

**FreeWing** M<sup>o</sup>DEL

# ***F/A-18C Hornet***

*FreeWing 1/11.5 Scale EDF Jet*

**Wingspan:1034mm**

**Length:1500mm**

**Empty Weight:2640G[w/o Battery]**



EN	1~8
中	9~16

Introduction.....1  
 Basic Product information.....2  
 Packing list.....2  
**PNP Assembly Instructions**  
 Install Main wing.....3  
 Install Horizontal Stabilizer.....3  
 Install Vertical Stabilizer.....4  
 Install Scale Accessories .....4  
 Battery.....4  
 Pushrod instructions .....5  
 Center of Gravity .....5  
 Control Direction Test .....6  
 Dual Rates and Flight Attention .....7  
 Servo Direction .....8  
 Motor Specification.....8

前言.....9  
 产品基本参数.....10  
 产品包装清单.....10  
**PNP组装说明**  
 主翼组装.....11  
 平尾组装.....11  
 垂尾组装.....12  
 电池安装说明.....12  
 仿真小配件 .....12  
 舵面控制钢丝尺寸 .....13  
 重心示意图 .....13  
 舵面测试 .....14  
 大、小舵参数 .....15  
 舵机使用介绍 .....16  
 电机参数.....16

Thank you for purchasing our Freewing 80/90mm EDF Super Scale Jet, the F/A-18C Hornet! It is 1500mm in length with a wingspan of 1034mm. This 1/11.5 scale F/A-18C uses EPO material and super scale details such as a scale pilot figure, LED lights, flap hinges, antennas, etc. All control surfaces are easily removable and the MCE-E consolidates wiring for optimal organization. The elevator's control hardware is completely concealed within the fuselage, and the rudder servos are recessed to reduce their observability.

The Freewing F/A-18C can be configured in either 80mm or 90mm power system (Subject to Freewing power system equipment).

The Freewing F/A-18C PNP Version includes a preinstalled 90mm EDF power system comprising a 9-blade EDF impeller, 3748-1750KV outrunner motor, 130A ESC, and 5A UBEC. The recommended battery is a 6S 5000mAh 35C+ battery, providing a top speed in excess of 170KPH / 106.5MPH.

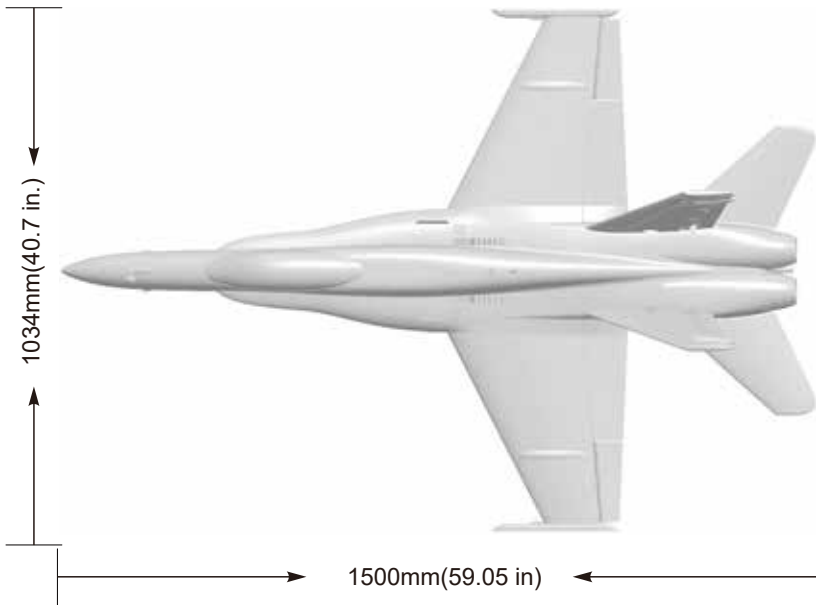
The ARF PLUS Version was specially designed to also be able to accommodate an 80mm EDF power system, if a user decides to install his/her own lighter power system. Two foam "shims" are included in the box to facilitate the narrower 80mm EDF.

When landing, there is no need to intervene too much to maintain the direction, the direction stability is good, and it is not easy to be biased. The shortest takeoff distance is about 25M. The air posture is stable, easy to control, and the action is responsive. It maintains a stable flight attitude at high speeds and low speeds. In the case of a low-altitude, low-speed, large-turn maneuver, maintain adequate throttle to complete the maneuver smoothly. When landing, the flaps decelerate the aircraft significantly, and at the same time, the slight bowing effect caused by the opening of the flaps gives the aircraft a stable and gentle rate of decline, making the landing sequence easier to handle.

**⚠ 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! Operator 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.



**Standard Version**

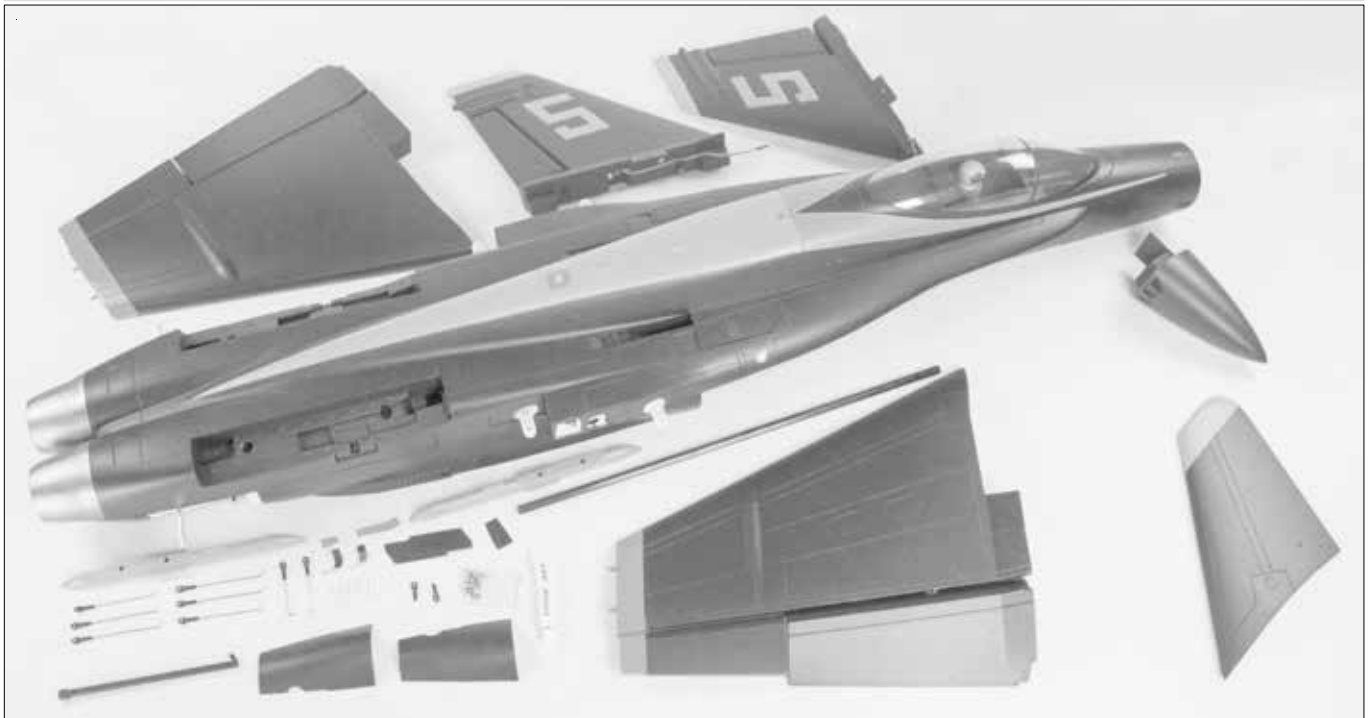
Wingload: 150g/dm<sup>2</sup>  
 Wing Area: 22 dm<sup>2</sup>  
 Motor: 3748-1750KV O/R Motor  
 Servo: 9g MG Hybrid servo (7pcs)  
           17g MG Hybrid servo (2pcs)  
 ESC: 130A with 8A UBEC  
 Ducted fan: 90mm 9-blade fan  
 Weight: 2640g (w/o Battery)  
 Thrust: 4000g

**Other features**

Material: EPO  
 Aileron: Yes            Split Flaps: Yes  
 Elevator: Yes         Rudder: Yes  
 Landing gear: Retract landing gear  
                               controlled by electric worm  
 Cabin door: nose gear electric cabin door  
 Scale LED lights  
 Scale Pilot figure (1pcs)  
 LiPo Battery: 6S 4500-5500mAh (1pcs)

**⚠ 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	Airframe	No.	Name	PNP	ARF Plus	Airframe
1	Fuselage	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	6	Carbon tube	✓	✓	✓
2	Main wing	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	7	Pushrod instructions	✓	✓	✓
3	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	8	Non-slip mat & Glue	✓	✓	✓
4	Vertical tail	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	9	Manual	✓	✓	✓
5	Drop tank	✓	✓	✓	10	Screw	✓	✓	✓

