Item No.: NJ201
Version No.: NJ201-V01

F-104 70mm EDF JET starfighter

User Manual

FNRC HOBBY 飛恩航模

MADE IN CHINA

Introduction

Thanks for purchasing F104 70mm EDF jet. F-104 fighter stressed the light and simple, is the world's first aircraft over two times the speed of sound of the aircraft. and in the 1960's, it kept the record of L speed and height ((100000 feet) in long time. In addition to the use of the United States, but also exported to many countries, and become NATO member of the main tactical nuclear weapon projection force.Because of the emphasis on the performance of high-speed flight, the appearance is very special, with a person missile nickname, the United States total produced 2580 pcs F-104 fighters.

This F104 70mm EDF jet is very scale, it use EPS material in fuselage, to ensure its lightness and strengthen. Main wing,wingtip drop tanks,nose cone ..use removable design, it can bring convenience, and avoid its damage in ship. Equipped the retractable landing gear to improve the flight drag and increase its ornamental.

This F104 70mm EDF jet, equipped with three different power system and five different configurations, it will get closer to your needs.

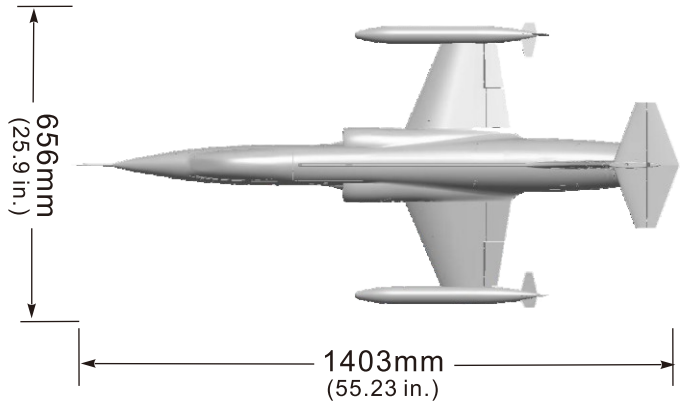
⚠ **NOTE:** This is not a toy. Not for children under 14 years. Young people under the age of 14 should only be permitted to operate this model under the instruction and supervision of an adult. Please keep these instructions for further reference after completing model assembly.

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 EPS 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.

Assembling Data Index

Product basic information



Standard Version	Servo: 9g plastic*6pcs 9g MG *1pcs Motor: 2839-3200KV outrunner motor ESC: 60A Ducted fan: 6-blade plastic ducted fan Weight:1080g (without battery) Battery Advise: ≥4S 14.8V 3300mAh Pre-installed landing gear, fuselage connection cables.
Upgrade Version	Servo: 9g plastic*6pcs 9g MG *1pcs Motor: 2849-2200KV outrunner motor ESC: 60A Ducted fan: 6-blade plastic ducted fan Weight:1080g (without battery) Battery Advise: ≥6S 14.8V 3300mAh Pre-installed landing gear, fuselage connection cables.
Deluxe Vesion	Servo: 9g plastic*6pcs 9g MG *1pcs Motor: 3065-2100KV outrunner motor ESC: 80A Ducted fan: 12-blade plastic ducted fan Weight:1260g (without battery) Battery Advise: ≥6S 14.8V 3700mAh Pre-installed landing gear, fuselage connection cables.

⚠ 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

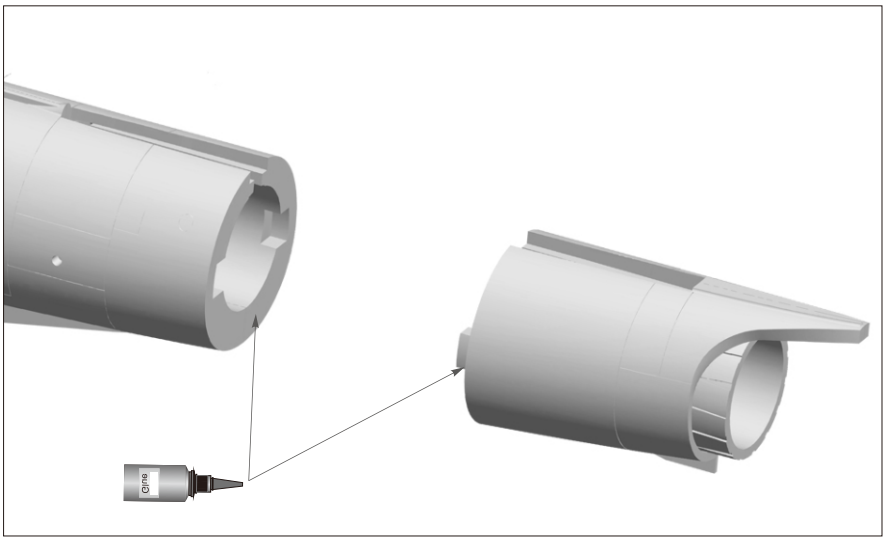
Different equipment include different spareparts. Please refer to the following contents to check your sparepart list.

No.	Name	PNP	KIT Plus	Airframe
1	Fuselage	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment
2	Main wing set	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment
3	Tail wing set	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment
4	Nose cone	✓	✓	✓
5	Oil tank	✓	✓	✓
6	Manual	✓	✓	✓

No.	Name	PNP	KIT Plus	Airframe
1	AB Glue	✓	✓	✓
2	Spareparts bag	✓	✓	✓
3	Carbon fiber tube	✓	✓	✓
4	Pushrod	✓	✓	
5	Y wire			✓
6	Other			✓

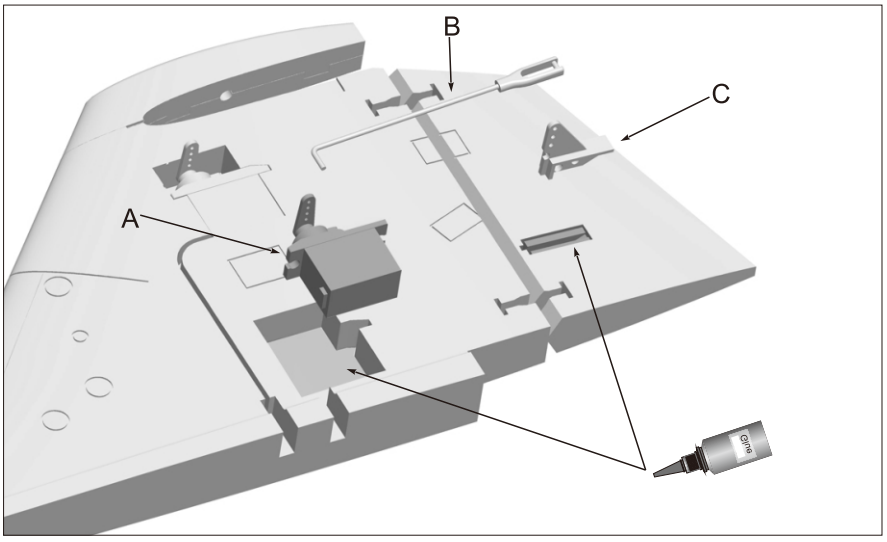
Install Fuselage

1.Use glue to attach front & rear fuselage.

