Item No.:FJ1181

F-22 Raptor Instruction Manual

WINGSPAN : 690MM (27.17 IN)

EN 1
中 14



Version No.:FJ1181-V01

MADE IN CHINA

Introduction

EN

Thanks for your purchasing our Freewing F-22 jet. It used EPO material with very scale appearance, and its excellent control performance and flight performance, is suitable for the jet beginner players.This F-22, all the control surface we used the modular design, it can be very convenient for installation and carry in outside.

⚠ **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.

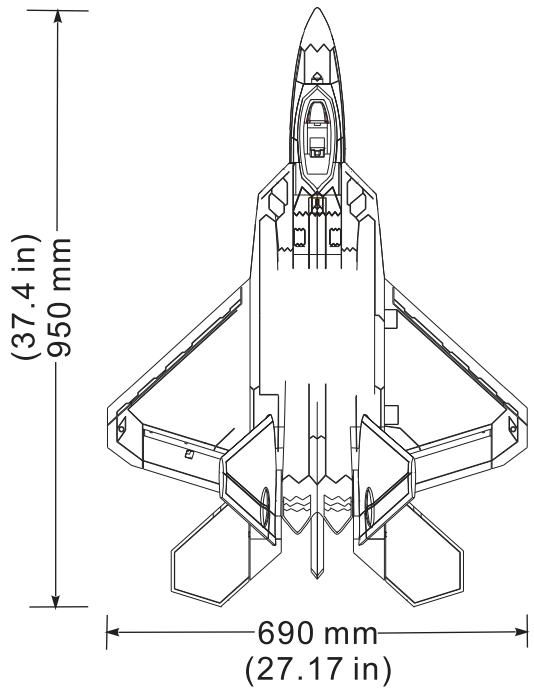
Note

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



⚠ 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.

- MOTOR
  2627-4300KV (for 11.1V 3S battery)
  2836-3500KV (for 14.8V 4S battery)
- ESC
  30A ESC (for 11.1V 3S battery, 2627-4300kv motor)
  40A ESC (for 14.8V 4S battery, 2836-3500kv motor)
- SERVO
  9g Servos (5pcs)
- Battery
  3S 11.1V 1600mAh 25C
  4S14. 8V1600mAh 25C
- Ducted Fans
  64mm ducted fans
- Take-off weight
  750g (26.45 oz.) (for 11.1V 3S battery)
  850g (29.98 oz.) (for 14.8V 4S battery)
- Thrust
  650g (22.93 oz.) (for 11.1V 3S battery)
  900g (31.75 oz.) (for 14.8V 4S battery)

Landing Gear	Aileron	Flaps	Elevator	Rudder	Throttle
Yes	Yes	No	Yes	Yes	Yes

Package List



Open package and check the package list. (Different version include different contents)

No.	Accessories Name	RTF	PNP	KIT
1	Fuselage set	Yes	Yes	Yes
2	Main wing set	Yes	Yes	Yes
3	Elevator	Yes	Yes	Yes
4	Rudder	Yes	Yes	Yes
5	Landing gear	Yes	Yes	Yes

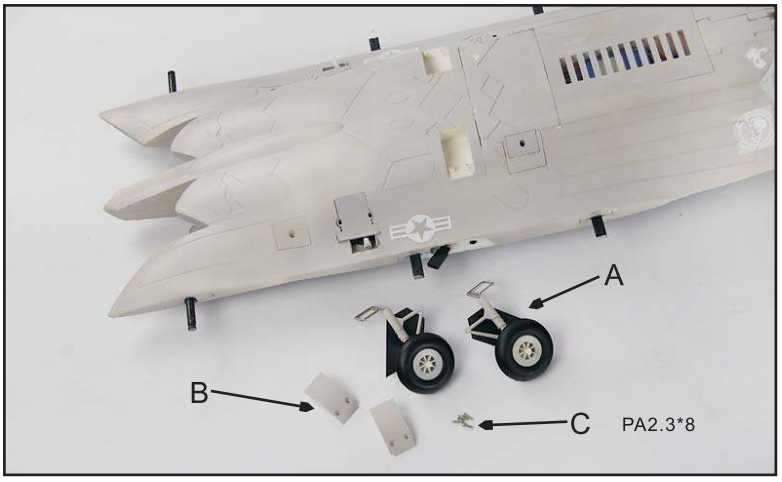
No.	Accessories Name	RTF	PNP	KIT
6	Plastic accessories	Yes	Yes	Yes
7	Radio	Yes	No	No
8	Battery	Yes	No	No
9	Charger	Yes	No	No
10	Screwdriver & screw accessories	Yes	Yes	Yes

Installing rear landing gear

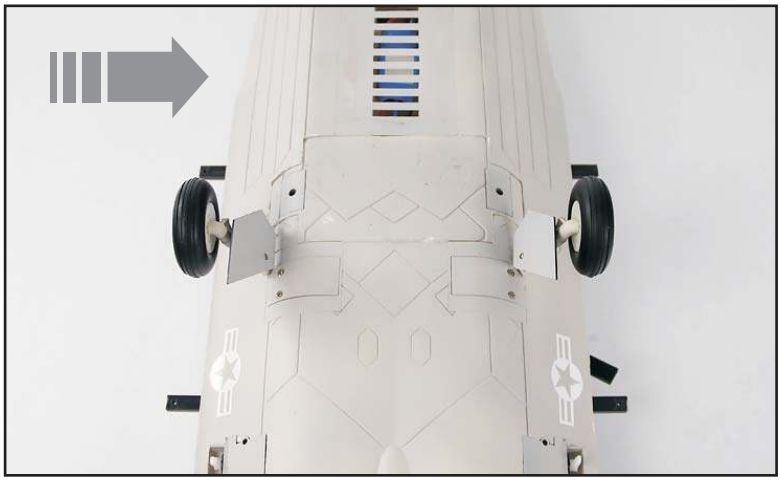
Remove these accessories
A- Left / Right landing gear
B- rear landing gear fixed part
C- screw (PA2.3*8 4pcs)

1. Install left / right landing gear (A) on the indicated position of fuselage.
2. Cover rear landing gear fixed part(B).

⚠Note: please check the plastic part "L" "R" mark. Plastic part should distinguish left/right to check its install position.



3.Fixed the landing gear by screws (C).
4.Finish to install as the right photo shown.