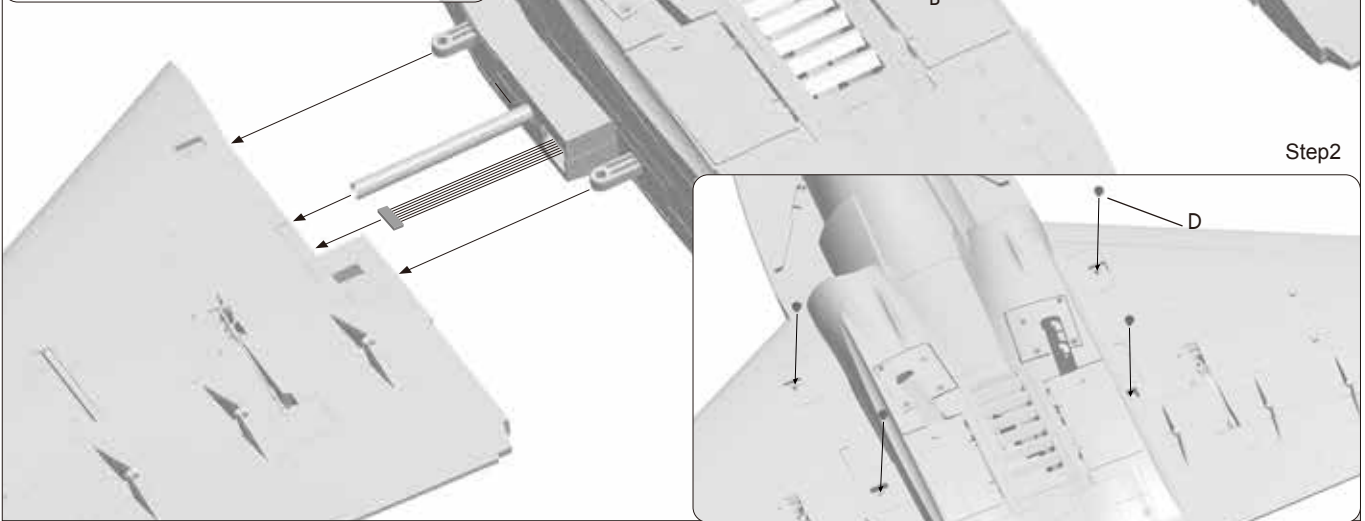
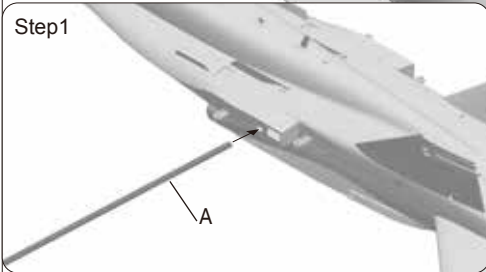
## Install Main wing

As the photo show:

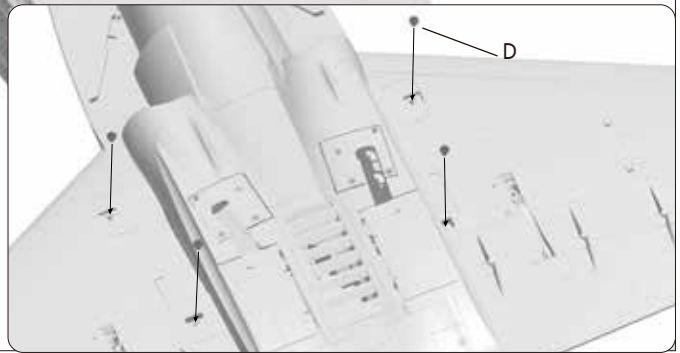
1. Insert the carbon tube to the fuselage.
2. Insert the ribbon wire to the main wing control board and install left/right wing on the fuselage.
3. Use screws to fix the main wing.

- A-Carbon tube (Ø10x480mm 1pcs)
- B-Ribbon wire
- C-Controller Module
- D-Screw (PWM3x6mm 4pcs)

Step1



Step2



## Install Horizontal Stabilizer

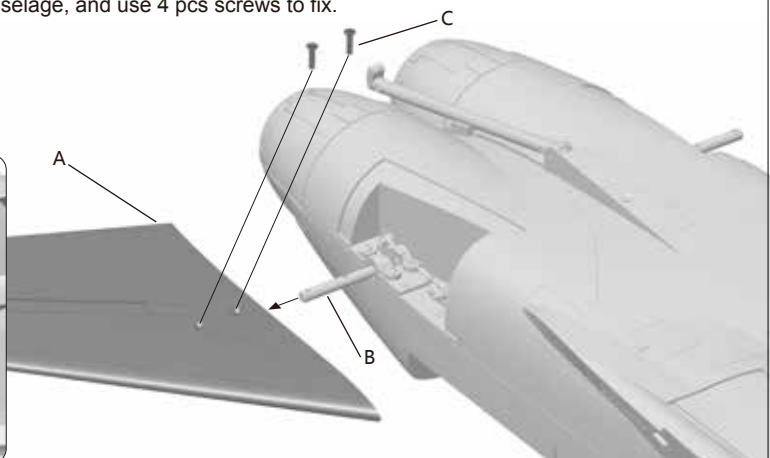
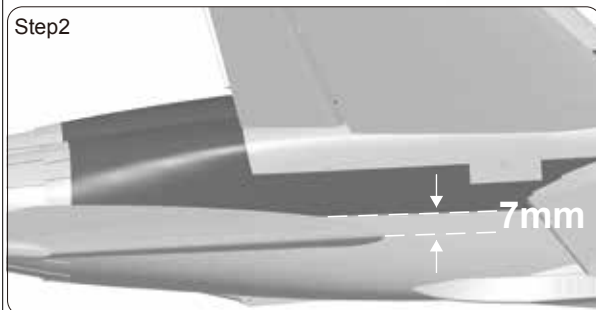
Step1

As the photo show:

1. Insert the left/right horizontal stabilizer to the shaft of tail fuselage, and use 4 pcs screws to fix.
2. Adjust the pushrod length to the correct position.

- A-Horizontal Stabilizer
- B-horizontal tail shaft
- C-Screw (KM3x8mm 4pcs)

Step2



As the photo show: Use glue to attach the plastic cover on the indicated position.

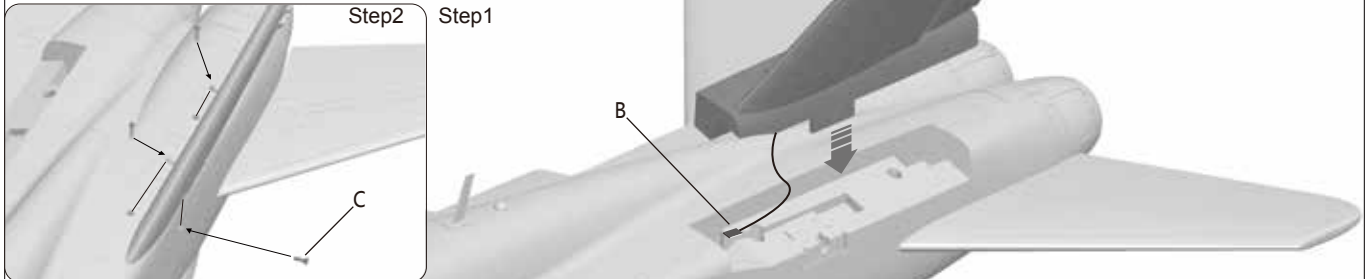


## Install Vertical Stabilizer

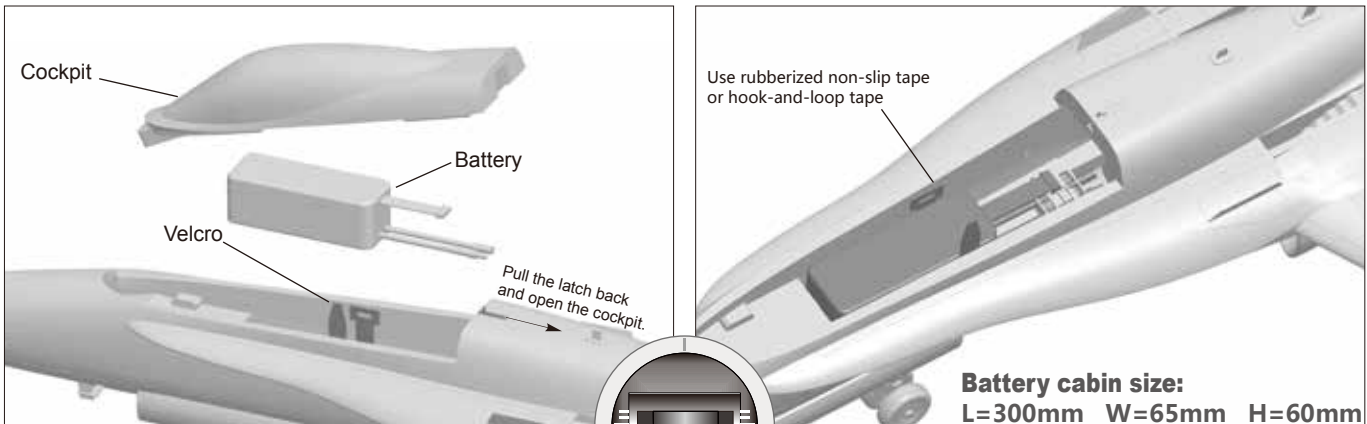
As the photo show:

1. Pull the rudder servo cable along the slot into the battery compartment and install the vertical tail.
2. Use 6pcs screws to fix the vertical tail to prevent loosening.

- A-Rudder
- B-Rudder servo cable
- C-Screw (FA3x10mm 6pcs)



## Battery Size

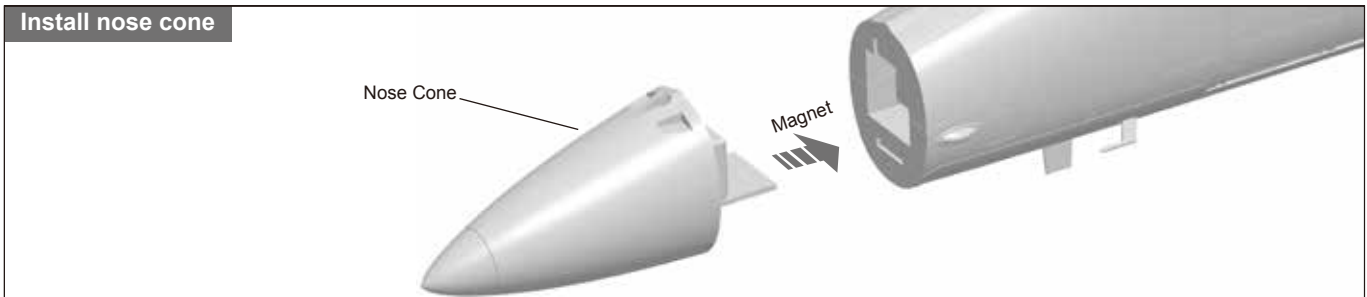


Before connecting the battery and receiver, please switch on the transmitter power and make sure the throttle stick is in the lowest position. Bind your receiver to your transmitter according to your transmitter's instruction manual.

