READY2FLY»

Item No.:RJ3011

Як-130

USER MANUAL

Wingspan: 1200mm

Designed in Switzerland

Version No.:RJ3011-V01

MADE IN CHINA

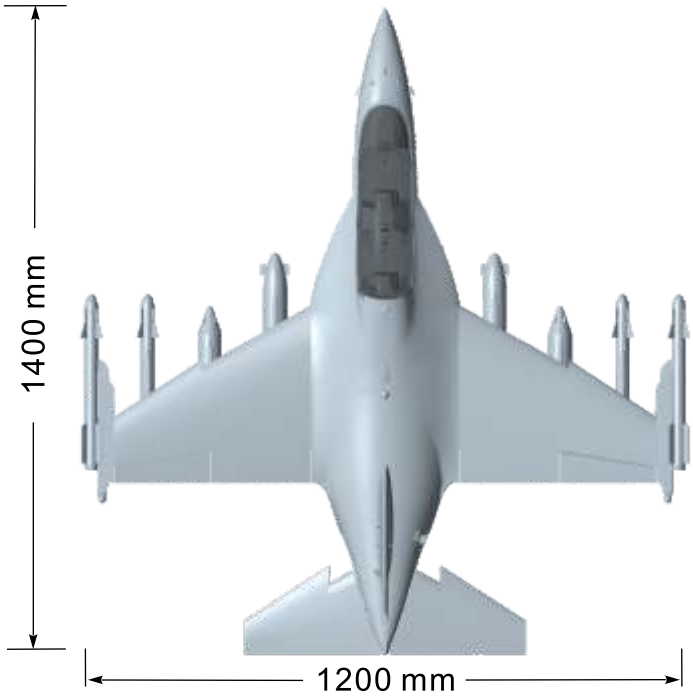
Note

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.

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.

Assembling data index

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**
  4074-1600KV Inrunner Brushless motor
- **ESC**
  130A ESC with 8A UBEC
- **Servo**
  17g Metal gear servo (2pcs)
  9g Metal gear servo (12pcs)
- **Battery**
  6S 22.2V 5000mAh - 6000mAh 35C
- **Ducted fan**
  90mm 12-Bladed fan
- **Take-off weight**
  4150g

- Scale retract with damping landing gear
- Gear door & gear door control
- Scale LED light & high taxi light
- Air brake

Introduction of Fuselage rear part

Accessories list:

A - Screw (PWA2. 0×8 4pcs)
B - Servo
C - Wood piece for elevator servo installation
D - Elevator drive shaft 1
E - Elevator drive shaft 2
F - Elevator control horn
G - Jimi screw (M4×4 2pcs)
H - Screw (PA2.3×8 8pcs)
I - Elevator drive shaft fixing part 1
J - Elevator drive shaft fixing part 2
K - Screw (PWA2.3×8 2pcs)

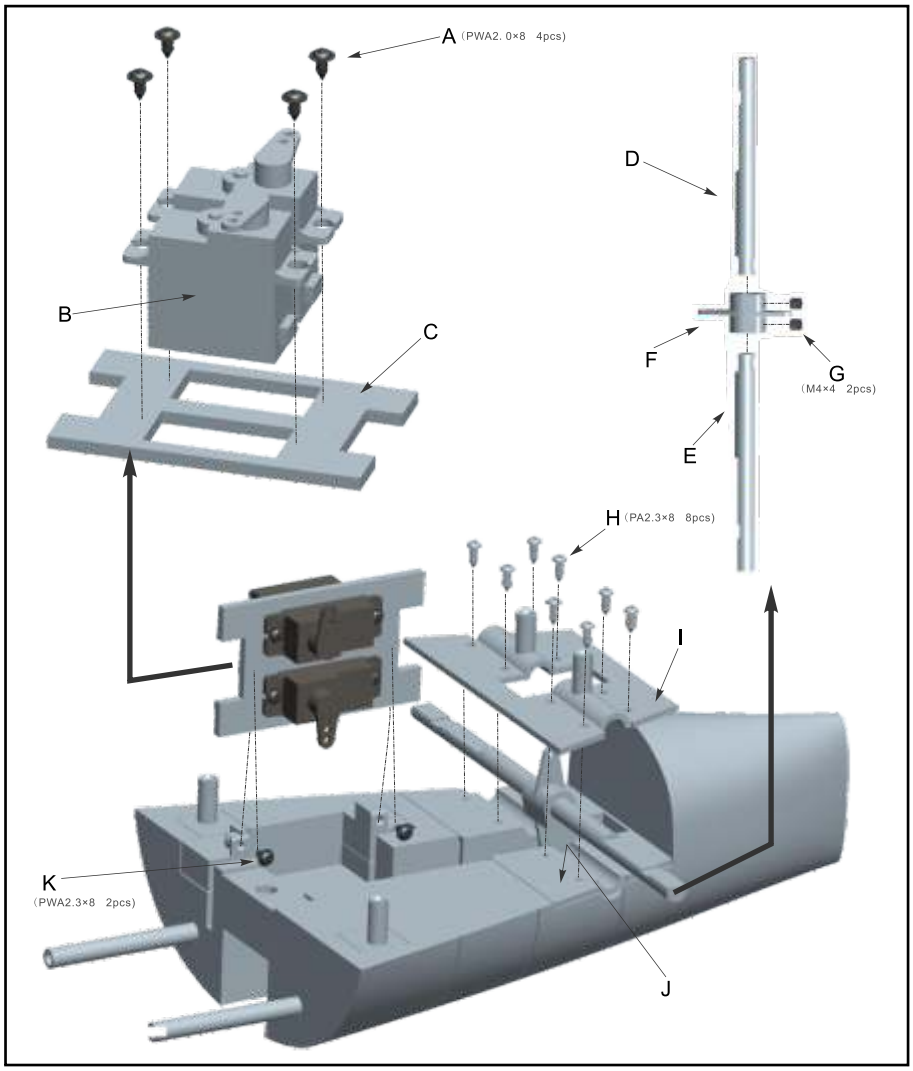
1.Firstly, operate your radio to center the servo arm.

2.Install the servo on the “wood piece (C)”, fixed it by “screw (A)”.

3.Insert the “ Elevator drive shaft 1 (D)” and “Elevator drive shaft 2 (E)” inside the “Elevator control horn (F)”, and use “Jimi screw(G) “to fix.

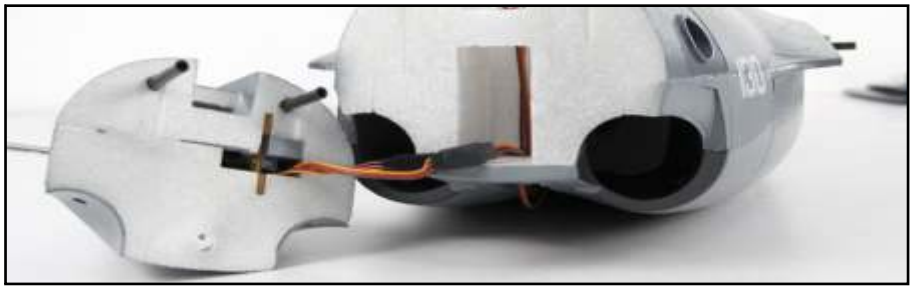
4.Install the finised elecator drive shaft on the”Elevator drive shaft fixing part 2 (J)” and cover “Elevator drive shaft fixing part 1 (I)” , then fixed it by screw (H).

5.As the right photo shown, buckle the wood piece (which installed the servo) into the indicated place. And fixed it by 2 pcs “screws (K)”.



A - Fuselage
B - Rear fuselage
C - EPO glue
D - Screw (PA 3×15 4pcs)
E - Rear fuselage bottom-foam
F - Rear fuselage top-foam

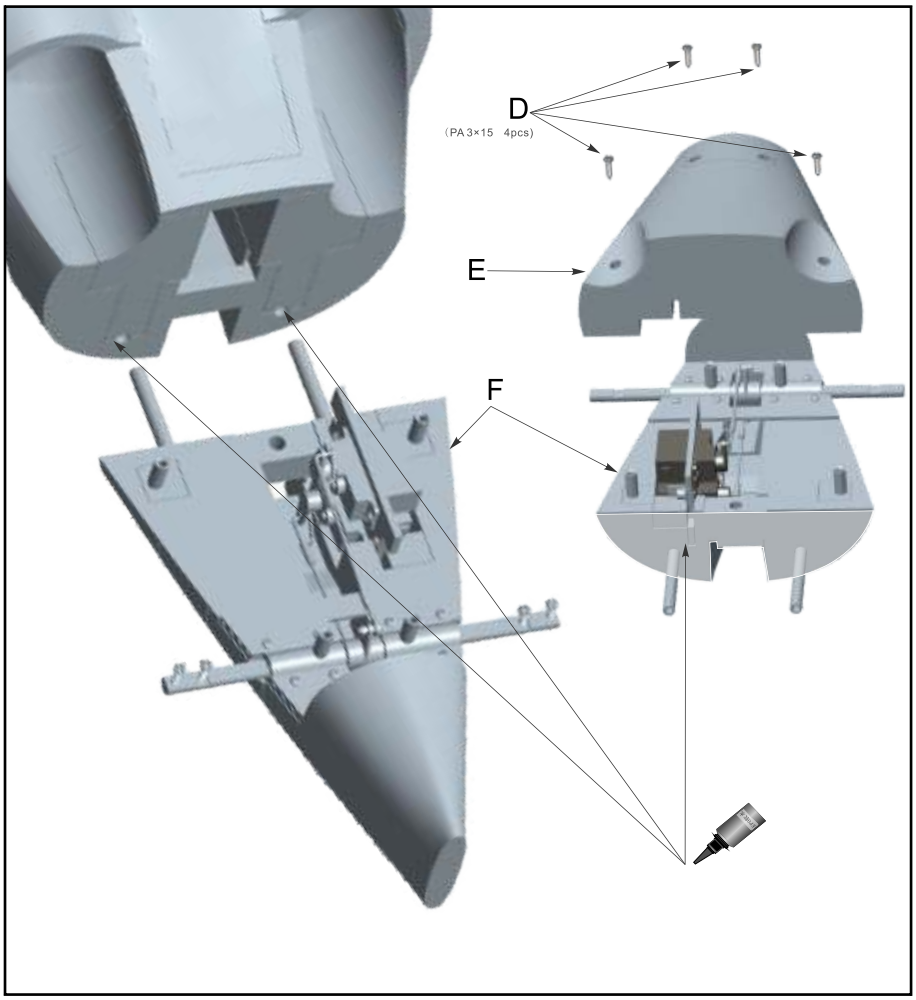
1.Connect servo cable of “rear fuselage (B)” and extension line of “fuselage (A)”.



Introduction of Fuselage rear part

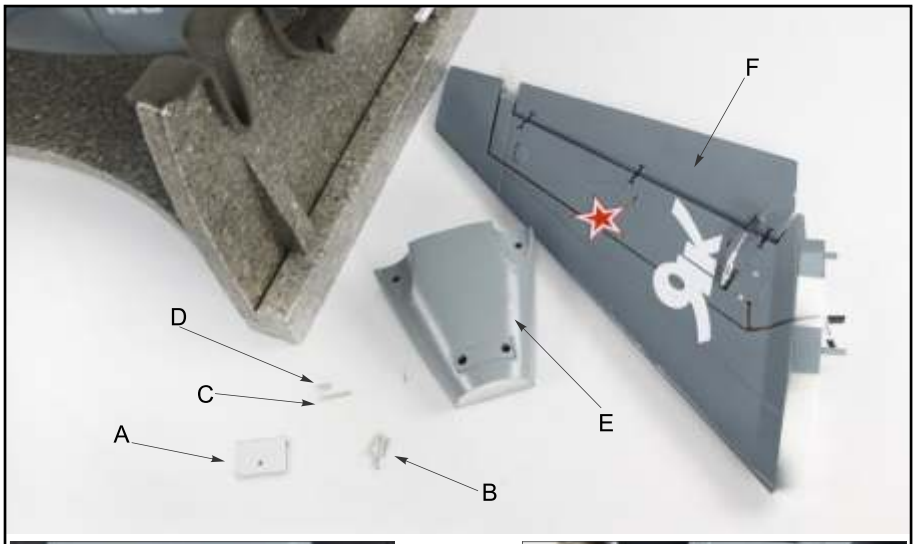
2.If you purchased PNP version, you need to loosen “screw (D)”, and remove “rear fuselage bottom-foam (E)”.(If KIT version, ignore this step.)