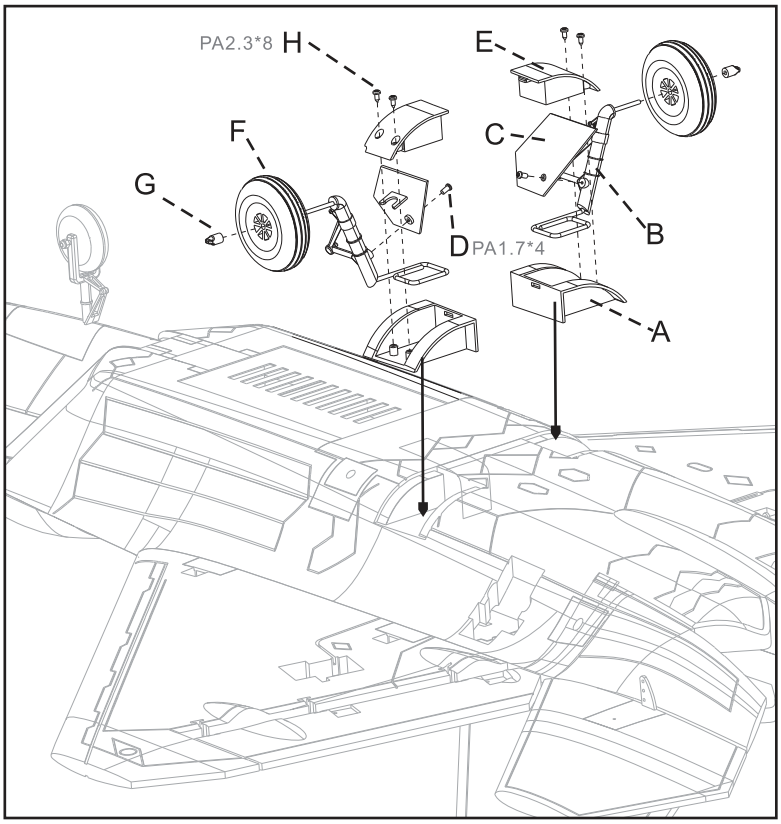
Rear landing gear structure

When you need to repair landing gear, please refer to the following structure to disassemble/assemble properly.

Rear landing gear accessories list

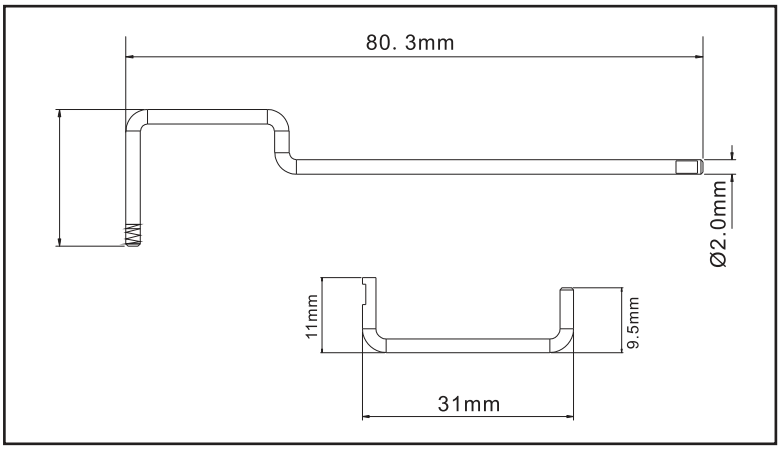
A-Platic part that is attached on the fuselage.
B-landing gear wire
C-landing gear cabin door (decorated part)
D-screw (PA1.7*4 2pcs)
E-rear landing gear fixed part
F-wheel
G-wheel shock
H-screw (PA2.3*8 4pcs)

1.Attached the plastic part(A) on the indicated position of fuselage.
2.Install landing gear wire (B) on the plastic part (A).
3.Insert rear landing gear fixed part (E) into plastic part (A) and fixed landing gear wire (B) by screws (H).
4.Fixed the landing gear cabin door(C) on the landing gear wire(B) by screws(D).
5.Put the wheels (F) on the wires.
6.Fixed it by wheel shock (G).



Installing nose landing gear

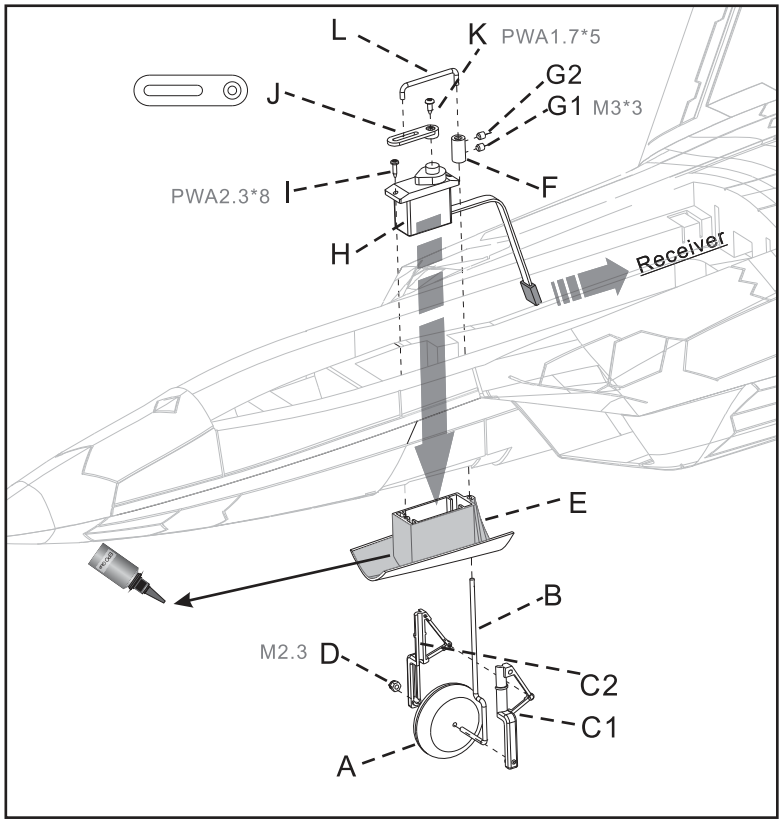
When you need to disassemble/assemble the nose landing gear, please refer to the following structure.



Accessories list & name

A- wheel
B- “L” nose landing gear wire
C-nose landing gear decorated part
D-locknut (M2.3 1pcs)
E-nose landing gear mount
F-nose landing gear wire connecting post
G- jimi screw (M3*3 2pcs)
H-servo
I-screw (PWA2.3*8 1pcs)
J-arm of servo steering
K-servo screw (PWA1.7*5 1pcs)
L- “U” nose landing gear wire.

1.Insert wheel(A) into “L” nose landing gear wire(B).
2.Install the nose landing gear decorated part (C2) on the “L” nose landing gear wire(B). then use the locknut (D) to fix wheel(A) and nose landing gear decorated part (C2).
3.Attached nose landing gear decorated part (C1) on the “L” nose landing gear wire(B) and fixed by screw.
4.Insert the “L” nose landing gear wire(B) into nose landing gear mount (E), then insert into nose landing gear wire connecting post (F), and use jimi screw(G) to fix “L” nose landing gear wire(B).
5.Install the servo(H) and fix it by screw(I).
6.Install the arm of servo steering (J) and fix it by screw (K)
7.Insert the flap head of “U” nose landing gear wire (L) into nose landing gear wire connecting post (F), another head insert into the arm of servo steering (J) and use Jimi srcew(G2) to fix.
8.At last, attached the indicated position of nose landing gear mount(E) on the fuselage.