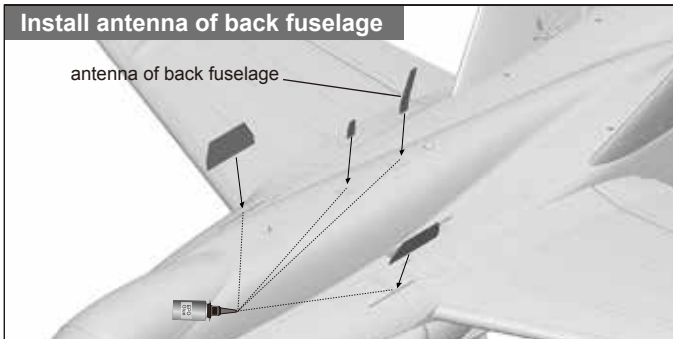
We recommend the following LiPo battery:  
**6S22.2V 4500mAh~6S22.2V 5500mAh**  
 Discharge rate of C ≥ 35C

## Install Other Accessories

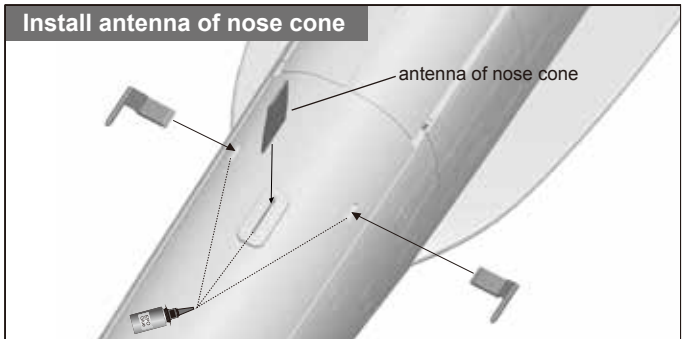
### Install nose cone



### Install antenna of back fuselage



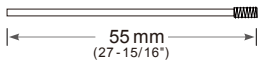
### Install antenna of nose cone





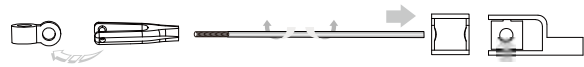
## Pushrod instructions

### Nose gear steering pushrod length

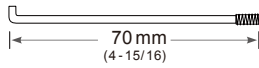


Pushrod diameter  $\varnothing 1.2\text{ mm}$

### Nose gear steering pushrod mounting hole



### Rudder pushrod length

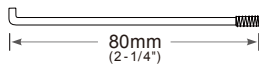


Pushrod diameter  $\varnothing 1.5\text{ mm}$

### Rudder pushrod mounting hole

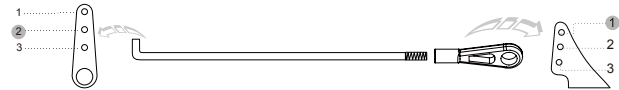


### Elevator pushrod length

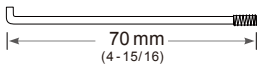


Pushrod diameter  $\varnothing 1.5\text{ mm}$

### Elevator pushrod mounting hole



### Aileron pushrod length

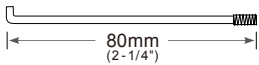


Pushrod diameter  $\varnothing 1.5\text{ mm}$

### Aileron pushrod mounting hole



### Flap pushrod length



Pushrod diameter  $\varnothing 1.5\text{ mm}$

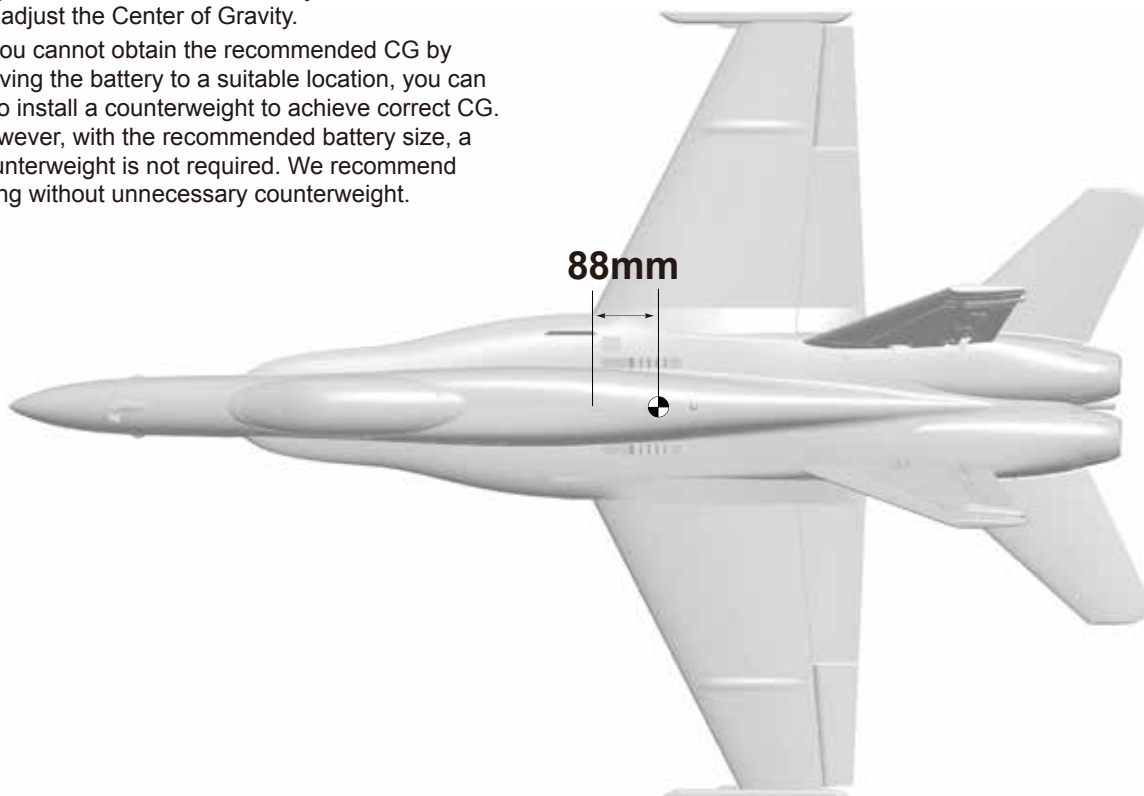
### Flap pushrod mounting hole



## 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 chosen 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.



## 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 Up



Stick down



### Flaps

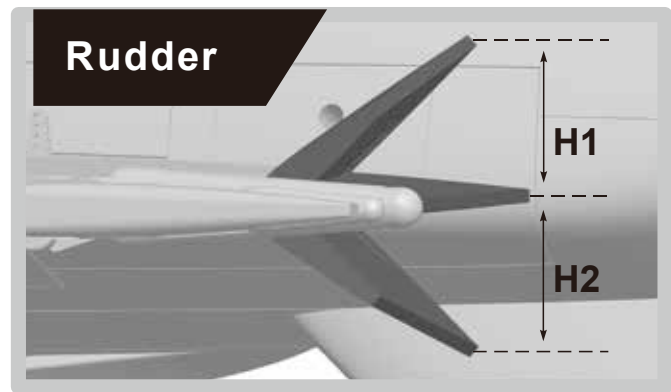
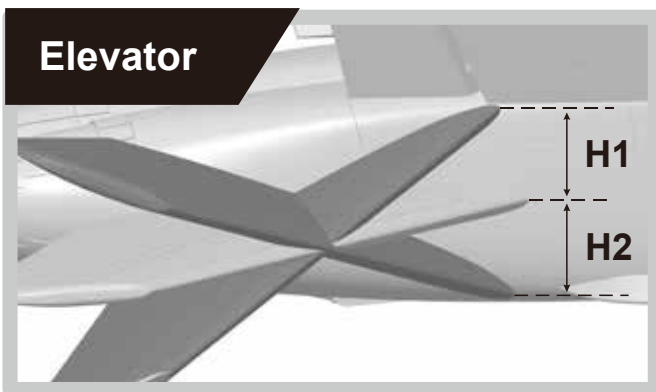
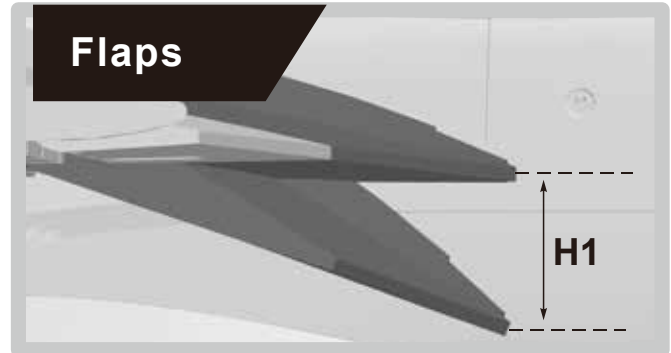
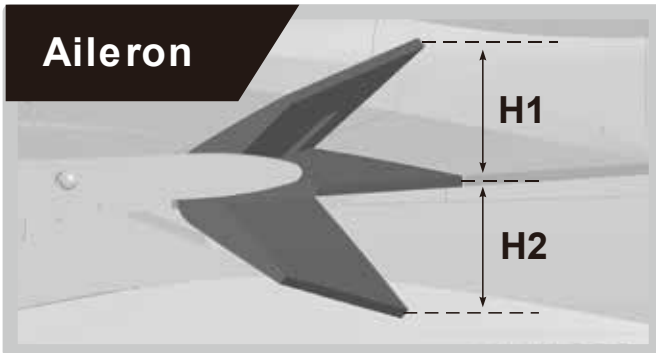
Flaps down