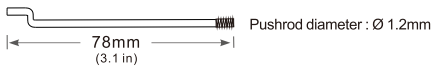


Install rudder servo

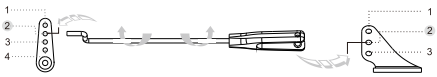
1.Use glue to attach the servo (A) to the indicated foam as the right photo shown.
2.And use glue to attach the servo arm (C) on the indicated foam as the right photo shown.
3.As the right photo shown, use pushrod (B) to contact servo (A) and servo arm (C).



Rudder pushrod size

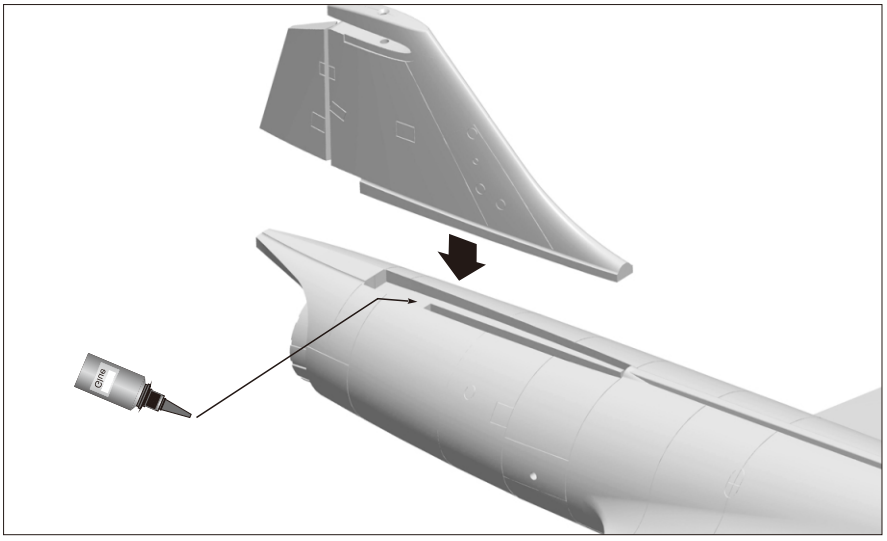


Rudder pushrod mounting hole



Install rudder

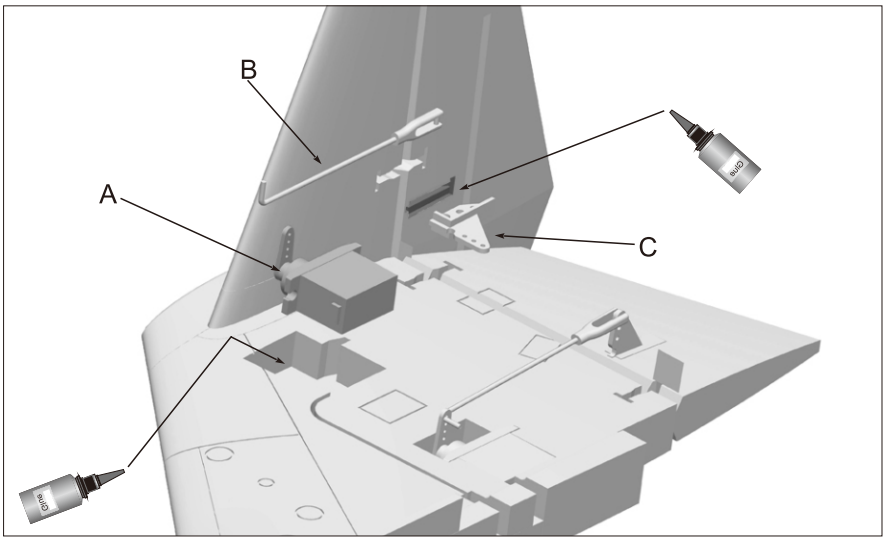
1.As the right photo shown, use glue to attach the rudder on the fuselage.



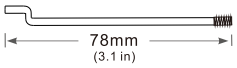
Install Fuselage

Install elevator servo

1.Use glue to attach the servo (A) to the indicated foam as the right photo shown.
2.And use glue to attach the servo arm (C) on the indicated foam as the right photo shown.
3.As the right photo shown, use pushrod (B) to contact servo (A) and servo arm (C).