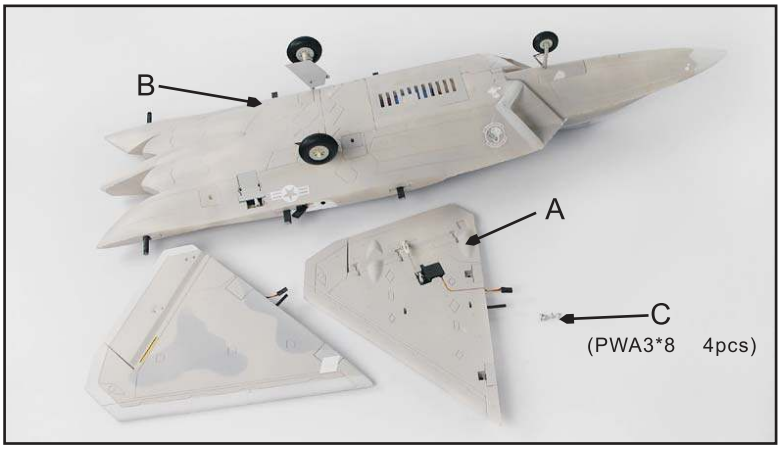
⚠ Note: When fixing “L” nose landing gear wire(B), please check the flat position of wire head must face to screw hole, just like this, it can fix the wire effectively.

⚠ Note: The arm of servo steering (J) is special arm, it can not be in common use. If damage or loss, please contact with distributor and purchase again.

Installing the Wing

1.Remove these accessories

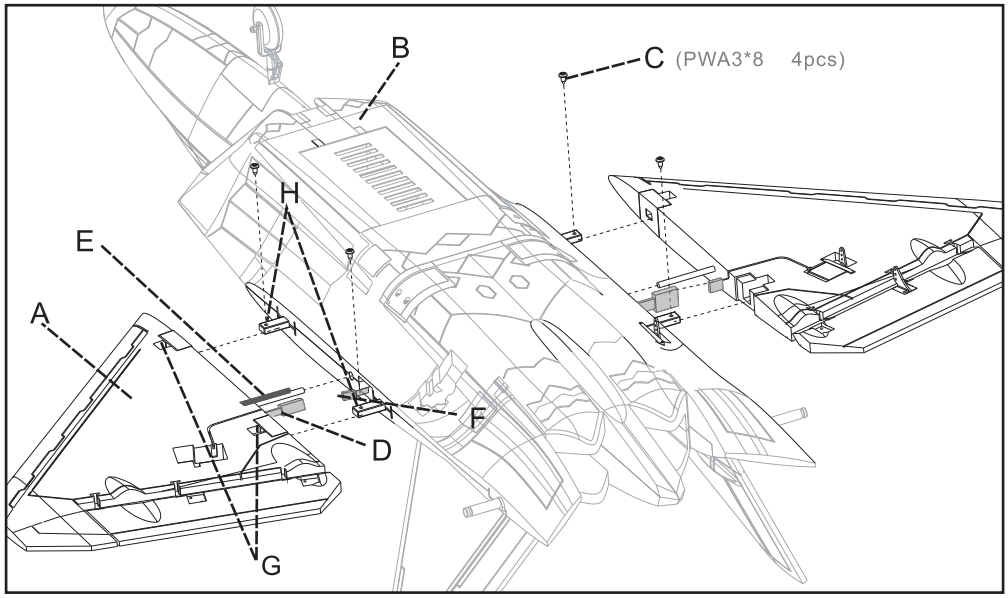
A-Left / right wing
B-Fuselage
C-Screw (PWA3*8 4pcs)

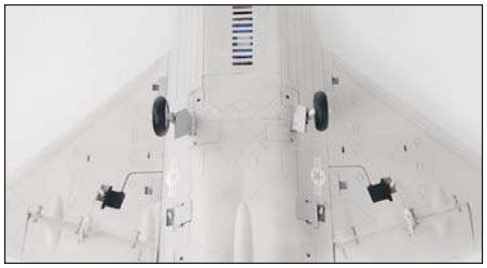


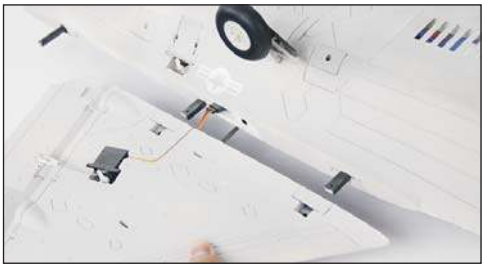
Installing the Wing

2.Connect the servo wire (D) and extension wire in fuselage(F).
3.Insert left wing(A) into fuselage, and we should pay attention of following:
- Insert carbon tube in wing(E) to the carbon tube(F).
- Insert plastic parts in wing (G) to the plug in fuselage(H).

4.Through plastic parts in wing (G), fix the wing by 2pcs screws (C).
5.Use the same way to install the right wing.



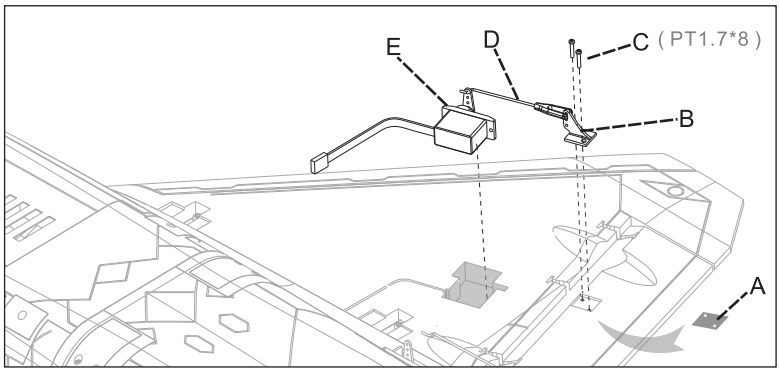




Installing the Wing's servo

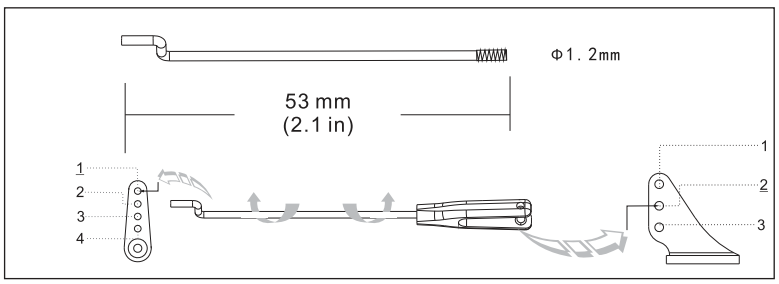
If you purchased KIT version, please refer to the following to install.

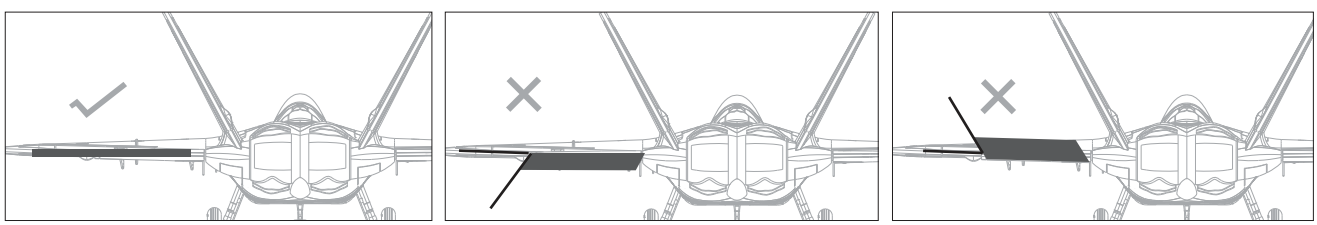
1.Firstly, we need to be center the servo arm through radio or servo tester.
2.Buckle control horn fixed part (A) into the mounting position of wing lower surface.
3.Install the control horn (B) on the wing surface as the photo shown.
4.Fix it by two screws(C).
5.One head of pushrod (D) insert into servo arm, another head insert into control horn (B).



