

# L-15/教10 组装说明书

## JL-10 User Manual

Wingspan:760mm

Length:970mm

Empty Weight:910G[w/o Battery]



EN 1~10

中 11~20

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Thank you for purchasing the Freewing Model 64mm EDF jet -- the L-15 "Falcon" trainer. This trainer is designed and produced by China Aviation Industry Hongdu Aviation Industry Group Co., Ltd. It is divided into AJT advanced trainer type and LIFT combat entry-level type. Its advanced design indicators and supersonic flight capability can fully meet the combat introductory training and tactical basic training of third-generation fighter pilots. The main model used by the Chinese Air Force is the AJT Advanced Trainer Type, named "Coach-10".

The Freewing L-15 64mm EDF jet is designed based on the LIFT combat entry-level model and features a blue test flight coating. It also includes wing tips, main wing mounts, and related missile models. The main wing, vertical tail, and full-elevator horizontal tail are quickly disassembled and assembled by screws. The missiles and hanger are fixed using a sliding rail installation method. Fixed steel wire landing gear, covered with plastic simulated structural components, tightly inserted into the fuselage together with the simulated cabin door, without screws and glue. The PNP version of the L-15 64mm EDF jet can be assembled in approximately 15 minutes.

The Freewing L-15 64mm EDF jet has 970mm length and 760mm wingspan. PNP version includes two versions: the standard version and the upgraded version to meet different needs.

Standard version: Equipped with the 4S E7206 power system (64-12b EDF, 2840-2850KV, out-runner brushless motor) and 40A V2 ESC, weight is about 910 grams (without battery) and the maximum flight speed is about 135KPH.

Upgraded version: Equipped with the 6S E7208 power pack (64-12b EDF, 2849-2300KV in-runner brushless motor) and a 50A ESC, weight is about 975 grams (without battery) and the maximum flight speed is about 160KPH.

This jet has a large battery compartment space, with 320mm battery placement distance, and it can accommodate various specifications and capacities of 4S/6S batteries. During takeoff, during ground taxiing, the directional autonomy is maintained well, without too much human intervention, with sufficient thrust and a short distance for takeoff. During flight, the attitude is stable, the roll rate is moderate, and it is not too sensitive. It has full-elevator and high rate efficiency.

When landing, there is a noticeable deceleration accompanied by a nose-up phenomenon if the flaps are developed. A flap-to-elevator mix is required to maintain level flight when the flaps are developed.

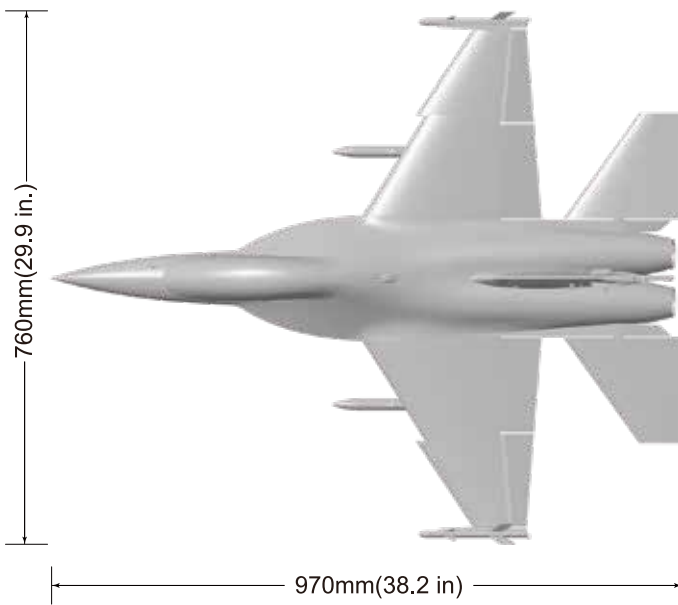
In a secondary wind speed environment, with a high attack angle, the lateral stability is good and it is easy to land. When landing without flaps, lower the altitude, close the throttle at 50% throttle, glide into the approach at a long distance, and pull out the high attack angle before landing.

As a 64 mm scale EDF jet, the L-15 is very suitable for advanced training of 64mm EDF jet enthusiasts. Its impressive flight performance, as well as its appearance with a large number of simulation elements, will be the reason why you choose and love it.