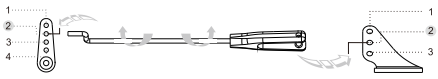


Elevator pushrod size



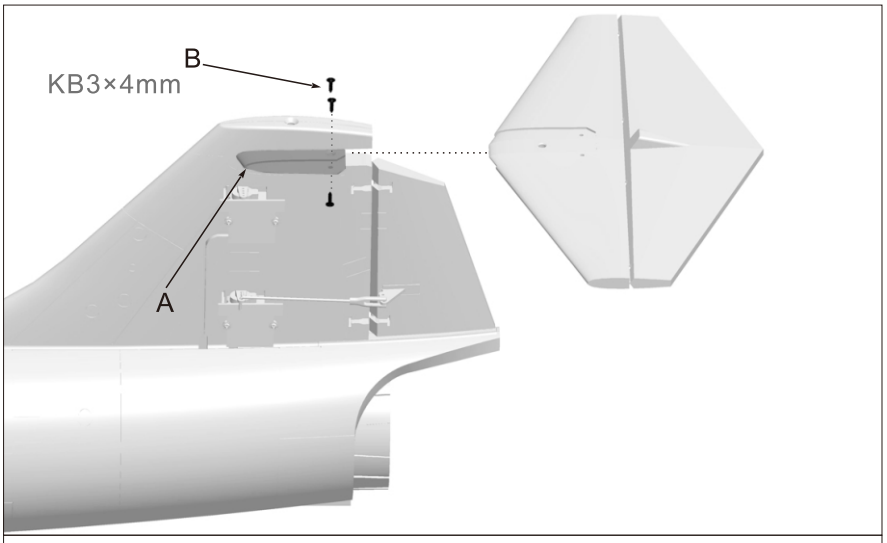
Pushrod diameter : Ø 1.2mm

Elevator pushrod mounting hole

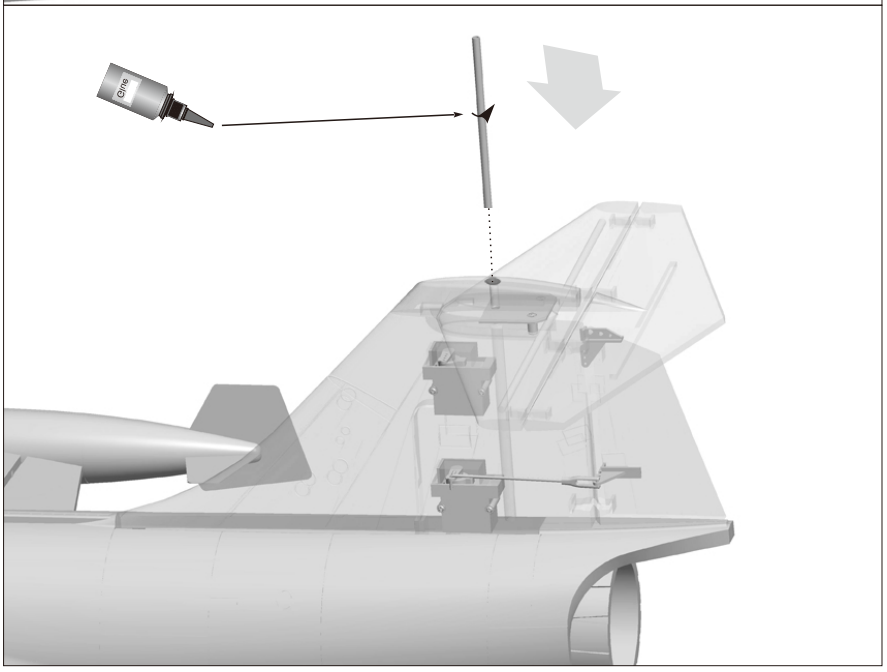


Install elevator

1.As the right photo shown, insert the elevator on the rudder plastic part (A).
2.Use screw (B) to fix the elevator.



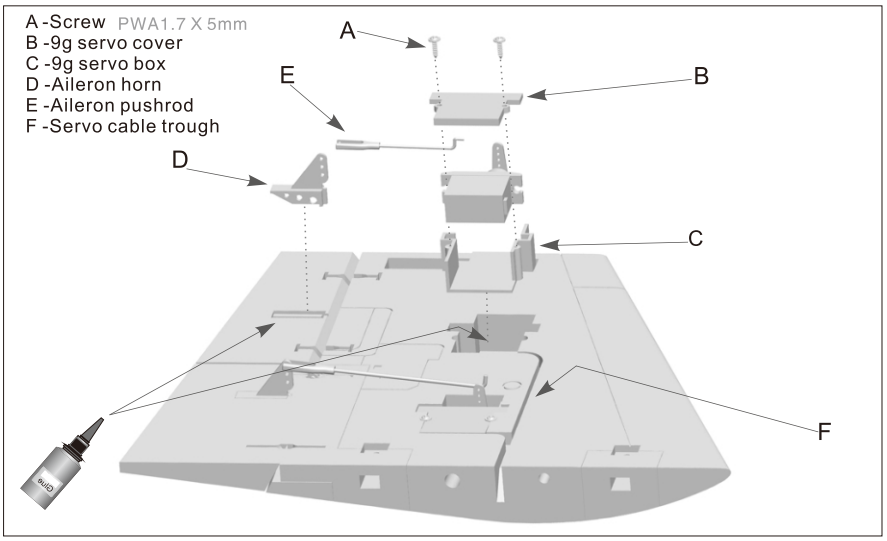
1.Evenly coated with glue on the surface of carbon tube.
2.As the right photo shown, insert the carbon tube into rudder, it can strengthen rudder.



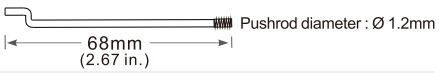
Install Fuselage

Installing aileron servo

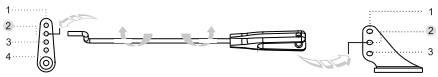
1.Through servo tester or radio to center the servo arm.
2.Apply the glue to attach the “9g servo box C” and “aileron horn D” on the fuselage.
3.Install the servo on the “9g servo box C”, press the servo cable in the “servo cable trough F”, then cover the “9g servo cover B”, and use 2pcs “screw A” to fix.
4.Use “aileron pushrod E” to connect the servo arm and aileron horn.



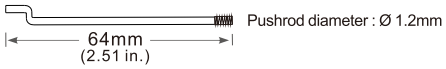
Aileron pushrod size



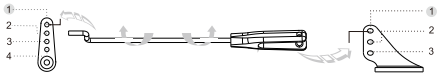
Aileron pushrod mounting hole

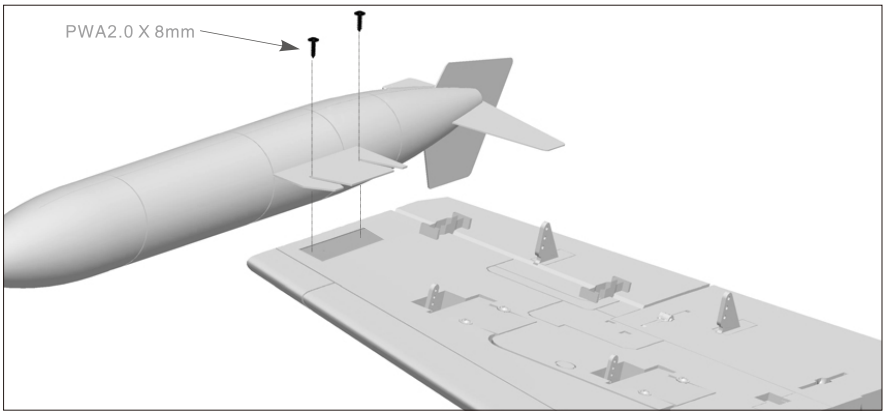


Flap pushrod size



Flap pushrod mounting hole





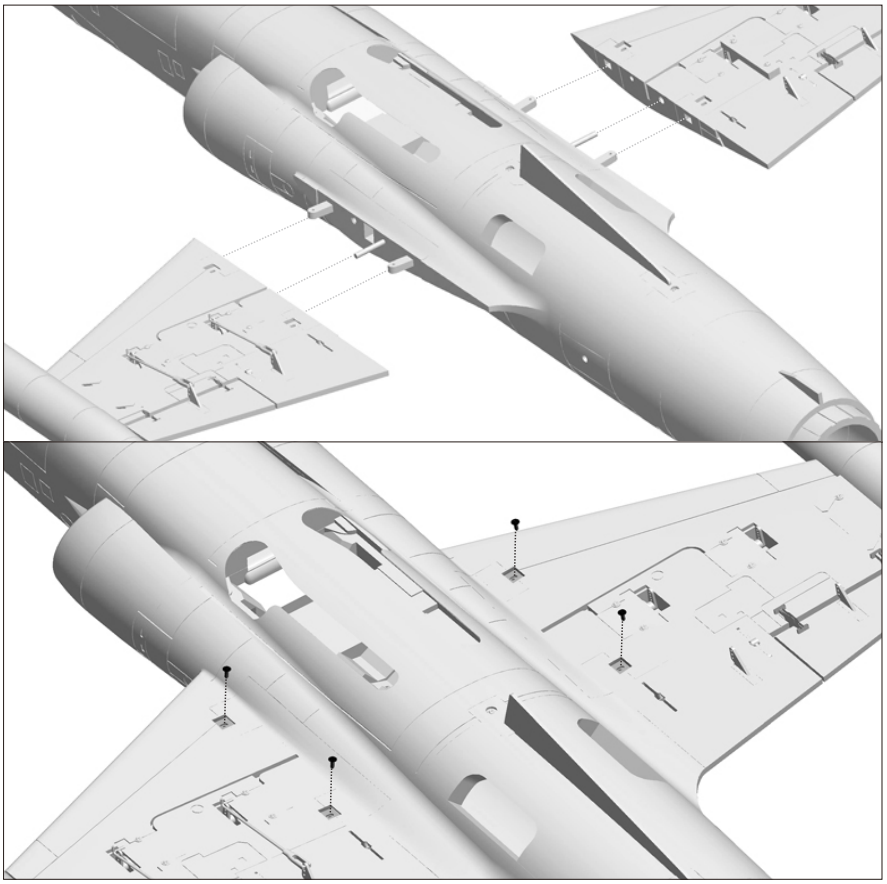
1.Use two pcs screws to fix the wingtip drop tank.

