

Item No.:FJ306
Version No.:FJ306-V01

Freewing MODEL
www.freewing-model.com

F-16 *FIGHTING FALCON* ***USER MANUAL***



Thank you for purchasing F-16 "Fighting Falcon" scale EDF jet. F-16 "Fighting Falcon" is a lightweight multi-role fighter manufactured in the United States, this excellent fighter, it received wide attention from its first launch. So far, total have 24 countries use this fighter to protect their country. No doubt, F-16 "Fighting Falcon" is the main fighter in Western countries!.

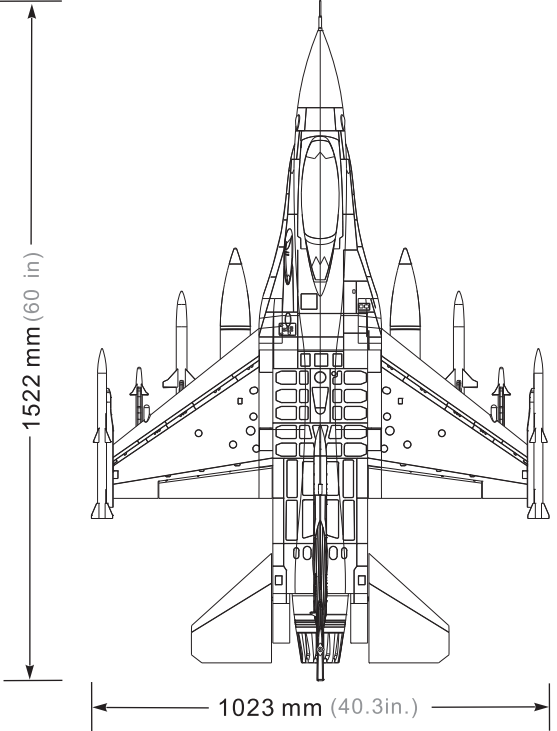
This is a new F-16 "Fighting Falcon" scale EDF jet brings us excellent scale details. "It" is the most important program in 2014. This product not only retains the usual excellent structural design, but also integrated into many most innovative design ideas and skills. Through these efforts, we are able to ensure the take-off weight is within 3600g (no missiles), this standard equipment can get to 160km / h of the flight speed;

- First time to use Fiberglass cabin door in foam jet
- First time to use Scale hardware landing gear in the foam jet.
- New scale electronic retracts.
- Scale tail flame light system
- Removable Missiles & Pylons design
- Integrated circuit module of connection cables and LED light
- High light scale navigation LED light system
- Rubber wheel, use longer time

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

Note:

1. This is not a toy! Operator should have a certain experience, beginners should operate under the guidance of professional players.
2. Before install, please read through the instructions carefully and operate strictly under instructions.
3. Cause of wrong operation, Freewing and its vendors will not be held responsible for any losses.
4. Model planes' players must be on the age of 14 years old.
5. This plane used the EPO material with surface spray paint, don't use chemical to clean, otherwise it will damage.
6. You should be careful to avoid flying in areas such as public places, high-voltage-intensive areas, near the highway, near the airport or any other place where laws and regulation clearly prohibit.
7. You cannot fly in bad weather conditions such as thunderstorms, snows....
8. Model plane's battery, don't allowed to put in everywhere. Storage must ensure that there is no inflammable and explosive materials in the round of 2M range.
9. Damaged or scrap battery should be properly recycled, it can't discard to avoid spontaneous combustion and fire.
10. In flying field, the waste after flying should be properly handled, it can't be abandoned or burned.
11. In any case, you must ensure that the throttle is in the low position and transmitter switch on, then it can connect the lipo-battery in aircraft.
12. Do not try to take planes by hand when flying or slow landing process. You must wait for landing stop, then carry it.

 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.	Standard Version ● Motor 3748-1550KV (out runner motor) ● ESC 130A ESC (8A UBEC) ● Servos 9g MG-servo (4pcs) 17g MG-servo (5pcs) ● Battery 6S 22.2V 5000mAh 35C ● Ducted fans 12-Bladed 90mm EDF ● Take-off weight 3550 g (126 oz.) ● Thrust 3150g (112 oz.)
	Upgrade Version ● Motor 4068-1680 KV (in-runner motor) ● ESC 130A ESC (8A UBEC) ● Servos 9g MG-servo (4pcs) 17g MG-servo (5pcs) ● Battery 6S 22.2V 5000mAh 35C ● Ducted fans 12-Bladed 90mm EDF ● Take-off weight 3680 g (129 oz.) ● Thrust 3400g (120 oz.)

Package list



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

PNP equipment list

- 1.Fuselage (installed, include the electric parts and connection cables)
- 2.Main wing (installed, include the electric parts and connection cables)
- 3.Tail wing set (installed, include the electric parts and connection cables)
- 4.Missiles & pylons
- 5.Nose cone & Fin parts
- 6.Carbon tube
- 7.Screws
- 8.Glue

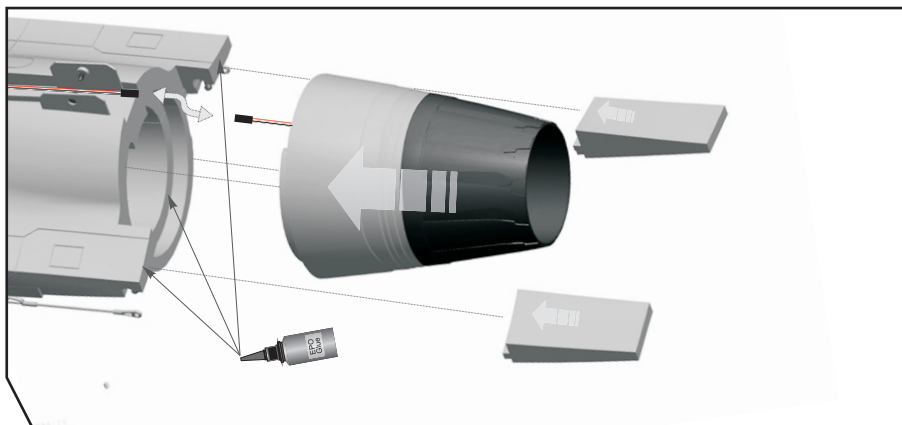
KIT equipment list

- 1.Fuselage set (installed, include the landing gear and connection cables)
- 2.Main wing set
- 3.Tail wing set
- 4.Missiles & Pylons
- 5.Nose cone and fin parts
- 6.Carbon tube
- 7.Screws
- 8.Glue

Installing Fuselage

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As the right photo shown, use glue to attach the front/rear fuselage and left / right foam parts. Connect the tail flame light cable and extension cable in fuselage.

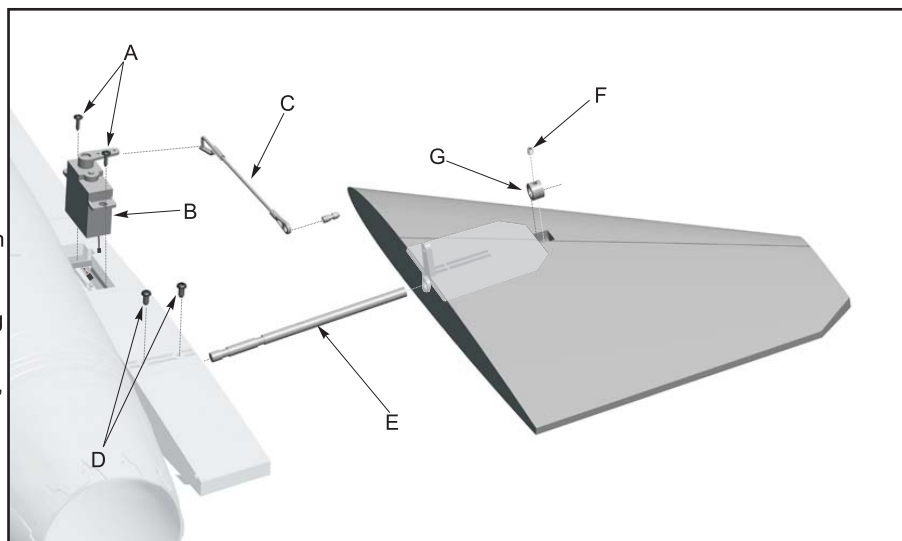


Installing the elevator

- A - Screw (PWA3×8mm 4pcs)
- B - 17G servo
- C - Elevator pushrod
- D - Screw (PT3×10mm 4pcs)
- E - Full elevator rotating shaft
- F - Screw (PM2×4mm 2pcs)
- G - Metal fixed ring

1. Use servo tester or radio to center the servo arm.
2. Connect the servo cable and extension cable, then use "screw (A)" to fix the "servo (B)".
3. Insert one side of "full elevator rotating shaft (E)" to the fixed base in the rear fuselage, then use "screw (D)" to fix.
4. At first, put the "metal fixed ring (G)" to the elevator groove, together with elevator, put it to the other side of "full elevator rotating shaft (E)", at last, use "Jimi screw (F)" to fix the "metal fixed ring (G)" on the "full elevator rotating shaft (E)".
5. At last use elevator "pushrod (C)" to connect the servo arm and elevator horn.