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

## Note:

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



### Standard Version

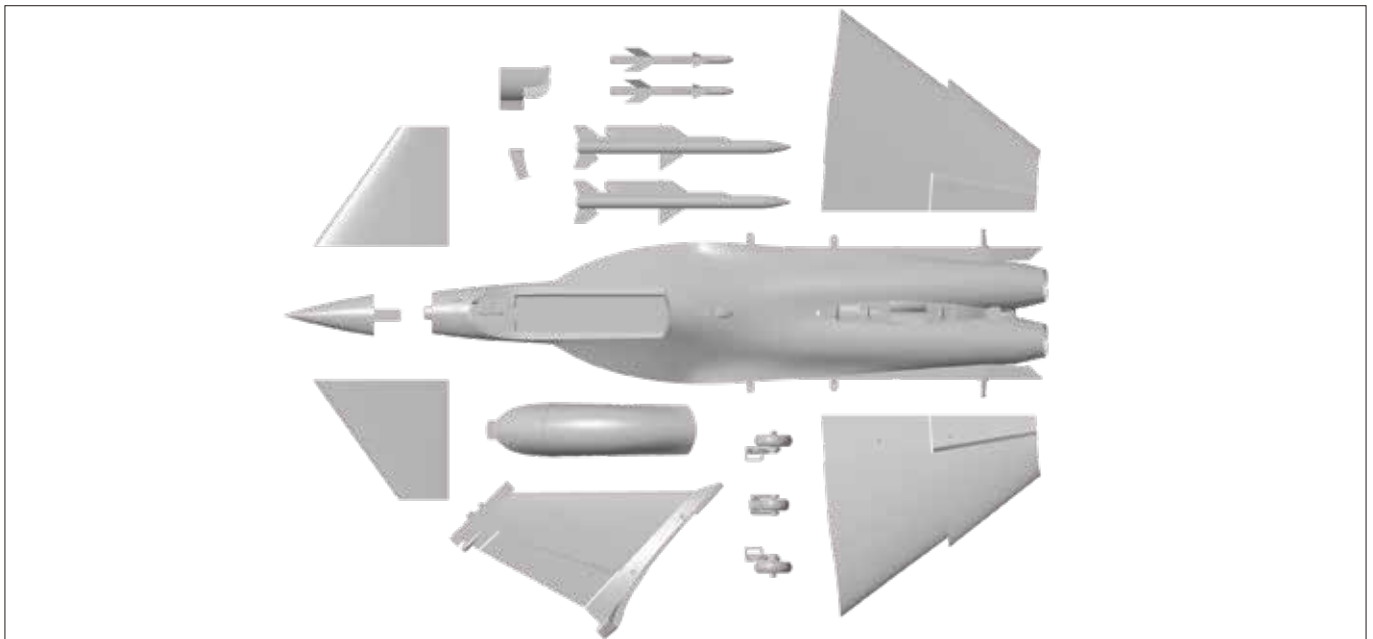
Wingload: 103 g/dm<sup>2</sup>  
 Wing Area: 11 dm<sup>2</sup>  
 Servo: 9g Digital plastic servo ×8  
 Motor: 2840-2850KV O/R Motor  
 Ducted fan: 64mm 12-blade fan  
 ESC: 40A Brushless(Thrust Reverse function)  
 Weight:910g(w/o Battery)  
 Li-Po Battery:4S 1800-2600mAh  
 Landing gear:Fixed landing gear

### Upgrade Version

Motor: 2949-2300KV O/R Motor  
 Ducted fan: 64mm 12-blade fan  
 ESC: 50A Brushless  
 Weight:975g(w/o Battery)

**Note:** The parameters in here are derived from test result using our accessories. If use other accessories, the test result will be different. Any problem since of using other accessories, we are not able to provide technical support.

## Package List



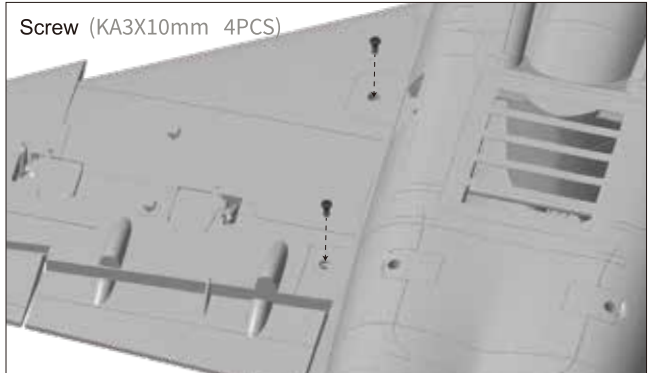
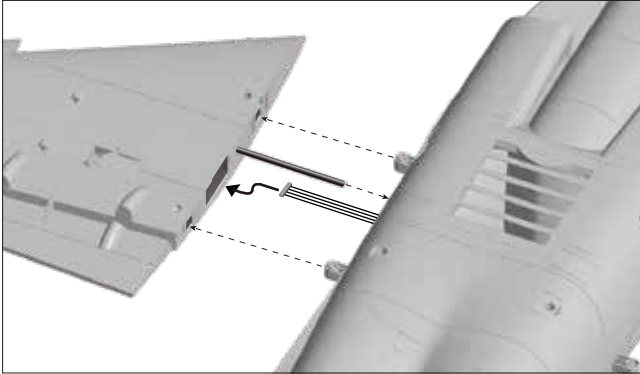
No.	Name	PNP	ARF Plus
1	Fuselage	Pre-installed all electronic parts	Pre-installed servo
2	Main wing	Pre-installed all electronic parts	Pre-installed servo
3	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo
4	Vertical tail	Pre-installed all electronic parts	Pre-installed servo
5	Nose cone	✓	✓

