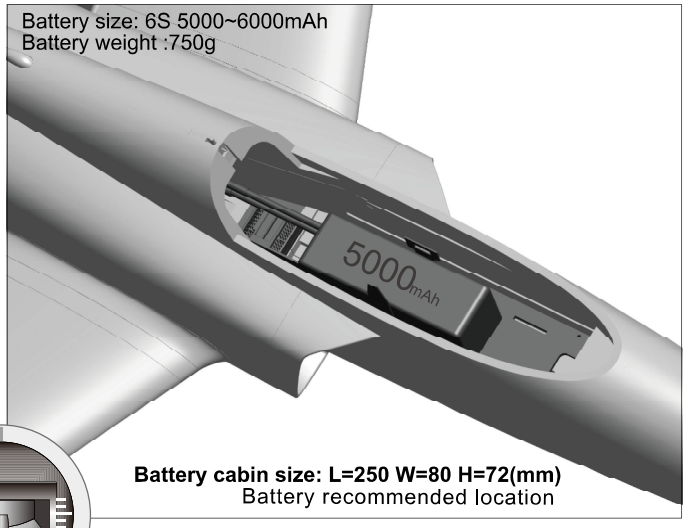
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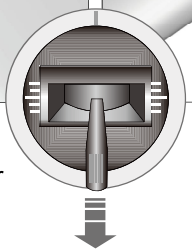
Install nose cone



Install Battery







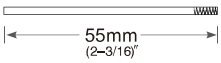
Before connecting the battery and receiver, please switch on the transmitter power and make sure the throttle stick is in the lowest position. Bind your receiver to your transmitter according to your transmitter's instruction manual.

We recommend the following LiPo battery:
6S 22.2V 5000mAh~6S 22.2V 6000mAh
Discharge rate of C ≥ **35C**

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Pushrod instructions

Nose gear steering pushrod length

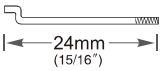


Pushrod diameter Ø1.2mm

Nose gear steering pushrod mounting hole



Nose Cabin door pushrod length

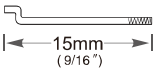


Pushrod diameter Ø1.2mm

Nose cabin door pushrod mounting hole



Rear cabin door pushrod length

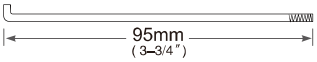


Pushrod diameter Ø1.2mm

Rear cabin door pushrod mounting hole



Aileron pushrod length

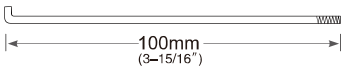


Pushrod diameter Ø1.5mm

Aileron pushrod mounting hole



Flap pushrod length

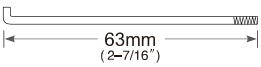


Pushrod diameter Ø1.5mm

Flap pushrod mounting hole



Elevator pushrod length

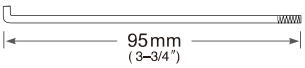


Pushrod diameter Ø1.5mm

Elevator pushrod mounting hole



Rudder pushrod length



Pushrod diameter Ø1.5mm

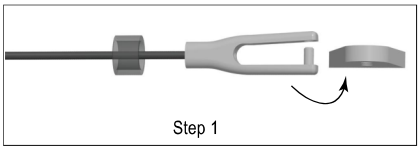
Rudder pushrod mounting hole

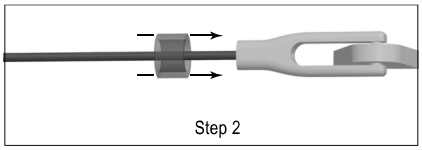


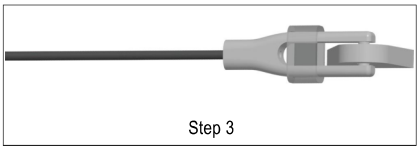
Important additional notes

The Y-type clevis used in this product is equipped with a transparent silicone ring for secondary reinforcement, which can effectively prevent the clevis from accidentally loosening.

As shown in the following figure, when you buckle the clevis into the control surface horn, use the silicone ring to cover the clevis.







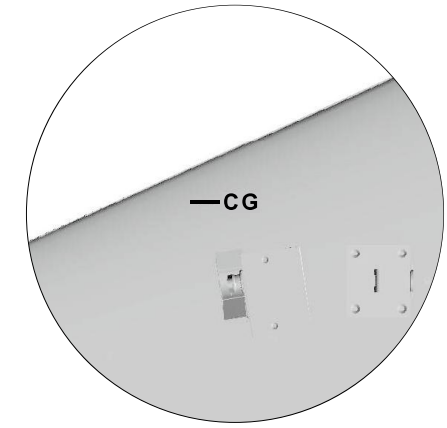
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Center of Gravity

Correct Center of Gravity ("CG") is critical for enabling safe aircraft stability and responsive control. Please refer to the following CG diagram to adjust your aircraft's Center of Gravity.