## Dual Rates

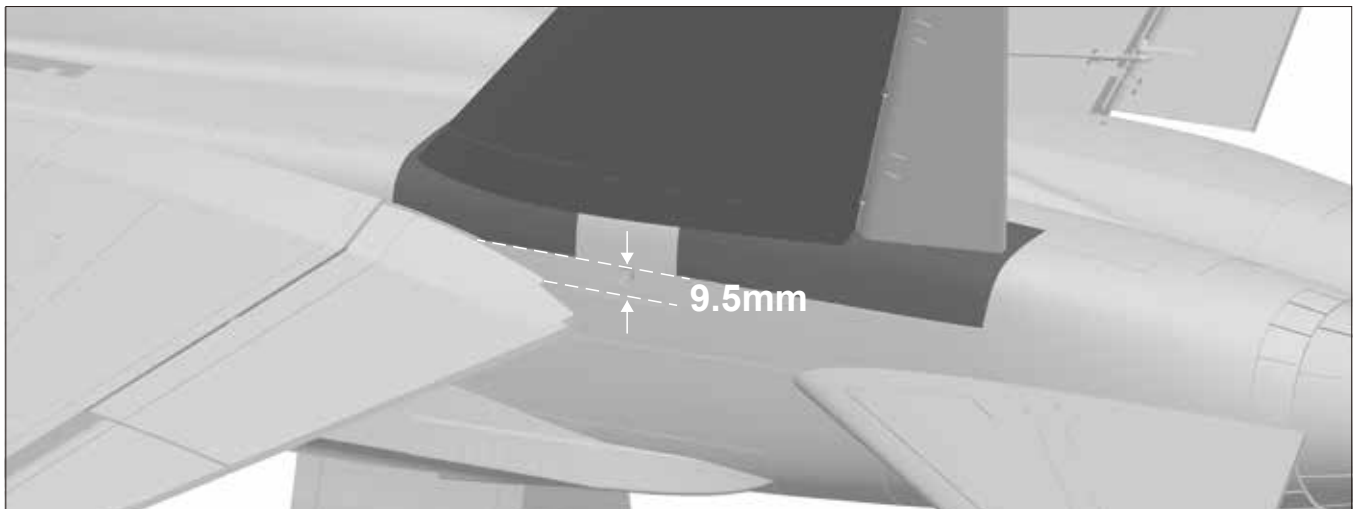
According to our testing experience, use the following parameters to set Aileron/Elevator Rate. Program your preferred Exponential % in your radio transmitter. We recommend using High Rate for the first flight, and switching to Low Rate if you desire a lower sensitivity. On successive flights, adjust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



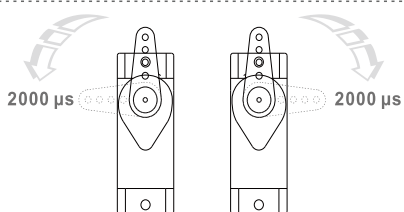
	Aileron(measured closest to the fuselage)	Rudder(Measured from the bottom)	Elevator(measured closest to the fuselage)	Flaps
<b>Low Rate</b>	H1/H2 26mm/ 26mm D/R Rate: 80%	H1/H2 23mm/ 23mm D/R Rate: 80%	H1/H2 30mm/ 30mm D/R Rate: 65%	H1 21mm
<b>High Rate</b>	H1/H2 32mm/ 32mm D/R Rate: 100%	H1/H2 27mm/ 27mm D/R Rate: 100%	H1/H2 36mm/ 36mm D/R Rate: 80%	H1 43mm

## ⚠ Flight Notes:

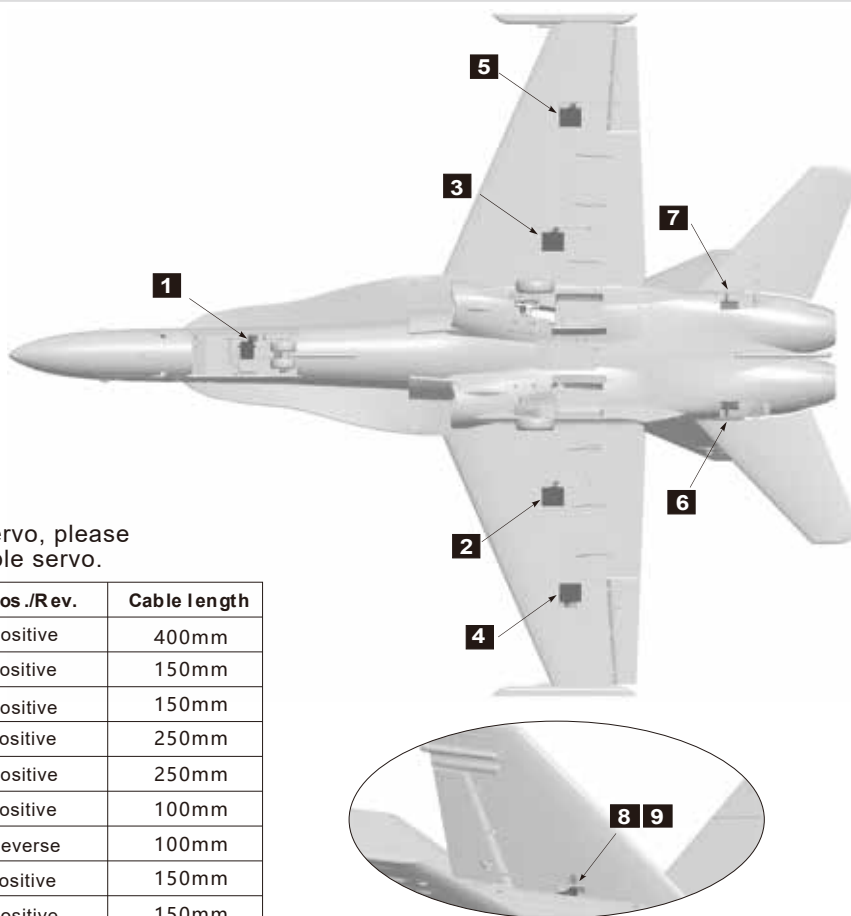
Flap center position, please refer to the following photo:



## 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**.

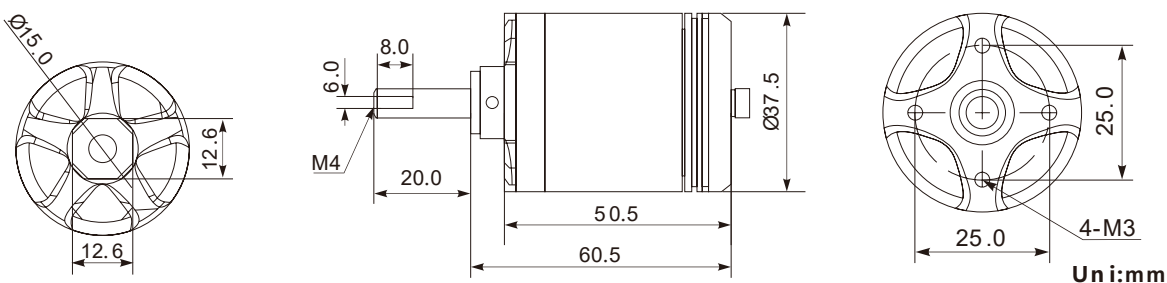


If you need to purchase another brand's servo, please refer to the following list to choose a suitable servo.

Position	Servo regulation	No.	Pos./Rev.	Cable length
Nose gear steering servo	9g Digital-Hybrid	1	Positive	400mm
Flap(R)	9g Digital-Hybrid	2	Positive	150mm
Flap(L)	9g Digital-Hybrid	3	Positive	150mm
Aileron(R)	9g Digital-Hybrid	4	Positive	250mm
Aileron(L)	9g Digital-Hybrid	5	Positive	250mm
Elevator(R)	17g Digital-Hybrid	6	Positive	100mm
Elevator(L)	17g Digital-Hybrid	7	Reverse	100mm
Rudder(R)	9g Digital-Hybrid	8	Positive	150mm
Rudder(L)	9g Digital-Hybrid	9	Positive	150mm

## Motor Specification

Item No.:MO037484  
**3748-1750kv**



Item No.	Use motor	Motor(KV)	Thrust(g)	Current(A)	Use voltage (V)	Use ESC (A)	EDF Weight (g)	Max power (W)	Efficiency (g/w)
E 7228	<b>MO037484</b> 3748-1750KV	1750	4000	100	22.2(6S)	130	378	2200	1.82

欢迎购买飞翼模型 2019 款 F/A-18C 电动涵道模型飞机，此模型机长 1500mm, 翼展 1034mm, 近似 1/11.5 比例，主要采用 EPO 材料制作，外形轮廓仿真，细节丰富，包含飞行员人偶，仿真 LED、机身天线等大量仿真细节。全机各翼面，均采用快拆结构，同时，使用 MCB-E 通用型多功能集线盒及排线，优化连接过程。大量碳纤管的植入，能够有效提高结构强度，保证飞行品质。

Freewing Model F/A-18C 机体兼容 80mm 及 90mm 二个尺寸的动力系统的安装（以 Freewing 涵道动力产品为准）。

——空机版本及空机 Plus 版本的涵道舱，出厂时默认为 90mm 口径，使用包装盒内的二个 80mm 口径泡沫件，经过简单的几个改进步骤后，即可改变为 80mm 口径涵道舱。