No.	Name	PNP	ARF Plus
6	Cockpit	✓	✓
7	Landing gear	✓	✓
8	Annex bag	✓	✓
9	Missile	✓	✓
10	Manual	✓	✓

## Install Main wing

As the photo show:

- 1.Take one side main wing and insert it into the fuselage after aligning the carbon tube holes and pin holes;
- 2.Before the main wing close with the fuselage, remove the cable from one end of the fuselage, connect it into the main wing control board, and then close the fuselage;
- 3.Then, fix it with 2 screws; 4.Repeat the above steps to install the other main wing.

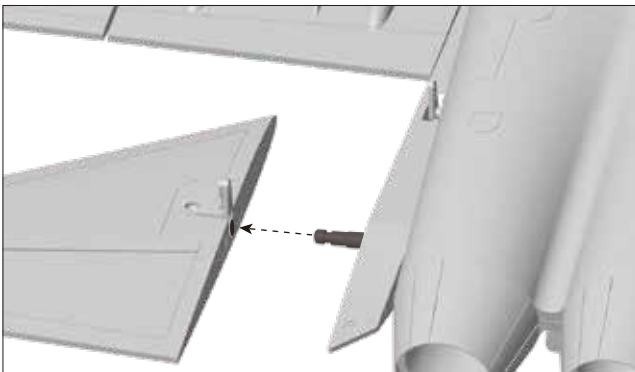


## Install Horizontal stabilizer

As the photo show:

- 1.Place the horizontal tail on the rotating shaft at the rear fuselage and push it to the fuselage.  
Then fix with screws to prevent its fall off.

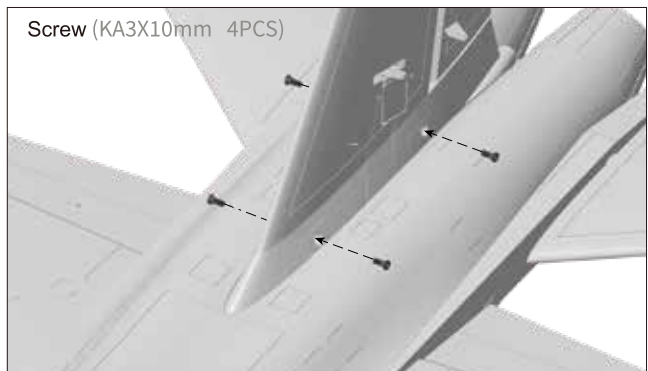
Attention: When the screw is tightened all the way down, please stop immediately when the resistance suddenly increases; Then twist the screw in the opposite direction by half a turn, leaving a certain gap between the screw and the groove of the rotating shaft. At this point, rotating the horizontal tail can move normally, and pulling the horizontal tail outward, it will not fall off, indicating that the installation meets the requirements.



## Install Vertical stabilizer

As the photo show:

- 1.Connect the vertical tail servo cable to the servo extension cable, ensuring that the extension cable clamp has fully hooked onto the servo cable plug;
2. Clip the cable connector back into the cable slot for fixation;
3. Install the vertical tail to the fuselage and fix it with screws.



### Install Nose Landing Gear

As the photo show:

1. Insert the front wheel into the aluminum part, ensuring that the flat surface on the front wheel wire faces the screw hole, and then secure it with the screw.