- Depending on the capacity and weight of your choosen flight batteries, move the battery forward or backward to adjust the Center of Gravity.
- If you cannot obtain the recommended CG by moving the battery to a suitable location, you can also install a counterweight to achieve correct CG. However, with the recommended battery size, a counterweight is not required. We recommend flying without unnecessary counterweight.

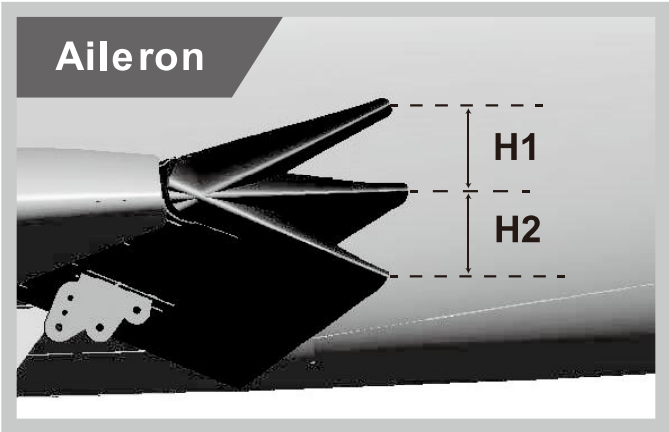
As the photo show, We marked the center of gravity on the bottom of the Main wing. Please confirm the CG based on this marked position.

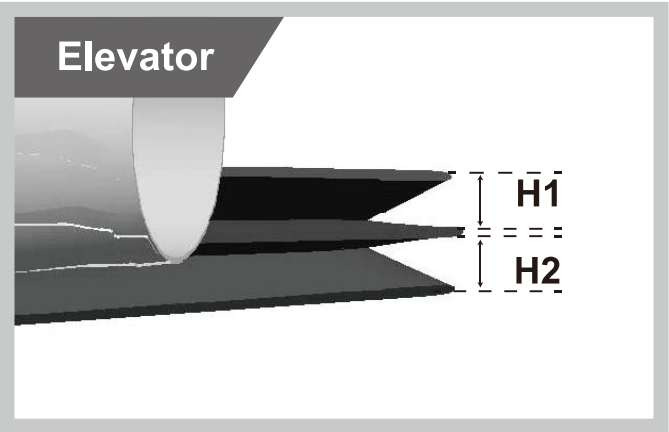


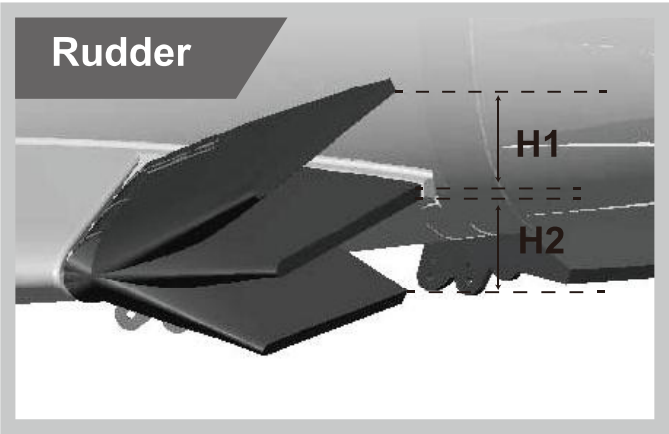
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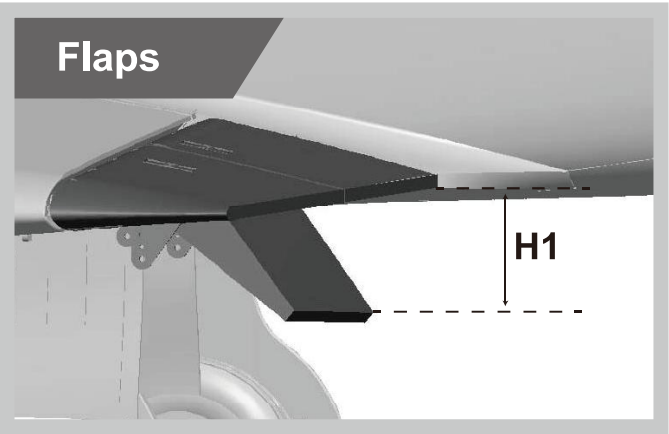
Dual Rates

According to our testing experience, use the following parameters to set Aileron/Elevator Rate. Program your preferred Exponential % in your radio transmitter. We recommend using High Rate for the first flight, and switching to Low Rate if you desire a lower sensitivity. On successive flights, adjust the Rates and Expo to suit your preference.