Install main wing

1.As the right photo shown, insert left & right wing on the bolt of fuselage.

2.Use 4 screws to fix the main wing.

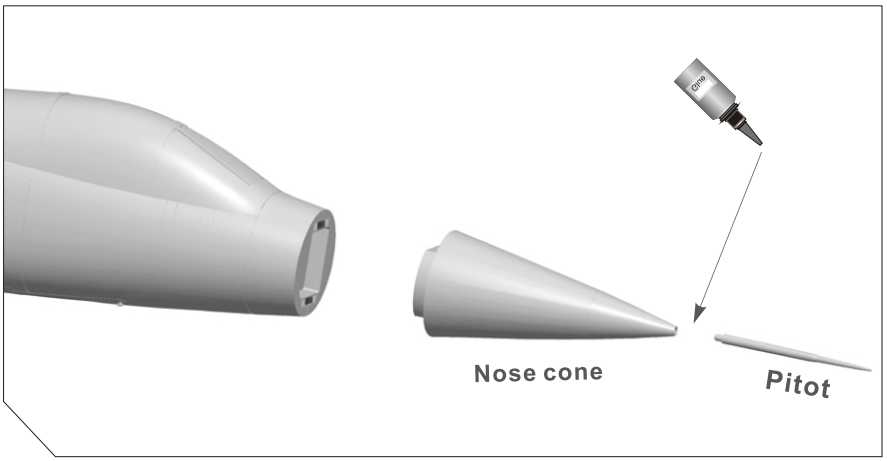
Screws PWA3×8mm (4pcs)



Install Fuselage

Install nose cone

1.Use glue to attach the pitot on the nose cone.
2.Through magnets, nose cone attach on the fuselage.



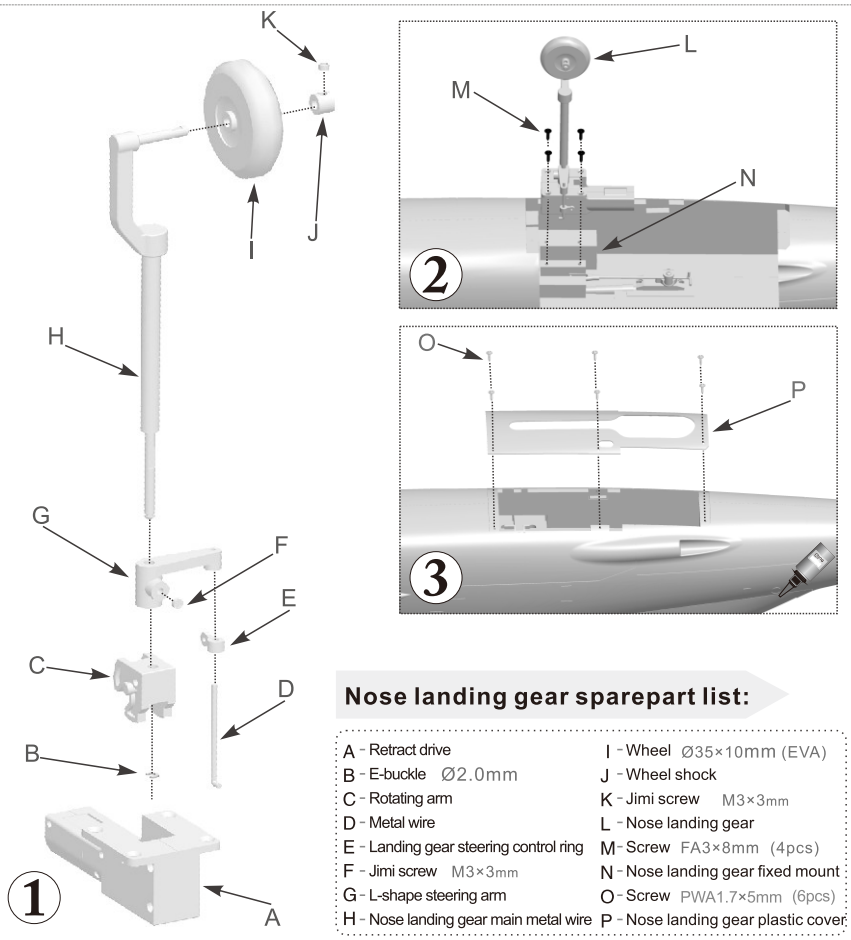
Install landing gear

Install nose landing gear

1.Put the L-shape steering arm (G) , rotating arm (C) on the top of nose gear metal wire (H).
2.Make sure the flat position, screw hole position, use screw (F) to fix L-shape steering arm (G).
3.Put the E-buckle (B) in the top groove of nose gear metal wire (H), to avoid the nose gear metal wire (H) fall off from rotating arm (C).
4.Put the landing gear steering control ring (E) to metal wire (D), screw metal wire (D) to the L-shape steering arm (G).
5.Put the wheel (I) , wheel chocks (J) on the end of nose gear metal wire (H), then fix it by jimi screw (K).
6.At last install the aseembled rotating arm (C) on the retract drive (A).

7.As the right photo 2 shown, install the assembled nose landing gear (L) on the nose landing gear fixed mount.
8.Fix it by 4 screws (M).

9.As the right photo 3 shown, after close the nose landing gear, use 6pcs screws (O) to fix the nose landing gear plastic cover.