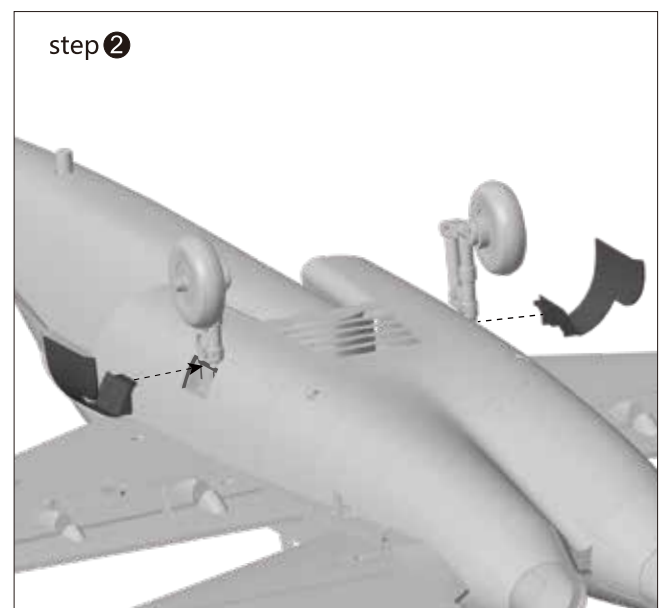
### Install Rear Landing Gear

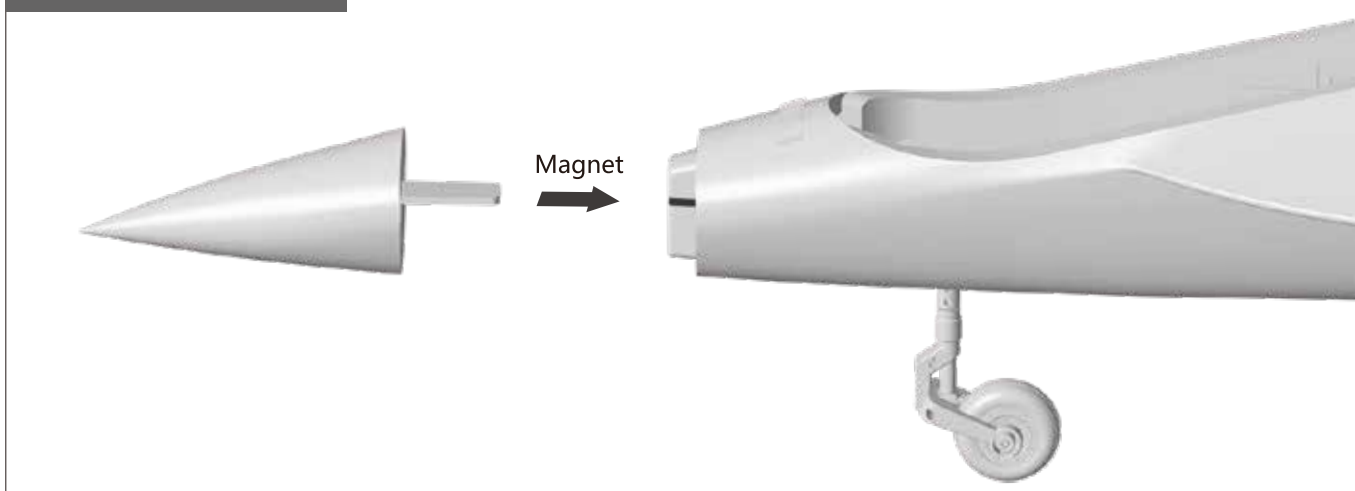
As the photo show:

1. Insert the left and right rear landing gear into the fixed mount of the landing gear;
2. Insert the left and right rear landing gear doors into the landing gear fixed mount.

Attention:

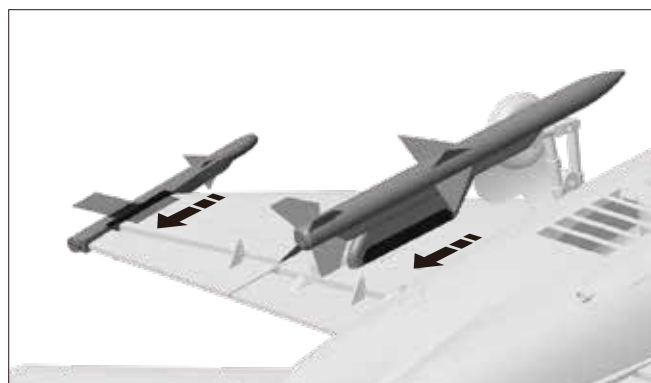
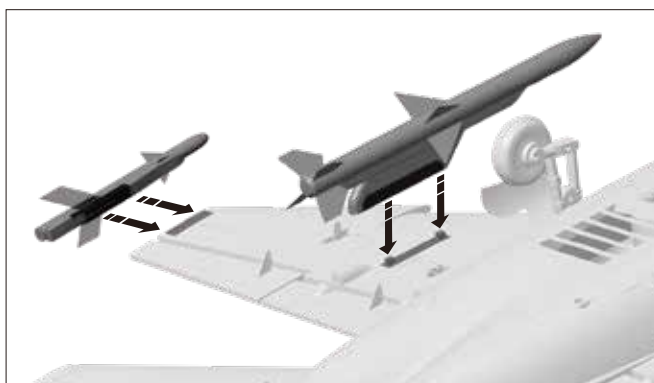
1. When install, please refer to the pictures and correctly distinguish between the front and rear directions;
2. When forcefully installing the landing gear or cabin door, a slight "click" sound is heard, indicating that the installation is complete.