3.Apply the glue to the indicated place, and adhesive the “rear fuselage up-foam (F)” to the “fuselage (A)”.



Installing the rudder

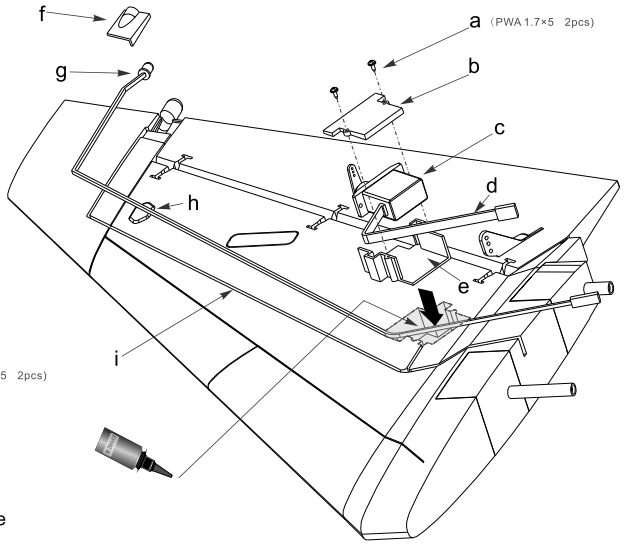
A - Rudder fixing plastic part
B - Screw (PA 3×15 4pcs)
C - Screw (PA 3×12 1pcs)
D - Screw (PA 3×25 1pcs)
E - Rear fuselage bottom-foam
F - Rudder



1.Apply the glue to the indicated place, and adhesive the “rudder fixing plastic part (A)” on the foam surface.

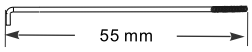
Installing the rudder

1.Install the “Led light (G)” on the rudder, then use glue to adhesive the “LED cover (F)” on the rudder.
2.Buckle the “LED light line (H)” into “trough (I)”.
3.Apply the glue to the indicated place, adhesive the “servo box (E)” on the rudder, then install the “servo (C)” on the “servo box (E)”, then fix the “servo cover (B)” on the “servo box (E)” by 2 pcs “screw (A)”. after these work, we finished to fix the servo.
4.Then press the “servo cable (D)” in the “trough (I)”.



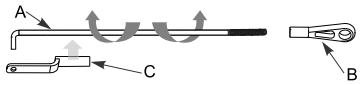
a - Screw(PWA 1.7×5 2pcs)
b - Servo cover
c - Servo
d - Servo cable
e - Servo box
f - LED cover
g - LED light
h - LED light line
i - Trough

Rudder pushrod size

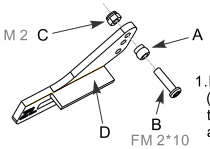


Pushrod diameter : Ø 1.5mm

Rudder pushrod mounting hole



1.Screwed one screw thread side of pushrod (A) into the ball head buckle (B), we can screw left, right to increase/reduce the length of pushrod.
2.Connect the bending side of pushrod and servo arm. Then buckle the second part of plastic buckle (C) to pushrod (A) and buckle the hole side of plastic buckle (C) to the pushrod to fix it.

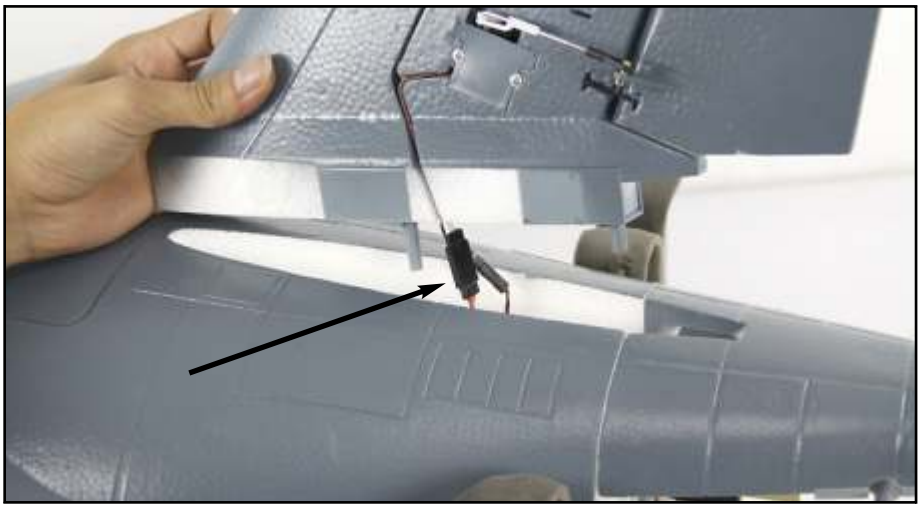


1.Put the ball head(A) into the screw (B), then insert the screw (B) into the hole of control surface horn(D) , and fix it by screw (C).

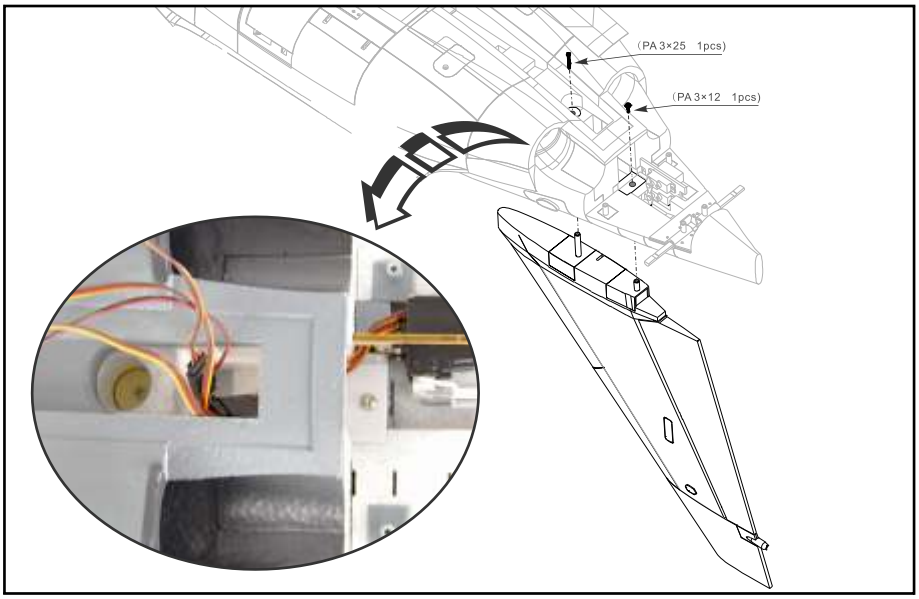
Servo cable length of rudder we advise is:
Rudder servo cable length: 100mm

2.Connec the rudder servo cable and extension line of fuselage.

3.Insert the “rudder (F)” into fuselage, then turn over the fuselage to prepare next step.

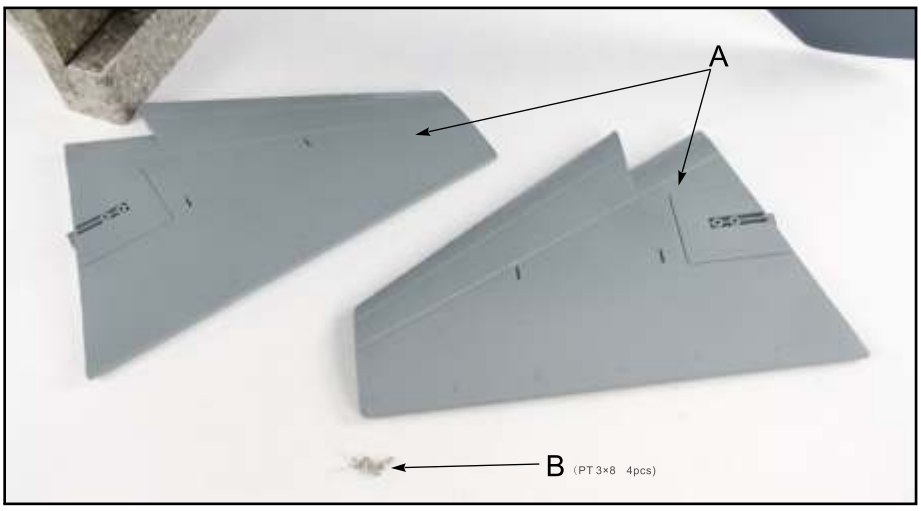


4.Refer to the right photo, fix the “rudder (F)” by “screws (C, D)”.

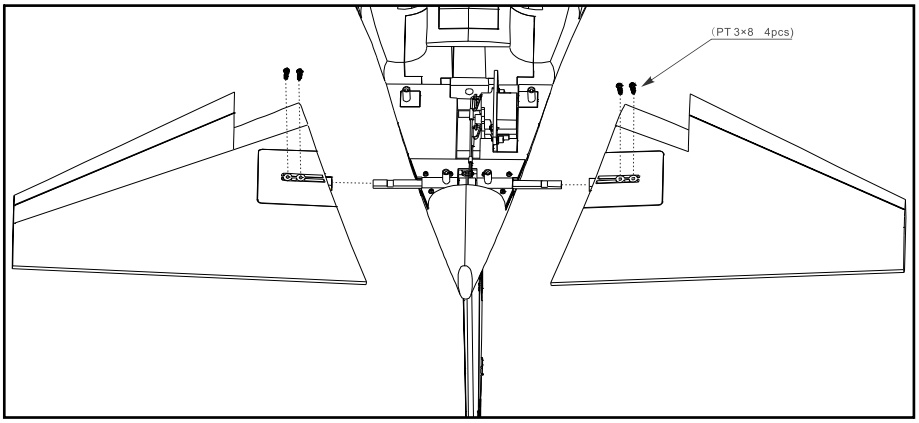


Installing the elevator

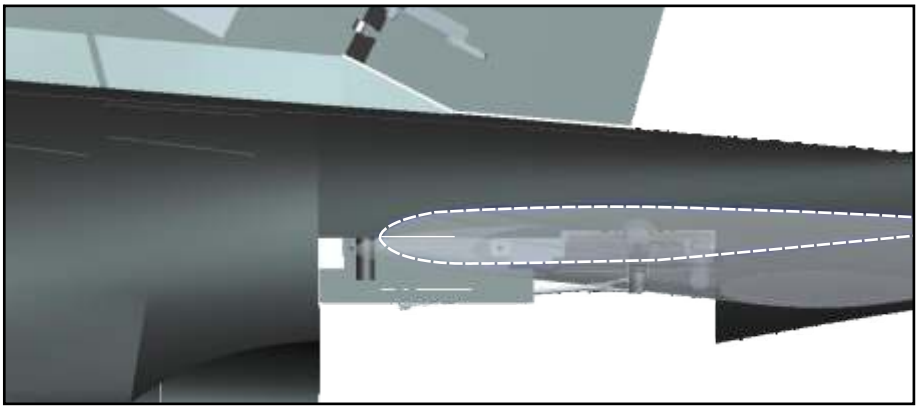
A - Elevator set
B - Screw (PT 3×8 4pcs)



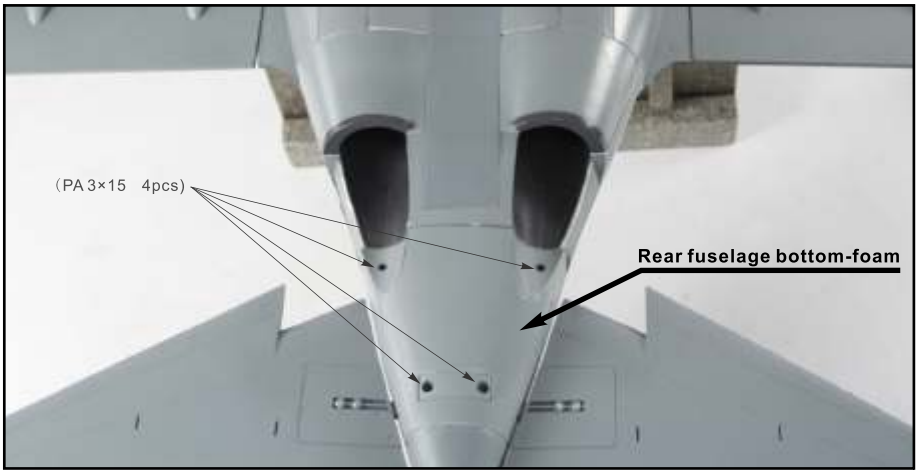
1.As the right photo shown, insert the “elevator set (A)” into the elevator drive shaft, and fix it by 4pcs “screws (B)”.



