www.freewing-model.com

Avanti S

Freewing 90mm EDF Sport Jet



EN 1~10
中 11~20

Catalog

https://www.freewing-model.com EN

1	Introduction	11	前言
2	Product Basic Information	12	产品规格参数
2	Package list	12	包装列表
3	PNP Assembly Instructions	13	PNP组装步骤介绍
3	Install Fuselage	13	机身组装
3	Install Horizontal Tail	13	平尾组装
4	Install Vertical Tail	14	垂尾组装
4	Install Main Wing	14	主翼组装
5	Install Nose Cone	15	机头罩安装
6	Battery Instructions	16	电池介绍
6	Pushrod Instructions	16	舵面控制钢丝尺寸及安装孔位
7	Center of gravity	17	重心示意图
8	Control Direction Test	18	模型舵面测试
8	Important Flight Notes	18	飞行注意事项
9	Dual Rates	19	舵量范围
10	Servo Direction	20	舵机介绍
10	Motor Specification	20	电机介绍

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.

⚠ **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.

Freewing Avanti introduction

Thank you for purchasing our Freewing 90mm EDF sport jet Avanti 90. Before you assemble this jet,please carefully read instructions and follow the correct process for assembly and adjustment. If you encounter problems during assembly and debugging, please first resolve them by instruction. If the problem persists, please contact the distributor or directly contact us.

The newly designed ultra-large Avanti 90mm EDF jet features exquisite craftsmanship and elegant styling, with a wingspan of 1380mm and a fuselage length of 1460mm. Its larger size enhance the aircraft's aerial recognition and deliver exceptional flight stability. By integrating numerous mature and superior structural designs, it significantly improves product performance and user experience across multiple dimensions.

Appearance It features two independent color schemes: the classic red and white, and green and white. Both color schemes incorporate a black gradient mesh design at the base of the fuselage, creating strong color contrast that aids pilots in clearly discerning the aircraft's attitude during low-light flight scenarios.

The entire aircraft is equipped with LED warning lights at five positions, along with four sets of formation lights installed on the vertical tail and both sides of the fuselage, making the plane exceptionally conspicuous against the sky background.

Convenience The Avanti 90 adopts the screw-less "QUICK II" portable install structure for main wing and featured a direct plug-in circuit connection. This significantly enhances operational convenience in practical application scenarios such as transportation and field installation, greatly reducing the risk of foam surface damage during the complex installation process. The tail wing is secured with screws, and wiring is connected in a single step, ensuring easy maintenance.

Structural design The segmented fuselage is fixed with screws, which facilitates the modification of vector accessories and helps to reduce packaging size; Hollow main wing design, integrated with carbon fiber square tube and wooden rib beam to ensure rigidity and strength. By using irregular materials to penetrate the left and right horizontal tail fins, and adding a carbon fiber square tube embedded on one side for further reinforcement. Enable the overall strength of the aircraft to meet the strength standards required for turbojet power retrofitting within 5KG.

Hidden plastic hinge with smooth rotation. The fixed base area of the control surface arm is increased, and it is fixed by adhesive and screws to improve the overload, fatigue resistance, and safety reliability of the control surface arm.

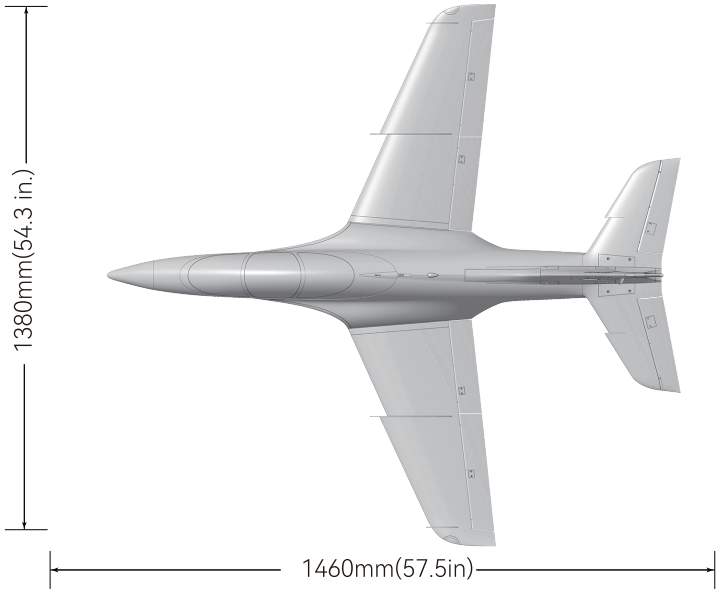
A prismatic heat dissipation airway is designed on both the left and right sides of the nose, providing a continuous supply of cold air during flight, which can dissipate heat and cool the battery and other electronic devices, improving the performance of the battery.

Landing gear The landing gear adopts the mature ET86 series electric retractable controller with a torque of 21kgf, which has high strength and good reliability. The main landing gear shock-absorbing action tube is embedded with a sealing rubber ring, and through spring shock absorption, damping grease eliminates rapid rebound, achieving better landing grounding effect and effectively eliminating the huge energy generated during heavy descent, reducing the probability of bouncing.

Performance Introduction The Freewing Avanti 90 sports jet continues to use our mature 6S/8S 90m series power system. Obtain the highest horizontal flight speeds of 190KPH/200KPH respectively.

The aircraft has a short takeoff distance and can smoothly leave the ground within 15 meters when accelerating at full throttle. Excellent flight stability, high heading accuracy, and good anti stall characteristics. Accurate action response and balanced handling performance in fast and slow speed ranges. Compared to other aircraft, the lateral attitude and flight path maintenance are more relaxed in handling. With abundant power, it can smoothly complete various common electric tunnel stunts. Support low-speed approach, easily achieve wheel lift landing. Replacing vector accessories can further expand gameplay and stably perform rich 3D stunts such as flat spirals, small radius somersaults, pendulums, explosive tops, and bullet rolls.