Installation Notes of Wing pushrod

1.Please check the pushrod length.
2.Insert the pushrod into the first hole of servo arm, and insert clevis into the second hole of control horn.
3.Turn on the clevis to adjust the aileron, refer to the following photo.



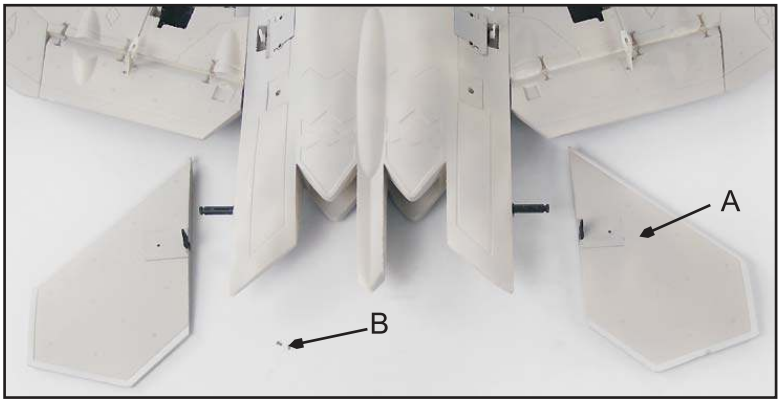


Installing the Elevator

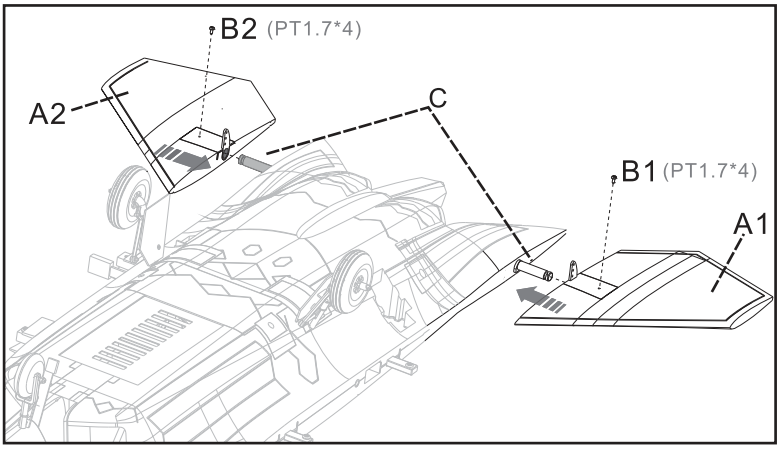
1.Remove these accessories

A-left/right elevator
B-screw (PT1.7*4 2pcs)

2.Insert left/right elevator (A1,A2) to the horizontal tail holder (C) of fuselage.
3.Fix the elevator by screws((B1,B2)



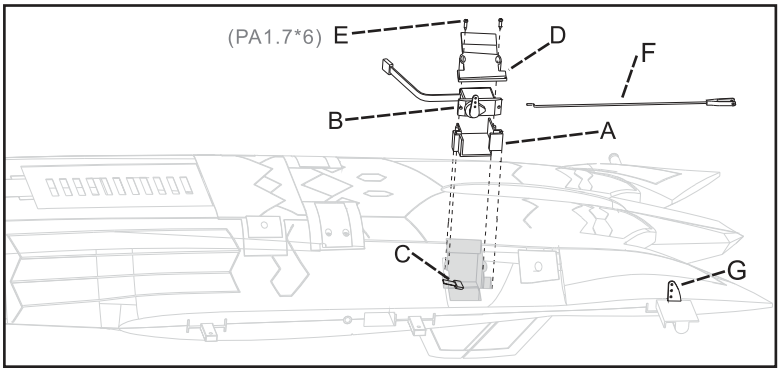




Installing the Elevator's servo

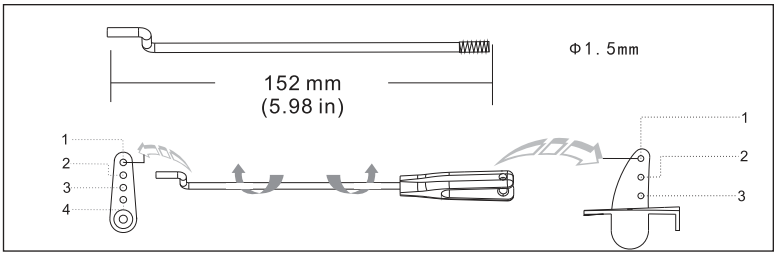
If you purchased KIT version, please refer to the following to install.

1.Firstly, we need to be center the servo arm through radio or servo tester.
2.Attach the elevator servo box (A)on the fuselage.
3.Connect extention wire (C) and servo wire.
4.Press servo (B) to the elevator servo box (A)
5.Press on the servo (B) by the elevator servo cover(D).
6.Screw tightly by two screws (E) to strengthen.
7.At last install on the elevator pushrod (F).

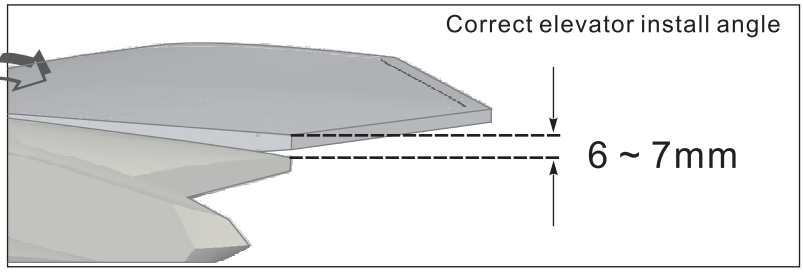


Installation Notes of Elevator pushrod

1.Please check the pushrod length.
2.Insert the pushrod into the first hole of servo arm, and insert the plastic clevis into the first hole of control horn.
3.Turn on the clevis to adjust the elevator, refer to the following photo.