Through adjust the length of pushrod to center the elevator.

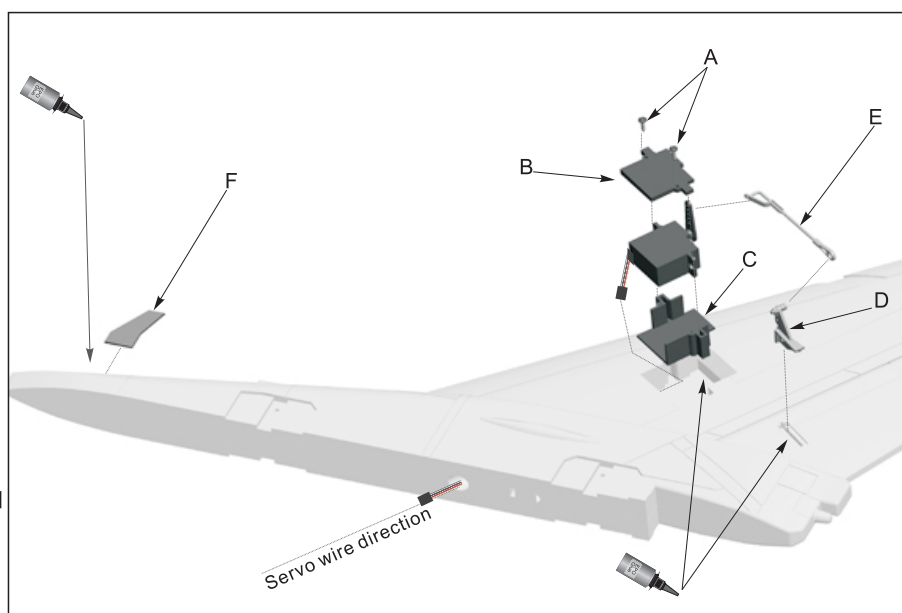


Installing the Rudder servo

- A - Screw (PWA1.7×5mm 2pcs)
- B - 17g servo cover
- C - 17g servo box
- D - Rudder horn
- E - Rudder pushrod
- F - Scale rudder antenna

1. Use servo tester or radio to center the servo arm.
2. Use glue to attach the "17g servo box (C)" "rudder horn" and "scale rudder antenna (F)" on the rudder.
3. Install the servo on the "17g servo box (C)", then cover the "17g servo cover (B)", and use 2pcs "screws (A)" to fix tightly.
4. Use the "rudder pushrod (E)" to connect the servo arm and "rudder horn (D)".

Through adjust the length of pushrod to center the rudder.



Installing rudder

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1. Connect the rudder servo cable, rudder LED light cable and extension cable in fuselage.
2. Insert the rudder on the tail of fuselage and use 4pcs screws to fix.

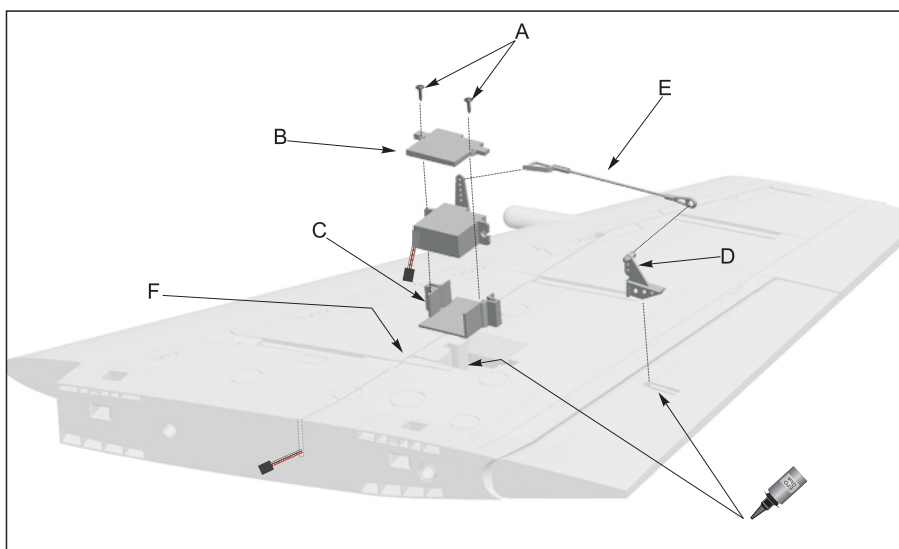


Installing Main wing

- A - Screw (PWA1.7x5mm 2pcs)
- B - 17g servo cover
- C - 17g servo box
- D - Aileron horn
- E - Aileron pushrod
- F - Servo trough

1. Use servo tester or radio to center the servo arm.
2. Use glue to attach the "17g servo box (C)" and "aileron horn (D)" on the aileron.
3. Install the servo in the "17g servo box (C)", and press the servo cable in the "servo trough (F)", then cover the "17g servo cover (B)" and use 2pcs "screw (A)" to fix.
4. Use aileron pushrod to connect the servo arm and "aileron horn (D)".

Through adjust the length of pushrod to center the rudder.

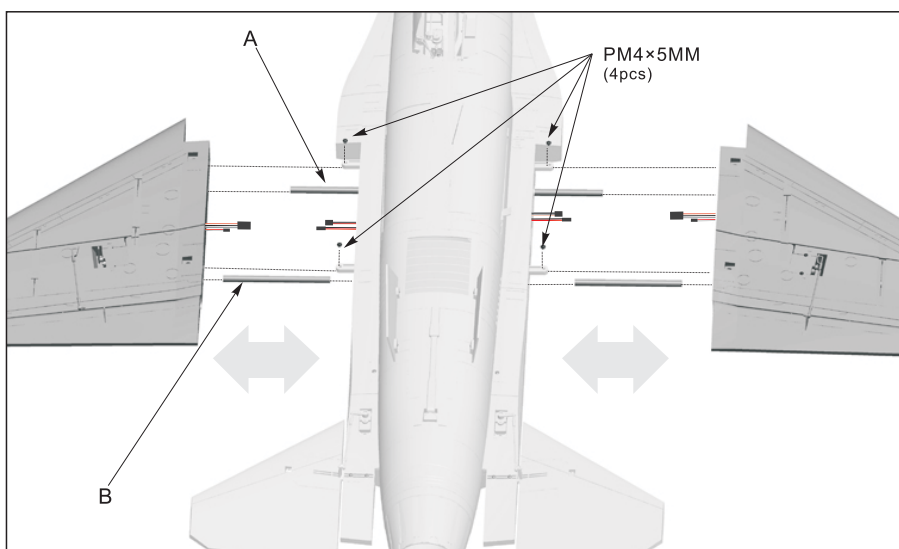


Installing main wing

1. Insert the carbon tube in the fuselage.
2. Put the carbon tube in the left / right main wing and insert it into fuselage.
3. Use 4pcs screws to fix the main wing.

Carbon fibre tube size :

- Ø8*350mm wall thickness=1mm 1pcs
- Ø8*125mm wall thickness=2mm 2pcs

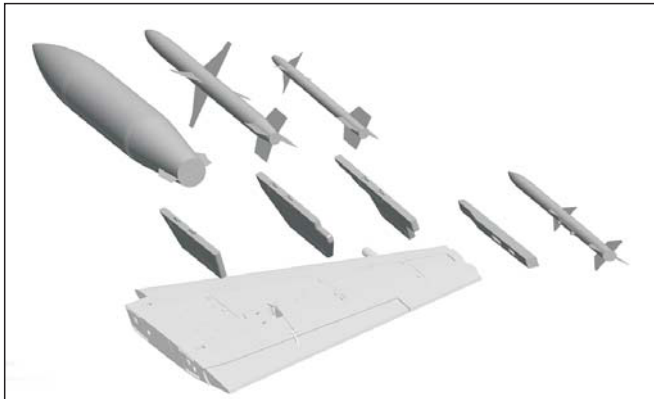
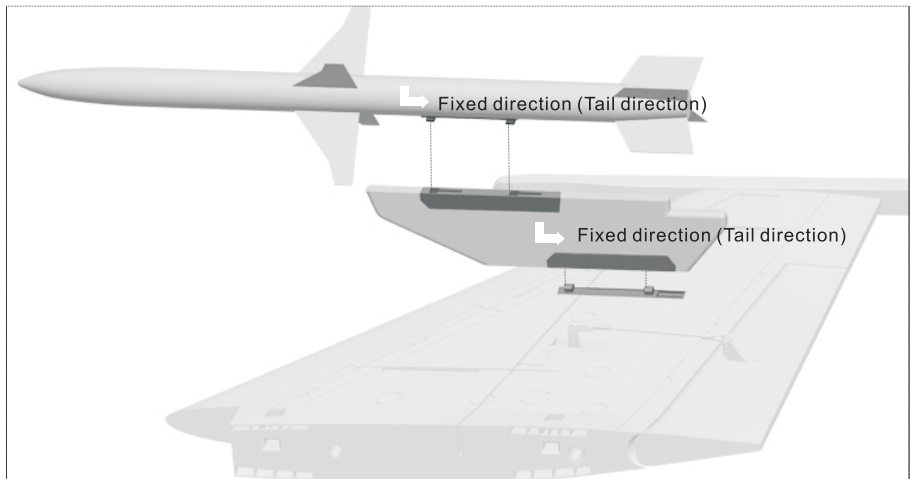