Product Basic information



6S Standard Version

Wingload: 112 g/dm²
Wing Area: 34.5dm²
Servo: 17g MG Digital Servo(7pcs)
9g Digital Plastic Gear Servos(1pcs)
9g Hybrid Digital Servos (1pcs)
ESC: 120A Brushless ESC
Motor: 3668-1960KV I/R Motor
Ducted fan: 90mm 12-blade fan
Weight: 3125g(w/o Battery)
Li-Po Battery: 6S 5000-6000mAh

8S Upgrade Version

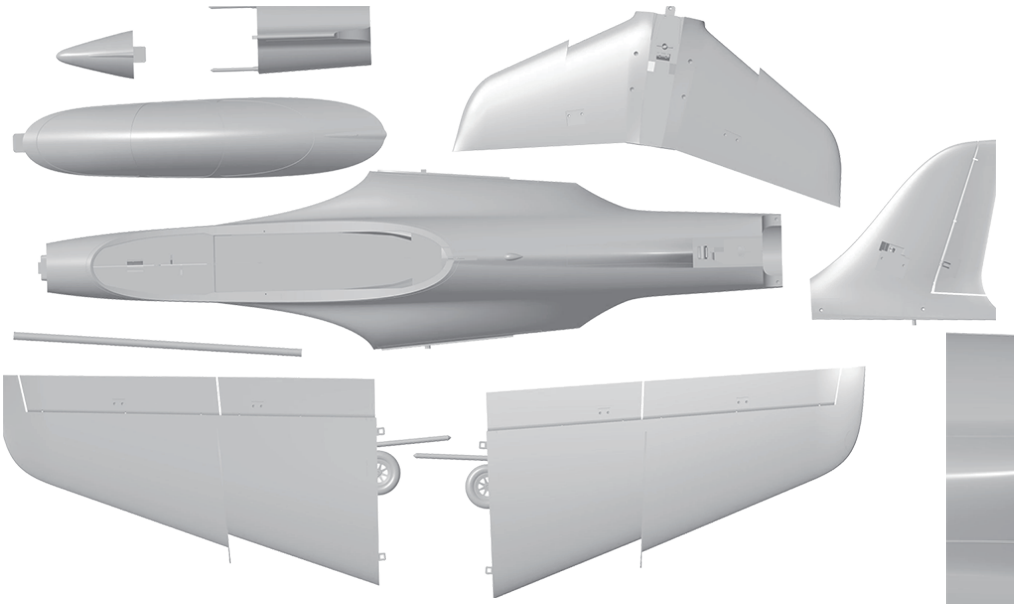
Motor: 4075-1350KV I/R Motor
Ducted fan: 90mm 12-blade fan
ESC: 120A Brushless ESC
Weight: 3265g(w/o Battery)

Other Notes

Landing gear: Electric landing gear
Cabin doors: nose complete cabin door,
Gyros: FreewingGuard 6-Axis Gyro(Optional)

⚠ 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	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo
3	Main wing	Pre-installed all electronic parts	Pre-installed servo
4	Vertical tail	Pre-installed all electronic parts	Pre-installed servo
5	rear-fuselage	√	√

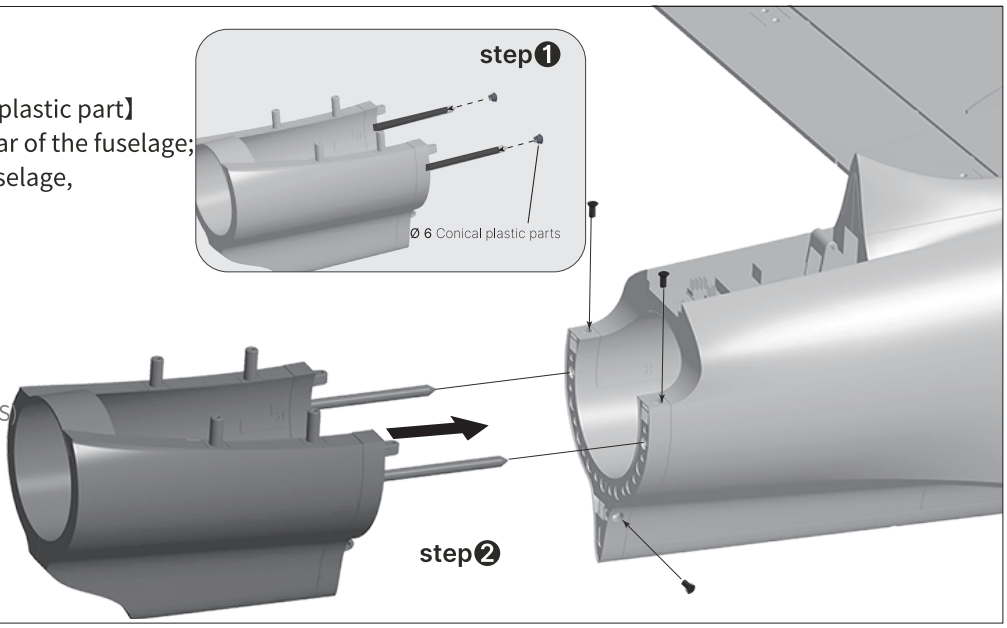
No.	Name	PNP	ARF Plus
6	Cockpit	√	√
7	Nose cone	√	√
8	Carbon tube	√	√
9	Annex bag	√	√
10	Manual	√	√

Install fuselage

As the photo show:
1.Use glue to fix the 【Conical plastic part】 onto the carbon tube at the rear of the fuselage;
Align the rear section of the fuselage, then insert it into the fuselage.
2.Then tighten with screws.

Screw (KM 3*7mm 3PCS)

Conical plastic parts (Ø6mm 2PCS)