Nose landing gear sparepart list:

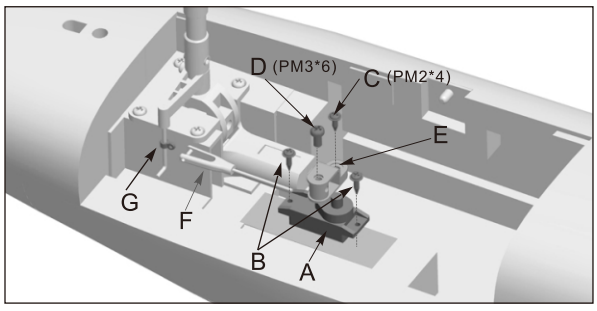
A - Retract drive	I - Wheel Ø35×10mm (EVA)
B - E-buckle Ø2.0mm	J - Wheel shock
C - Rotating arm	K - Jimi screw M3×3mm
D - Metal wire	L - Nose landing gear
E - Landing gear steering control ring	M - Screw FA3×8mm (4pcs)
F - Jimi screw M3×3mm	N - Nose landing gear fixed mount
G - L-shape steering arm	O - Screw PWA1.7×5mm (6pcs)
H - Nose landing gear main metal wire	P - Nose landing gear plastic cover

Installing The Servo Of Nose Steering

Assessories list

A - 9g servo
B - Screw (PWA2*8)
C - Screw (PWA1.7*5)
D - Screw (PM3*6)
E - U-shape servo arm
F - Pushrod
G - Landing gear steering control ring

1.Install the " servo (A) " on the wood piece, use "screw (B)" to fix the servo. Install the "U-shape servo arm (E)" on the servo, and use "screw (C)" to fix the arm.
2.Buckle one side of "pushrod (F)" in the " landing gear steering control ring (G)". Insert the other side through "U-shape servo arm (E)", adjust its depth to center the nose wheel.
3.Use "screw (D)" to fix the "rudder pushrod (F)".



Pushrod diameter : Ø 1.2mm

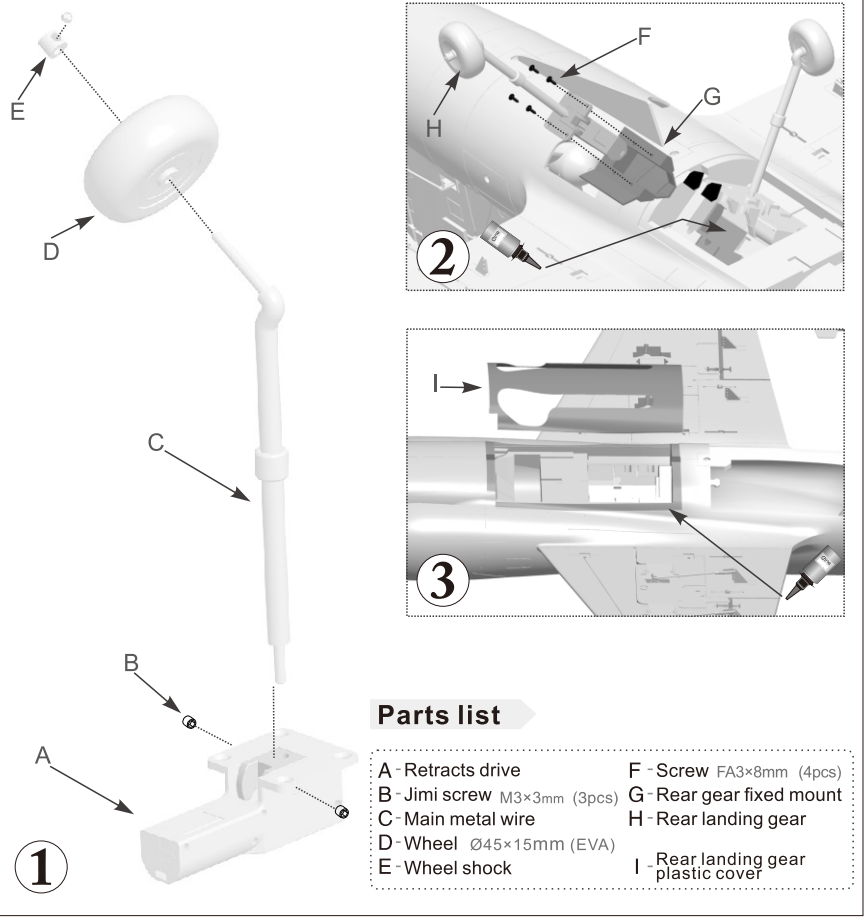
Install landing gear

Install rear landing gear

1.Insert the rear landing gear main metal wire (C)to the retracts drive (A), fix it by screw (B).
2.Put the wheel (D) , wheel chocks (E) on the end of rear landing gear main metal wire (C), then fix it by jimi screw (B).

3.As the right photo 2 shown, use glue to attach the rear gear fixed mount (G) on the indicated position.
4.Install the assembled rear landing gear (H) on the rear gear fixed mount (G)
5.and fix it by screw (F).

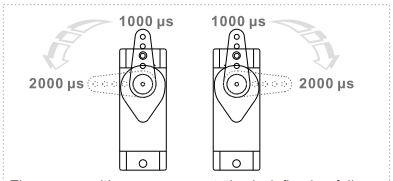
6.Repeat the above steps to install another side of rear landing gear.
7.After finish to install the left & right landing gear, close the landing gear
8.As the right photo 2 shown, use glue to attach the rear landing gear plastic cover on the fuselage.