Installing missiles and pylons

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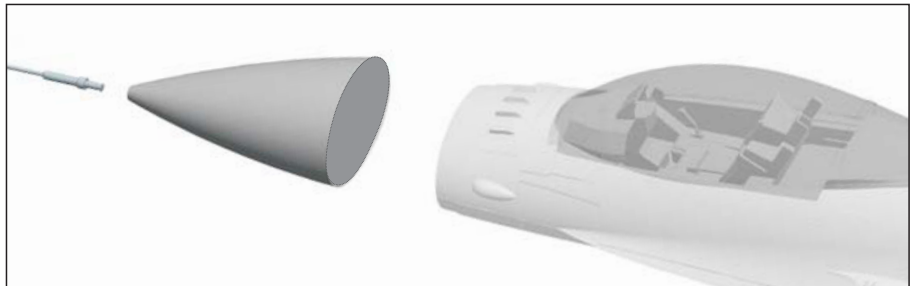
1. As the right photo shown, installed the missiles and pylons.

When installing, please refer to the right photo, and check the direction of missiles & pylons



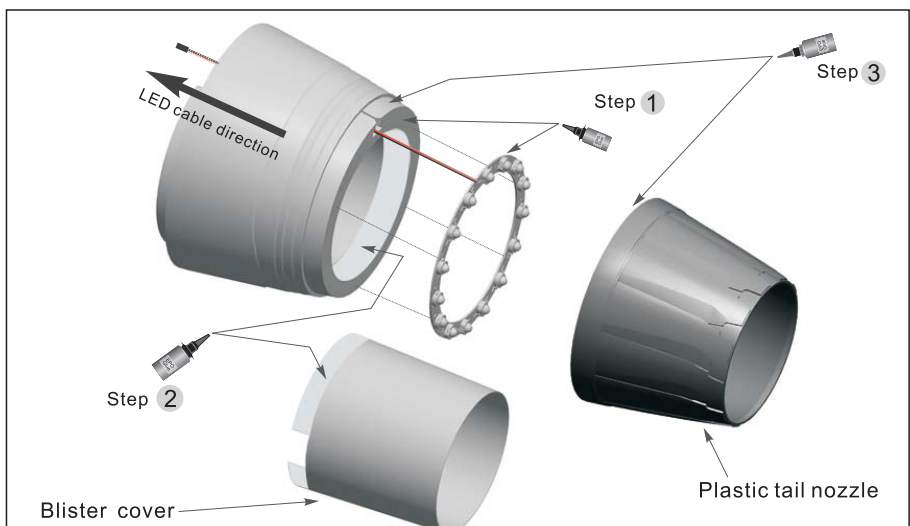
Installing Nose Cone

1. Since installed magnet, we only need to put the nose cone on the front of fuselage.

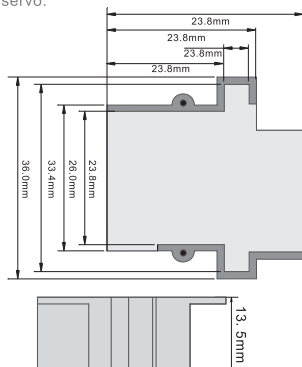


Installing tail flame LED light module

Replace the tail flame LED light, please refer to the right photo, install it step by step.



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.

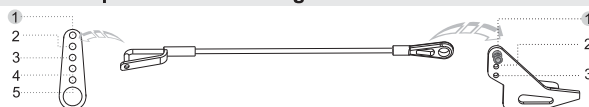


Rudder pushrod size

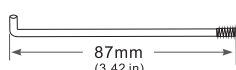


Pushrod diameter : Ø 1.5 mm

Rudder pushrod mounting hole



Elevator pushrod size



Pushrod diameter : Ø 1.5 mm

Elevator pushrod mounting hole



Aileron pushrod size



Pushrod diameter : Ø 1.5 mm

Aileron pushrod mounting hole



Installing nose landing gear

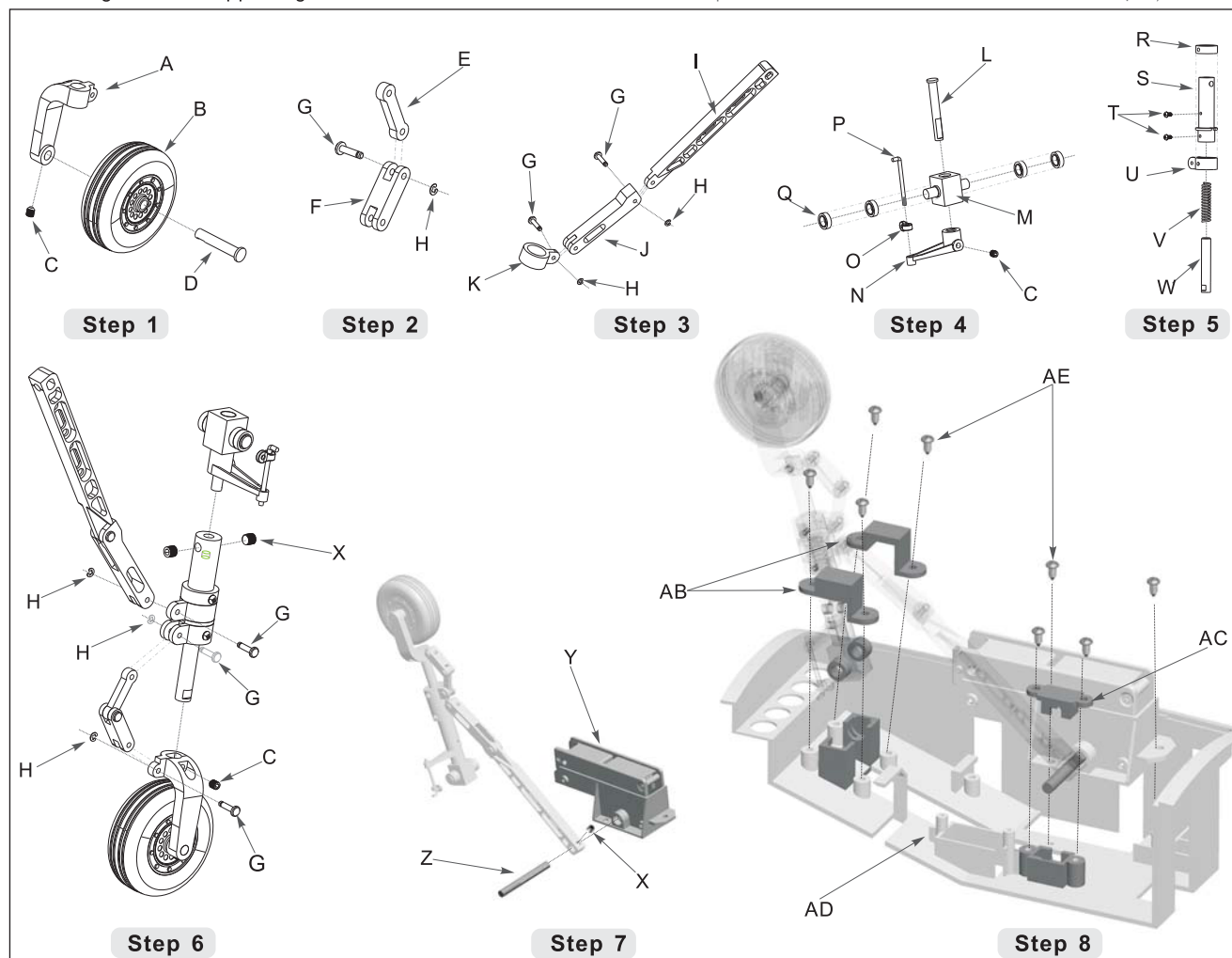
Please refer to the following drawing, assemble/disassemble and replace the nose landing gear.