⚠**Note:** Installing the elevator, when the elevator chord is overlapped with foam , its correct elevator install angle. Or, adjust the elevator pushrod to overlap.when installing elevator.



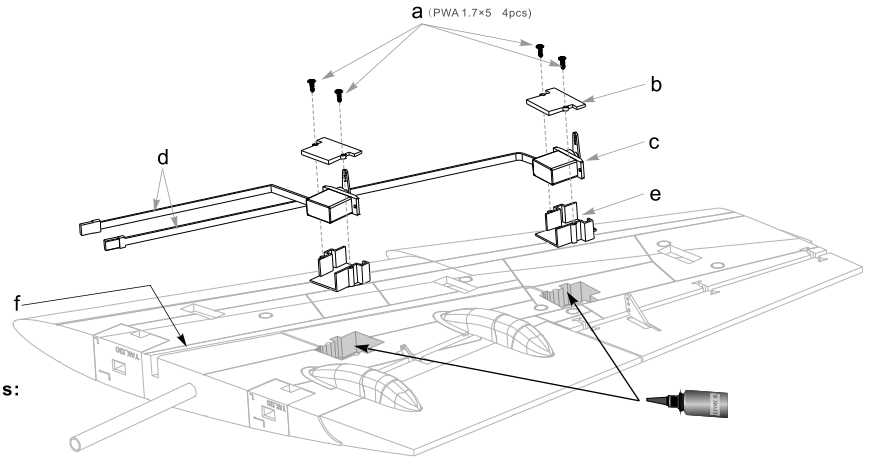
2.Use 4pcs screws to fix the rear fuselage bottom-foam on the fuselage.



Installing the servo of main wing

1.Apply the glue on the indicated place, and adhesive the “servo box (E)” on the main wing. Then install the “servo (C)” on the“servo box (E)”, use 2pcs “screw (A)” to fix the “servo cover (B)” on the “servo box (E)”, after these work, we finished to fix the servo.
2.Press the “servo cable (D)” into the “trough (F)”.

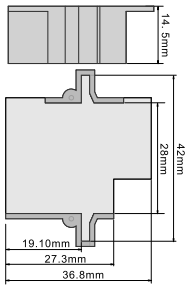
a - Screw (PWA 1.7×5 4pcs)
b - Servo cover
c - Servo
d - Servo cable
e - Servo box
f - Trough

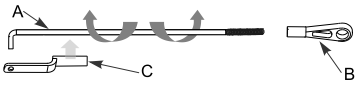


Servo cable length of main wing we advise is:

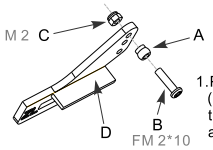
Aileron servo cable length: 300mm
Flap servo cable length: 300mm

Note: we have installed all the servo box in aircraft, when players disassemble the servo, it will not damage the foam surface. If need to replace servo, please purchase Freewing servo ,or refer to the following drawing, choose the correct size servo.



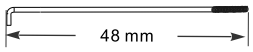


1.Screwed one screw thread side of pushrod (A) into the ball head buckle (B), we can screw left, right to increase/reduce the length of pushrod.
2.Connect the bending side of pushrod and servo arm. Then buckle the second part of plastic buckle (C) to pushrod (A) and buckle the hole side of plastic buckle (C) to the pushrod to fix it.



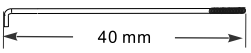
1.Put the ball head(A) into the screw (B), then insert the screw (B) into the hole of control surface horn(D) , and fix it by screw (C).

Aileron pushrod size



Pushrod diameter : Ø 1.5mm

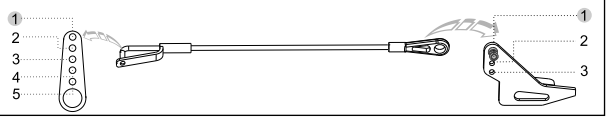
Flap pushrod size



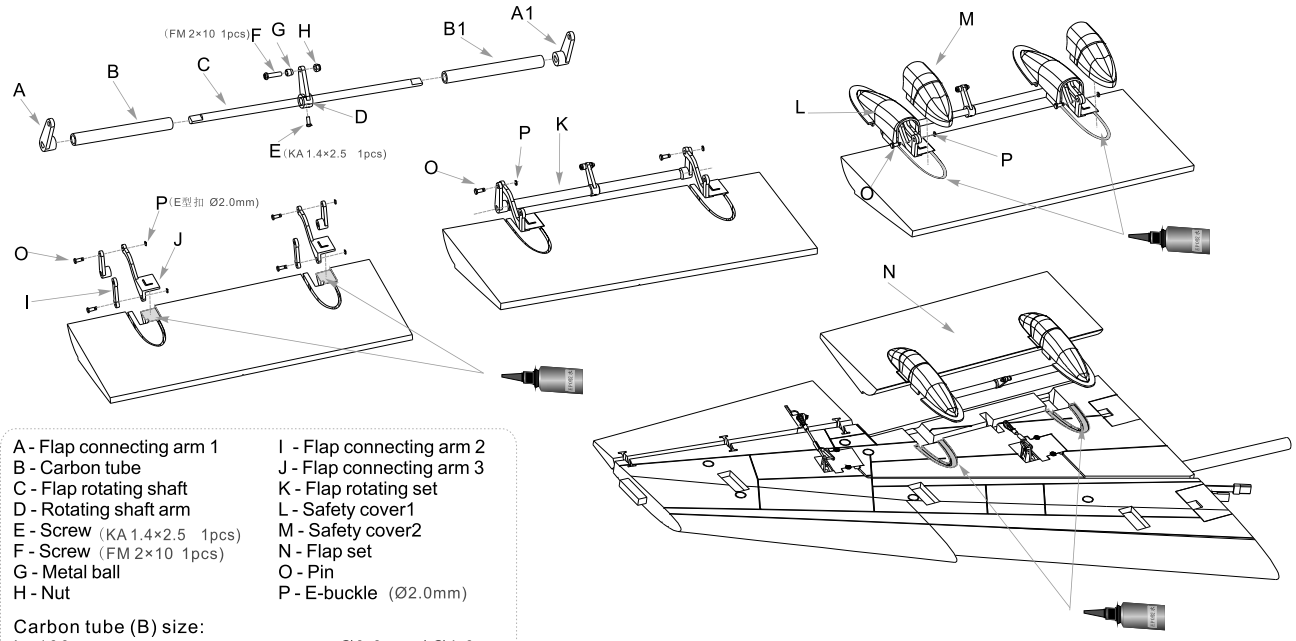
Pushrod diameter : Ø 1.5mm

Aileron pushrod mounting hole

Flap pushrod mounting hole



Installing flap



A - Flap connecting arm 1
B - Carbon tube
C - Flap rotating shaft
D - Rotating shaft arm
E - Screw (KA 1.4×2.5 1pcs)
F - Screw (FM 2×10 1pcs)
G - Metal ball
H - Nut
I - Flap connecting arm 2
J - Flap connecting arm 3
K - Flap rotating set
L - Safety cover1
M - Safety cover2
N - Flap set
O - Pin
P - E-buckle (Ø2.0mm)

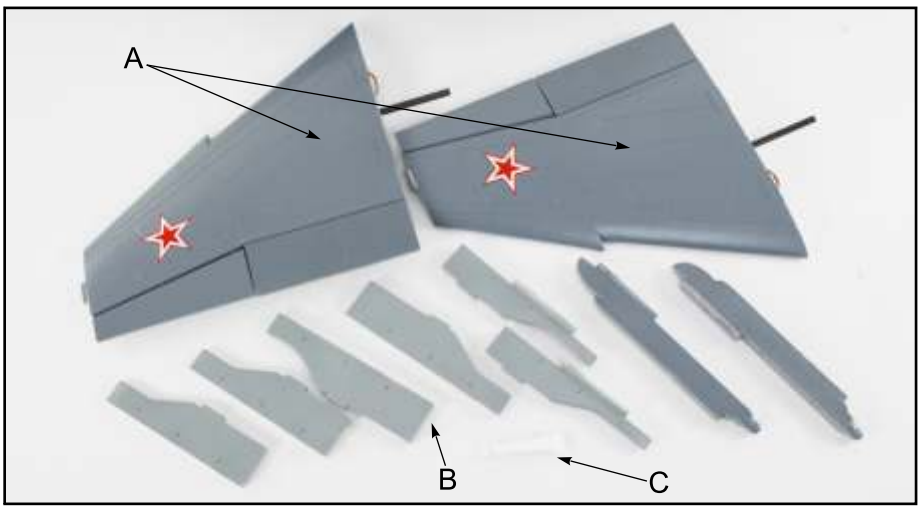
Carbon tube (B) size:
L=100mm **Outside / Inside diameter:** Ø6.0mm / Ø4.0mm

1.Put the Rotation axis arm (D) into the Flap rotating shaft (C), then use screw (E) to fix it.
2.Use screw (F), nut (H) to fix the metal ball (G) on the Rotating shaft arm (D).
3.As the photo shown, use pin (O), E-buckle (P) to connect the Flap connecting arm 2,3 (I、J), and fix them well.
4.Apply the glue on the indicated place and adhesive the Flap connecting arm 3 (J) on the flap.
5.The flap connecting arm 1(A) need to install on the Flap rotation axis (C), then use pin(O), E-buckle(P) to connect the flap connecting arm 1(A) and the flap connecting arm 3(J).
6.Use pin (O), E-buckle(P) to connect safety cover1(L) and Flap rotating set (K), and use glue to adhesive the safety cover2 (M) on the flap.
7.At last apply the glue to adhesive the safety cover1(L) of installed Flap set (N) on the main wing.

Note: when we install these accessories, please complete each step very carefully. Any improper assembly, will lead its work not normal. The photo only show one side assembly way, the assembly way is the same as another side. But, part of accessories should distinguish left and right, please distinguish the left and right to purchase correct spareparts.