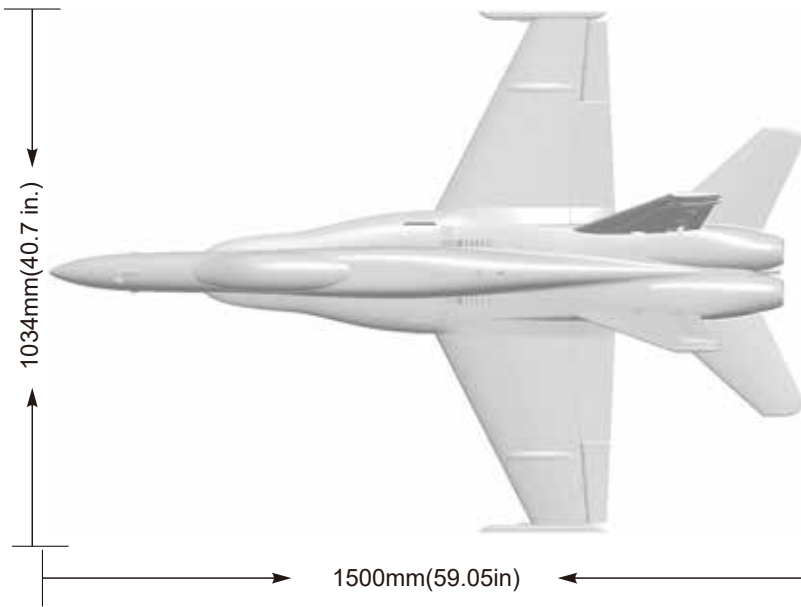
——PNP 版本，搭载了高效率的 9 叶 90mm 涵道风扇，3748-1750KV 外转无刷马达，130A 无刷电调。PNP 版本使用 6S 5000mAh 35C 电池进行实测得出：此模型最高飞行时速度可达 170KPH / 106.5MPH。

陆地滑跑时，无需过多干预来保持方向，方向稳定性较好，不易偏向。最短起飞距离约 25M。空中姿态稳定，易于操控，动作响应灵敏。高速和低速飞行状态下，都能够保持稳定的飞行姿态。在低空低速大幅度转弯机动的情况下，保持油门，即可顺利完成动作。降落时，襟翼减速明显，同时，因打开襟翼所产生的轻微低头效应，给飞机带来稳定温和的下降率，使得降落过程更加容易操

**⚠ 注意：**模型产品是具有一定危险性的产品，请禁止 14 岁以下的儿童玩耍，14 岁以上的儿童，请在有飞行经验的成人指导下使用，无飞行经验的购买者，应当在具有一定电动涵道飞机飞行经验的成人指导下使用！组装模型前，请仔细阅读说明书，按照说明书的要求进行安装。进行调试和飞行时，请根据说明书指示的参数进行调整。

## 重要提示

1. 模型飞机不是玩具，操作者需要具备一定的经验；没有经验的初学者，必须在有丰富经验的专业人士指引下，逐步学习！
2. 在组装之前，必须认真阅读产品说明书，严格按照说明书指示操作。
3. 飞翼模型及其销售商，对于违反说明书的要求操作而造成的损失，将不负任何法律责任！
4. 模型飞机的使用年龄必须是 14 岁以上的儿童或者成人。
5. 此模型产品使用 EPO 材料制成，表面喷涂油漆，不可随意使用化学制剂擦拭，否则会损坏模型产品。
6. 不可以在公共场合、高压线密集区、高速公路附近、机场附近或者其它法律法规明确禁止飞行的场合飞行。
7. 不可以在雷雨、大风、大雪或者其它恶劣气象环境下飞行。
8. 模型飞机的电池产品，不可以随意乱扔，乱放。存放时，必须保证周边 2M 范围内，无易燃、易爆物体。
9. 损坏或者报废处理的模型飞机电池，应妥善回收处理，不准随意抛弃，避免自燃而引发火灾。
10. 在飞场飞行时，应做到妥善处理飞行后所产生的垃圾，不可随意抛弃、焚毁模型及其配件。
11. 在任何情况下，都必须保证油门杆处于起始位、发射机处于打开状态时，才能连接模型飞机内部的动力电池。
12. 无论是模型飞机是在正常飞行过程中，或者是在缓慢降落过程中，都不要尝试用手去回收模型。必须等模型降落平稳以后，再进行回收！



**标准版**

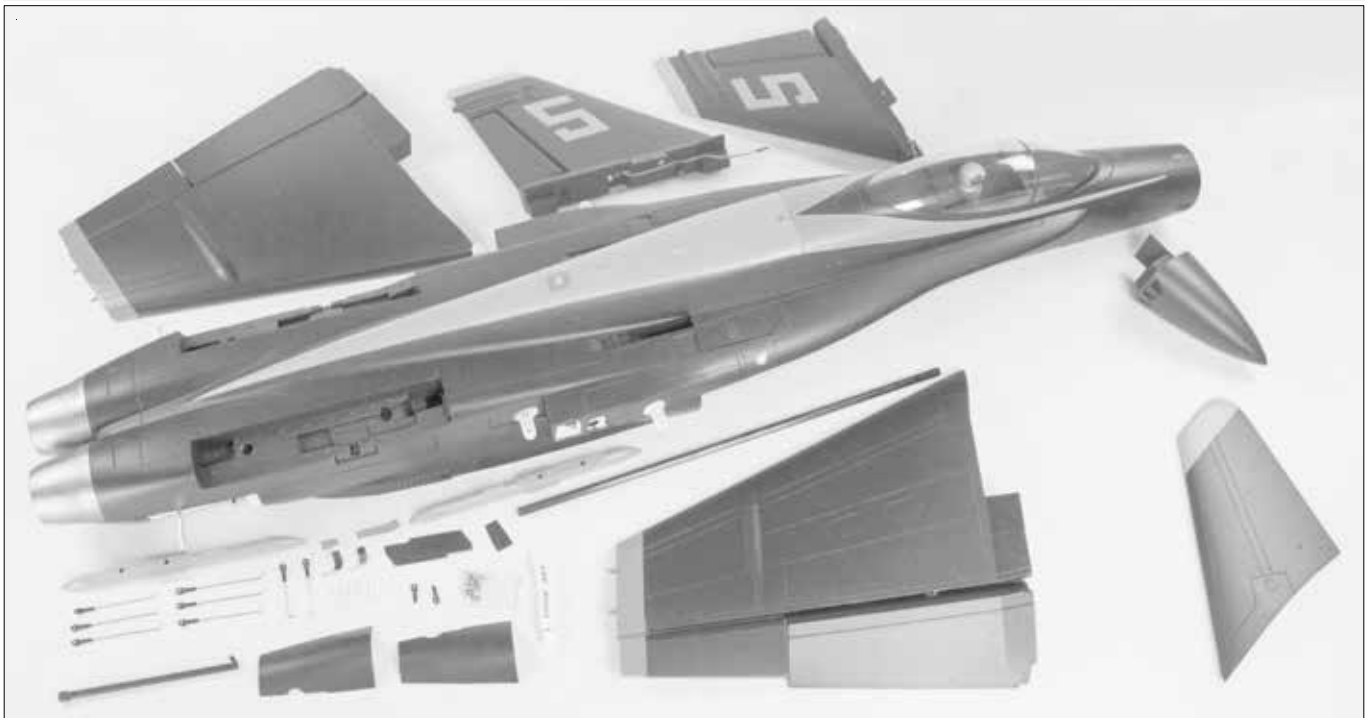
翼载荷: 150g/dm<sup>2</sup>  
 翼面积: 22dm<sup>2</sup>  
 舵机: 9g数码混合齿舵机 (7pcs)  
           17g数码混合齿舵机 (2pcs)  
 电机: 3748-1750KV外转无刷电机  
 涵道风扇: 90mm 9叶一体涵道  
 电调: 130A无刷电调 UBEC 8A  
 起飞重量: 2640g(不含电池)  
 推力: 4000g

**其它特性**

机体材料: EPO, ABS工程塑料  
 副翼: 有      襟翼: 有  
 平尾: 有      垂尾: 有  
 起落架: 金属减震起落架  
 舱门: 前、后起落架随动舱门  
 LED: 仿真LED灯  
 飞行员: 仿真飞行员(1pcs)  
 电池范围: 锂电池 6S 4500-5500mAh (1pcs)

⚠注意: 此处各项参数, 均使用本公司配件测试得出, 如果使用副厂配件, 会有所差异。使用副厂配件时所产生的问题, 我们将无法给予技术支持!

产品包装清单



打开产品包装, 核对包装清单。(不同配置的版本, 包含内容不同!)