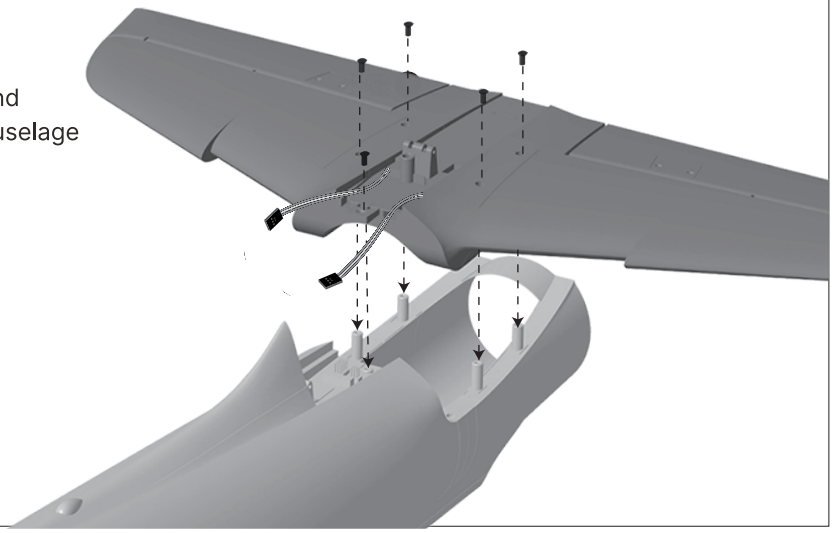


Install Horizontal tail

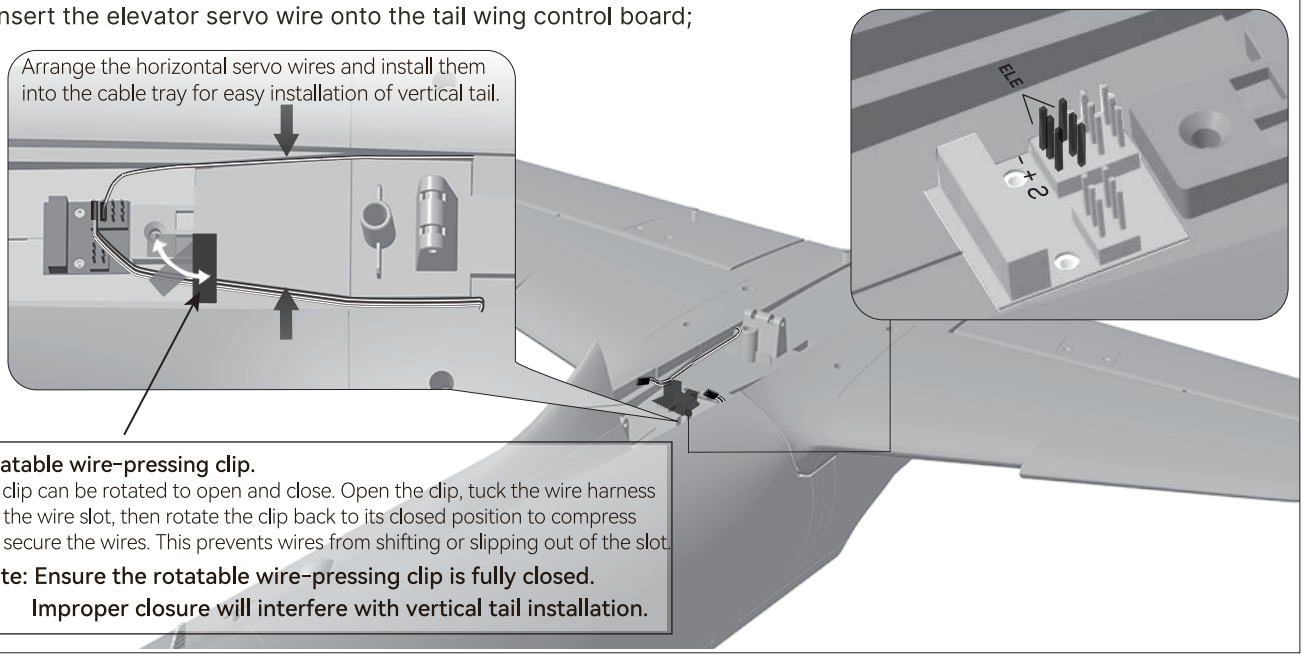
As the photo show:

1. Align the Horizontal tail with the fuselage and push it into the installation position on the fuselage
2. Then tighten with screws;

Screw (KM 3*7mm 5PCS)



3. Insert the elevator servo wire onto the tail wing control board;



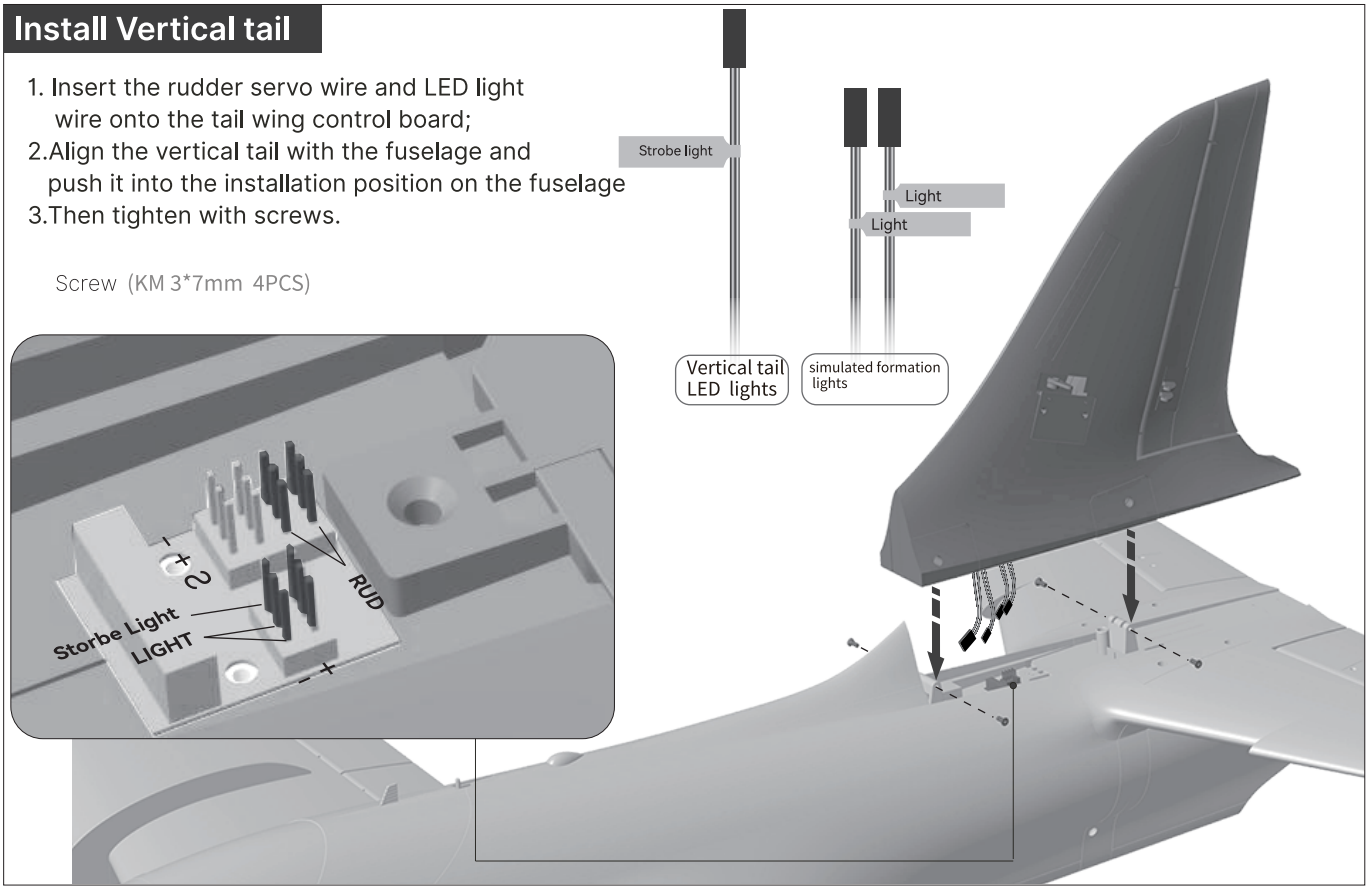
Rotatable wire-pressing clip.
The clip can be rotated to open and close. Open the clip, tuck the wire harness into the wire slot, then rotate the clip back to its closed position to compress and secure the wires. This prevents wires from shifting or slipping out of the slot.