**Install Nose cone****Install Missiles**

As the photo show:

1. Install the missiles on the fuselage.

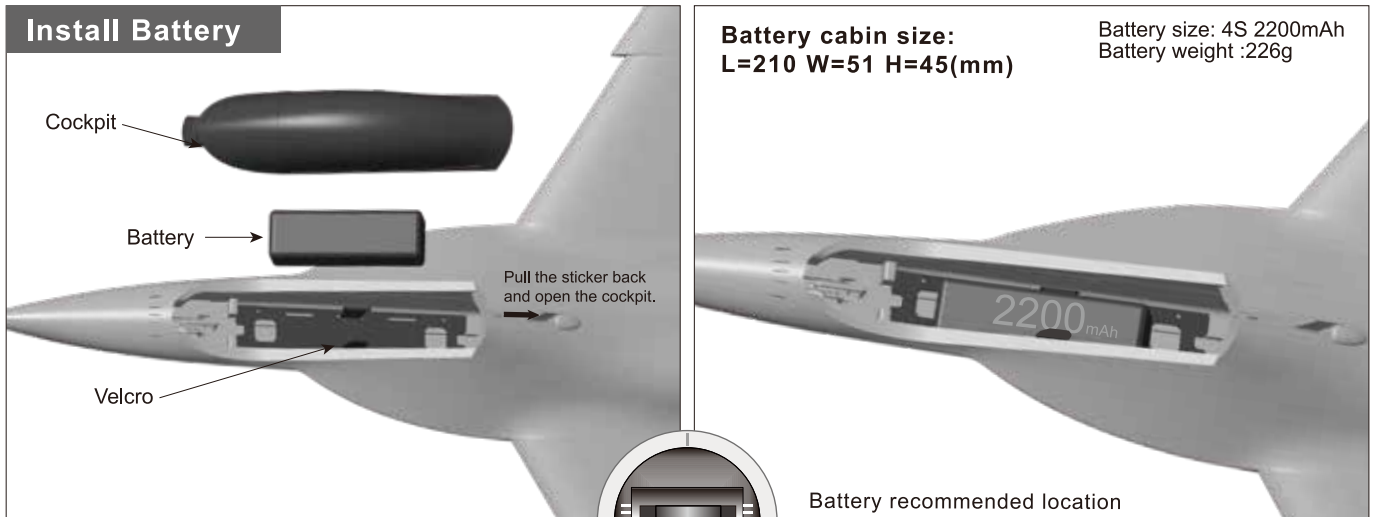
**Install scale decorated parts**

As the photo show:

1. Apply glue to the dark shaded area at the bottom of the antenna, and then stick it onto the back of the fuselage.



## Install Battery



**Battery cabin size:**  
L=210 W=51 H=45(mm)

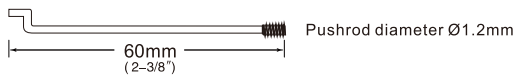
Battery size: 4S 2200mAh  
Battery weight :226g

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

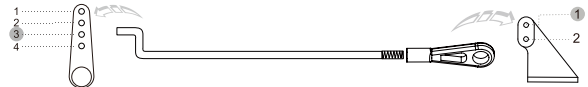
We recommend the following LiPo battery:  
**4S 14.8V 1800mAh~4S 14.8V 2600mAh (1pcs)**  
Discharge rate of C ≥ 35C

## Pushrod instructions

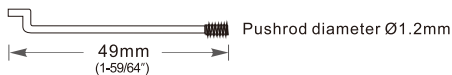
### Aileron pushrod length



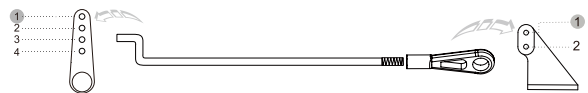
### Aileron pushrod mounting hole



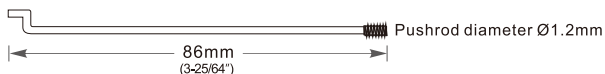
### Flap pushrod length



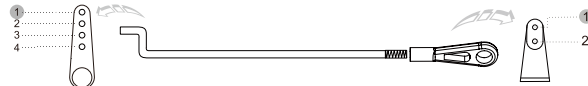
### Flap pushrod mounting hole(Inside)