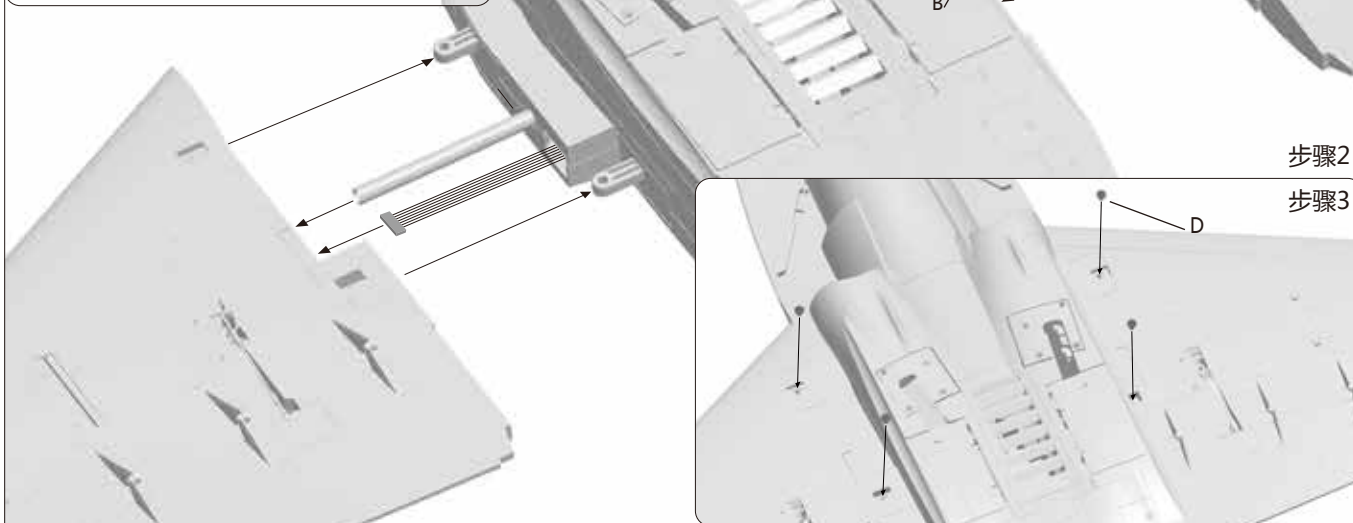
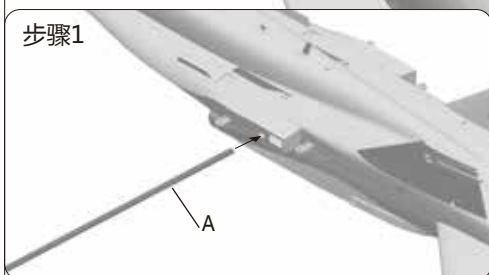
序号	配件名称	PNP	ARF Plus	Airframe	序号	配件名称	PNP	ARF Plus	Airframe
1	机身	预装所有电子设备	预装舵机	不含电子设备	6	碳纤维管	✓	✓	✓
2	主翼	预装所有电子设备	预装舵机	不含电子设备	7	舵面控制钢丝	✓	✓	✓
3	平尾	预装所有电子设备	预装舵机	不含电子设备	8	防滑垫、胶水	✓	✓	✓
4	垂尾	预装所有电子设备	预装舵机	不含电子设备	9	说明书、贴纸	✓	✓	✓
5	装饰件	✓	✓	✓	10	螺丝、塑料件	✓	✓	✓

## 主翼组装

如图所示：1.将碳纤维管插入机身；  
2.把排线插入主翼两侧侧面转接板后，把左、右主翼在机身上安装好；  
3.用螺丝把主翼固定。

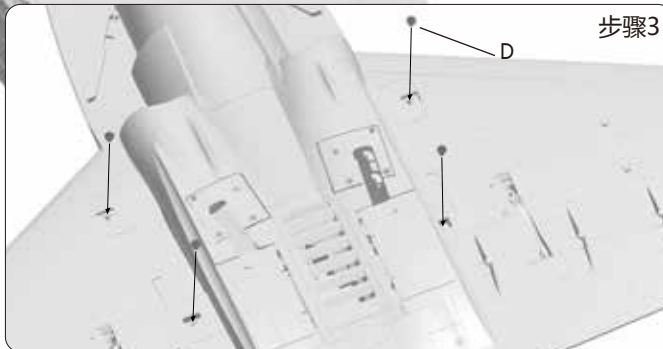
A-碳纤维管 (Ø10x480mm 1pcs)  
B-排线  
C-转接板  
D-螺丝 (PWM3x6mm 4pcs)

步骤1



步骤2

步骤3



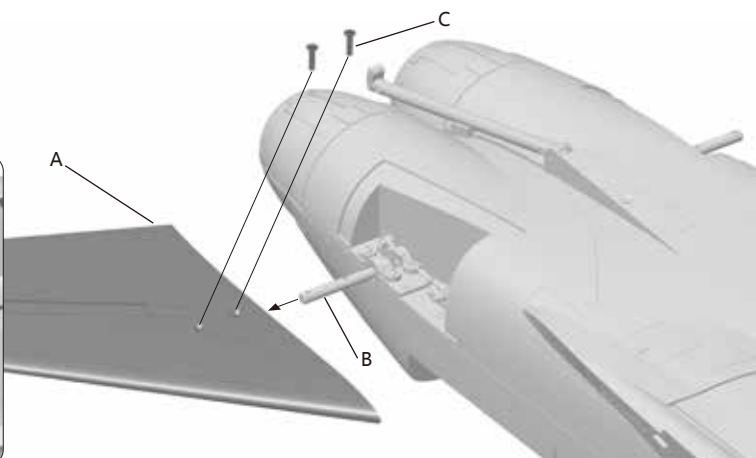
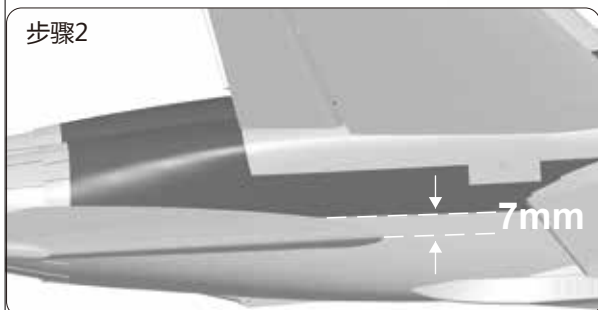
## 平尾组装

步骤1

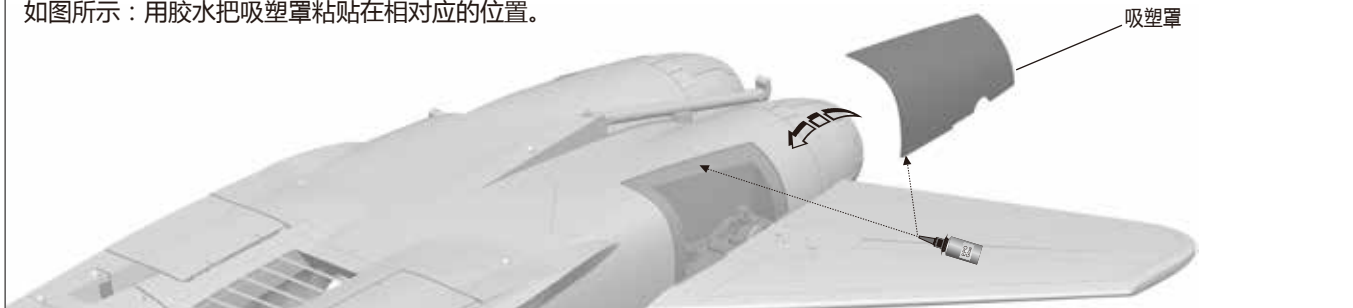
如图所示：1.将左、右平尾分别插到到机身尾部的平尾轴,使用4颗螺丝固定，防止松脱！  
2.调整钢丝长度，让平尾居于合适位置！

A-平尾  
B-平尾轴  
C-螺丝 (KM3x8mm 4pcs)

步骤2



如图所示：用胶水把吸塑罩粘贴在相对应的位置。

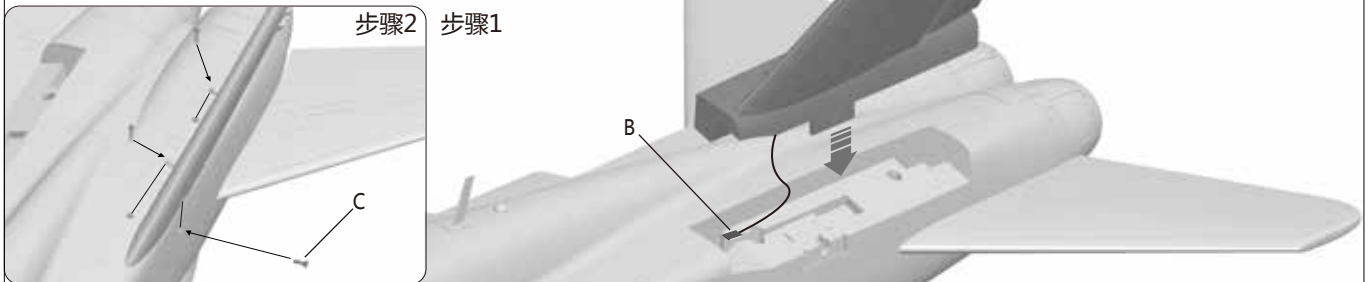




## 垂尾组装

如图所示：1.将垂尾舵机线连接到机身内部对应的延长线上后，把垂尾安装好；  
2.使用6颗螺丝固定住垂尾，防止松脱！

- A-垂尾
- B-垂尾舵机线
- C-螺丝 (FA3x10mm 6pcs)