Note: Ensure the rotatable wire-pressing clip is fully closed. Improper closure will interfere with vertical tail installation.

Install Vertical tail

1. Insert the rudder servo wire and LED light wire onto the tail wing control board;
2. Align the vertical tail with the fuselage and push it into the installation position on the fuselage
3. Then tighten with screws.

Screw (KM 3*7mm 4PCS)



Install Main Wing

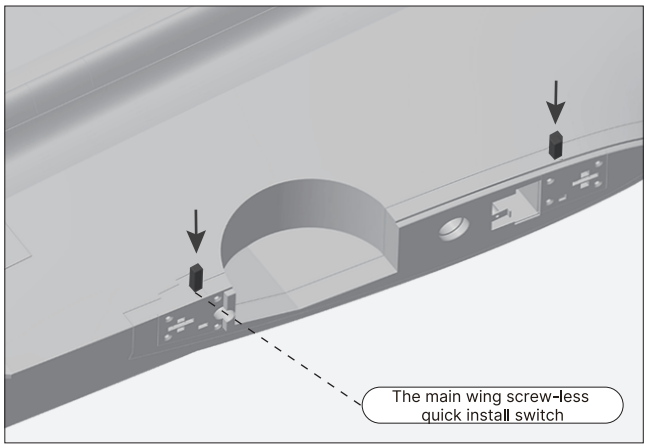
As the photo show:

1. Press the fuselage screw-less quick install switch to unlock it ;❶

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）

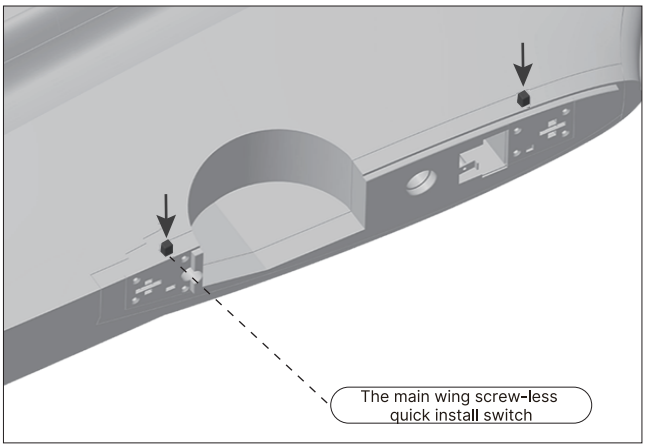
Unlock status

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.



Install Main Wing

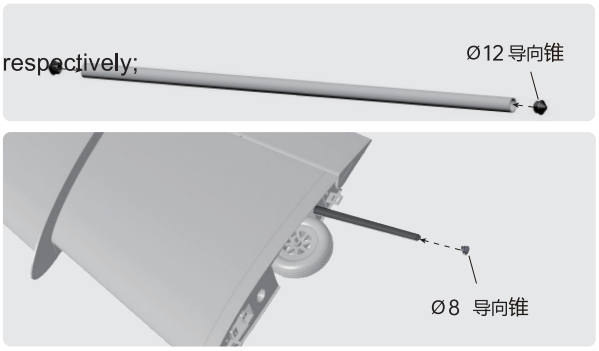
1. Use glue to fix the【 Conical plastic part 】on carbon tubes respectively;

Carbon tube ❶(Ø12*440mm 1PCS)

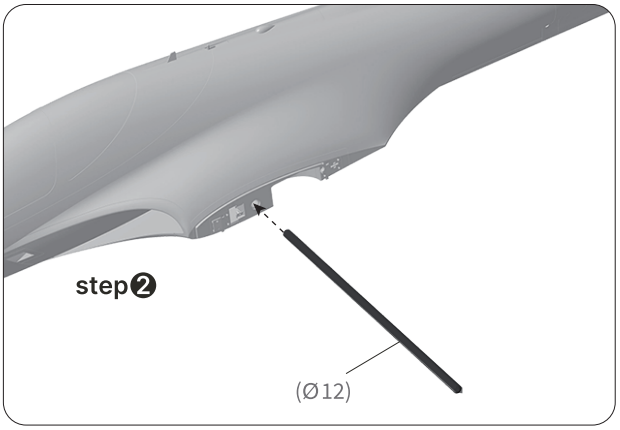
Conical plastic parts (Ø12mm 2PCS)

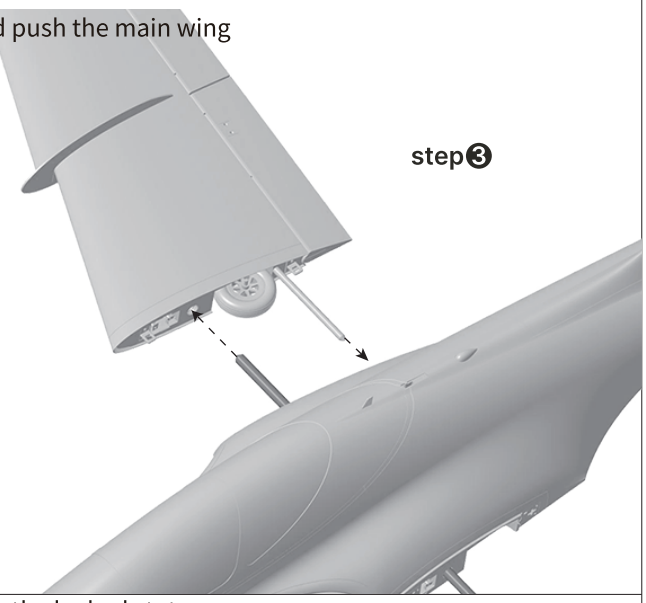
Conical plastic parts (Ø8mm 2PCS)