Accessories name and specification

- A - L- damping arm
- B - Nose wheel
- C - Jimi screw (M3×3mm 3pcs)
- D - Axle
- E - 8-shape damping arm
- F - H- damping arm
- G - Pin (5pcs)
- H - E-buckle (ø1.5mm 5pcs)
- I - Nose gear slant supporting rod 1
- J - Nose gear slant supporting rod 2

- K - O-connecting arm
- L - Nose gear rotating axle
- M - X-rotating part
- N - L-rotating arm
- O - O-ring
- P - Pushrod
- Q - Bearing (4pcs)
- R - O-connecting arm 1
- S - Damping support rod
- T - Screw (PM2×4mm 2pcs)

- U - O-connecting arm 2
- V - Spring
- W - Damping active lever
- X - Jimi screw (M4×3mm 3pcs)
- Y - Retractable controller
- Z - Retract drive rod
- AB - Bearing fixed cover
- AC - Drive rod fixed cover
- AD - Nose gear mount
- AE - Screw (PA3×8mm 8pcs)



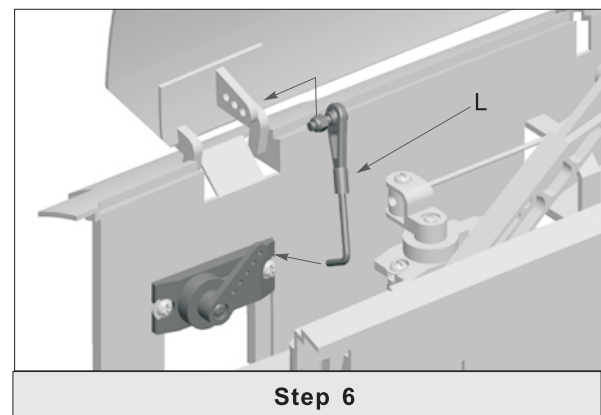
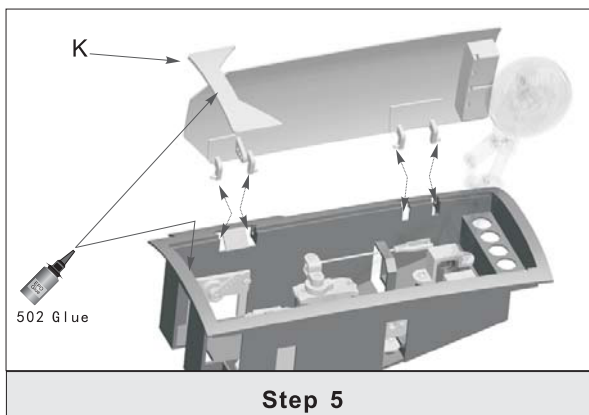
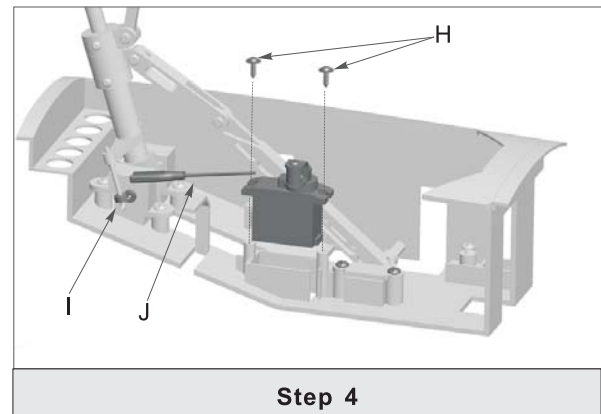
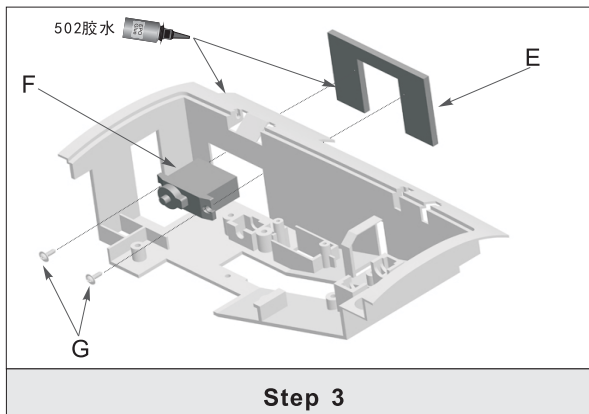
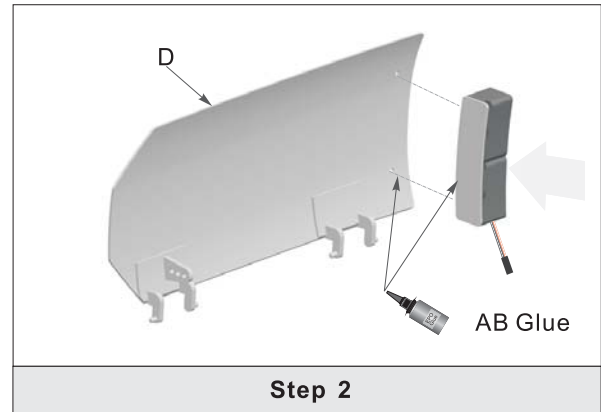
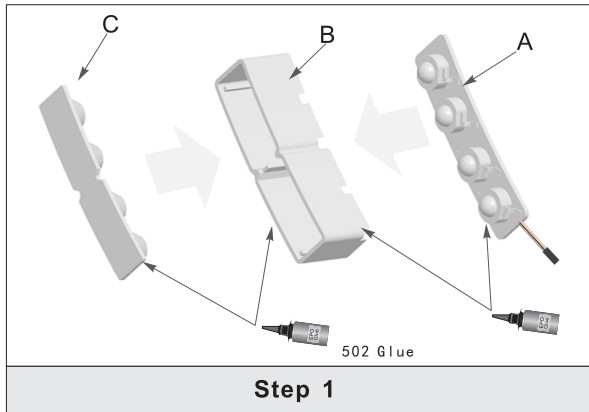
Please refer to the following drawing, assemble/disassemble and replace the nose cabin door.

Accessories name and specification

A - Nose gear taxi light
B - Taxi light house
C - Taxi light cover
D - Nose gear cabin door 1

E - Nose cabin servo fixed board
F - Servo
G - Screw (PWA2×8mm 2pcs)
H - Screw (PWA2×8mm 2pcs)

I - O-ring
J - Nose gear steering pushrod
K - Nose gear cabin door 2
L - Nose cabin door pushrod