## 电池安装说明

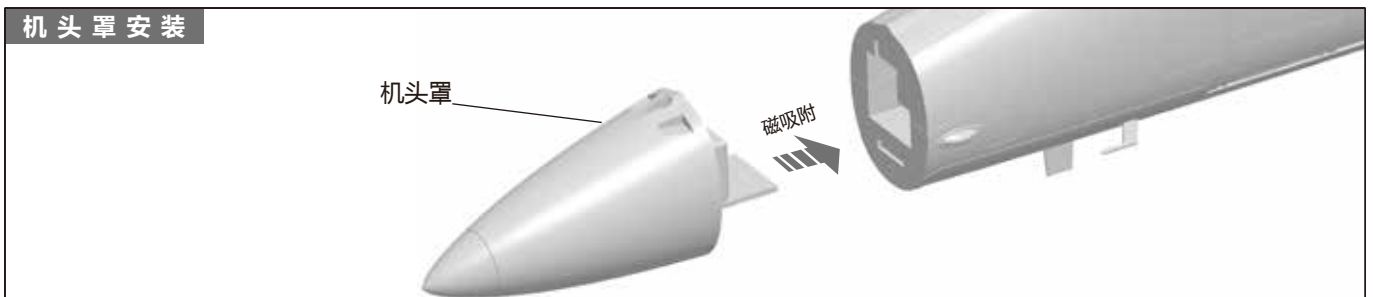


将电池与电调间接前，首先请打开发射机电源，确认油门杆处于低位。

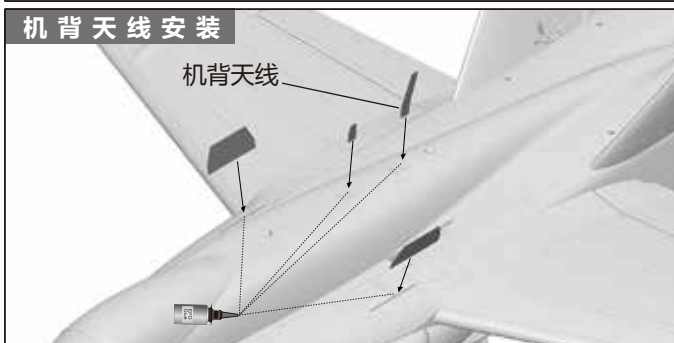
我们建议使用的电池容量和放电倍率如下：  
锂电池6S22.2V 4500mAh~6S22.2V 5500mAh  
放电倍率 ≥ 35C

## 其它配件安装

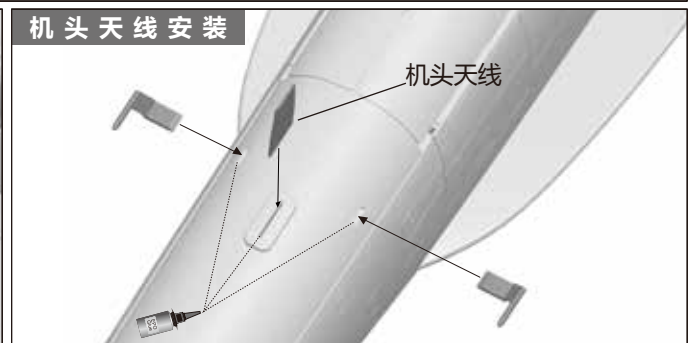
### 机头罩安装



### 机背天线安装

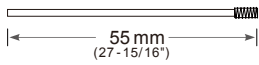


### 机头天线安装



## 舵面控制钢丝尺寸

### 前轮转向控制钢丝尺寸

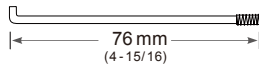


钢丝直径  $\varnothing 1.2\text{mm}$

### 前轮转向控制钢丝安装孔位



### 垂尾控制钢丝尺寸

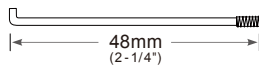


钢丝直径  $\varnothing 1.5\text{mm}$

### 垂尾控制钢丝安装孔位



### 平尾控制钢丝尺寸

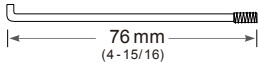


钢丝直径  $\varnothing 1.5\text{mm}$

### 平尾控制钢丝安装孔位



### 副翼控制钢丝尺寸

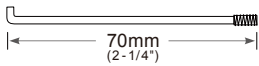


钢丝直径  $\varnothing 1.5\text{mm}$

### 副翼舵机钢丝安装孔位



### 襟翼控制钢丝尺寸



钢丝直径  $\varnothing 1.5\text{mm}$

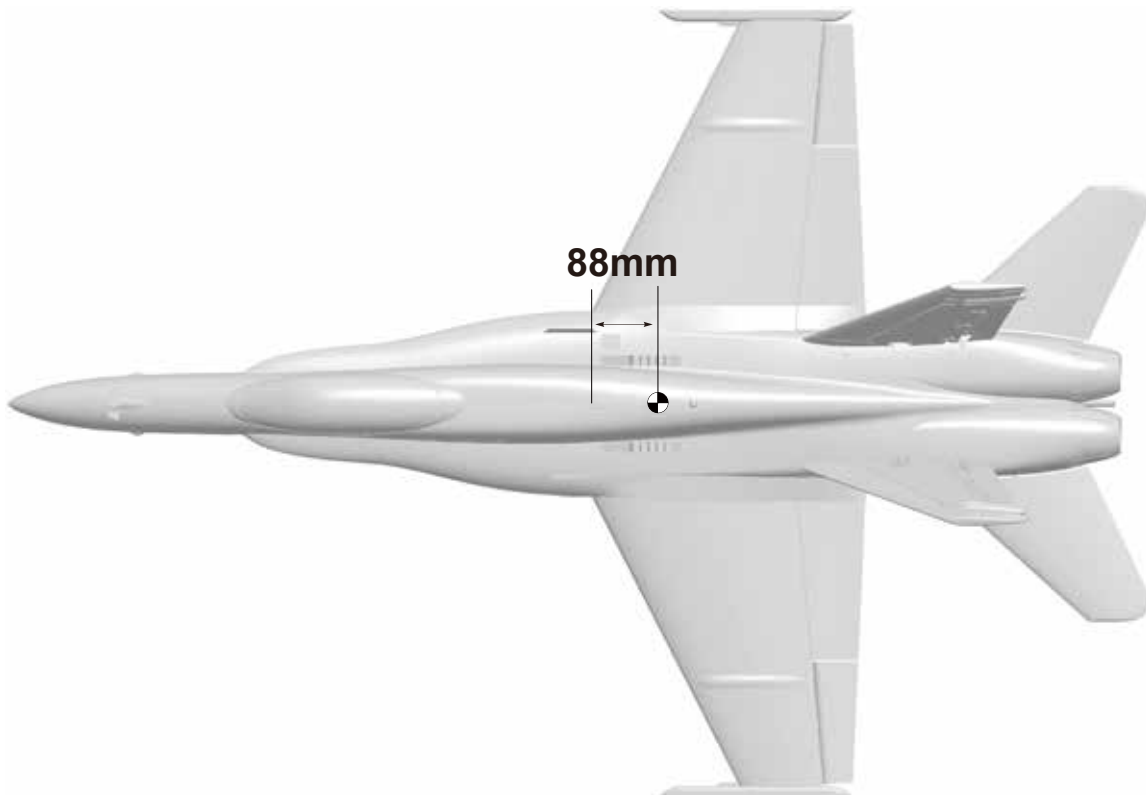
### 襟翼舵机钢丝安装孔位



## 重心示意图

**正确的重心，直接关系到飞行的成功与否，请参考下面的重心标示图，来调整飞机的重心。**

- 您可以将电池向前，或者向后移动，来调整飞机的重心;
- 如果通过电池的移动无法调整到正确的重心位置，您还可以适当的使用一些其它材料来配重，使飞机的重心处于正确的位置！





## 舵面测试

当您按前面的步骤组装好飞机后，在飞机前，我们需要一块充满电的电池，连接到电调。用遥控器测试每个舵面的工作情况，检查是否正常！

## 副翼

副翼摇杆  
向左运动



副翼摇杆  
向左运动



## 方向舵

方向摇杆  
向左运动

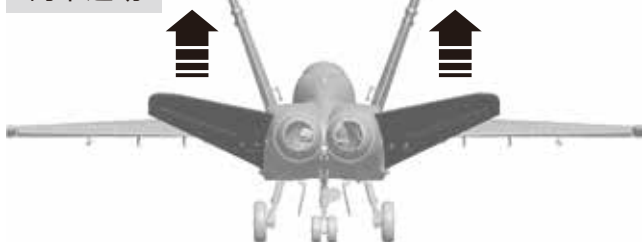


方向摇杆  
向右运动



## 升降舵

升降摇杆  
向下运动



升降摇杆  
向上运动



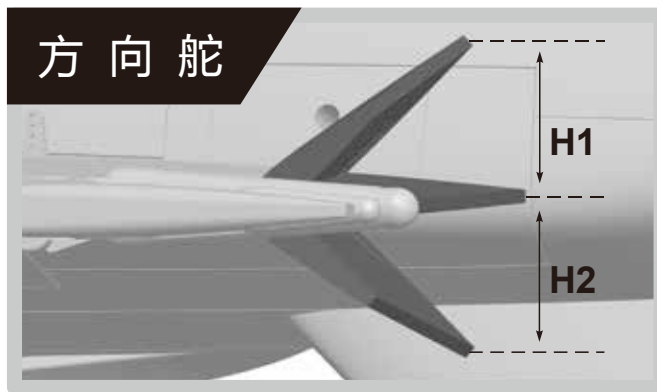
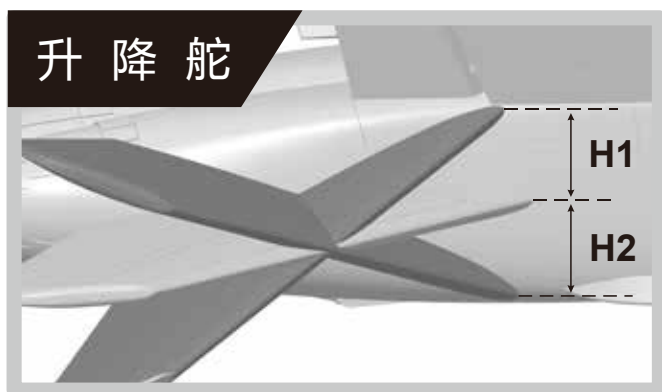
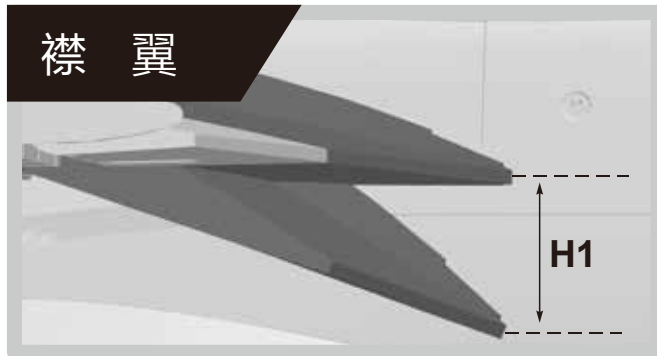
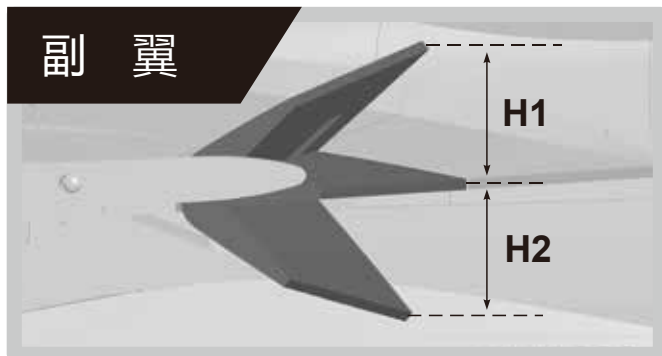
## 襟翼