step❶

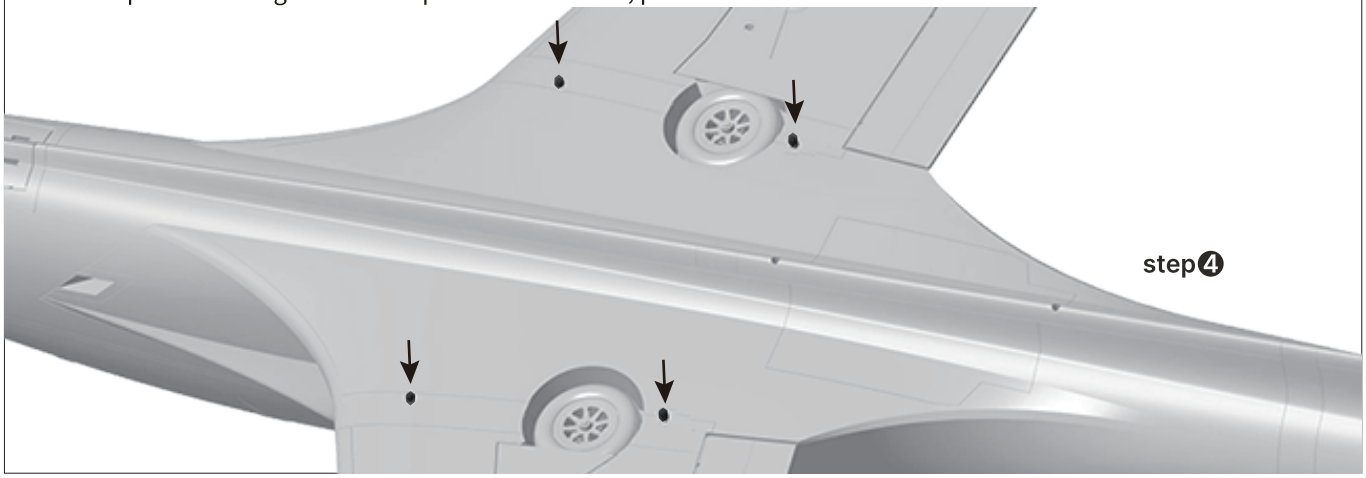


2. Install the carbon tube on the fuselage;
3. Align the carbon tube on both sides with the main wing, and push the main wing into the installation position on the fuselage;
(Repeat this step for the other main wing)





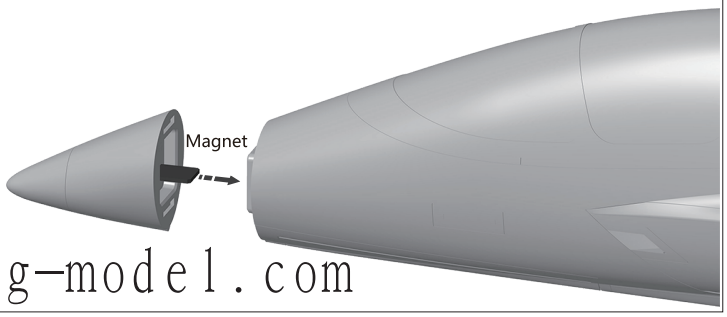
4. Press 4pcs main wing screw-less quick install switch, put it in the locked status.



Install nose cone

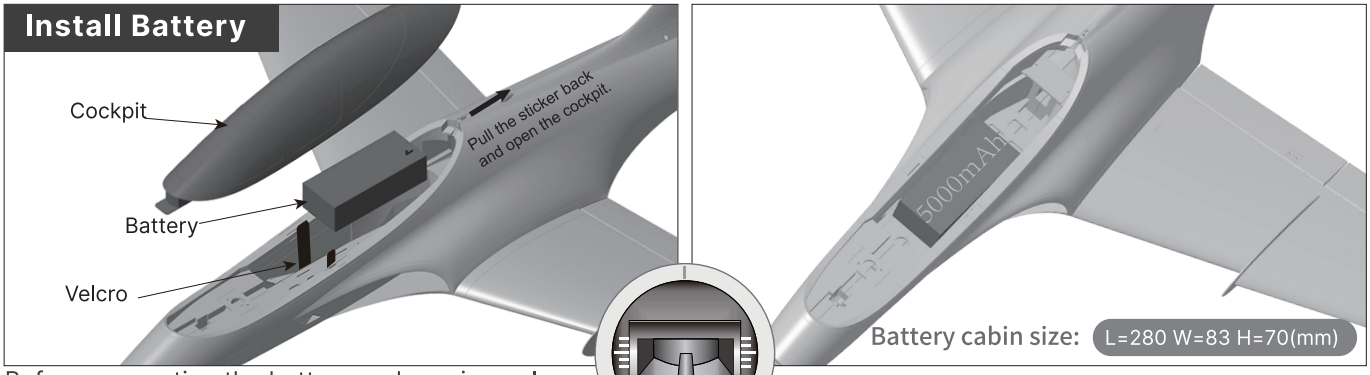
As the photo show:

1. Install the nose cone onto the fuselage



https://www.freewing-model.com

Install Battery

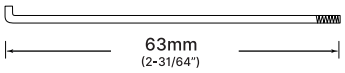


Before connecting the battery and receiver, please switch on the transmitter power and make sure the throttle stick is in the lowest position. Bind your receiver to your transmitter according to your transmitter's instruction manual.

We recommend the following LiPo battery:
6S 22.2V 5000mAh~6S 22.2V 6000mAh
Discharge rate of C ≥50C

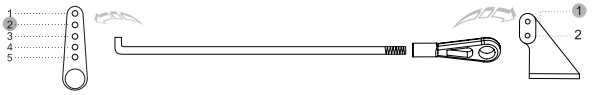
Pushrod Instructions

Aileron pushrod length

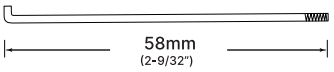


Pushrod diameter Ø1.5mm

Aileron pushrod mounting hole

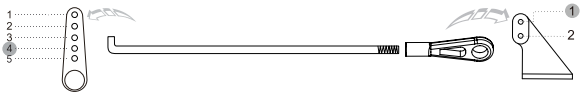


Flap pushrod length

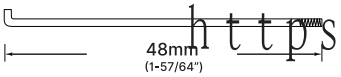


Pushrod diameter Ø1.5mm

Flap pushrod mounting hole(Inside)



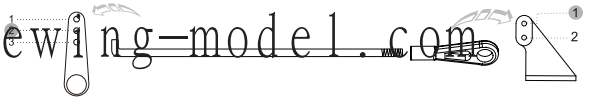
Elevator pushrod length



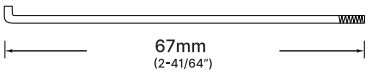
Pushrod diameter Ø1.5mm

https://www.freewing-model.com

Elevator pushrod mounting hole

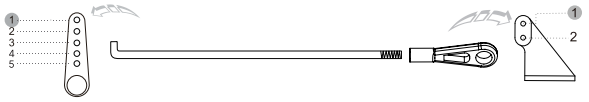


Rudder pushrod length

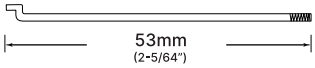


Pushrod diameter Ø1.5mm

Rudder pushrod mounting hole



Nose Cabin door pushrod length

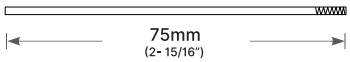


Pushrod diameter Ø1.2mm

Nose cabin door pushrod mounting hole



Nose gear steering pushrod length



Pushrod diameter Ø1.5mm

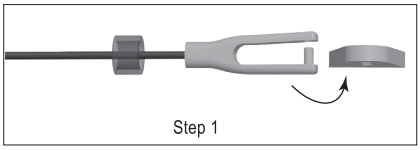
Nose gear steering pushrod mounting hole

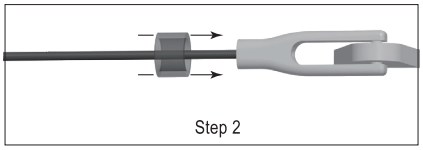


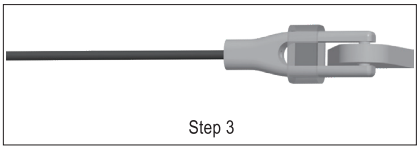
Important additional notes

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.