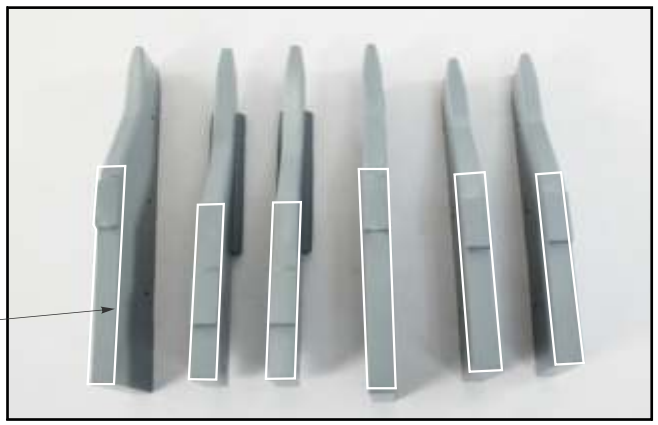
Installing scale weapons pylons

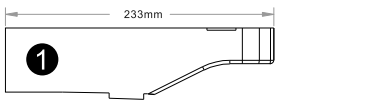
A - Main wing
B - Scale weapons pylons
C - Glue

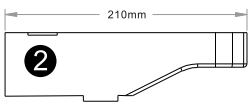


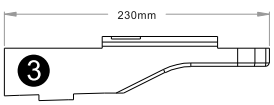
1.Apply the glue to the indicated place, and adhesive the “scale weapon pylons (B)” on the bottom -surface of main wing.

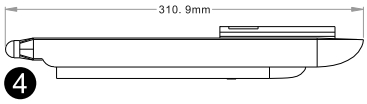
⚠ **Note:** When we applied the glue, it need to wait one minute, then begin the adhesive work. This time, the EPO glue is the strongest adhesive condition. Within ten minutes after adhesive, we must repeat to squeeze the adhesive surface, it will be more firmly.

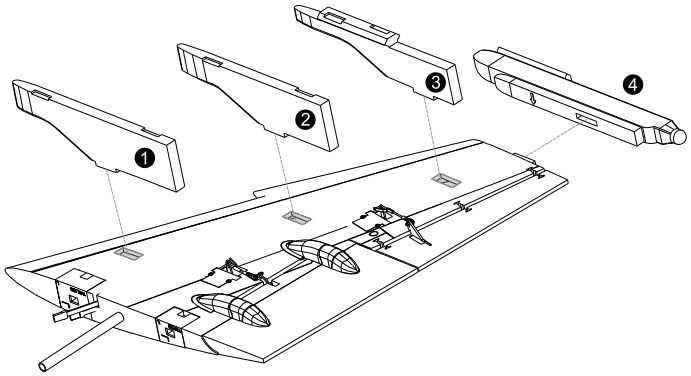


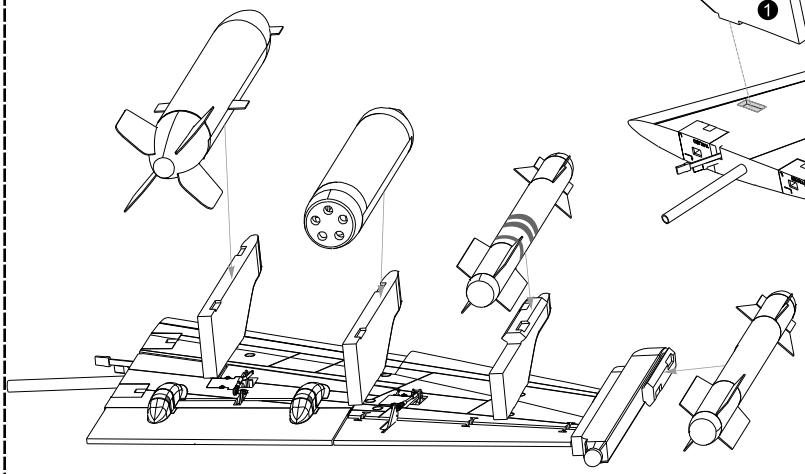








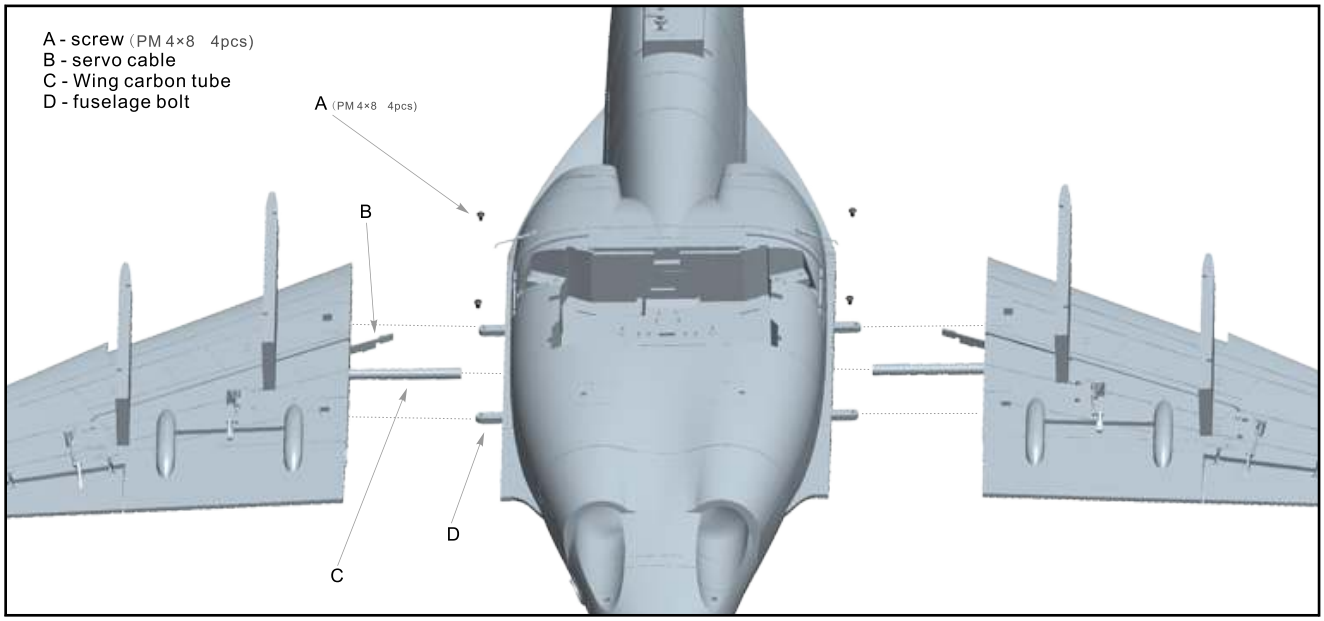




⚠ **Note:** Refer to the weapon pylons's size and No in the above photo, adhesive weapon pylons to the correct position.

⚠ **Note:** After adhesive to the weapon pylons, please do not install the missiles 、rocket launchers immediately, the glue solidify completely time need six hours.

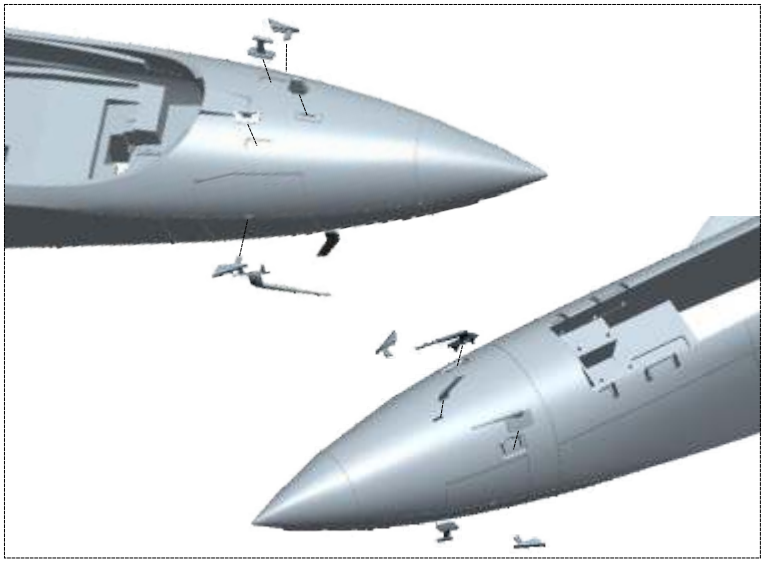
Installing main wing



1.Insert the wing carbon tube into the fuselage, but don't need to close. Then connect the “servo cable, LED cable (B)” and the extension line in fuselage.
2.Close the main wing and fuselage, and use “screw (A)” to screw the bolt , to finish this step.
3.Repeat above steps to install another side main wing.

Installing nose cone

1.Firstly, use glue to adhesive the nose cone on the fuselage.
2.Next, refer to the right photo, use glue to install the 6pcs scale plastic part on the nose fuselage.

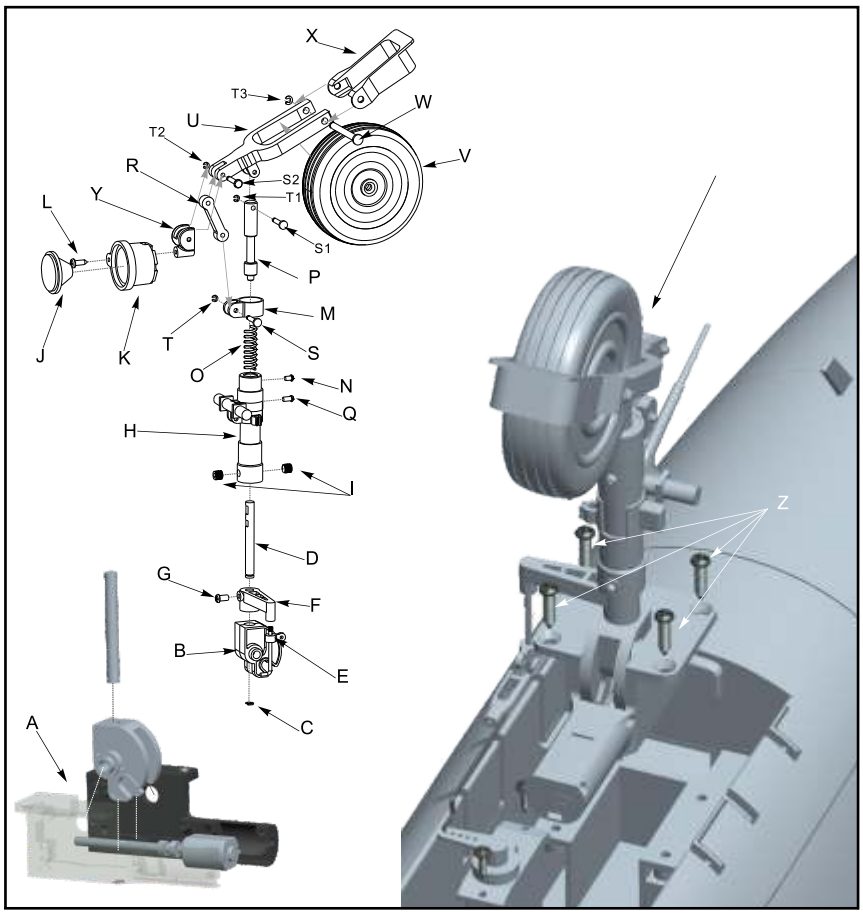


Installing nose landing gear

Usually, before ship, the factory installed all the landing gear. In here, we also need to provide more details installation and sparepart name. Players can refer it to revise and replace parts.