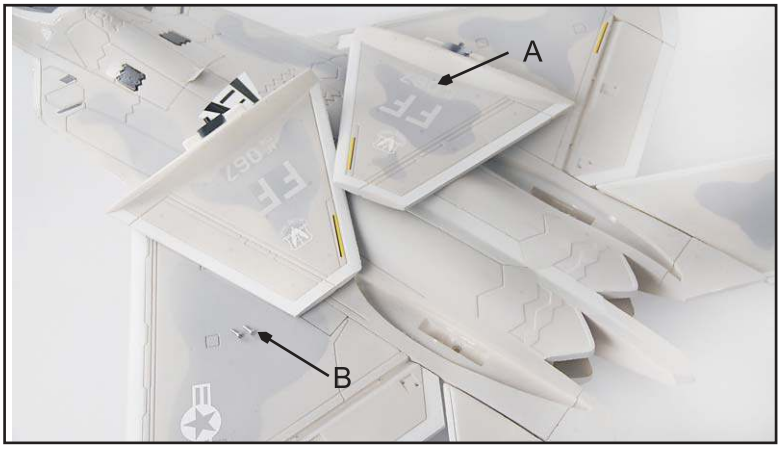


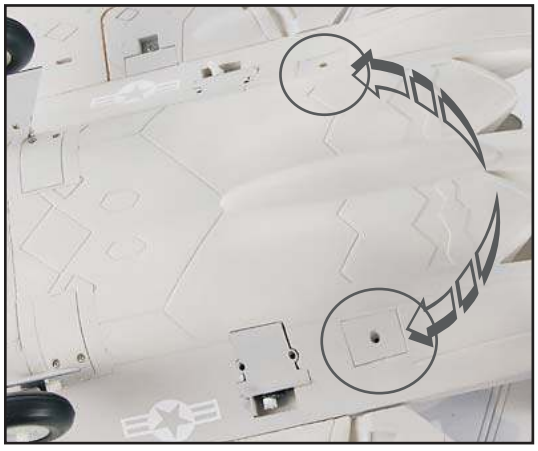
Installing the Rudder

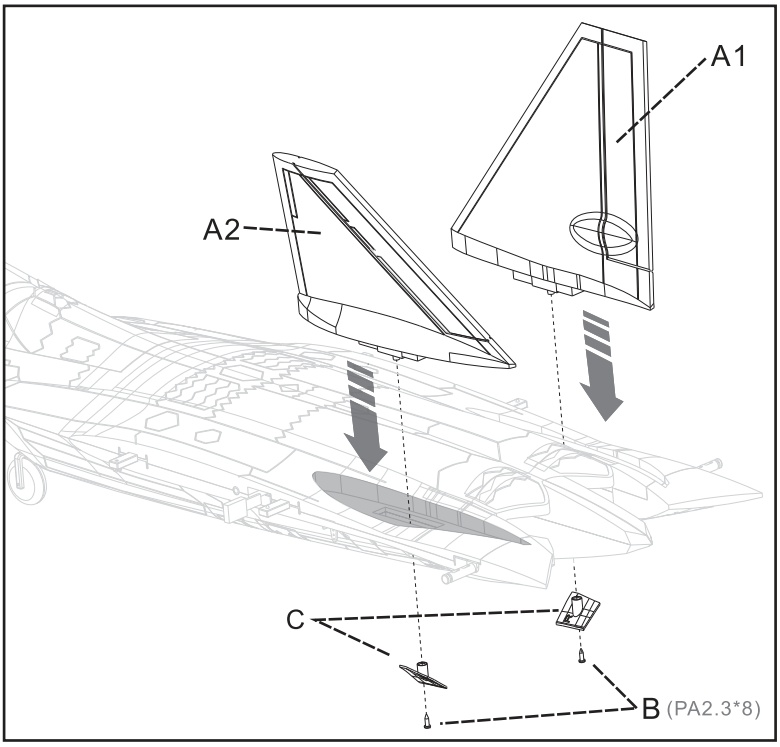
1.Remove these accessories

A-left/right rudder
B- screw (PA2.3*8 2pcs)

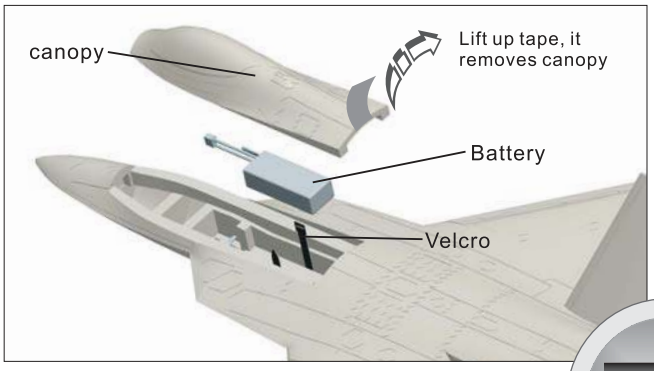
2.Insert left/right rudder (A1 , A2) to the fuselage.
3.Reverse the fuselage and rudder together, put on the rudder screw fixed part(C).
4.Fix the rudder by 2pcs screws (B).

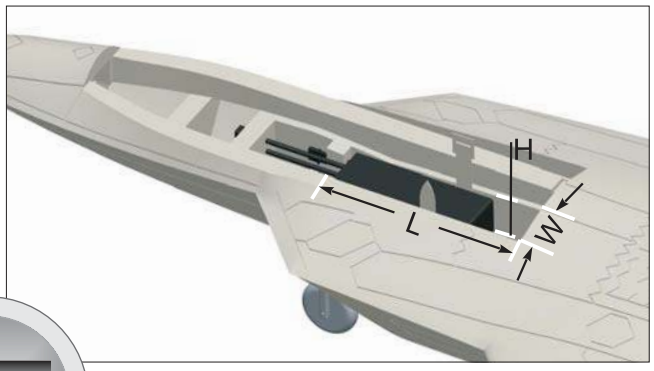


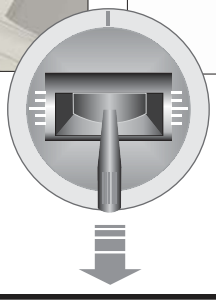




Install on battery







Lift up tape,it removes 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.

Our standard battery is
3S 11.1V 1600mAh 25C or 4S 14.8V 1600mAh 25C

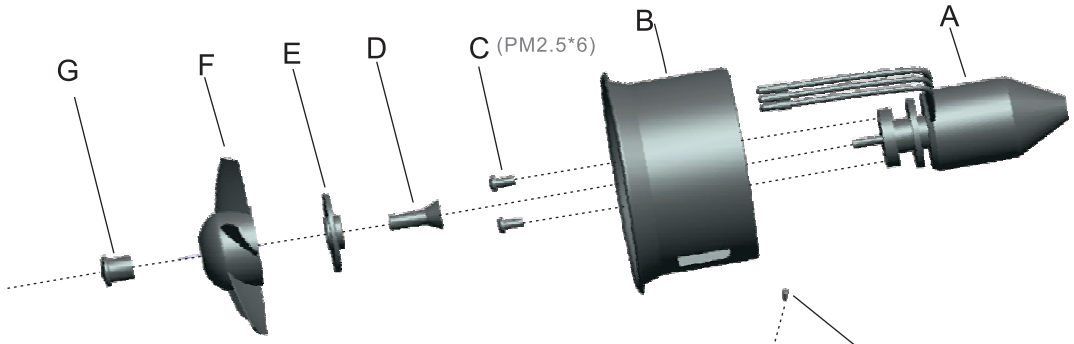
You can choose the battery refer to the battery cabin size:

L=130mm W=40mm H=50mm

Different weight battery may affect its CG, please check the correct range of CG indication.