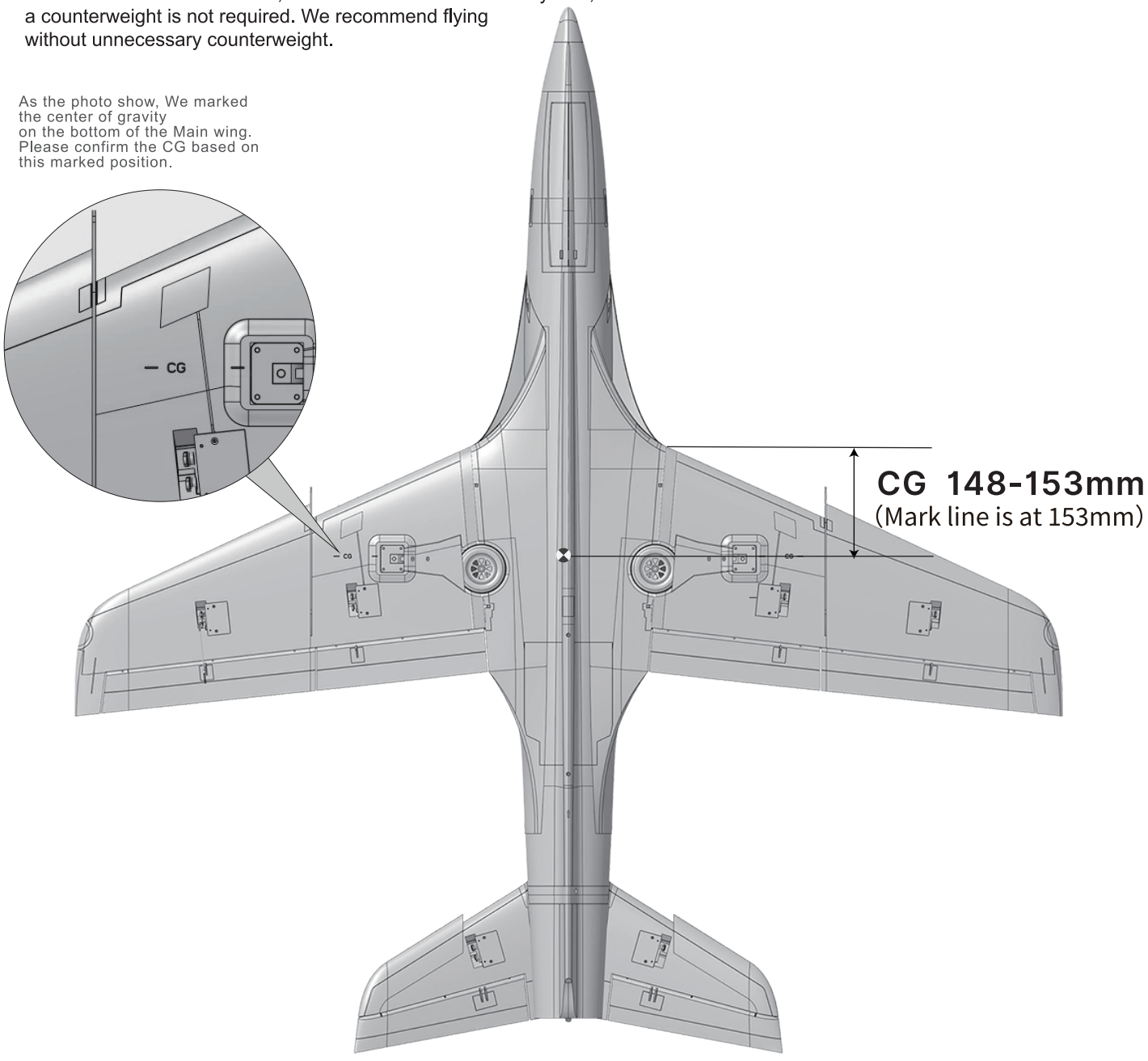


Center of Gravity

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.



After installed this Avanti model plane, please connect to the receiver and power on, then adjust it.

1.When all channels of radio are fine tuned to zero and the control stick is centered: check whether each control surface on the aircraft is in the center position. If it is found that the control surface is not in the center position, please adjust the control rod to center it;

2.Please refer to the diagram below and use the radio to test each control surface to ensure that its movement direction matches the diagram. If the opposite movement occurs, first check whether the relevant channel in the radio has enabled the reverse function; If the problem persists, please contact us for assistance in resolving it.