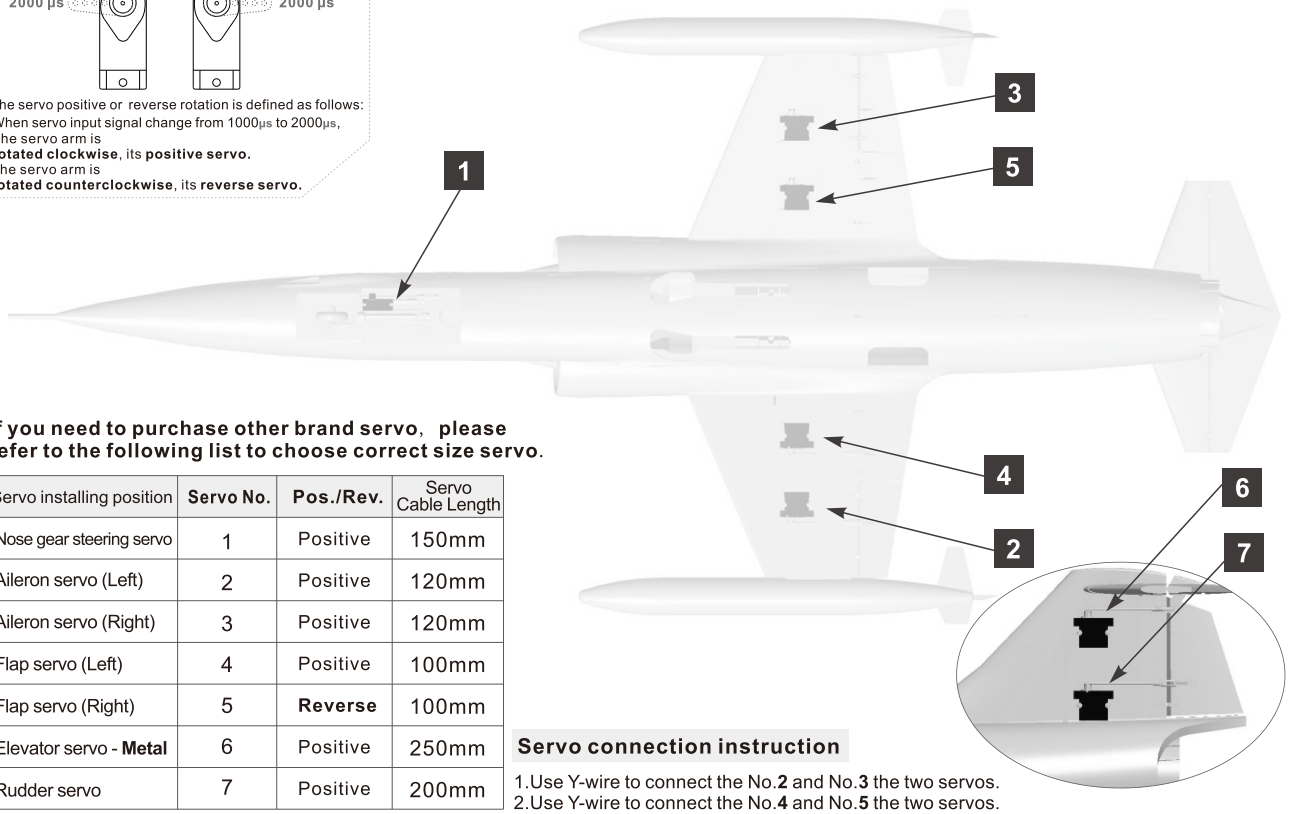
Parts list

A - Retracts drive	F - Screw FA3×8mm (4pcs)
B - Jimi screw M3×3mm (3pcs)	G - Rear gear fixed mount
C - Main metal wire	H - Rear landing gear
D - Wheel Ø45×15mm (EVA)	I - Rear landing gear plastic cover
E - Wheel shock	

Servo introduction



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.**



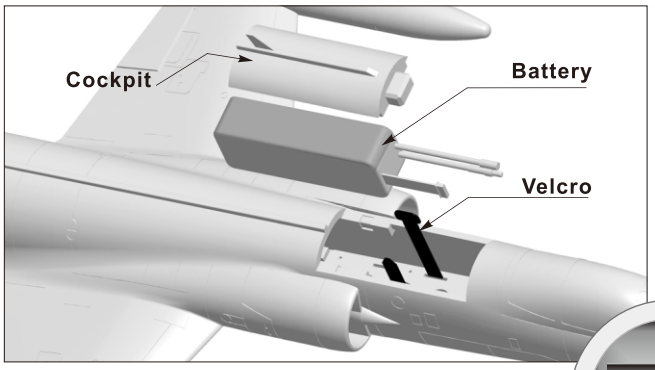
If you need to purchase other brand servo, please refer to the following list to choose correct size servo.

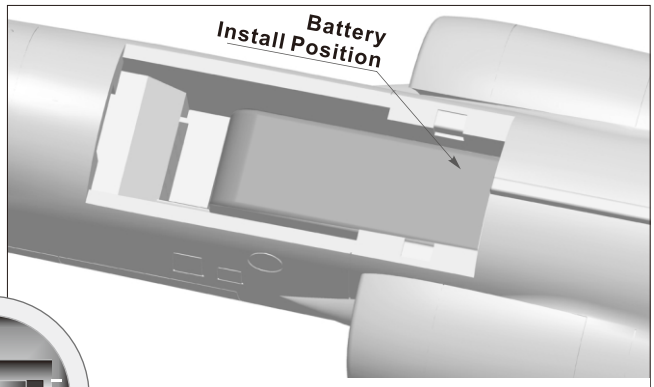
Servo installing position	Servo No.	Pos./Rev.	Servo Cable Length
Nose gear steering servo	1	Positive	150mm
Aileron servo (Left)	2	Positive	120mm
Aileron servo (Right)	3	Positive	120mm
Flap servo (Left)	4	Positive	100mm
Flap servo (Right)	5	**Reverse**	100mm
Elevator servo - **Metal**	6	Positive	250mm
Rudder servo	7	Positive	200mm

Servo connection instruction

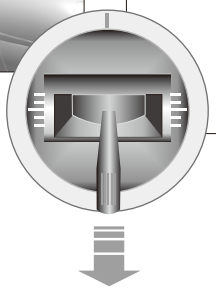
1.Use Y-wire to connect the No.**2** and No.**3** the two servos.
2.Use Y-wire to connect the No.**4** and No.**5** the two servos.

Install on battery





Lift up tape,it removable canopy, then bundled battery with Velcro.
Before connect battery and receiver, please switch on the transmitter and check that the throttle is in the low position.



Battery Cabin Size: 200×65×70mm

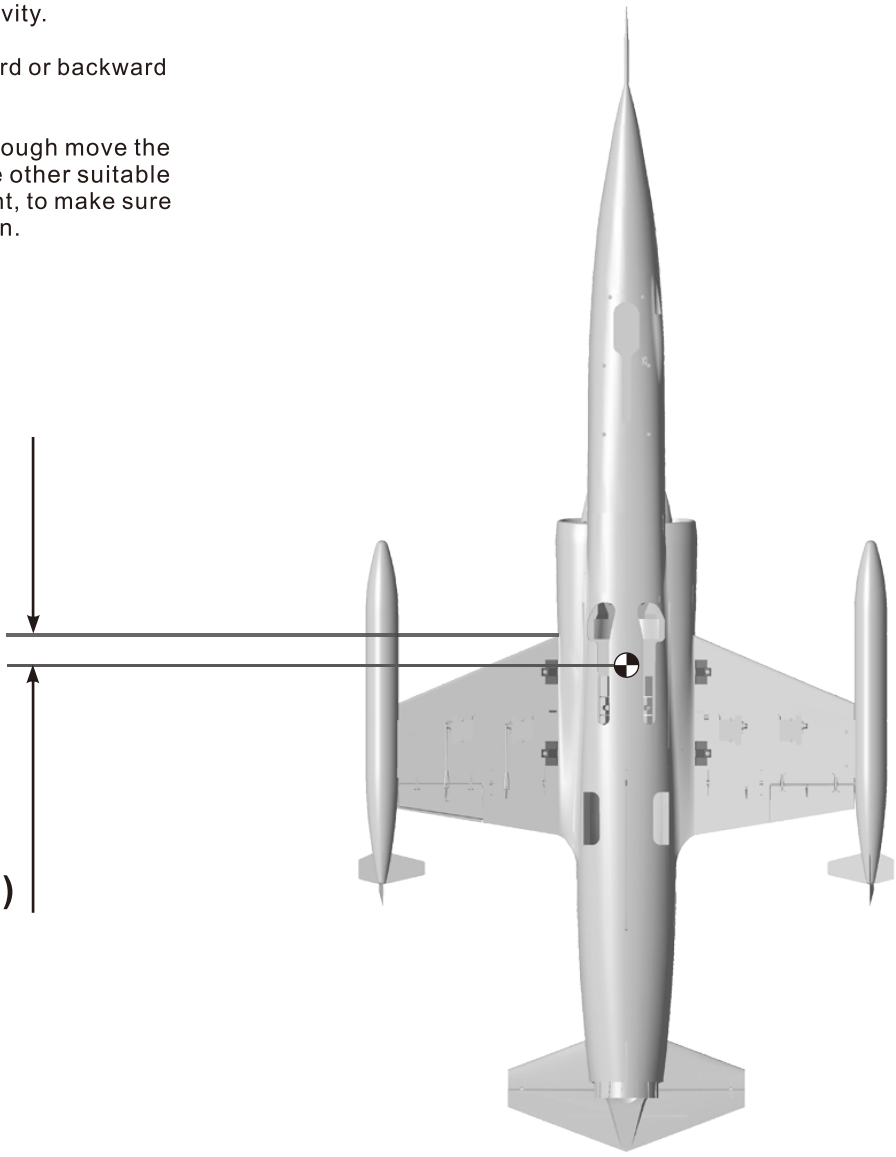
The battery capacity and discharge rate we advise is in the following:
4S 14.8V 3300mAh ~ 4S 14.8V 4500mAh
6S 22.2V 3300mAh ~ 6S 22.2V 4500mAh
Discharge rate of C ⩾ 30C
Different weight battery may affect its CG, please the correct range of CG indication.