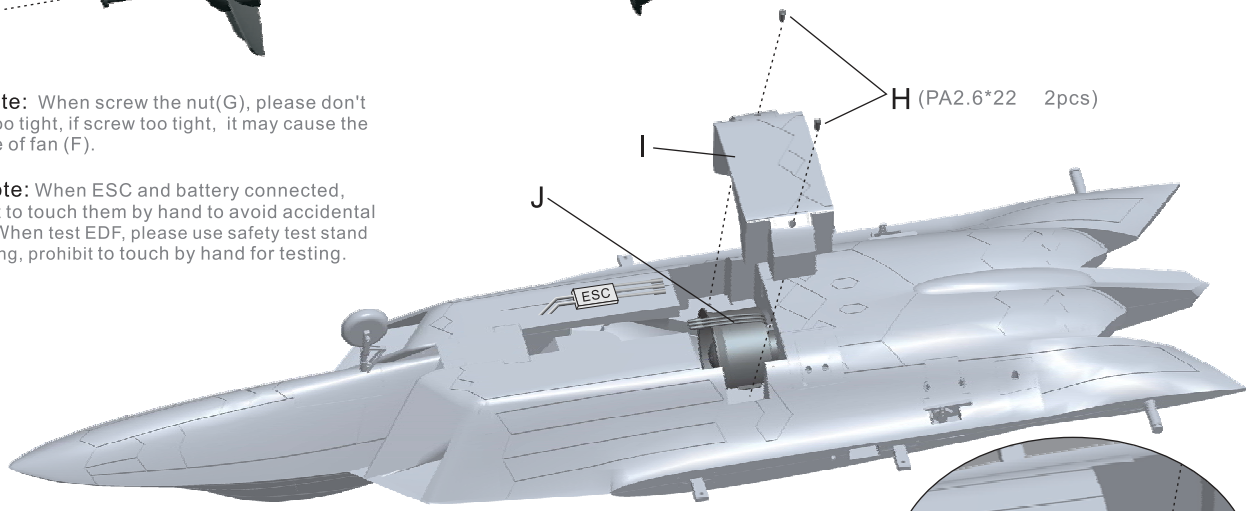
Assemble EDF and Motor

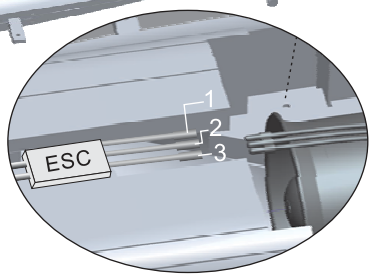
1.Assemble motor (A) to the motor mount (B).
2.Fix the motor(A) by screws(C).
3.Insert the collet(D) into motor shaft.
4.Set backplate(E) into the collet(D).
5.Set the fan (F) into the collet(D).
6.Screw the collet(D) by nut(G) to fix the fan (F).
7.Put the assembled EDF (J) into fuselage.
8.Connect ESC and motor and sort out the wires of ESC and motor.
9.Cover the EDF cabin cover(I)
10.Fix it by 2pcs screws(H).



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

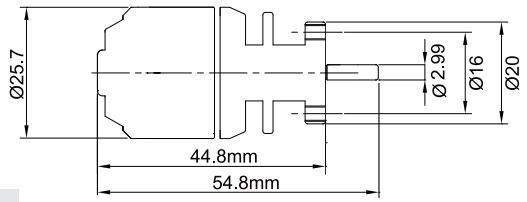
⚠ Note: When ESC and battery connected, prohibit to touch them by hand to avoid accidental injury. When test EDF, please use safety test stand for testing, prohibit to touch by hand for testing.

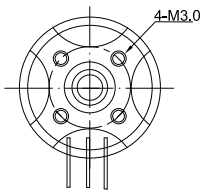




⚠ Note: When test EDF, if the motor reverse to turn, we can exchange the connection of wire 1 and wire 3 to change the motor's rotation.

Motor parameters



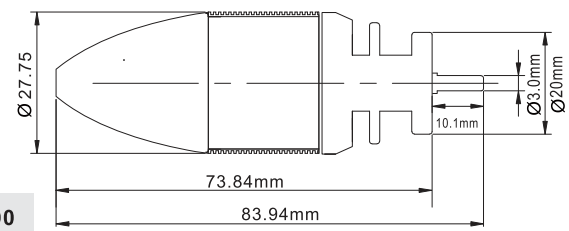


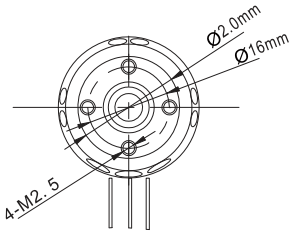
2627-4300

2627-4300KV brushless motor use 3S 11.1V lipo battery and 30A ESC

3826-3500KV brushless motor use 4S 14.8V lipo battery and 40A ESC.

⚠ Note: If you need other motor to use, please refer to the dimension shown on the left to select your motor, to make sure that the motor you purchased can install successfully.





2836-3500

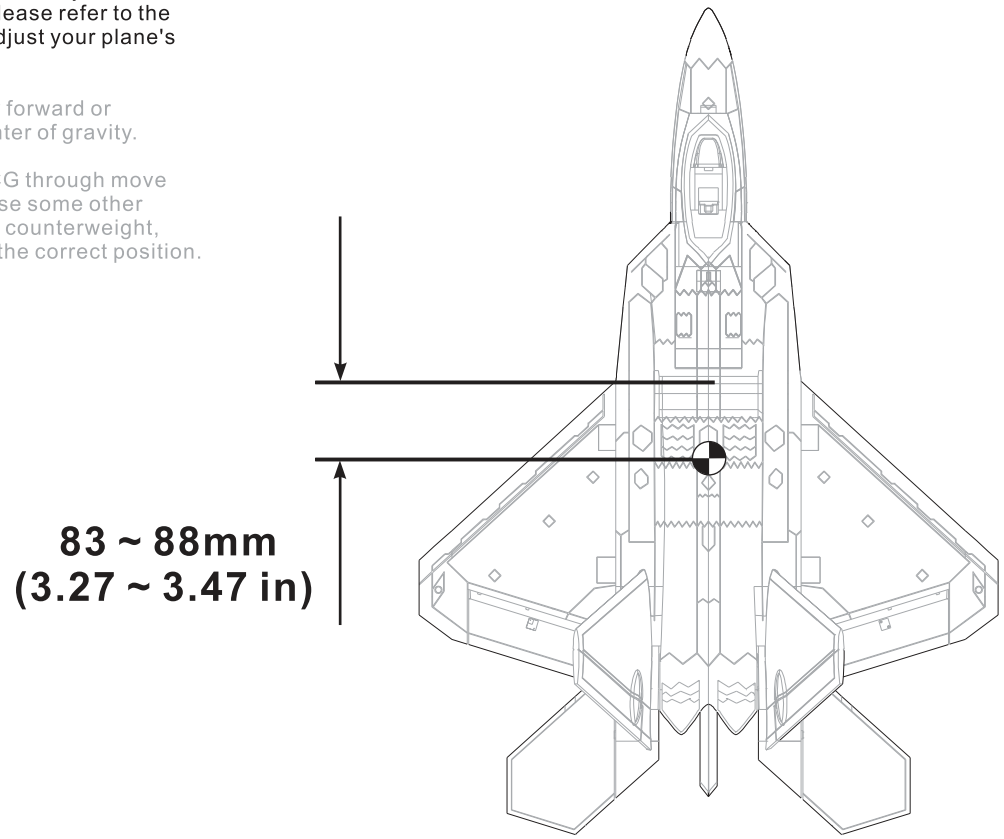
Model	KV Value	Volate (V)	Current (A)	Pull (g)	RPM	Weight (g)	No Load Current	Propeller	ESC
2627-4300	4300RPM/V	11.1	22.1	680	47700	42	0.7A	64mm Ducted Fan	30A
2836-3500	3500RPM/V	14.8	32	900	51000	98	2.7A	64mm Ducted Fan	40A

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.