Aileron

Stick Left

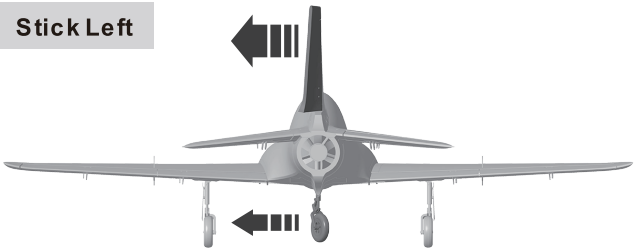


Stick Right

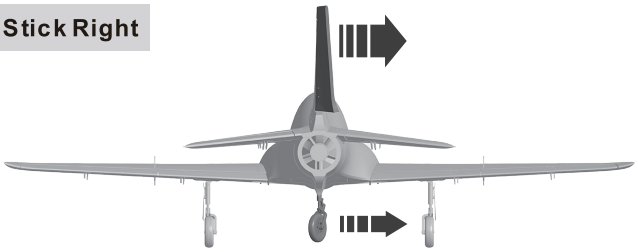


Rudder

Stick Left

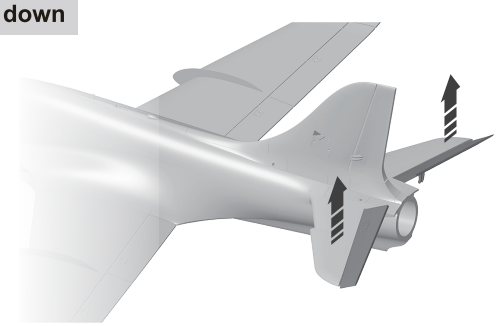


Stick Right

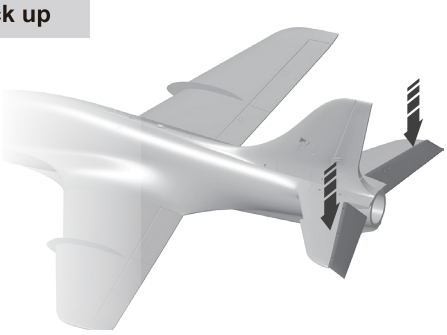


Elevator

Stick down

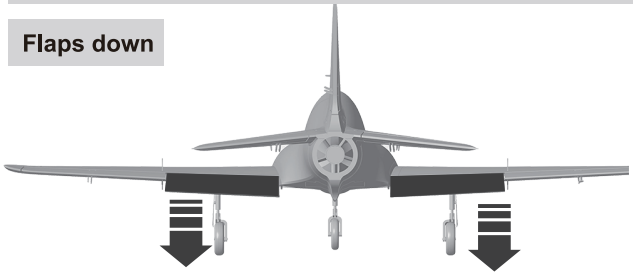


Stick up



Flaps

Flaps down



Flap-to-Elevator Mix

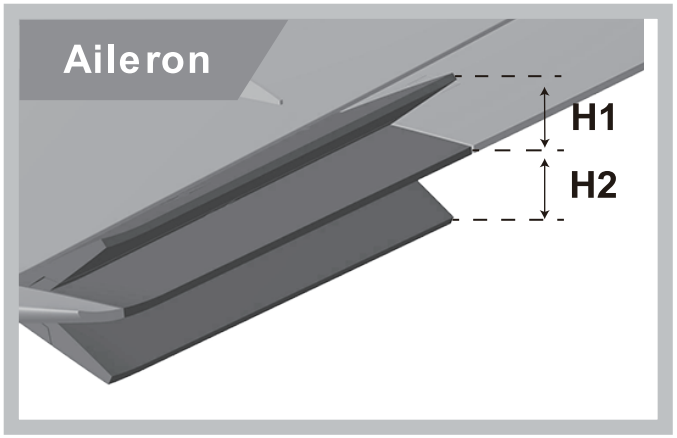
1. When Avanti model jet landing and flaps are developed, there may be a slight down-head. A Flap-to-Elevator Mix is required to maintain a good landing when flaps are deployed.

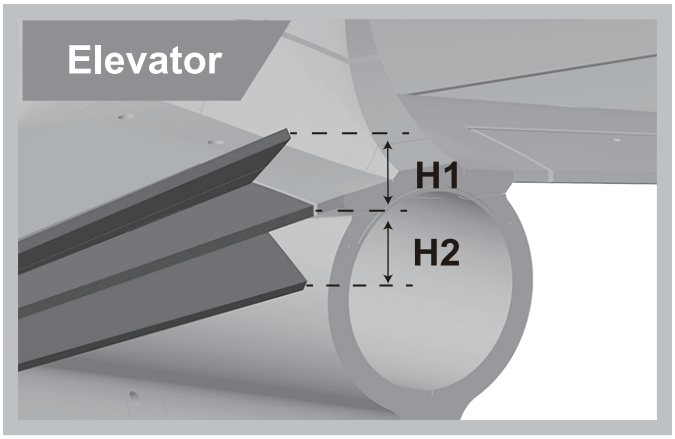
The detail is as below:

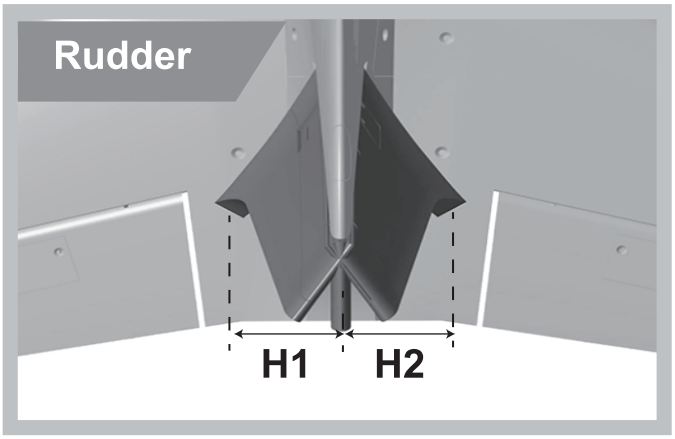
With flaps (Low Rate), **mix 0.8 mm of Down Elevator.** With flaps (High Rate), **mix 1.5 mm to Down Elevator.**

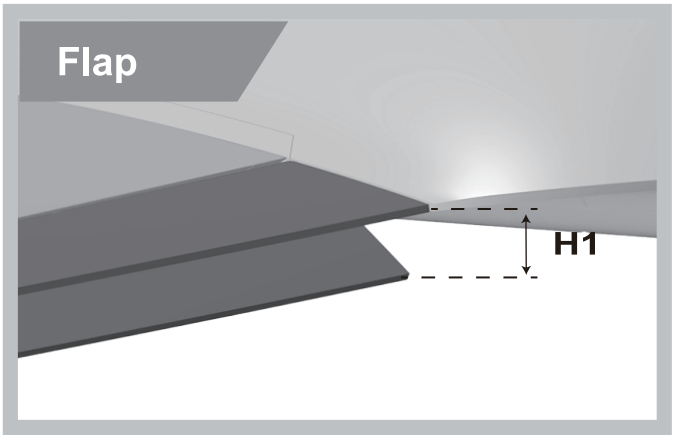
Dual Rates

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.





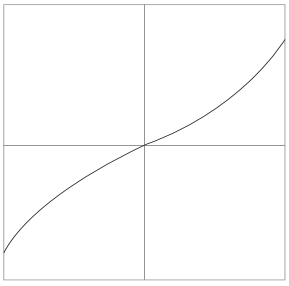




	Aileron (Measured closest to the fuselage)	Elevator (Measured closest to the fuselage)	Rudder (Measured from the bottom)	Flaps
Low Rate	H1/H2 27mm/27mm D/R Rate: 80%	H1/H2 16mm/16mm D/R Rate: 80%	H1/H2 50mm/50mm D/R Rate: 80%	H1 20mm
High Rate	H1/H2 32mm/32mm D/R Rate: 100%	H1/H2 21mm/21mm D/R Rate: 100%	H1/H2 56mm/56mm D/R Rate: 100%	H1 29mm

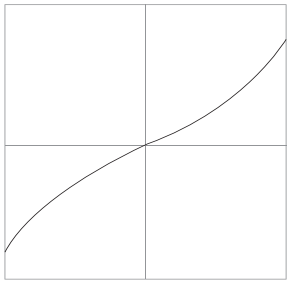
Remote Control EXP Setting Suggestion

1.Aileron EXP curve is shown as below :



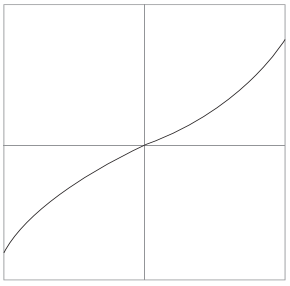
Futaba brand Remote Control : EXP A -30
EXP B -30
Spektrum brand Remote Control : EXPO 30% 30%