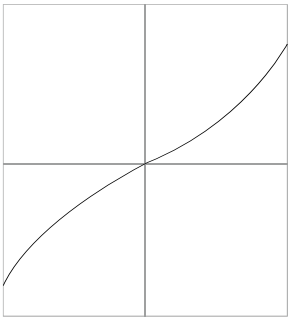




	Aileron (Measured closest to the fuselage)	Elevator (Measured closest to the fuselage)	Rudder (Measured from the bottom)	Flaps
Low Rate	H1/H2 12mm/12mm D/R Rate: 50%	H1/H2 23mm/23mm D/R Rate: 70%	H1/H2 30mm/30mm D/R Rate: 70%	H1 17mm
High Rate	H1/H2 17mm/17mm D/R Rate: 70%	H1/H2 34mm/34mm D/R Rate: 100%	H1/H2 40mm/40mm D/R Rate: 100%	H1 31mm

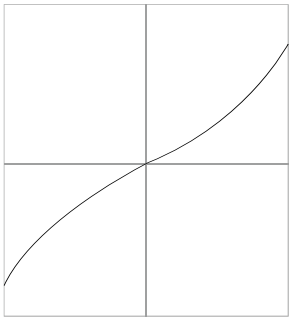
Remote Control EXP Setting Suggestion

1.Aileron EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30
EXP B -30
Spektrum brand Remote Control : EXPO 30% 30%

2.Elevator EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30
EXP B -30
Spektrum brand Remote Control : EXPO 30% 30%

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Flight note

A Flap-to-Elevator Mix is required to maintain a good landing when the flaps are deployed.
The detail is as below:
With low rate flaps deployed, mix 2mm of Down elevator.
With high rate flaps deployed, mix 4mm of Down elevator.

Control Direction Test

After installed the plane, before flying, we need a fully charged battery and connect to the ESC, then use radio to test and check that every control surface work properly.