Nose landing gear sparepart list

A - Landing gear electric base
B - Landing gear rotating arm
C - E-buckle (Ø2.0mm)
D - Nose landing gear metal wire
E - Nose landing gear steering wire
F - Nose landing gear steering arm
G - Screw (PT 2.6×6 1pcs)
H - Nose landing gear main strut
I - Jimi screw (M4×4 2pcs)
J - LED light cover
K - Taxi light
L - Screw (PA2.3×8 1pcs)
M - U shape damping arm
N - Screw (PM2×3 1pcs)
O - Spring
P - Damping active lever
Q - Screw (PM2×4 1pcs)
R - 8 shape damping shaft
S - Pin
T - E-buckle (Ø1.5mm)
U - U shape supporting rod
V - Wheel
W - Wheel shaft
X - Scale wheel lock
Y - LED light mount
Z - Screw (KA3×12 4pcs)



1. Disassemble the “landing gear electric base (A)” and remove the “landing gear rotating arm (B)”.
2. Insert the “nose landing gear metal wire (D)” into the “landing gear rotating arm (B)”, then use “E-bucke (C)” to stuck in the lower of the “nose landing gear metal wire (D)”, to avoid the wire off.
3. Put “nose landing gear steering arm (F)” into the “nose landing gear metal wire (D)”, then use 1 pcs“screw (G)” to fix it on the “nose landing gear metal wire (D)”. Finally screw the “nose landing gear steering wire (E)” on the “nose landing gear steering arm (F)”.
4. Put the “nose landing gear main strut (H)” on the “nose landing gear metal wire (D)”, use 2 pcs screws to fix. Use glue to adhesive the “LED light cover (J)”on the “taxi light (K)”.
5. Put the “U-shape damping arm (M)” into the “noselanding gear main strut (H)” and use 1 pcs “screw (N)” to fix.
6. Put the “spring (O)” into the “nose landing gear main strut (H)”, and then put the “damping active lever (P)” into the “nose landing gear main strut (H)”. and lock the “screw (Q)” on the “nose landing gear main strut (H)”.
7. Put the “8-shape damping shaft (R)” into the “U-shape damping arm (M)”, then put the “LED light mount (Y)” into the “U-shape damping arm (M)”. At last, use “pin (S)”, “E-buckle (T)” to fix the three accessories.
8. Through the “wheel shaft (W)”, string the “wheel (V)”, “scale wheel lock (X)”, “U-shape damping arm (M)” together. In the side of “wheel shaft (W)”, buckle the E-buckle to fix.
9. Put the installed landing gear set into the nose landing gear mount, and use 4pcs “screws (Z)” to fix.

Note: When installing, please check the flat position of spareparts, when screw to fix, the flat position must face to the screw hole, just like this, it can fix successfully, the spareparts don't rotate and fall off.

Note: There are spareparts name and its material code in manualm if you need to purchase spareparts, please refer it and consult with local distributor.

Installing the servo of nose landing gear steering

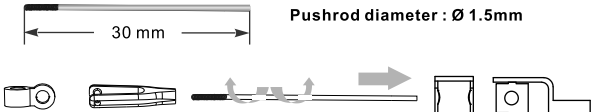
Spare part name

A-9g metal gear servo
B-Screw
C-Screw
D-Screw
E-U-shape servo arm
F-Servo pushrod
G-Landing gear steering control ring

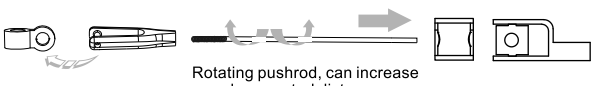
1. Installed the servo (A) on the wood piece, and use screw (B) to fix the servo. Then installed the U-shape servo arm(E) on the servo (A) and fixed it by screw (C).
2. Bucked one side of servo pushrod (F) into landing gear steering control ring(G). Insert another side into U-shape servo arm (E),adjust to be centered.
3. Use screw (D) to fix the pushrod (F)

Servo cable length of nose landing gear we advise is:

Servo cable length: 300mm

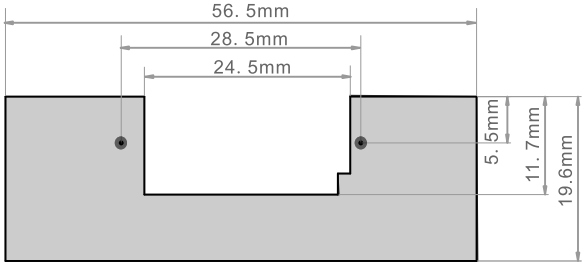


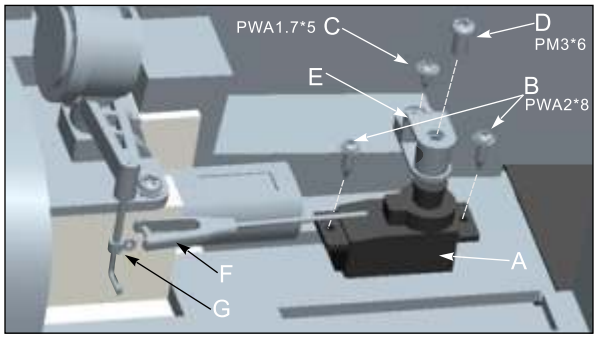
Pushrod diameter : Ø 1.5mm



Rotating pushrod, can increase or reduce control distance.

The servo mount parameter of nose landing gear steering

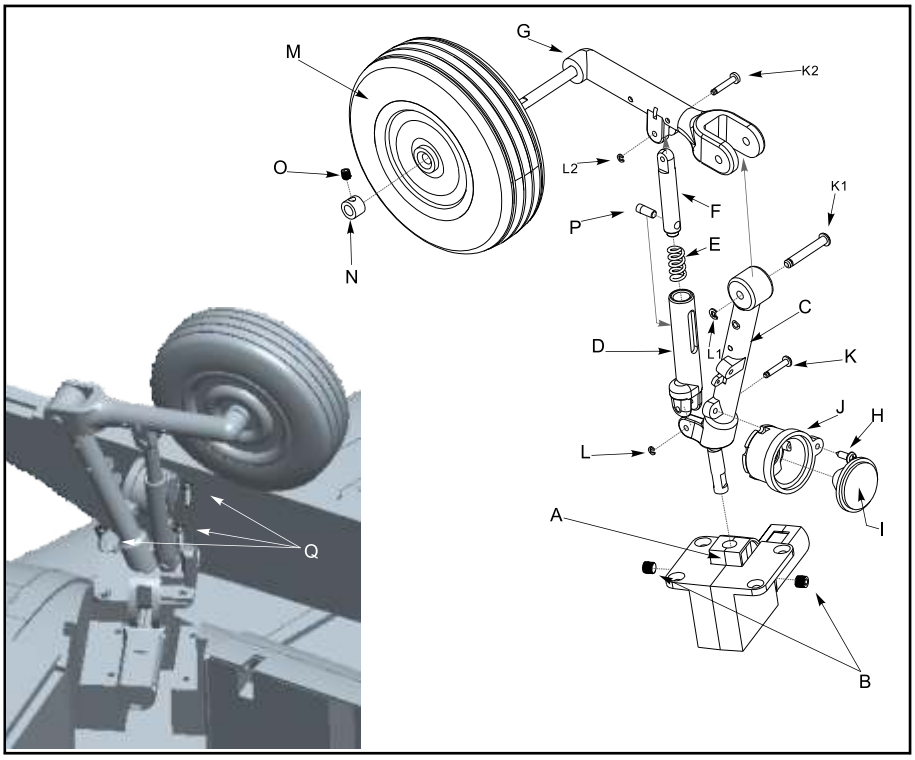




Installing rear landing gear

Rear landing gear sparepart list:

A - landing gear rotating arm
B - Jimi screw (M4×4 2pcs)
C - Rear landing gear metal wire
D - Rear landing gear main strut
E - Spring
F - Rear landing gear damping active lever 1
G -Rear landing gear damping active lever 2
H -Screw (PA2.3×8 1pcs)
I - Ligth cover
J - Taxi light
K- Pin
L - E-buckle (Ø1.5mm)
M-Wheel
N -Wheel gear
O-Jimi screw (M3×3)
P -Pin
Q-Screw (KA3×12 4pcs)



1. Insert the "rear landing gear metal wire (C)" into "landing gear rotating arm (A)", and use 2pcs "jimi screws (B)" to fix.
2. Connect the "rear landing gear main strut (D)" and "rear landing gear metal wire (C)" by pin and "E-buckle".
3. Put the "spring (E)" in the "rear landing gear main strut (D)", then insert the "rear landing gear damping active lever 1 (F)" into the "rear landing gear main strut (D)" and press it down firmly. Through the side of U-trough of "rear landing gear main strut (D)", press the "pin (P)" to the hole of the "rear landing gear damping active lever 1 (F)".
4. Connect the "rear landing gear damping active lever 1 (F)", "rear landing gear damping active lever 2 (G)", "rear landing gear metal wire (C)" by pin and "E-buckle".
5. Put the "wheel (M)" and "wheel gear (N)" into the "rear landing gear damping active lever 2 (G)", and use "Jimi screw (O)" to fix the wheel gear.
6. Put the installed rear landing gear set on the rear gear mount and fix it with 4pcs "screws (Q)".

⚠ **Note:** When installing, please check the flat position of spareparts, when screw to fix, the flat position must face to the screw hole, just like this, it can fix successfully, the spareparts don't rotate and fall off.

⚠ **Note:** There are spareparts name and its material code in manualm if you need to purchase spareparts, please refer it and consult with local distributor.

Installing cabin door of nose landing gear

A - Front cabin door of nose landing gear
B - Rear cabin door of nose landing gear
C - Pushrod
D - Pushrod

Next, we introduced how to install the nose cabin door and nose cabin door pushrod, please refer to the following steps to maintain and replace spareparts.

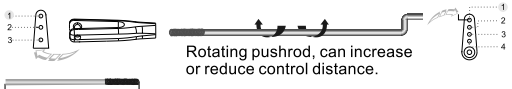
1. Use hand to squeeze inward the "Front cabin door of nose landing gear (A)" and "Rear cabin door of nose landing gear (B)", and made it curved. Then buckle the rotating shaft of the cabin door into the "hole (E)" of nose cabin door fixed part. When we loosen the hand, the plastic part will come back its original. Like this, we finished to install the cabin door.
2. Firstly, adjust the cabin door servo arm to the max travel . Use "pushrod (C)" and "pushrod (D)" to connect cabin and servo arm.
3. Do the test of cabin door open/close. If found the door don't close tightly, we need to adjust the "Nose cabin door pushrod " shorter. And if found the door close too tightly and also can hear the "zi-zi-zi" voice from servo, we need to adjust the "Nose cabin door pushrod " longer.

⚠ **Note:** Because the cabin door use the removable column design, when we install, we need some force to curve the cabin door, then buckle the rotating shaft of cabin door to the hole. Since of its plastic material, these columns is easy to break, we need to use correct way to assemble/disassemble the cabin door.