Rear landing gear assemble diagram

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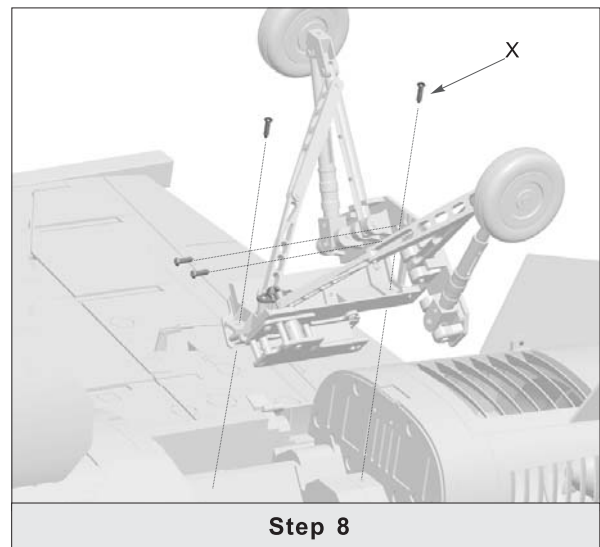
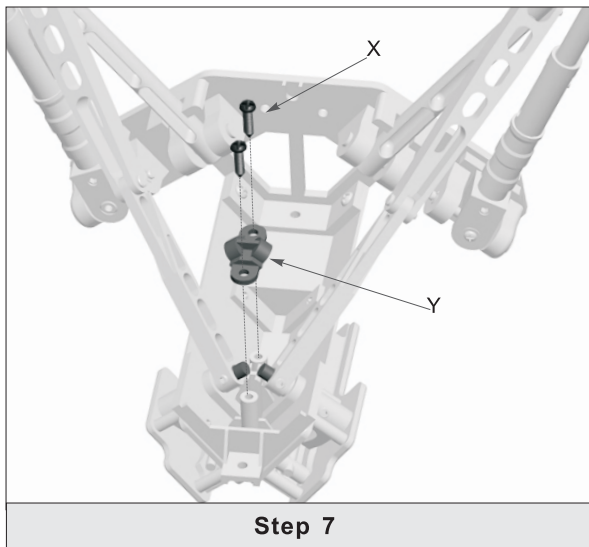
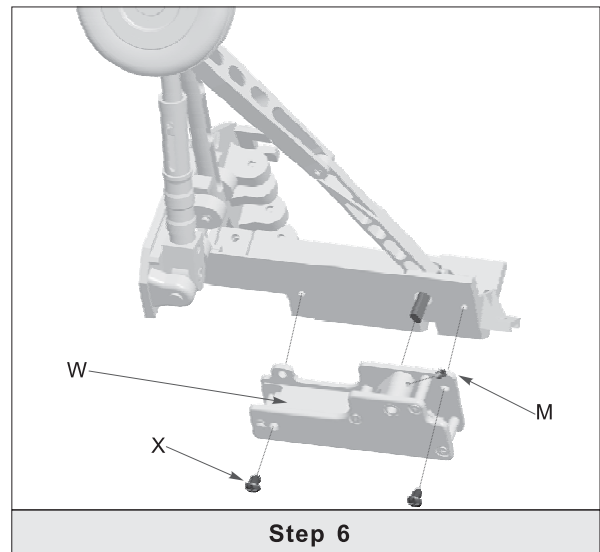
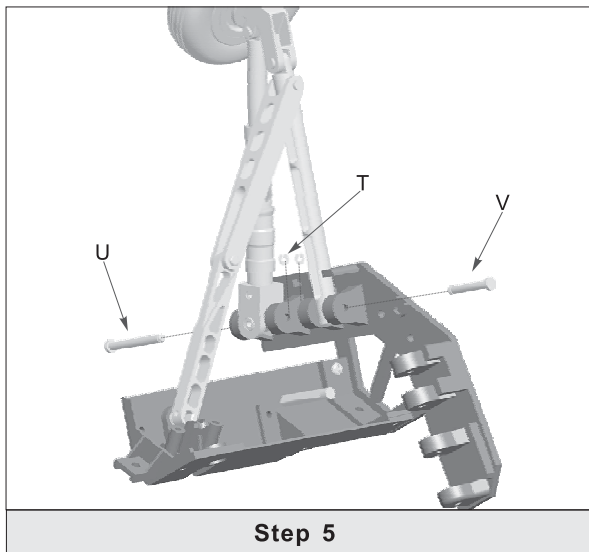
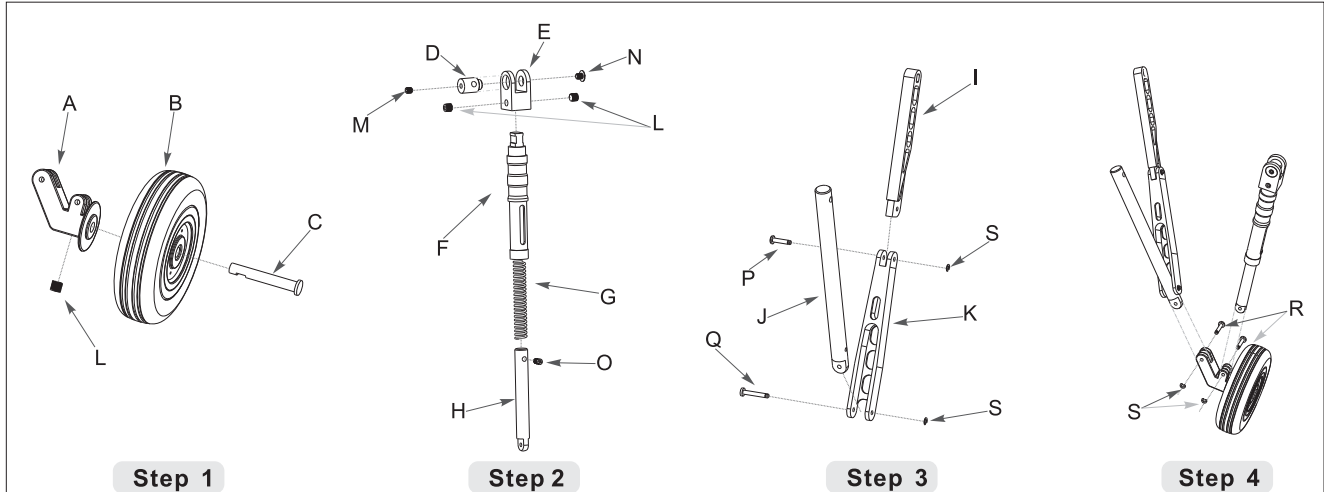
Please refer to the following diagram, assemble, disassemble, replace the rear landing gear accessories.

Accessories name and specification

A - Rear wheel damping connect arm
B - Rear wheel
C - Rear wheel axle (M3×3mm 3pcs)
D - Rotating axle
E - Rotating axle cover
F - Rear landing gear main supporting rod
G - Spring (2pcs)
H - Rear gear damping active lever
I - Rear gear fold supporting rod 1

J - Rear gear supporting rod 3
K - Rear gear fold supporting rod 2
L - Jimi screw (M4×3mm 6pcs)
M - Jimi screw (M3×3mm 4pcs)
N - Screw (PM3×4mm 2pcs)
O - Jimi screw (M3×5mm 2pcs)
P - Pin (2pcs)
Q - Pin (2pcs)
R - Pin (4pcs)

S - E-buckle (ø1.5mm 8pcs)
T - E-buckle (ø2.0mm 4pcs)
U - Pin (2pcs)
V - Pin (2pcs)
W - Retractable controller
X - Screw (PA3×8mm 10pcs)
Y - Rear gear drive rod fixed cover



F-16 Fighting Falcon

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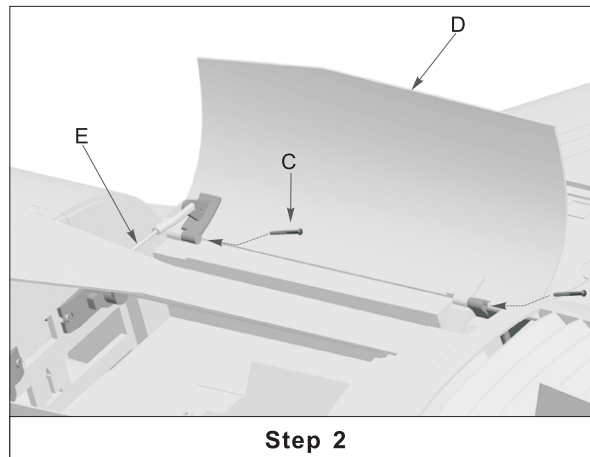
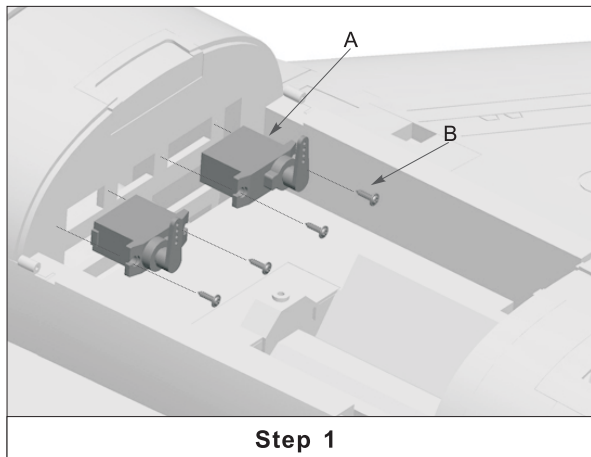
Installing rear cabin door

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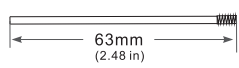
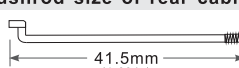
Please refer to the following diagram, assemble, disassemble, replace the rear landing gear accessories.

Accessories name and specification

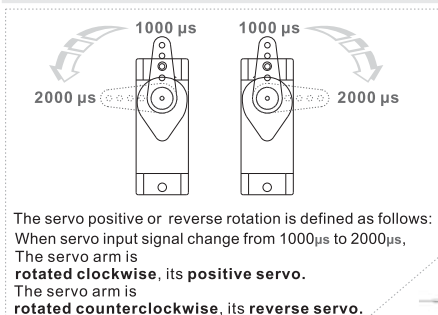
- A - Servo
 B - Screw (PWA2×8mm 4pcs)
 C - Screw (PA1.4×12mm 4pcs)
 D - Rear cabin door
 E - Rear cabin door pushrod