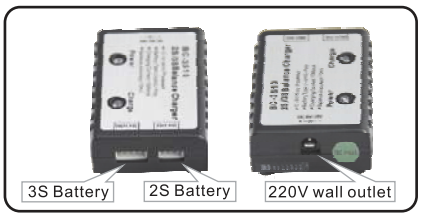
- You can move the battery forward or backward to adjust the center of gravity.

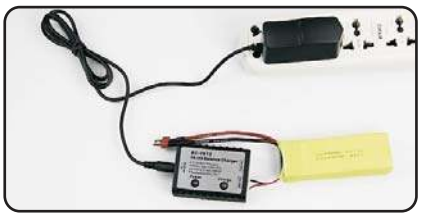
-If you can not adjust the CG through move the battery, you can also use some other suitable material weight to counterweight, to make sure that CG is in the correct position.



Charger Safe Use







You must first charge your flight battery before flying. Plug the charger into a 220V wall outlet. This charger can be used with 2 and 3 cell lipo batteries. The F-22 uses a 3 cell Li-po battery. The battery comes with two sets of wires and connectors. The set with the white plug and 4 wires is the charging lead. Connect the battery charge lead into the matching connector on the charger. 2 of the lights on the charger will turn red to indicate charging. It will take approximately 2.5 hours for the battery to fully charge. Once fully charged, the red lights on the charger will turn green to indicate that it is done. Flight times are approximately 3 to 5 minutes per charge.

Safety Instructions for charging and using Lipo batteries

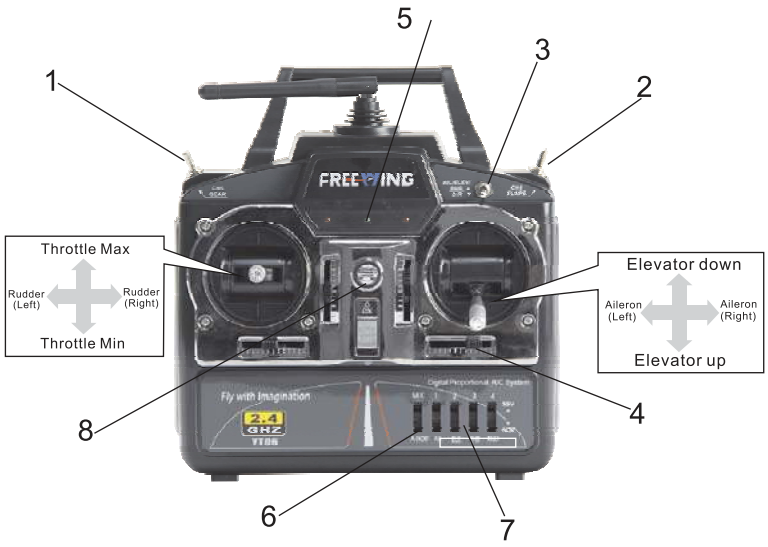
- Do not put the battery on, or near anything, that can catch fire.
- Charge the battery on a non-flammable base, i.e. a metal tray.
- Do not disassemble the battery
- Do not short-circuit the battery
- Do not use,or leave, the battery near a fire, stove or heated place.
- Do not immerse the battery in water or seawater.
- Do not charge the battery near a fire or under the blazing sunlight.
- Do not impact or throw the battery.

Radio control Direction

1.Radio include the transmitter and receiver.



2.Radio function introduction (Mode 2)





Aileron → Ch1
Elevator → Ch2
Throttle → Ch3
Rudder → Ch4
Landing Gear → Ch5
Flaps → CH6

1.Gear Switch (For 6CH)
2.Flap Switch (For 6CH)
3.D/R (For 6CH)
4.Trim
5.Power indicator
6.Delta
7.Reverse
8.Neckstrap Attachment

Note: The factory have bind the aircraft and transmitter, you can use directly. In exceptional circumstances, it need to re-frequency, please set up as following method.

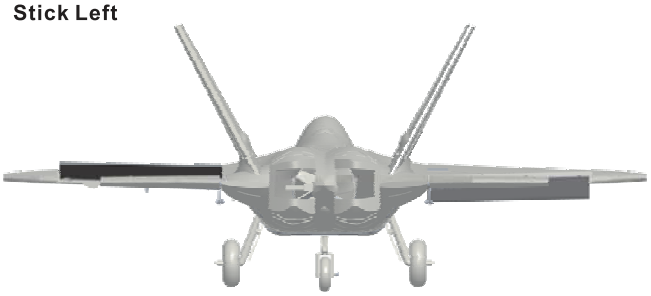
- Press on the receiver Frequency switch.
- While press on the receiver frequency switch, the receiver power on.
  (Now receiver frequency signal light should be continued flashing.)
- Switch on transmitter.(Red/yellow/green,the three LED signal light in transmitter should be continued flashing.)
- Release the receiver frequency switch.
- After the success of frequency, receiver frequency signal light and transmitter signal light are “lights on”, not flashing.

Control surface direction and set up

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

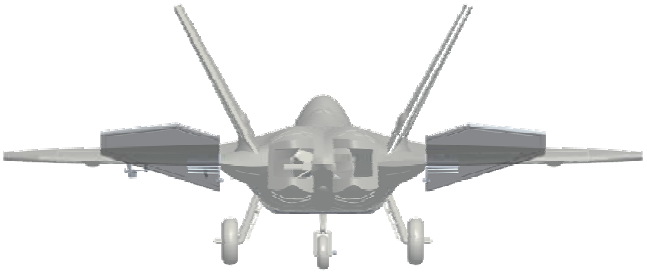


Stick Right

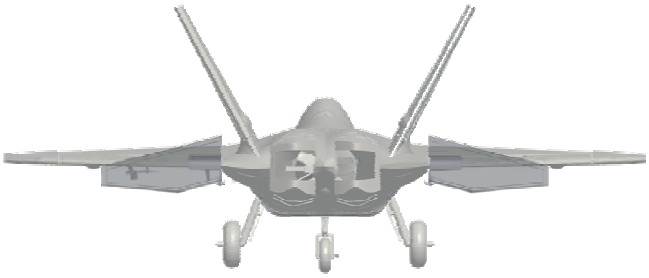


Elevator

Up Elevator



Down Elevator



Rudder

Stick Left



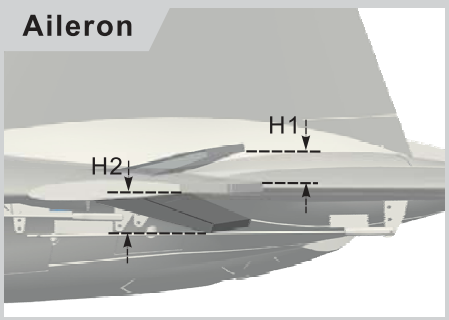
Stick Right



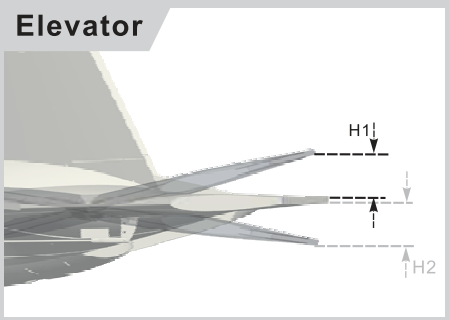
Dual Rates

According to our testing experience, refer to the following parameters to set up control surface rate, it will be useful for your flight. You can choose a rate to fly according to your own circumstance.