Note: The length of nose cabin door servo cable we advised is as following for your reference:

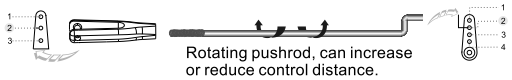
Front cabin door of nose landing gear 9g servo cable length: 200mm
Rear cabin door of nose landing gear 9g servo cable length: 300mm

The pushrod length of front cabin door of nose landing gear (C)

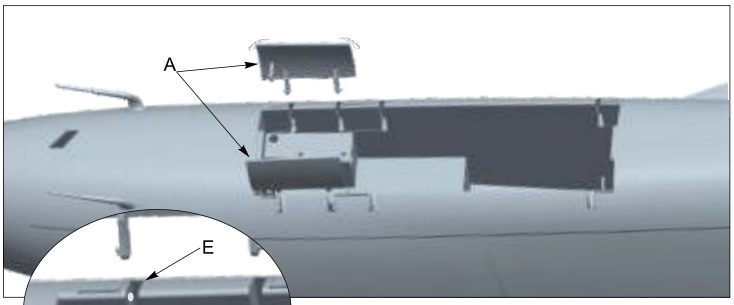


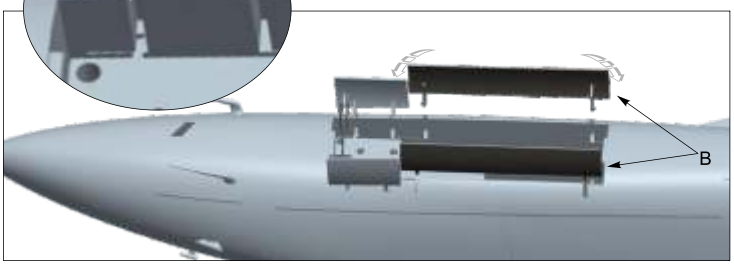
Pushrod diameter : Ø 1.2mm

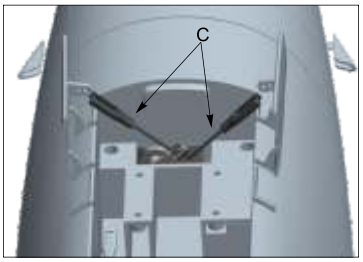
The pushrod length of rear cabin door of nose landing gear(D)

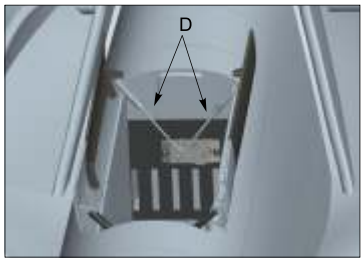


Pushrod diameter : Ø 1.2mm









F

Installing cabin door of rear landing gear

A - Main cabin door of rear landing gear
B - Side cabin door of rear landing gear 1
C - Side cabin door of rear landing gear 2
D - Pushrod
E - Pushrod
F - Pushrod

Next, we introduced how to install the rear cabin door and pushrod, please refer to the following steps to maintain and replace spareparts.

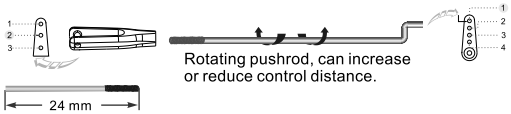
1.Use hand to squeeze inward the “main cabin door of rear landing gear (A)” and “side cabin door of rear landing gear1,2(B , C)”, and made it curved. Then buckle the rotating shaft of the cabin door into the hole of cabin door fixed part. When we loosen the hand, the plastic part will come back its original. Like this, we finishedto install the cabin door.
2.Firstly, adjust the cabin door servo arm to the max travel . Use “pushrod (D E F)” to connect cabin and servo arm.
3.Do the test of cabin door open or close. If found the door don't close tightly, we need to adjust the “Nose cabin door pushrod ” shorter. And if found the door close too tightly and also can hear the “zi-zi-zi” voice from servo, we need to adjust the “Nose cabin door pushrod ” longer.

⚠ **Note:** Because the cabin door use the removable column design, when we install, we need some force to curve the cabin door, then buckle the rotating shaft of cabin door to the hole. Since of its plastic material, these columns is easy to break, we need to use correct way to assemble/disassemble the cabin door.

Note: The length of rear cabin door servo cable we advised is as following for your reference:

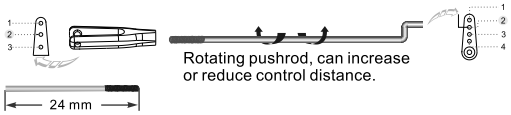
Main cabin door of rear landing gear 9g servo cable length: 200mm
Side cabin door of rear landing gear (2) 9g servo cable length: 360mm

The pushrod length of main cabin door of rear landing gear(D)



Pushrod diameter : Ø 1.2mm

The pushrod length of side cabin door 2 of rear landing gear(E)

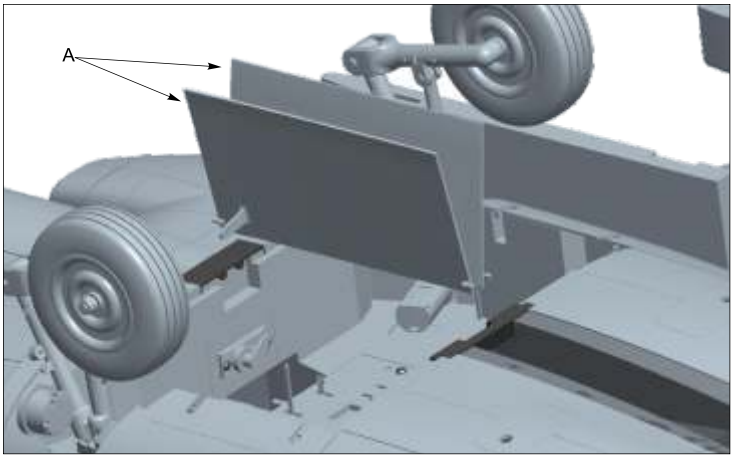


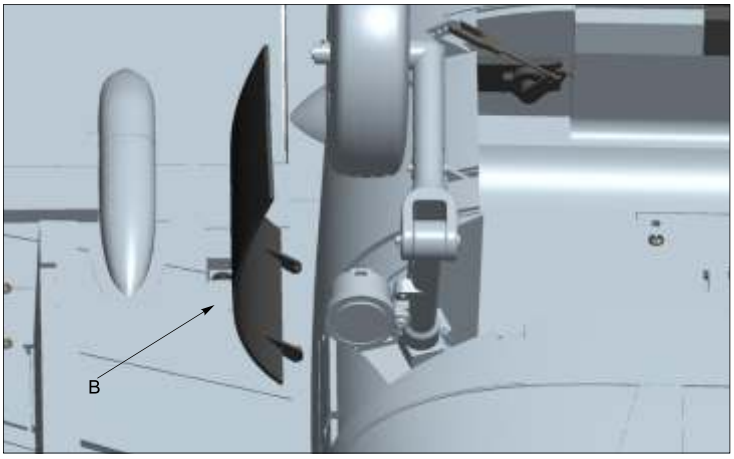
Pushrod diameter : Ø 1.2mm

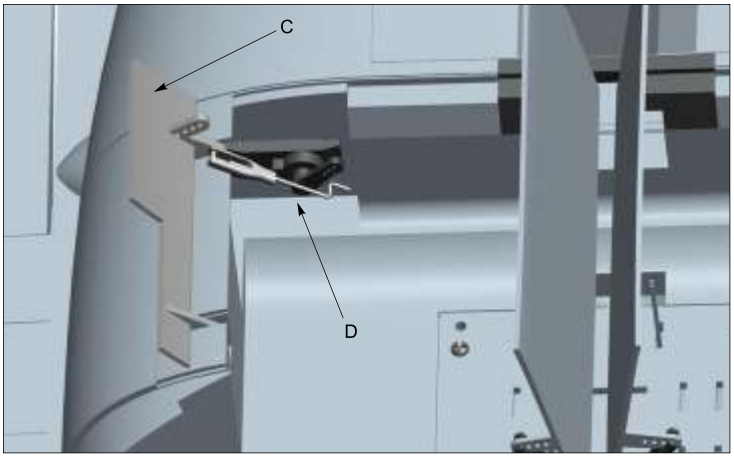
The pushrod length of side cabin door 1 of rear landing gear(F)

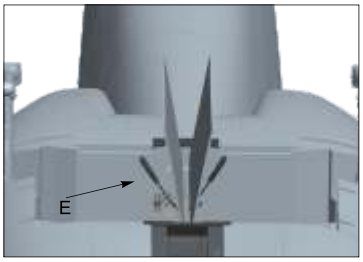
Pushrod diameter : Ø 1.2mm

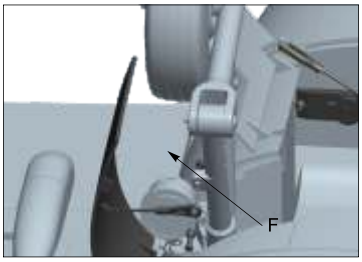
Rotating pushrod, can increase
or reduce control distance.







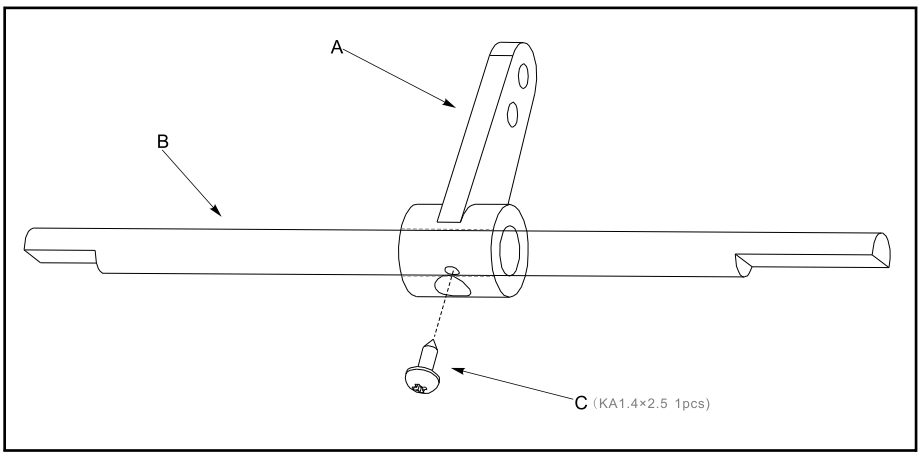




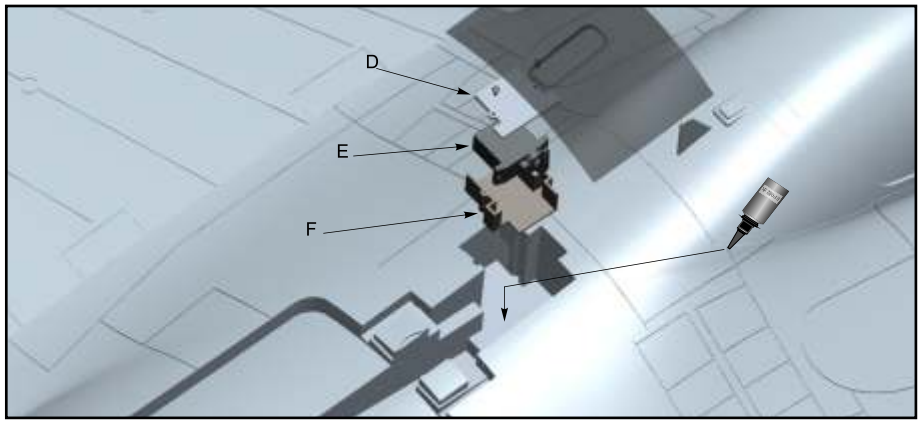
Installing air brake

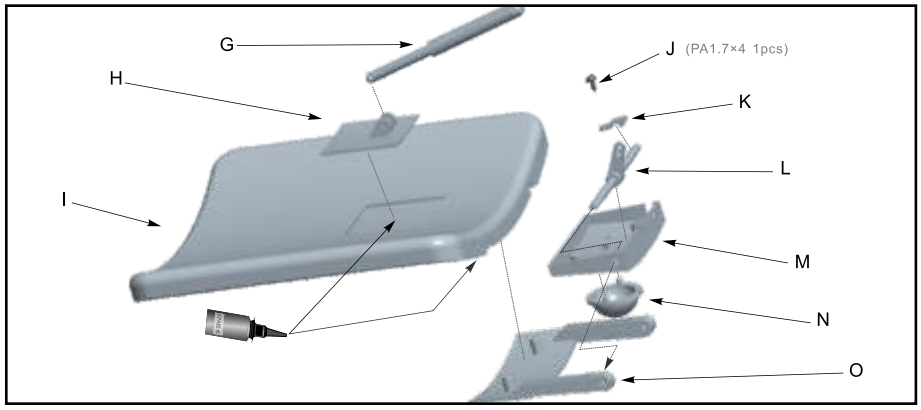
Air brake accessories list:

A - Air brake arm
B - Air brake rotating shaft
C - Screw (KA1.4×2.5 1pcs)
D - Servo cover
E - Servo
F - Servo box
G - Air brake supporting rod
H - Supporting rod arm
I - Foam air brake
J - Screw (PA1.7×4 1pcs)
K - Rotating shaft fixed part
L - Rotating shaft set
M - Mounting base
N - LED light cover
O -U-shape rotating arm
P - Air brake set
Q -Rod guide
R - Blister cover
S - Pushrod



1.Put the “air brake arm (A)” to the “Air brake rotating shaft (B)”, use “screw (C)” to fix.
2.Apply glue to adhesive “servo box (F)” on the indicated place.
3.Adjust the “servo (E)” arm to the max travel and installed “servo (E)”.
4.Apply the glue to adhesive the “supporting rod arm (H)” on the “back of foam air brake (I)”.Then connect the small dimater side of “Air brake supporting rod (G)” to the “supporting rod arm (H)”.
5.Apply 502 glue to adhesive the “LED light cover (N)” on the “mounting base (M)”.
6.Install the “rotating shaft set (L)” on the “mounting base (M)”. and use “screw (J)”, “rotating shaft fixed part (K)” to fix the “rotating shaft set (L)”
7.Adhesive the side of “U-shape rotating arm (O)” on the front of “foam air brake (I)”. Insert another side to the side of “Air brake rotating shaft (B)”
8.Adhesive the “Rod guide (Q)” on the indicate place as the right photo shown.
9.Buckle the big diameter side of “Air brake supporting rod” in the “Rod guide (Q)”.
10.Use” pushrod (S)” to connect the servo arm and “air brake arm (A)”.
11.Do the test of cabin door open or close. If found the door don't close tightly, we need to adjust the “Nose cabin door pushrod ” shorter. And if found the door close too tightly and also can hear the “zi-zi-zi” voice from servo, we need to adjust the “Nose cabin door pushrod ” longer.
12.After test and adjust the air brake work normal, apply the glue to adhesive “ blister cover (R)” on the fuselage, to finish the air brake installation.

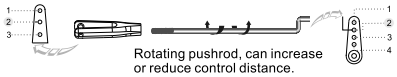


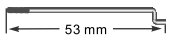


Note: The length of rear cabin door servo cable we advised is as following for your reference:

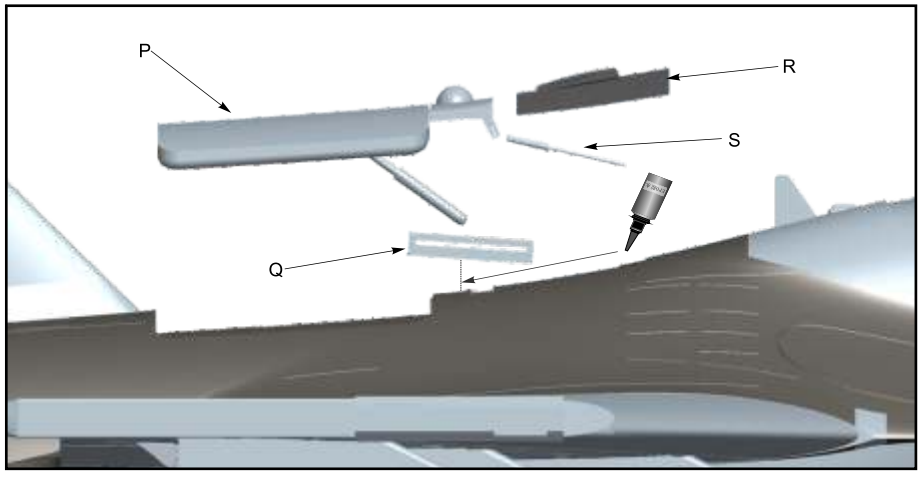
Air brake 9g servo
Length：100mm

The pushrod size of air brake (S)

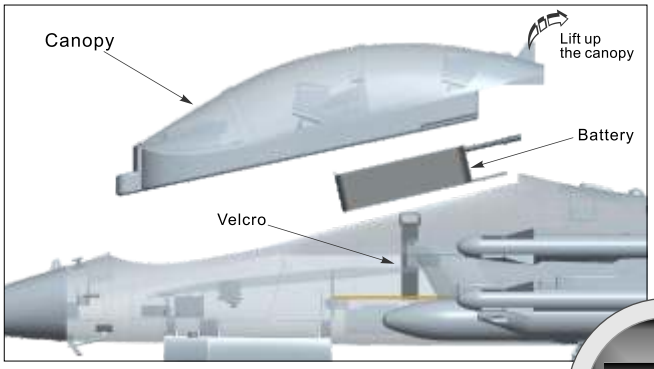


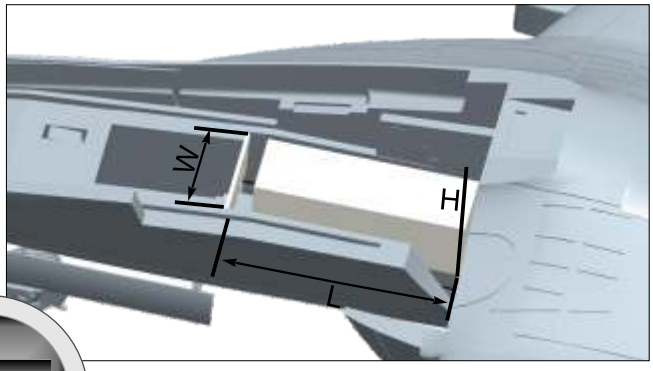


Pushrod diameter : Ø 1.2mm

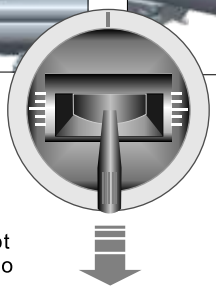


Install on battery





Lift up tape to remove the 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.
The connector we connected with battery and ESC, is XT150 connector, its max current is 150A,please do not overload to use. Please refer to the battery cabin size to choose correct battery!



Our standard battery is: **6S 22.2V 5000mAh 35C**
You can choose the battery refer to the battery cabin size:

L=175mm；W=75mm；H=55mm

6S 22.2V 4800mAh ~ 6S 22. 2V 6000mAh
Discharge rate of C > 35C

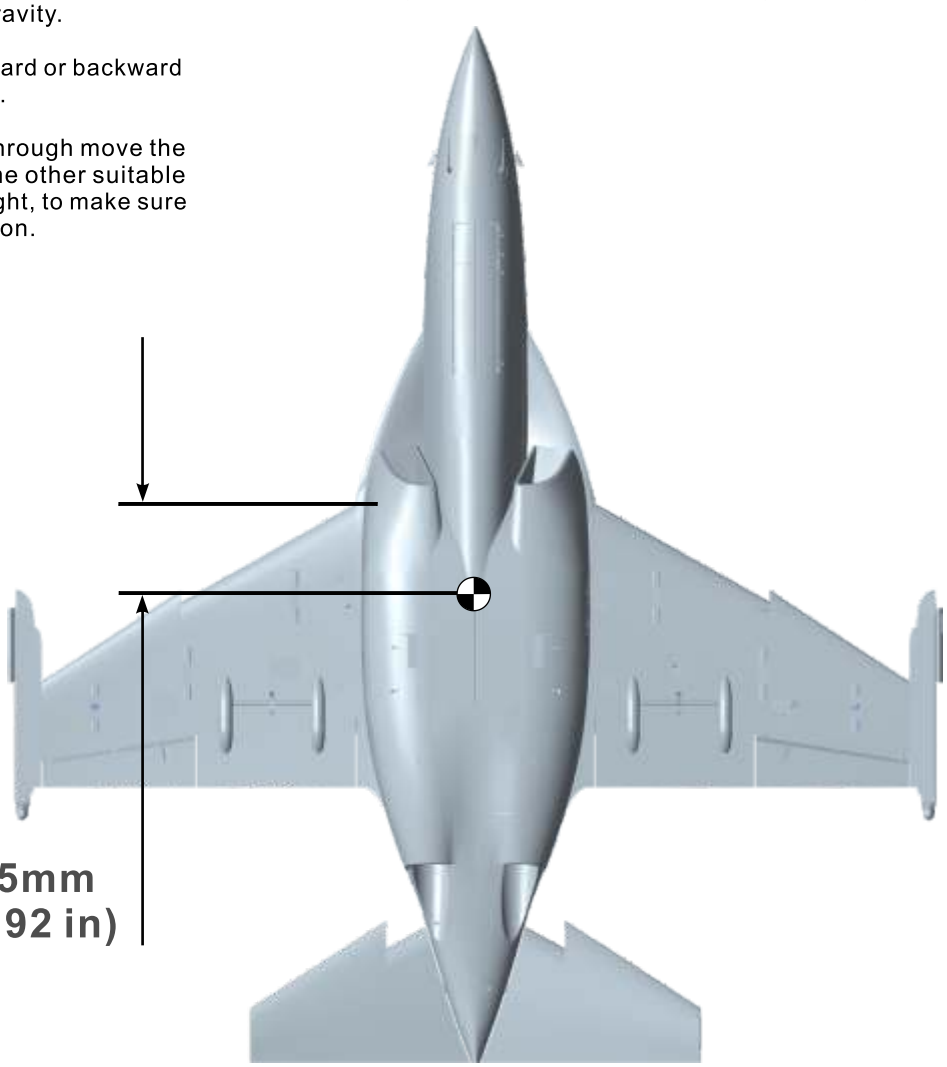
Different weight battery may affect its CG, please the correct range of CG indication.

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.

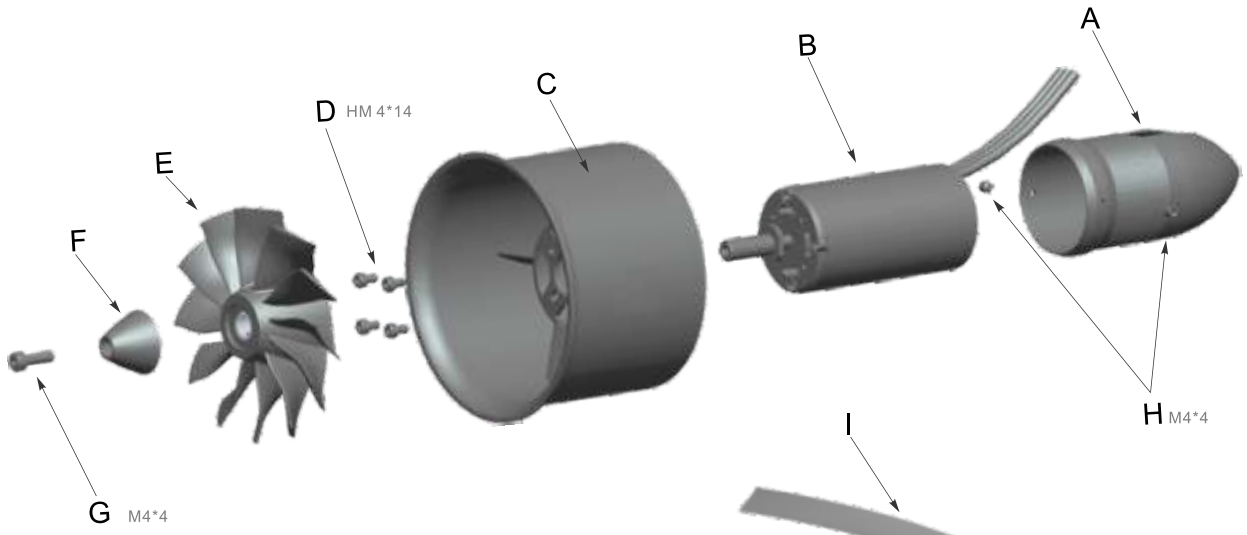
- You can move the battery forward or backward to adjust the center of gravity.