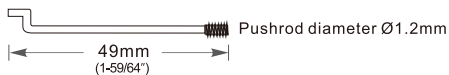
### Elevator pushrod length



### Elevator pushrod mounting hole



### Rudder pushrod length



### Rudder pushrod mounting hole



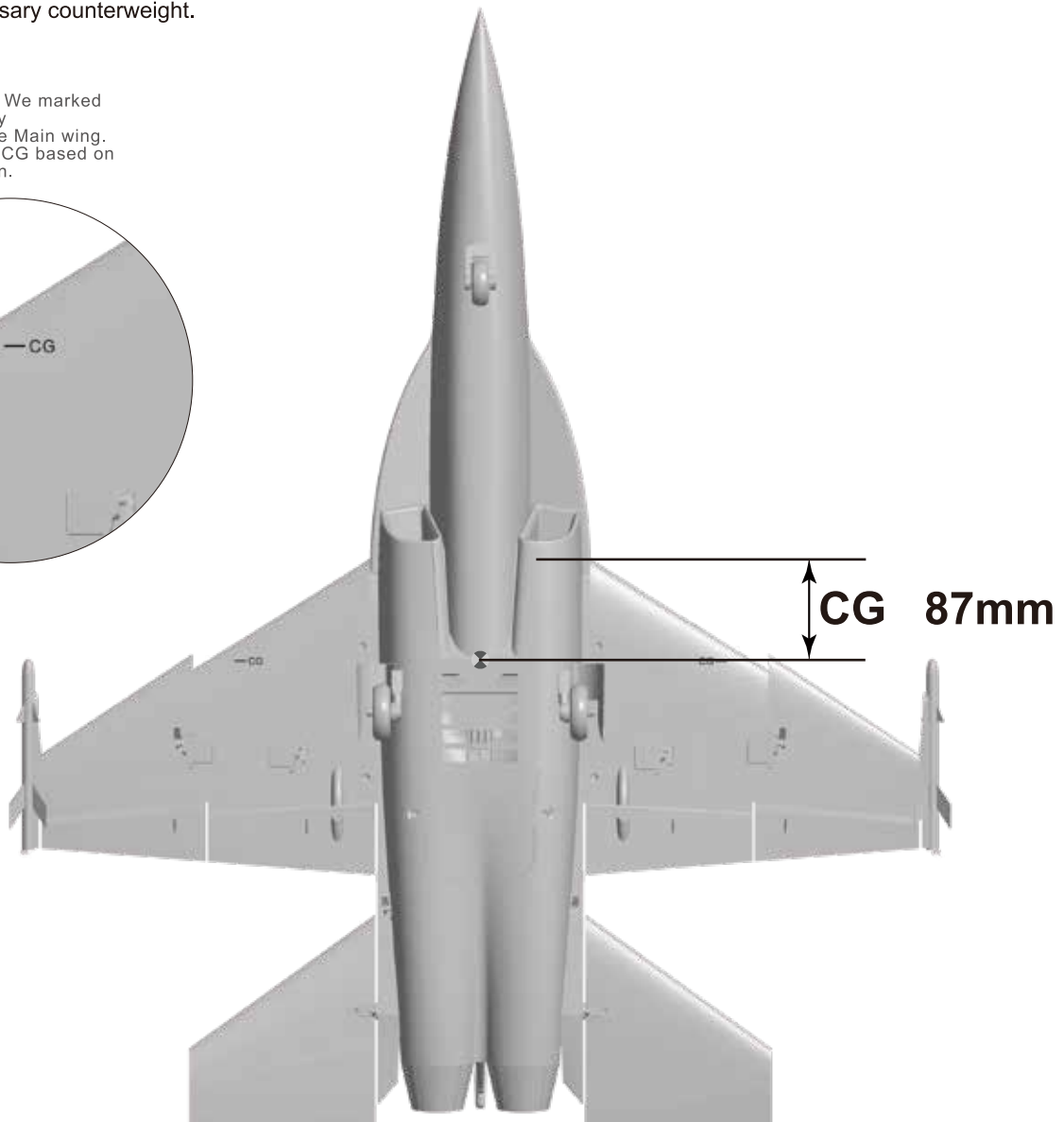
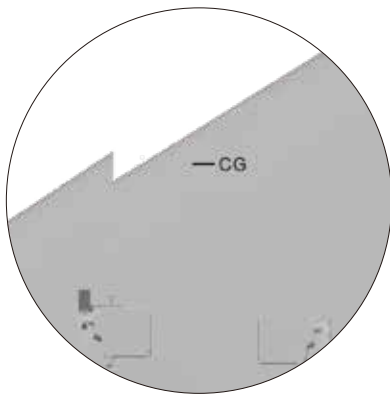


## Center of Gravity

Correct Center of Gravity ("CG") is critical for enabling safe aircraft stability and responsive control. Please refer to the following CG diagram to adjust your aircraft's Center of Gravity.