Aileron



Elevator



⚠ **Note :** If your radio haven't the rate setup function, you can adjust the hole of control horn which connect with pushrod, to increase or decrease its rate.

	High Rate	Low Rate
Aileron (H1、H2)	15mm	24mm
Elevator (H1、H2)	11mm	20mm

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

Accessories list support

Item No.	Product name	Specification	Unit	Qty
MO02611	Brushless motor	2627-4300KV	Pcs	1
MO02811		2836-3500KV	Pcs	1
FE0032	ESC	30A	Pcs	1
FE0042		40A	Pcs	1
MA30091	Servo	9G servo standard	Pcs	1
MA30091R		9G servo reverse	Pcs	1
MA30092	Servo	9G MG servo standard	Pcs	1
MA30092R		9G MG servo reverse	Pcs	1
FB31625	Battery	3S 11.1V 1600mAh 25C	Pcs	1
FB41625		4S 14.8V 1600mAh 25C	Pcs	1
P0641	Ducted Fans	64mm EDF	Set	1
FJ118101	Fuselage set	F22 fuselage set	Set	1
FJ118102	Main wing set	F22 main wing set	Set	1
FJ118103	Tail wing set	F22 tail wing set	Set	1
FJ1181061	Canopy	canopy	Pcs	1
FJ118106	Cockpit	canopy	Pcs	1
		cockpit	Pcs	1
		pilot figure	Pcs	1
		scale display	Pcs	1
		dashboard fixed part	Pcs	1
1239	Pilot figure	pilot figure	Pcs	1
FJ118107	Sticker	sticker	Pcs	1
FJ118108	Landing gear set	nose landing gear	Set	1
		rear landing gear	Set	2
FJ1181081	Nose landing gear	9g servo	Pcs	1
		wheel	Pcs	1
		"L" shape nose wheel wire	Pcs	1
		nose gear decorated part (left)	Pcs	1
		nose gear decorated part (right)	Pcs	1
		locknut	Pcs	1
		nose gear mount	Pcs	1
		nose gear wire connecting post	Pcs	1
		Jimi screw M3*3	Pcs	2
		screw 1 PWA2.3*8	Pcs	1
		screw 2 PWA1.7*5	Pcs	1
		screw 3 PT1.7*8	Pcs	1
		arm of servo steering	Pcs	1
		pushrod of nose gear steering	Pcs	1
FJ1181082	Rear landing gear	rear gear fixed part(left)	Pcs	1
		rear gear fixed part(right)	Pcs	1
		rear gear wire (left)	Pcs	1
		rear gear wire (right)	Pcs	1
		gear cabin door (left)	Pcs	1
		gear cabin door (right)	Pcs	1
		rear gear wire decorated part (LL)	Pcs	1
		rear gear wire decorated part (LR)	Pcs	1
		rear gear wire decorated part (RL)	Pcs	1
		rear gear wire decorated part (RR)	Pcs	1
		wheel	Pcs	2
		landinger gear fixed part (left)	Pcs	1
		landinger gear fixed part (right)	Pcs	1
		wheel chock	Pcs	2
		screw 1 PWA2.3*8	Pcs	4
		screw 2 PWA1.7*5	Pcs	2

Item No.	Product name	Specification	Unit	Qty
FJ1181083	Landing gear plastic part	nose gear decorated part (left)	Pcs	1
		nose gear decorated part (right)	Pcs	1
		nose gear mount	Pcs	1
		rear gear fixed part (left) which install on fuselage	Pcs	1
		rear gear fixed part (right) which install on fuselage	Pcs	1
		gear cabin door (left)	Pcs	1
		gear cabin door (right)	Pcs	1
		rear gear wire decorated part (LL)	Pcs	1
		rear gear wire decorated part (LR)	Pcs	1
		rear gear wire decorated part (RL)	Pcs	1
		rear gear wire decorated part (RR)	Pcs	1
		landing gear fixed part (left)	Pcs	1
		landing gear fixed part (right)	Pcs	1
		wheel chock	Pcs	3
FJ1181084	Metal wire of landing gear	"L" shape nose wheel wire	Pcs	1
		pushrod of nose steering	Pcs	1
		nose gear wire connecting post	Pcs	1
		pushrod of rear wheel (left)	Pcs	1
		pushrod of rear wheel (right)	Pcs	1
		jimi screw M3*3	Pcs	2
FJ118111	Pushrod	pushrod of main wing L=53mm Φ1.2	Pcs	2
		pushrod of elevator L=152mm Φ1.5	Pcs	2
FJ118109	F22 plastic parts	scale display	Pcs	1
		dashboard fixed part	Pcs	1
		"T" shape main wing fixed part (F)	Pcs	1
		"T" shape main wing fixed part (B)	Pcs	1
		"E" shape main wing fixed part (LF)	Pcs	1
		"E" shape main wing fixed part (LB)	Pcs	1
		"E" shape main wing fixed part (RF)	Pcs	1
		"E" shape main wing fixed part (RB)	Pcs	1
		EDF fixed part (L)	Pcs	1
		EDF fixed part (R)	Pcs	1
		rudder fixed part A	Pcs	2
		rudder fixed part B (L)	Pcs	1
		rudder fixed part B (R)	Pcs	1
		elevator shaft (L)	Pcs	1
		elevator shaft (R)	Pcs	1
		elevator shaft sleeve (L)	Pcs	1
		elevator shaft sleeve (R)	Pcs	1
		servo box (L)	Pcs	1
		servo box (R)	Pcs	1
		servo cover(L)	Pcs	1
		servo cover(R)	Pcs	1
N101	Control horn	control surface horn	Pcs	12
		control surface spacer	Pcs	12
N202	clevis	hole diameter 1.2mm	Pcs	8
N203	clevis	hole diameter 1.5mm	Pcs	8
N302	Nylon hinge	/	Pcs	12
FJ118110	F22 screw bag	locknut M2.3	Pcs	1
		screw PT1.7*4	Pcs	2
		screw PA2.6*22	Pcs	2
		screw PA2.3*8	Pcs	6
		screw PA1.7*6	Pcs	4
		screw PA1.7*4	Pcs	6
		screw PWA3*8	Pcs	4
		screw PWA2.0*8	Pcs	1
		screw PWA1.7*5	Pcs	1
		screw PT1.7*8	Pcs	5
		screw PM2.5*6	Pcs	2
		jimi screw M3*3	Pcs	2

Dongguan Freewing Electronic Technology Ltd
HK Freewing Model International Limited

Add.:FeiYi Building,face to Labor Bureau, Fumin Middle Road, Dalang Town,
Dongguan City，Guangdong Province, China
Web: http://www.sz-freewing.com
Email:freewing@sz-freewing.com
Tel: 86-769-82669669　　Fax:86-769-82033233

东莞市飞翼电子科技有限公司
香港飞翼模型国际有限公司

地址：广东省东莞市大朗镇富民中路402-408号飞翼楼四楼
Web: http://www.sz-freewing.com
Email:freewing@sz-freewing.com
Tel: 86-769-82669669　　Fax:86-769-82033233