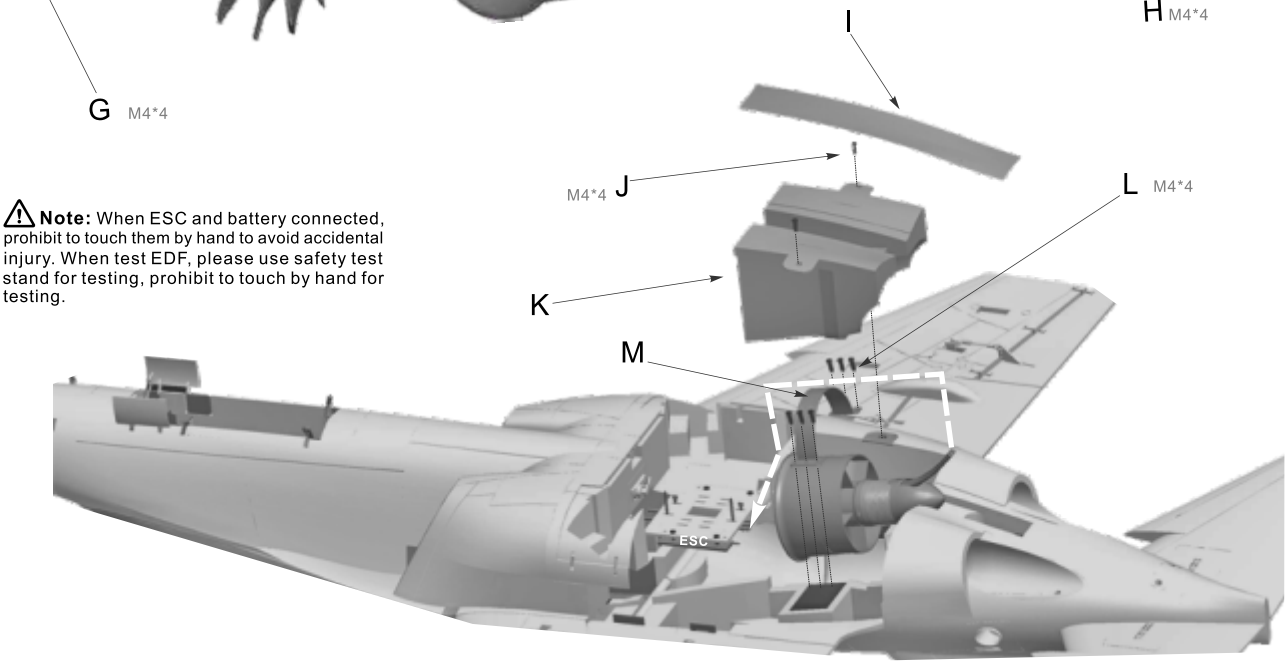
- If you can not adjust the CG through move the battery, you can also use some other suitable material weight to counterweight, to make sure that CG is in the correct position.



Install power system

1. Put the “motor (B)” into “ducted fan housing (C)”.
2. Use 4pcs “cup head screw (D)” to fix the motor.
3. Put the “blade (E)” into motor shaft.
   （Please note the plat position of hardware which installed in the fan,and the plat position of motor shaft, please check the alignment to install together）
4. Put the “spinner (F)” on the “blade (E)”.
5. Use “cup head screw (G)” to fix the “blade (E)” on the motor shaft.
6. Put the “guide cone (A)” in the “bottom of motor (B)”, and use 2 pcs “jimi screw (H)” to fix.
7. Connect the motor and ESC.
8. Put the installed EDF set in the fuselage.
9. Buckle the “EDF fixing ring (M)” into the notch of ducted fan housing, and use 6pcs “screw (L)” to fix the fixing ring on the wood piece.
10. Cover the “EDF cabin cover (K)”, and fix it by “screw (J)”,
11. Apply the glue on the blister piece and cover on the connection line.

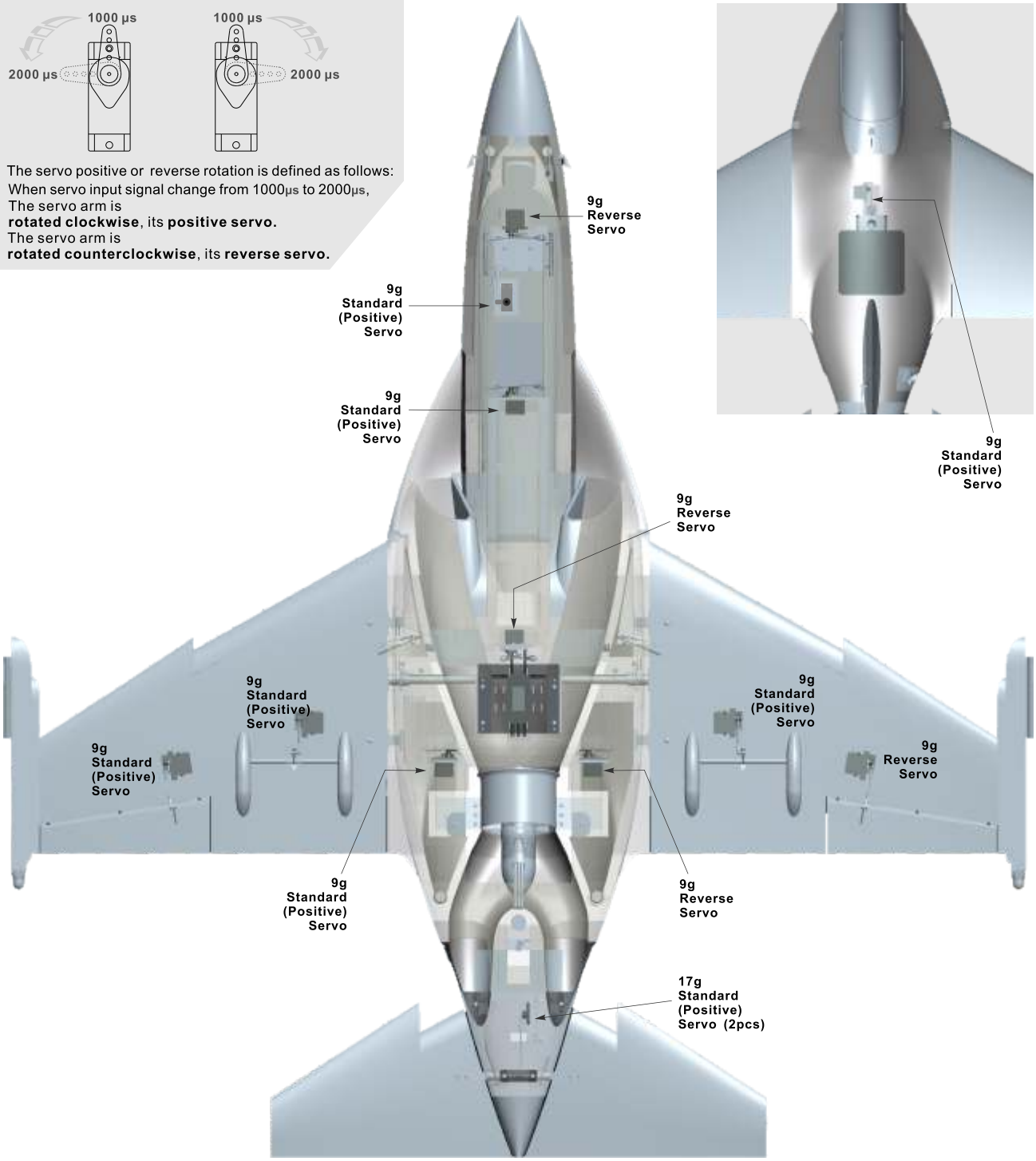




⚠ **Note:** When ESC and battery connected, prohibit to touch them by hand to avoid accidental injury. When test EDF, please use safety test stand for testing, prohibit to touch by hand for testing.

Servos's location

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.**



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

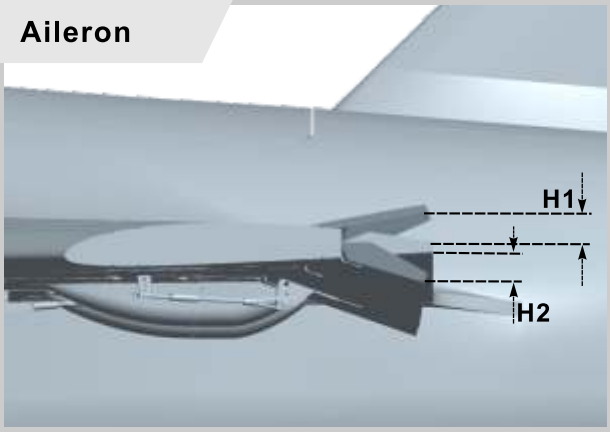
Optional Flaps

Flaps down

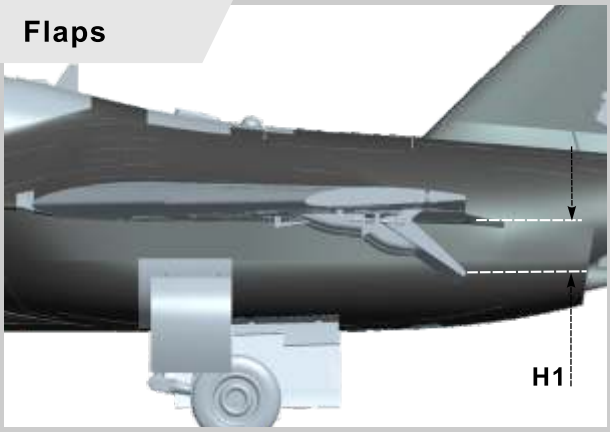
Dual Rates

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.

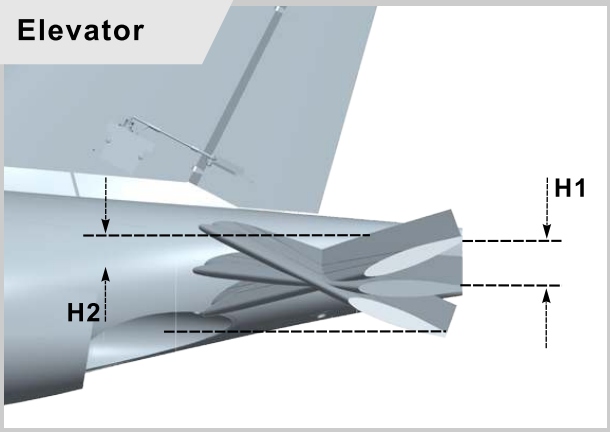
Aileron



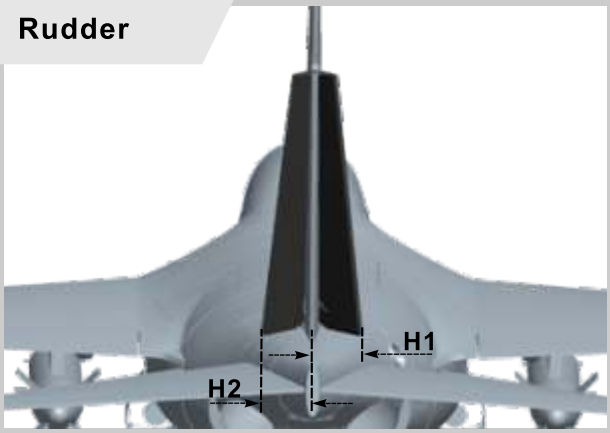
Flaps



Elevator



Rudder



	Aileron	Flaps	Elevator	Rudder
Low Rate	H1/H2 17mm/17mm	H1 30mm	H1/H2 14mm/14mm	H1/H2 20mm/20mm
High Rate	H1/H2 23mm/23mm	H1 55mm	H1/H2 19mm/19mm	H1/H2 30mm/30mm

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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