Center of Gravity

Correct center of gravity is directly related to the success of the flight, please refer to the following CG diagram to adjust your plane's center of gravity.

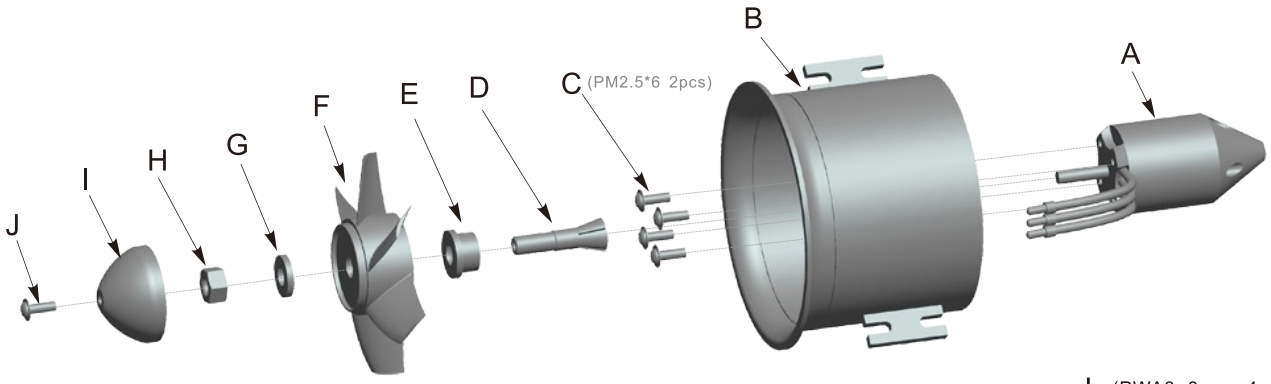
- You can move the battery forward or backward to adjust the center of gravity.

- If you can not adjust the CG through move the battery, you can also use some other suitable material weight to counterweight, to make sure that CG is in the correct position.



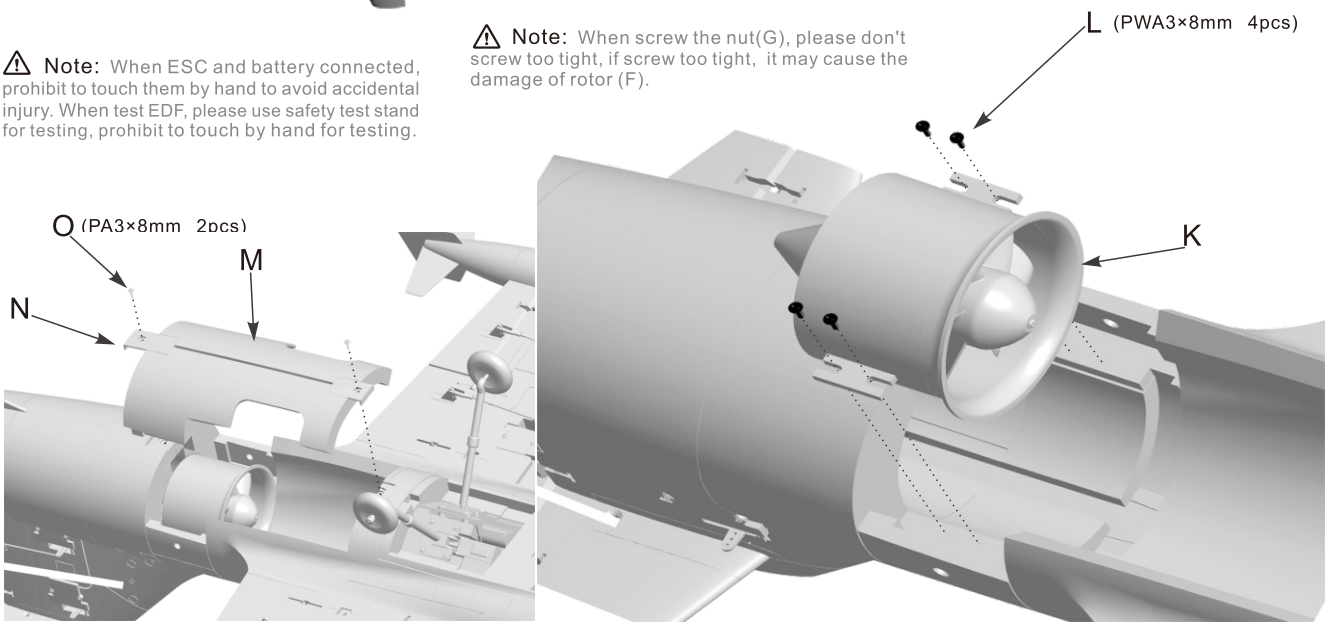
Install power system

1.Install “motor (A)” in “ducted fan housing (B)”.
2.Fix motor by 4pcs “screws (C)”.
3.Insert te “motor clip (D)” in the motor shaft.
4.Put the “fixed disk (E)” to the “motor clip (D)”.
5.then put the “rotor (F)”, “spacer (G)” to the “motor clip (D)”.
6.Use “nut (H)” to screw the “motor clip (D)” and fix the “rotor (F)”.
7.Cover the “spinner (I)”, and fix it by “screw (J)”.
8.Put the installed “EDF (K)” in the fuselage and fix it by “screws (L)”.
9.Connect the ESC and motor, and put the lines in order.
10.Cover the “EDF cover (M)” and “motor cabin fixed part (N)”.
11.Fix it by 2pcs “screws (O)”.



⚠ Note: When ESC and battery connected, prohibit to touch them by hand to avoid accidental injury. When test EDF, please use safety test stand for testing, prohibit to touch by hand for testing.

⚠ Note: When screw the nut(G), please don't screw too tight, if screw too tight, it may cause the damage of rotor (F).