襟翼放下



## 大、小舵参数

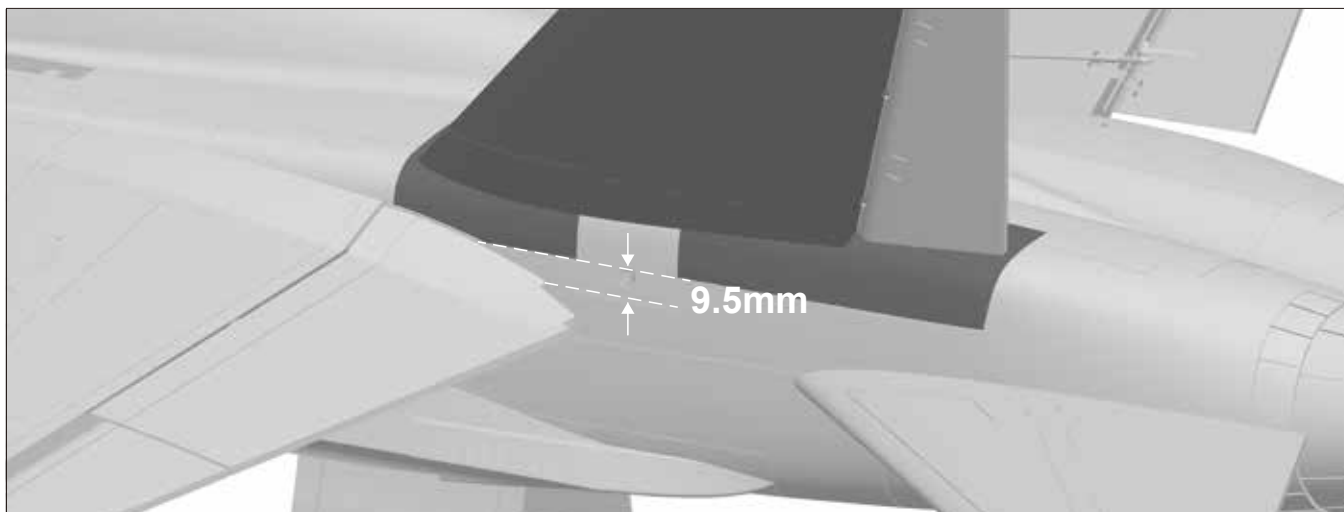
根据我们的测试经验，我们认为，按以下参数来设置大小舵量，将有助于飞行，舵量越大，模型飞机的动作响应更快，动作幅度可以更大。我们建议初次飞行使用大舵量起飞，然后根据个人情况调整到适合您的舵量。



	副翼 (内侧)	方向舵 (下端)	升降舵 (内侧)	襟翼
小舵量	H1/H2 26mm/26mm 舵量比率: 80%	H1/H2 23mm/23mm 舵量比率: 80%	H1/H2 30mm/30mm 舵量比率: 65%	H1 21mm
大舵量	H1/H2 32mm/32mm 舵量比率: 100%	H1/H2 27mm/27mm 舵量比率: 100%	H1/H2 36mm/36mm 舵量比率: 80%	H1 43mm

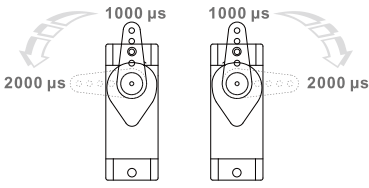
## ⚠ 飞行注意事项：

襟翼居中位置，请参考下图测量：



# 配件说明

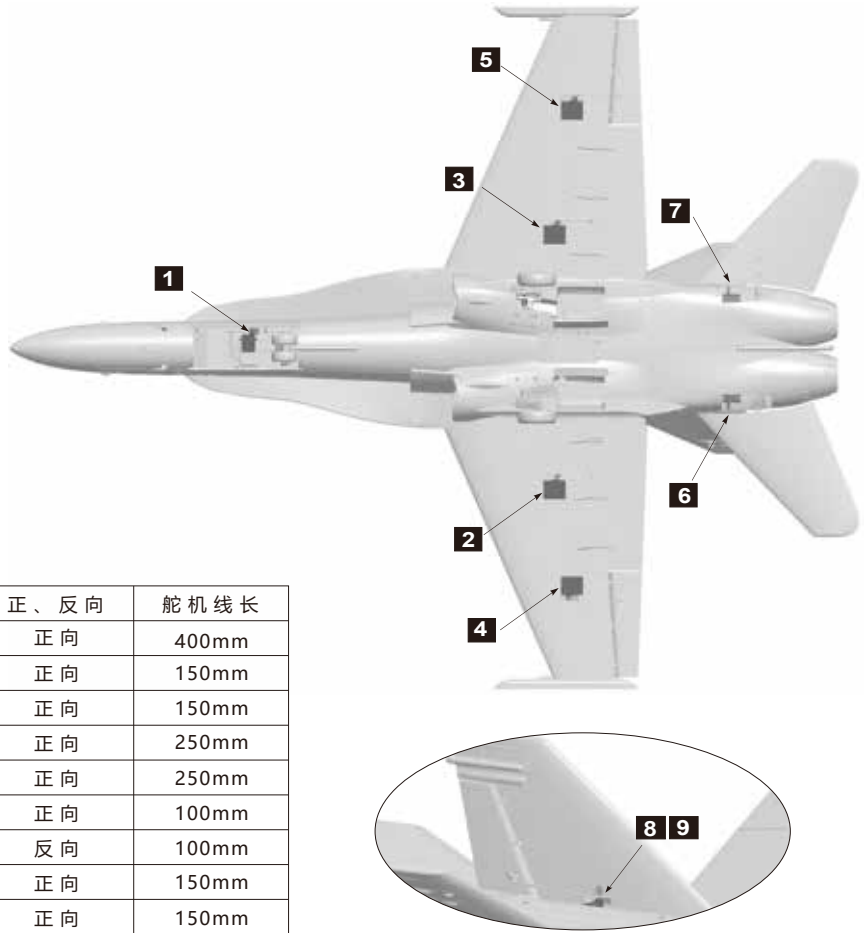
## 舵机使用介绍



我们的舵机正、反向标准是：  
当舵机输入信号从 1000μs 到 2000μs 时，  
如果舵机摇臂，  
顺时针旋转---正向舵机  
你是猪旋转---反向舵机

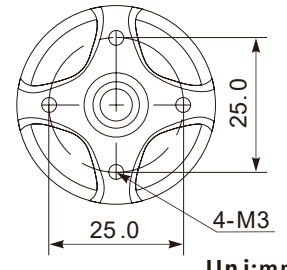
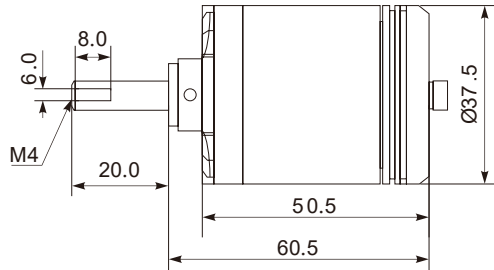
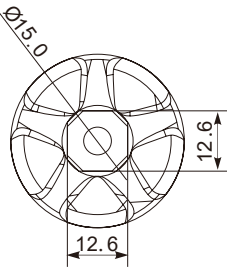
如果您需要选购其它品牌的舵机进行安装，  
请参考下面的表格选择的舵机

舵机位置	舵机规格	序号	正、反向	舵机线长
前轮转向	9g数码-金属混合齿	1	正向	400mm
襟翼（右）	9g数码-金属混合齿	2	正向	150mm
襟翼（左）	9g数码-金属混合齿	3	正向	150mm
副翼（右）	9g数码-金属混合齿	4	正向	250mm
副翼（左）	9g数码-金属混合齿	5	正向	250mm
平尾（右）	17g数码-金属混合齿	6	正向	100mm
平尾（左）	17g数码-金属混合齿	7	反向	100mm
垂尾（右）	9g数码-金属混合齿	8	正向	150mm
垂尾（左）	9g数码-金属混合齿	9	正向	150mm



## 电机参数

Item No.:MO037484  
**3748-1750 kv**



Uni:mm

动力组编号	使用电机	电机(KV)	推力(g)	电流(A)	使用电压(V)	使用电调(A)	涵道重量(g)	最大功率(W)	效率比(g/w)
E7228	<b>MO037484</b> 3748-1750KV	1750	4000	100	22.2(6S)	130	378	2200	1.82



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**HK Freewing Model International Limited**

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Web: <http://www.sz-freewing.com>

Email: [freewing@sz-freewing.com](mailto:freewing@sz-freewing.com)

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