The pushrod size of cabin door

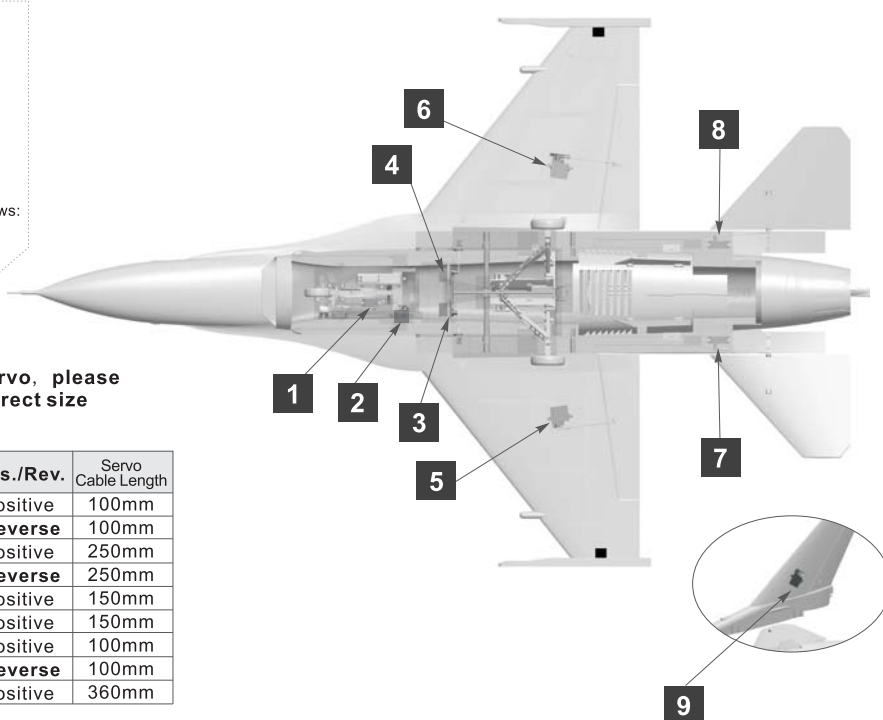
Pushrod size of steering  Pushrod diameter : Ø 1.5mm		Steering pushrod mounting hole  Rotating pushrod, can increase or reduce control distance.	
Pushrod size of nose cabin door  Pushrod diameter : Ø 1.2mm		Nose cabin door pushrod mounting hole 	
Pushrod size of rear cabin door  Pushrod diameter : Ø 1.2mm		Rear cabin door pushrod mounting hole  Rotating pushrod, can increase or reduce control distance.	

Servo Introduction



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

Installing position	No.	Size	Pos./Rev.	Servo Cable Length
Nose gear steering servo	1	9g-Metal	Positive	100mm
Front cabin door servo	2	9g-Metal	Reverse	100mm
rear cabin door servo	3	9g-Metal	Positive	250mm
rear cabin door servo	4	9g-Metal	Reverse	250mm
Aileron servo	5	17g-Metal	Positive	150mm
Aileron servo	6	17g-Metal	Positive	150mm
Elevator servo(Digital)	7	17g-Metal	Positive	100mm
Elevator servo(Digital)	8	17g-Metal	Reverse	100mm
Rudder servo	9	17g-Metal	Positive	360mm



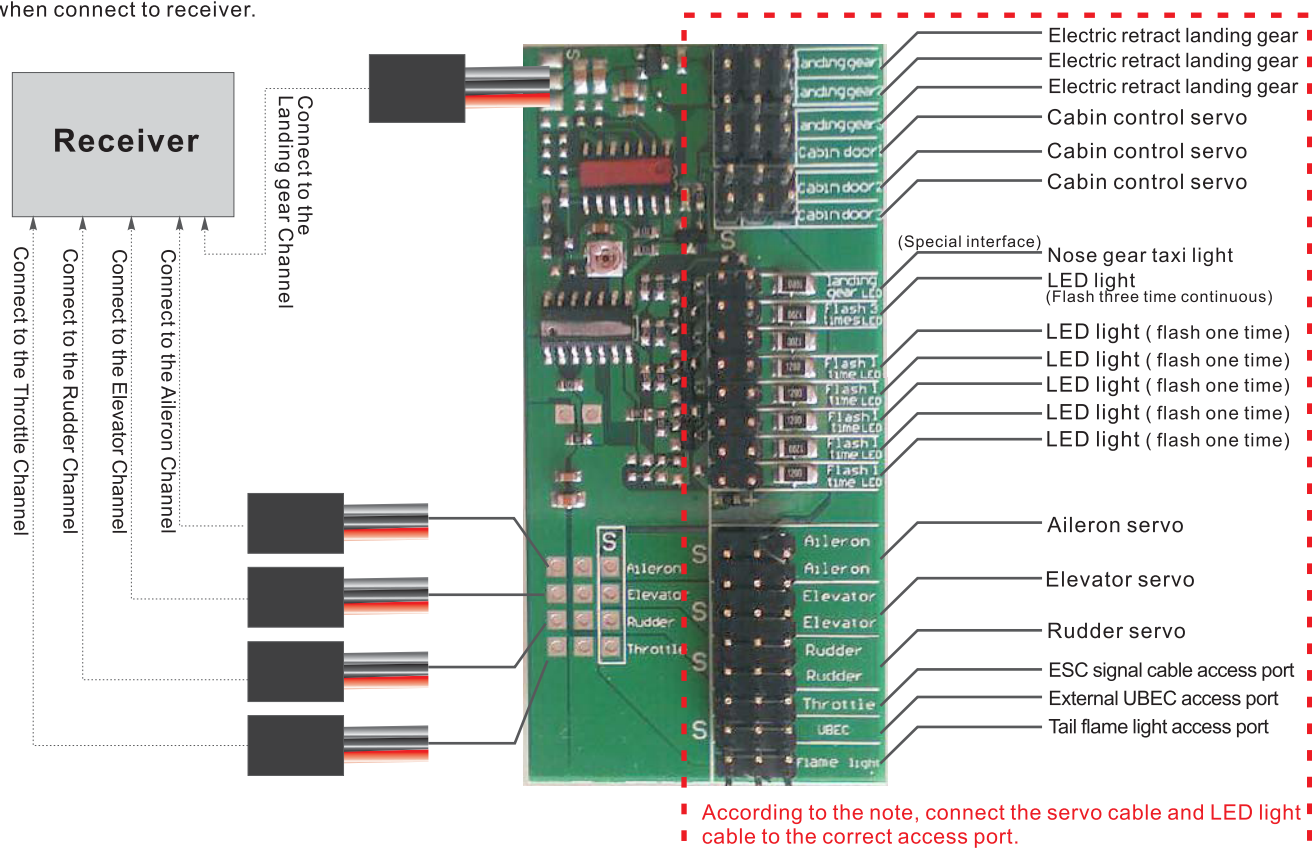
F-16 Fighting Falcon

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Integrated circuit module of servo cables and LED light have two function:

1. Switch off control of LED taxi light & cabin door.
2. All servo cables integrated adaptor.

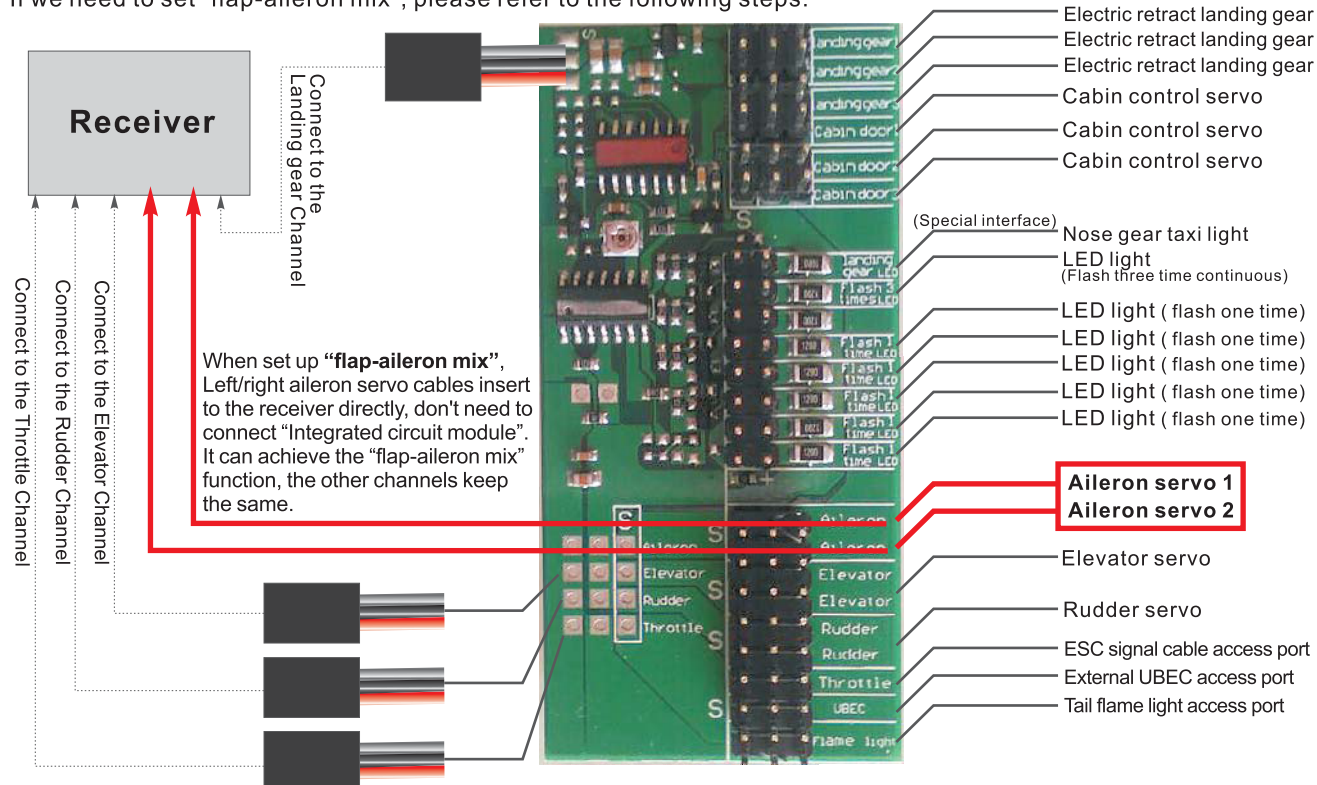
This part can effectively reduce the number of cables in battery compartment, let it become more concise. We will be more clear when connect to receiver.