Aileron

Stick Left



Stick Right



Rudder

Stick Left

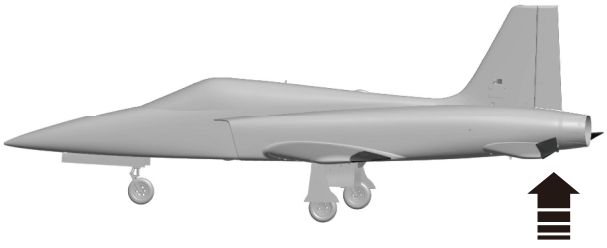


Stick Right

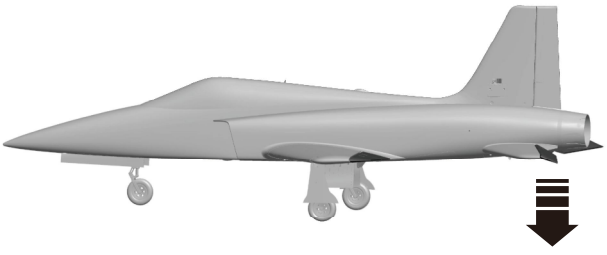


Elevator

Stick down

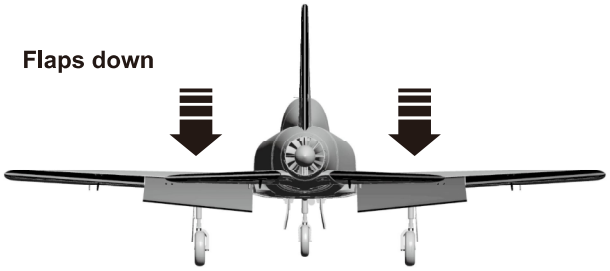


Stick up



Flaps

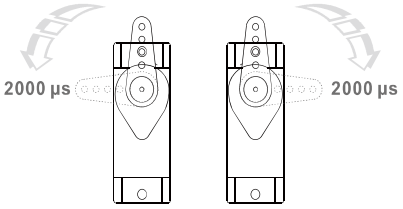
Flaps down



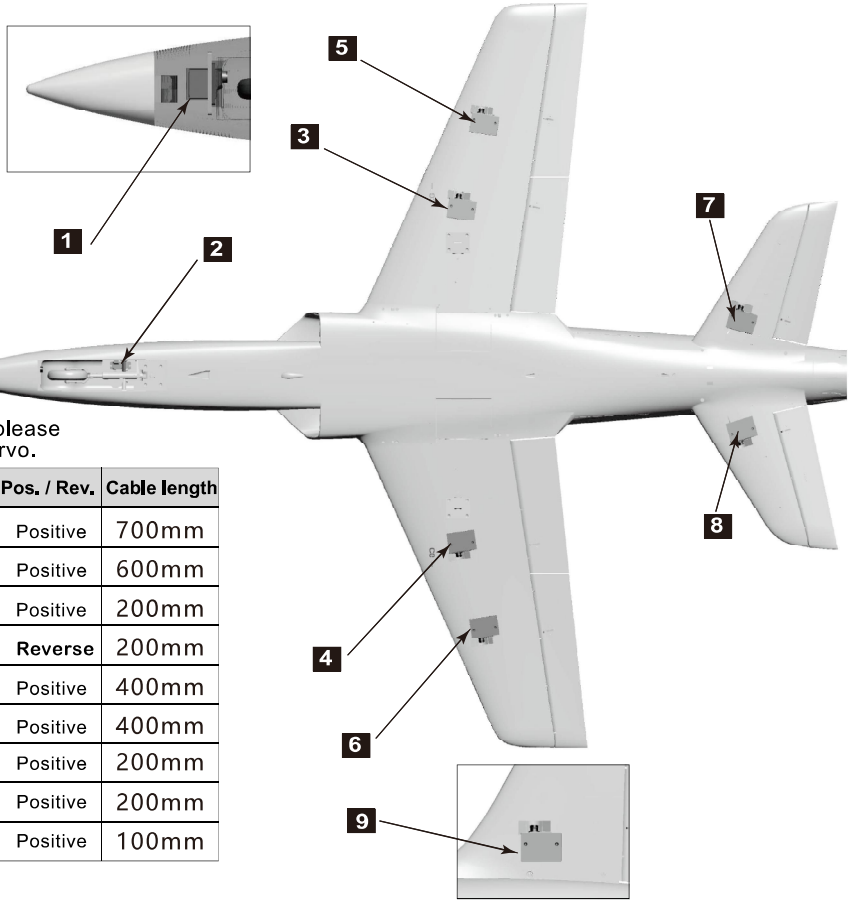
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Pre-Installed Component Overview

Servo Direction



The servo positive or reverse rotation is defined as follows:
When servo input signal change from 1000μs to 2000μs,
The servo arm is **rotated clockwise**, its **positive servo.**
The servo arm is **rotated counterclockwise**, its **reverse servo.**

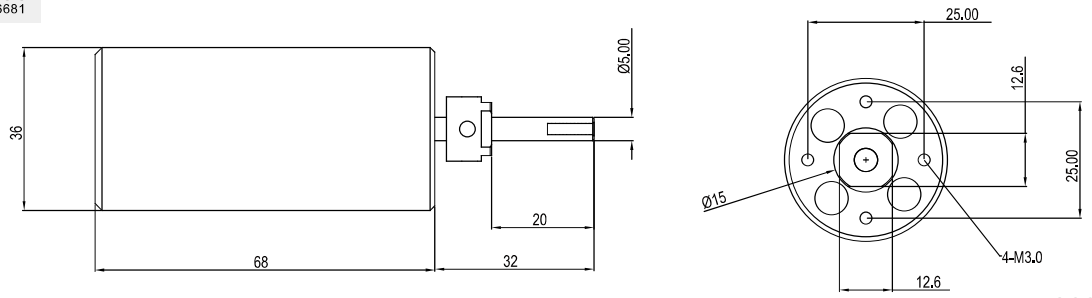


If you need to purchase another brand's servo, please refer to the following list to choose a suitable servo.

Position	Servo regulation	No.	Pos. / Rev.	Cable length
Nose cabin door	9g Digital-Hybrid	1	Positive	700mm
Nose gear steering servo	9g Digital-Hybrid	2	Positive	600mm
Flap(L)	17g Digital-MG	3	Positive	200mm
Flap(R)	17g Digital-MG	4	Reverse	200mm
Aileron(L)	17g Digital-MG	5	Positive	400mm
Aileron(R)	17g Digital-MG	6	Positive	400mm
Elevator(L)	17g Digital-MG	7	Positive	200mm
Elevator(R)	17g Digital-MG	8	Positive	200mm
Rudder	17g Digital-MG	9	Positive	100mm

Motor Specification

3668-1960
Item No.:MI036681



Unit :mm

3668-1960KV

Item No.	EDF Fans	Use voltage (V)	Current(A)	Max power (W)	Thrust(g)	Efficiency (g/w)	Motor(KV)	Use ESC (A)	Weight (g)
E72216	90mm 12-Blade	22.2	120	2660	3700	1.4	3668-1960	120	454

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