- Depending on the capacity and weight of your chosen flight batteries, move the battery forward or backward to adjust the Center of Gravity.
- If you cannot obtain the recommended CG by moving the battery to a suitable location, you can also install a counterweight to achieve correct CG. However, with the recommended battery size, a counterweight is not required. We recommend flying without unnecessary counterweight.

As the photo show, We marked the center of gravity on the bottom of the Main wing. Please confirm the CG based on this marked position.



## ESC Instruction

- 1.This product uses the new 40A V2 ESC, and adds the "Reverse throttle deceleration after landing" function.
- 2.This ESC has two connecting cables: "Throttle" signal control cable and "Reverse Brake" control cable.
- 3.Connection Instruction
  - "Throttle" signal control cable insert into the throttle channel of receiver to control the throttle size.
  - "Reverse Brake" control cable insert into any free two-way switch channel of receiver. After the plane lands on the ground, switch the corresponding channel switch on the radio to turn on the "Reverse throttle deceleration" function.

### Note:

- 1.After the model aircraft is off the ground, during the flight, the "throttle reverse thrust" function cannot turn on, otherwise the forward power will be lost, and resulting in a serious flight accident.

**Control Direction Test**

After installed the plane, before flying, we need a fully charged battery and connect to the ESC, then use radio to test and check that every control surface work properly.