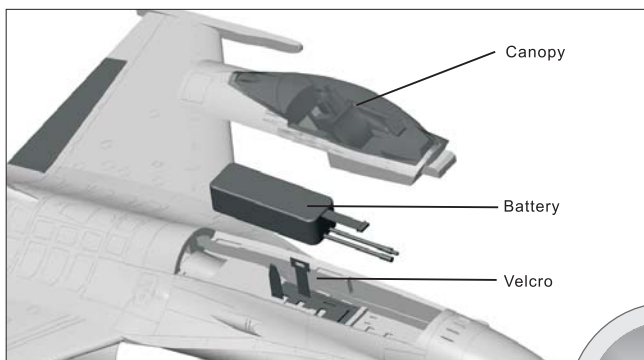


Set up the flap-aileron mix

Before F16 ship, all the extension cables, all pre-installed on the "Integrated circuit module", according to the above diagram, connect the 5 channels to the receiver correctly, and you can fly! This is a common flight mode, without flap function.

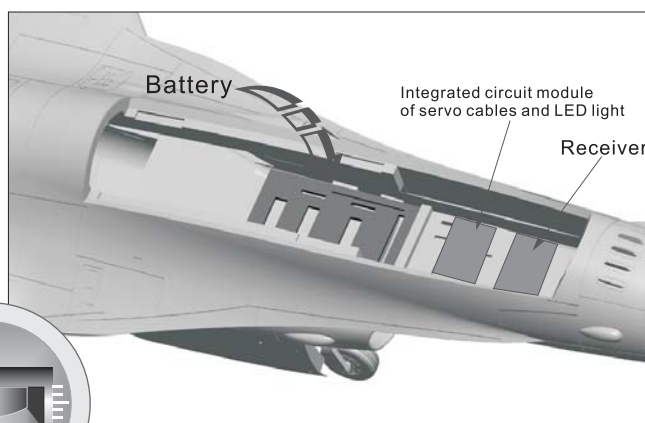
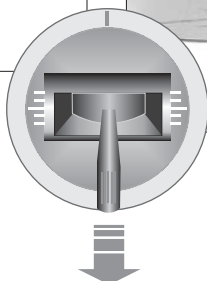
If we need to set "flap-aileron mix", please refer to the following steps.





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.



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

L=254mm; W=64mm; H=55mm

6S 22.2V 5000mAh ~ 6S 22.2V 6000mAh
Discharge rate of C ≥ 35C

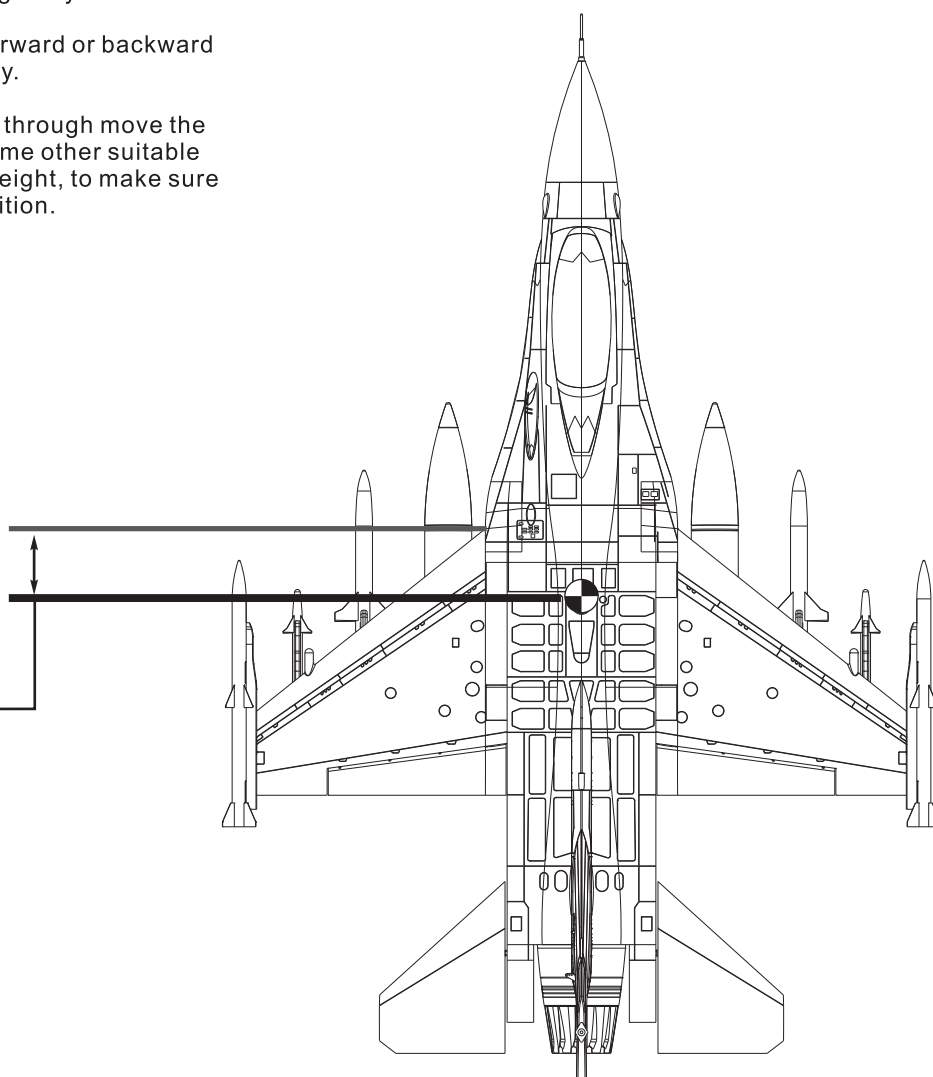
Different weight battery may affect its CG, please pay attention of the correct range of CG indication.

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.

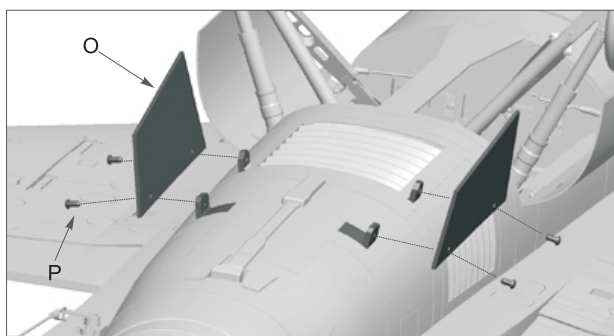
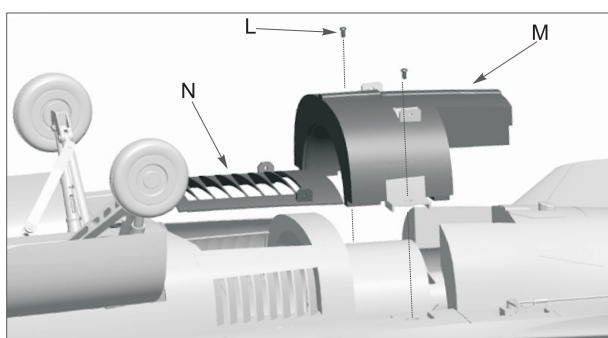
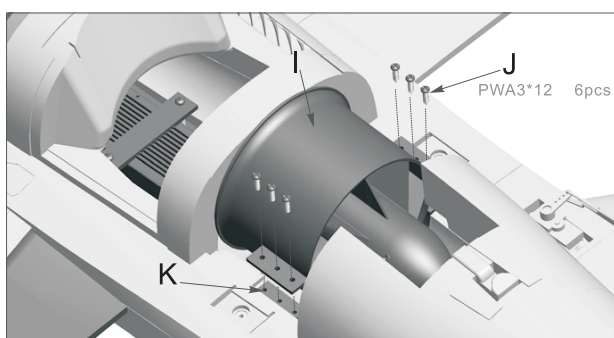
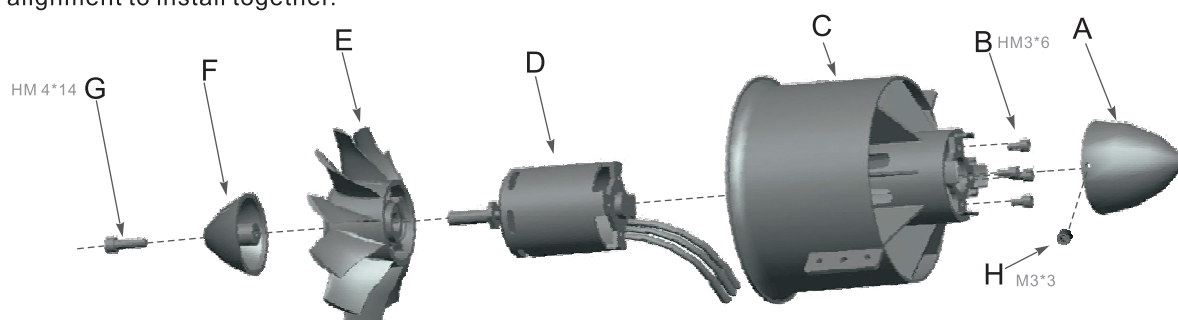
- You can move the battery forward or backward to adjust the center of gravity.
- If you can not adjust the CG through move the battery, you can also use some other suitable material weight to counterweight, to make sure that CG is in the correct position.