2.Elevator EXP curve is shown as below :



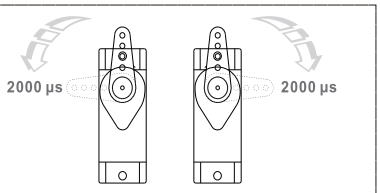
Futaba brand Remote Control : EXP A -30
EXP B
Spektrum brand Remote Control : EXPO

3.Rudder EXP curve is shown as below :

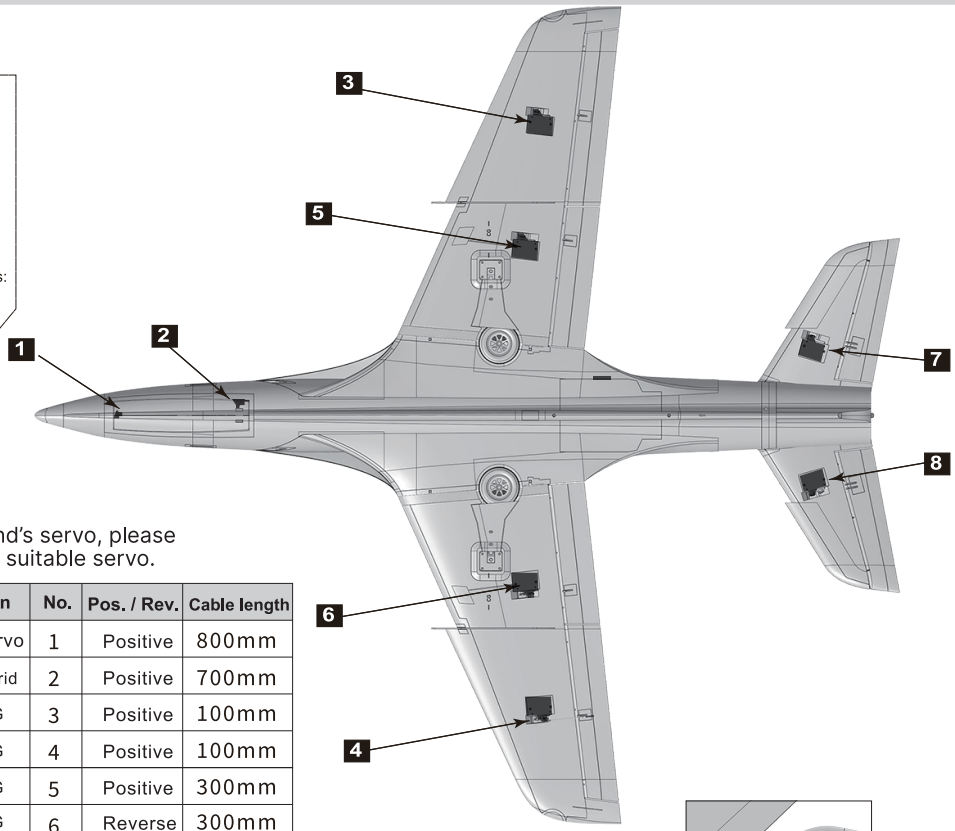


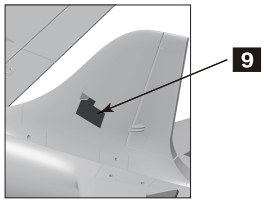
Futaba brand Remote Control : EXP A -30
EXP B -30
Spektrum brand Remote Control : EXPO 30% 30%

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.**





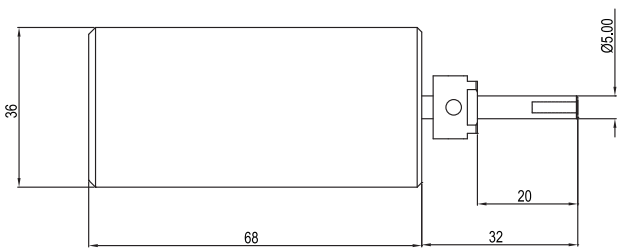
If you need to purchase another brand's servo, please refer to the following list to choose a suitable servo.

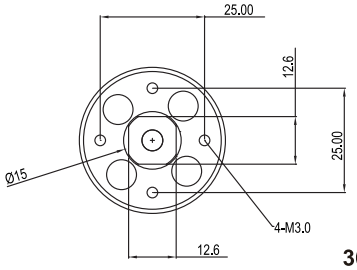
Position	Servo regulation	No.	Pos. / Rev.	Cable length
Nose cabin door	9g plastic servo	1	Positive	800mm
Nose gear steering servo	9g Digital-Hybrid	2	Positive	700mm
Aileron(L)	17g Digital-MG	3	Positive	100mm
Aileron(R)	17g Digital-MG	4	Positive	100mm
Flap(L)	17g Digital-MG	5	Positive	300mm
Flap(R)	17g Digital-MG	6	Reverse	300mm
Elevator(L)	17g Digital-MG	7	Positive	300mm
Elevator(R)	17g Digital-MG	8	Reverse	300mm
Rudder	17g Digital-MG	9	Positive	200mm

Motor Specification

3668-1960
Item No.:MI036681

6S





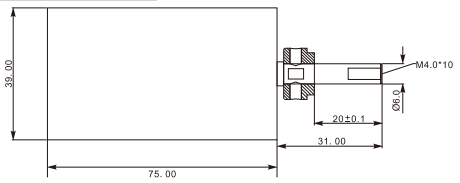
Unit :mm

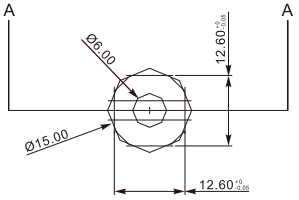
3668-1960KV

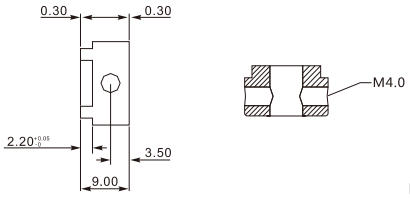
Item No.	EDF Fans	Use voltage (V)	Current(A)	Max power (W)	Thrust(g)	Efficiency (g/w)	Motor(KV)	Use ESC (A)	Weight (g)
E72216	90mm 12-Blade	22.2	120	2660	3700	1.4	3668-1960	120	454

Item No.:MI040754
4075-1350kv

8S







Unit :mm

Item No.	EDF Fans	Use voltage (V)	Current(A)	Max power (W)	Thrust(g)	Efficiency (g/w)	Motor(KV)	Use ESC (A)	Weight (g)
E72215	90mm 12-Blade	29.6	115	3400	4700	1.39	**MI040754** 4075-1350KV	120	558