Parameters

Power system category	Item No.	Voltage (V)	Current (A)	Power (W)	Thrust (Kg)	Efficiency (g/w)	Motor Specifications	Rotating speed (rpm)	Weight (g)
70mm 6-blade EDF power system	E7214	14.8	50	740	1.4~1.6	2.02	2839-3200kv	47000	146
	E7212	22.2	50	1100	1.7~1.9	1.63	2849-2200kv	48000	170
70mm 12-blade EDF power system	E7213SR	22.2	66	1500	2.3~2.5	1.66	3065-2100kv	46000	300

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

Elevator

Up Elevator

Down Elevator

Rudder

Stick Left

Stick Right

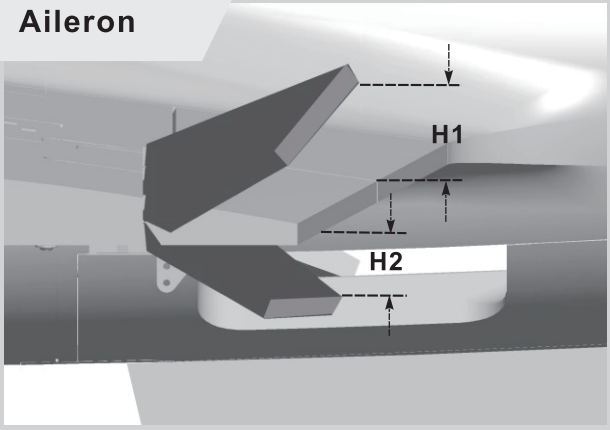
Optional Flaps

Flaps down

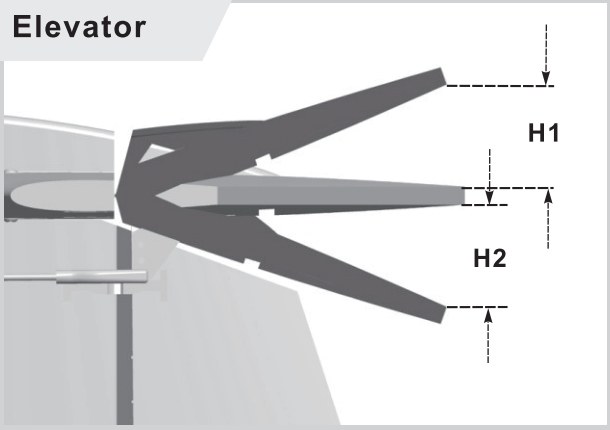
Dual Rates

According to our testing experience, according to the following parameters to set the aileron/elevator rate, it will be useful for flight. In low rate, its good for flight control and its suitable for the initial flight or less skilled players. According to your own circumstance, choose one rate in flight.

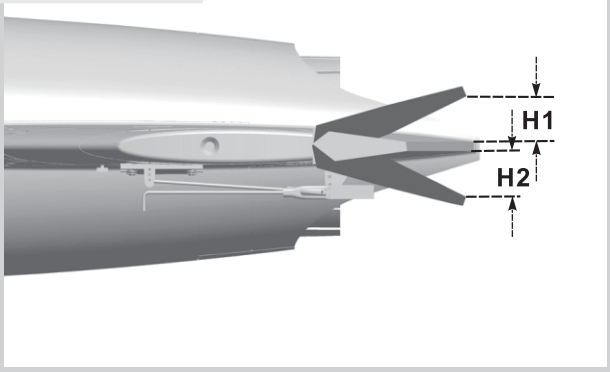
Aileron



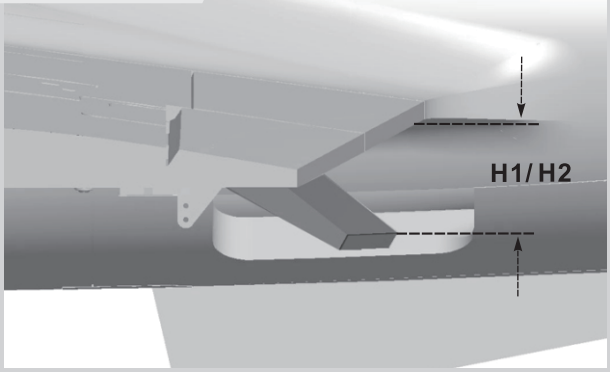
Elevator



Rudder



Flaps



	Aileron (without drop tanks)	Aileron (with drop tanks)	Elevator	Rudder	Flaps
Low Rate	H1/H2 8mm/8mm	H1/H2 10mm/10mm	H1/H2 25mm/25mm	H1/H2 15mm/15mm	H1/H2 25mm/25mm
Standard Rate	H1/H2 10mm/10mm	H1/H2 12mm/12mm	/	/	/
High Rate	H1/H2 12mm/12mm	H1/H2 15mm/15mm	H1/H2 30mm/30mm	H1/H2 25mm/25mm	H1/H2 38mm/38mm

Troubleshooting Guide

Motor does not turn on	A) Li-Po battery depleted	A) Recharge Li-Po battery
	B) Transmitter batteries depleted	B) Replace or recharge batteries
	C) Transmitter not turned on	C) Turn on transmitter
	D) Li-Po battery not plugged in	D) Plug in Li-Po battery
	E) Motor not armed	E) Arm motor
	F) A crash has damaged an internal component	F) Replace
	G) ESC or other damaged	G) Check ESC or contact local distributor
Cub is difficult to control	A) You are flying in too much wind	A) Fly when there is no wind
	B) Li-Po battery depleted	B) Recharge Li-Po battery
	C) Transmitter batteries depleted	C) Replace or recharge batteries
	D) Transmitter antenna not extended completely	D) Extend transmitter antenna completely
	E) Surface control rate is too high	E) Use low rate to fly
The nose always move down when fly, always need to up elevator	A) CG is forward	A) Adjust CG backward refer to instruction
Cub constantly climbs or descends, or turns right or left without control input	A) The aircraft is out of trim adjustment	A) Adjust the transmitter trim tabs
	B) You are flying in too much wind	B) Fly when there is no wind
Elevator is too flexible, up and down is not stable	A) CG is backward	A) Adjust CG forward refer to instruction
Plane will be slant when taxi on the runway	A) Nose gear is not center.	A) Center nose gear
	B) Rudder is not center.	B) Center rudder
Take off is difficult	A) Thrust is not on the high position	A) Thrust is on the high position
	B) Taxi distance is not enough	B) Long taxi distance
	C) Elevator rate is not enough high	C) Use high rate of elevator
Cub will not climb	A) Li-Po battery is depleted	A) Recharge Li-Po battery
	B) Ducted fan is damaged	B) Check and replace ducted fan
	C) Motor is damaged	C) Check and replace motor
	D) ESC overheat protection,power reduction.	D) Landing firstly, check and select a more powerful ESC
Li-Po battery is slightly warm after charging	A) This is normal	A) The Li-Po battery may be slightly warm when fully charged. It should not be hot to the touch.
Motor vibrates excessively	A) Ducted fan is damaged	A) Check and replace ducted fan
	B) Motor is damaged	B) Check and replace motor
	C) Ducted fan is not balance	C) Adjust the ducted fan balance
	D) High speed will happen slightly vibrate	D) Its normal to use
Control surface move the wrong direction	A) Servo direction is reversed	A) Adjust servo reversing function

FNRC HOBBY 飛恩航模

FNRC HOBBY
mail: fnrchobby@gmail.com