118-128mm
(4.64 ~ 5.05 in)



1. Installed the motor (D) in the ducted fan cover (C).
2. Fixed it with 4pcs cup head screws (B).
3. Put the fan (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. Use the spinner (F) cover the fan, and use the cup head screw (G) to fix the spinner (F).
5. Finally install the fan cowl (A) on the bottom of ducted fan cover (C) and fix it with 2 pcs jimi screws (H).

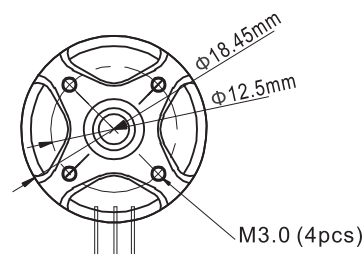
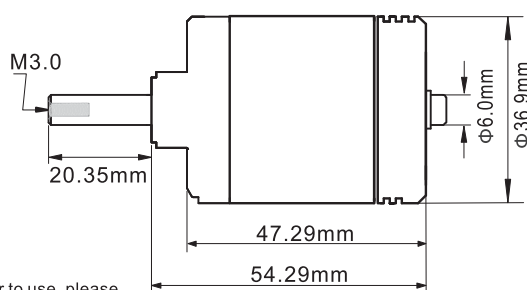
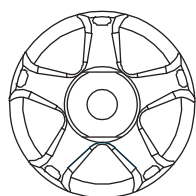


Accessories name and specification

- I -EDF power system
- J -Screw (PWA3×12mm 6pcs)
- K -Fuselage
- L -Screw (PA3×10mm 2pcs)
- M -EDF fixed cover
- N -Inlet grid
- O -Fin
- P -Screw (PA3×8mm 2pcs)

⚠ 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.

Motor parameters



⚠ 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.

Item No.	KV Value	Voltage (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Propeller	ESC
Mo03748	1550RPM/V	22.2	95	3600	0.02 Ω	195	2.7A/10V	90mm Ducted Fan	≥ 95A

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



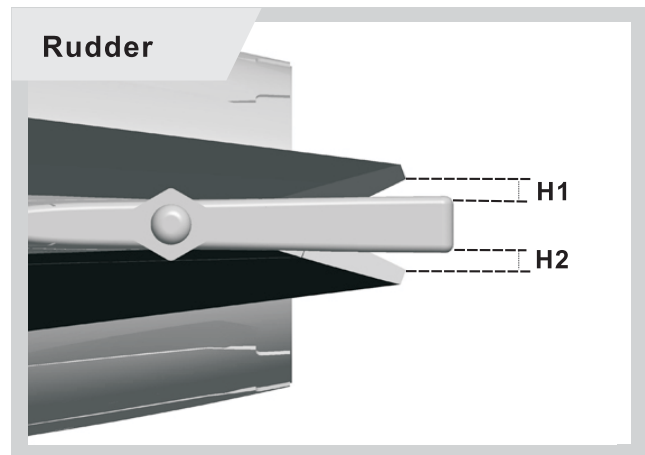
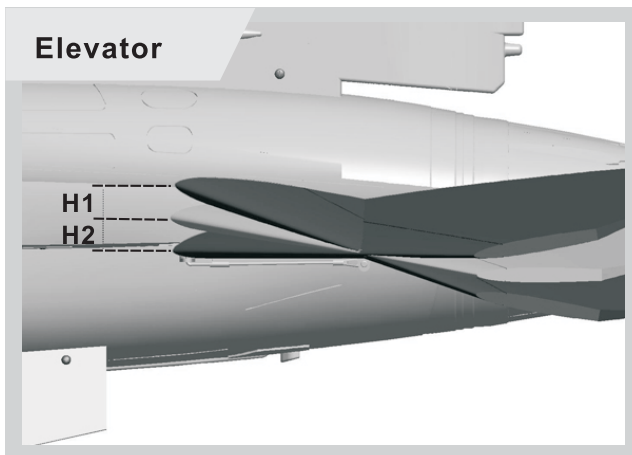
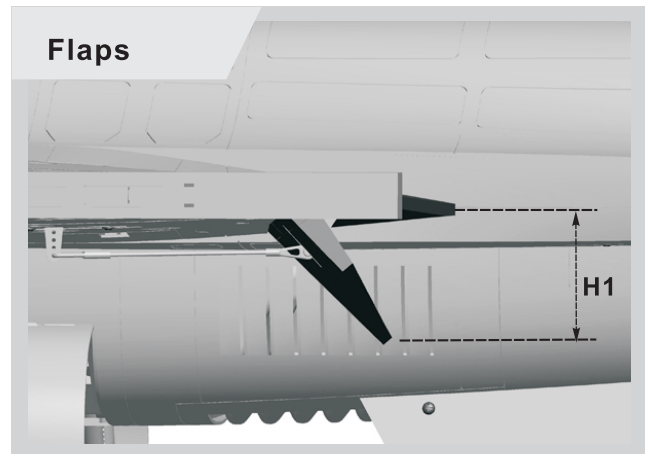
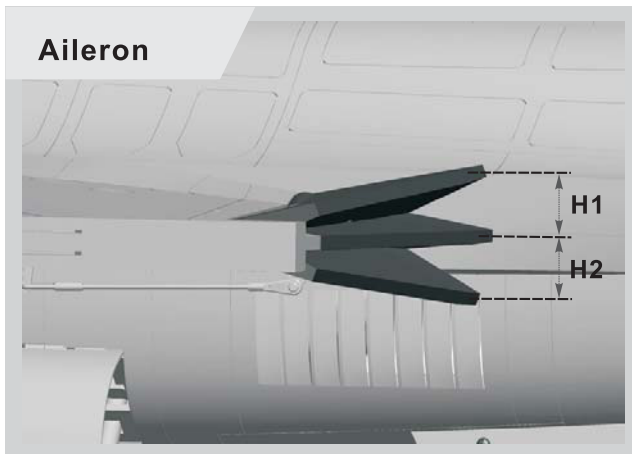
Optional Flaps

Flaps down



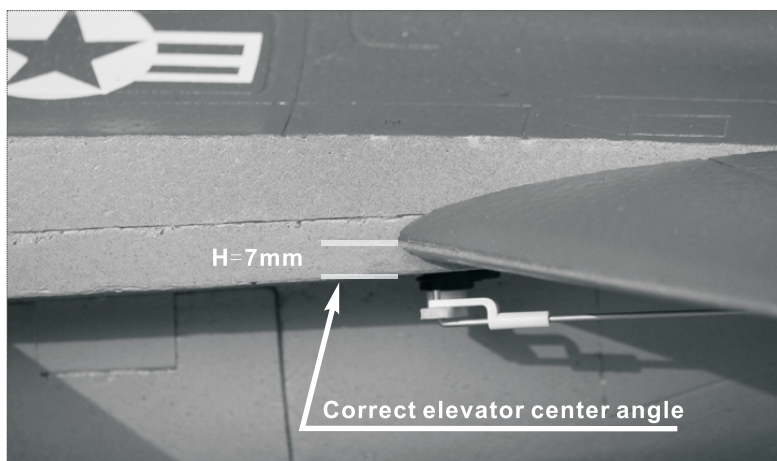
(Set up flap-aileron mix, then it has flap function)

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
Low Rate	H1/H2 18mm/18mm	H1 25mm	H1/H2 16mm/16mm	H1/H2 18mm/18mm
High Rate	H1/H2 25mm/25mm	H1 25mm	H1/H2 25mm/25mm	H1/H2 25mm/25mm

Full Elevator Center Diagram



Note:

Adjusting the plane, please check your F-16 elevator center angle very carefully.

For the plane with full elevator, wrong elevator installing angle will lead to failure flight, even crash it.

Please refer to the left photo, check your elevator installing position.

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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