**Aileron**

Stick Left



Stick Right



**Rudder**

Stick Left



Stick Right

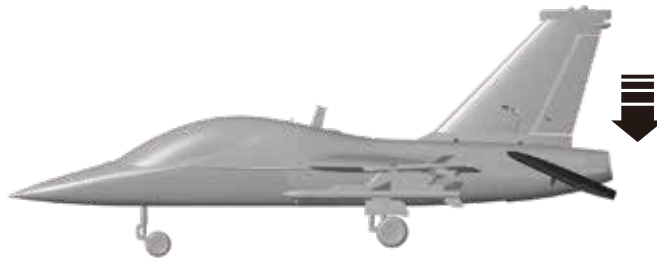


**Elevator**

Stick down



Stick up



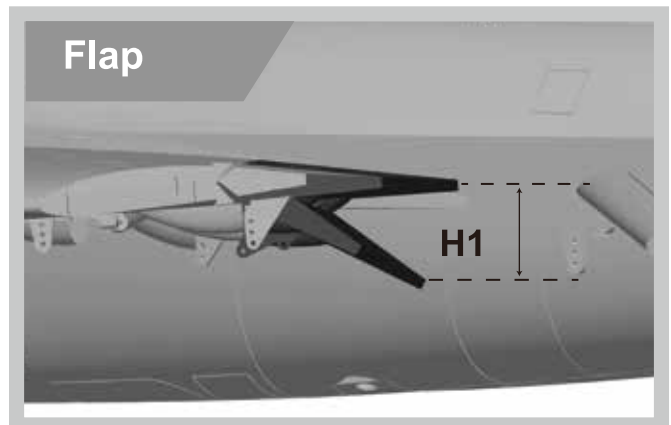
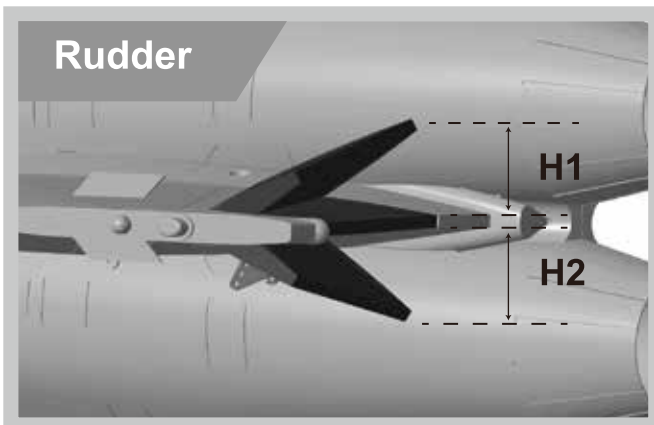
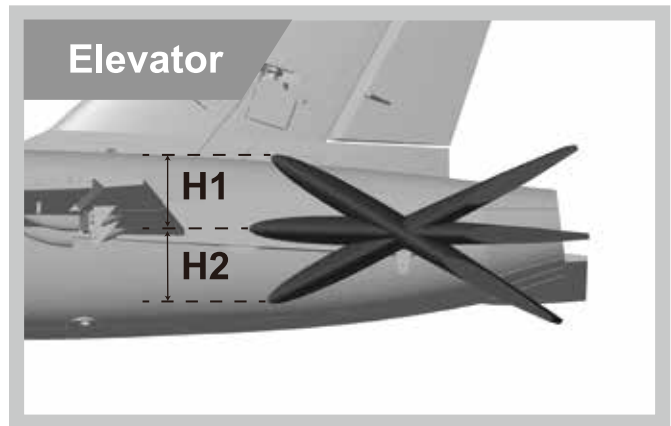
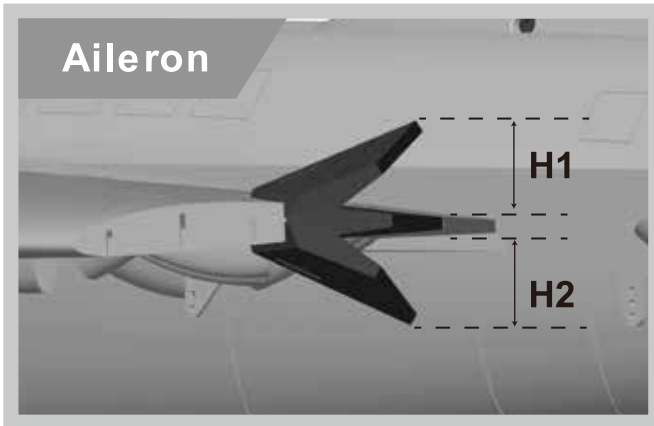
**Flaps**

Flaps down



## Dual Rates

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



	<b>Aileron</b> (Measured closest to the fuselage)	<b>Elevator</b> (Measured closest to the fuselage)	<b>Rudder</b> (Measured from the bottom)	<b>Flaps</b>
<b>Low Rate</b>	H1/H2 13mm/13mm D/R Rate: 80%	H1/H2 24mm/24mm D/R Rate: 80%	H1/H2 25mm/25mm D/R Rate: 80%	H1 16mm
<b>High Rate</b>	H1/H2 17mm/17mm D/R Rate: 100%	H1/H2 30mm/30mm D/R Rate: 100%	H1/H2 30mm/30mm D/R Rate: 100%	H1 22mm

### ⚠ Important Flight Notes:

- The L-15 model jet will meet the obvious nose-up phenomenon when flaps are deployed. A Flap-to-Elevator Mix is required to maintain a good landing when flaps are deployed.

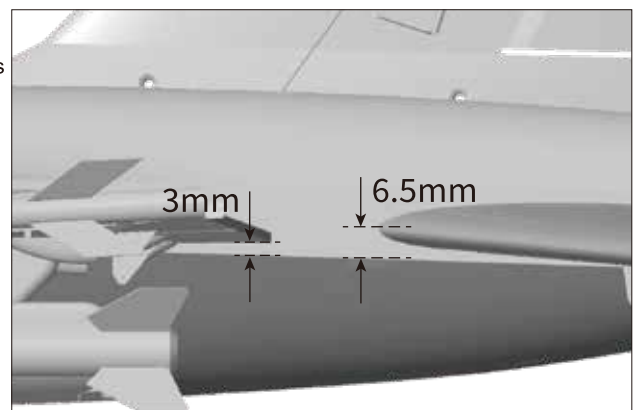
The detail is as below:

With low rate flaps deployed,  
**mix 2mm of DOWN elevator.**

With high rate flaps deployed,  
**mix 5mm of DOWN elevator.**

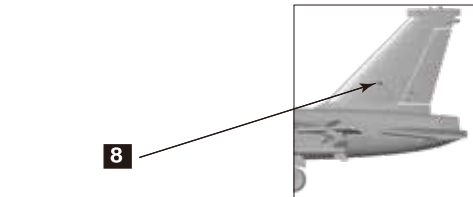
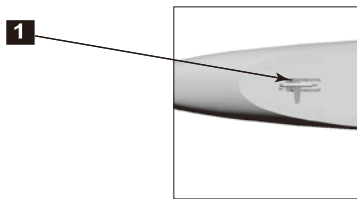
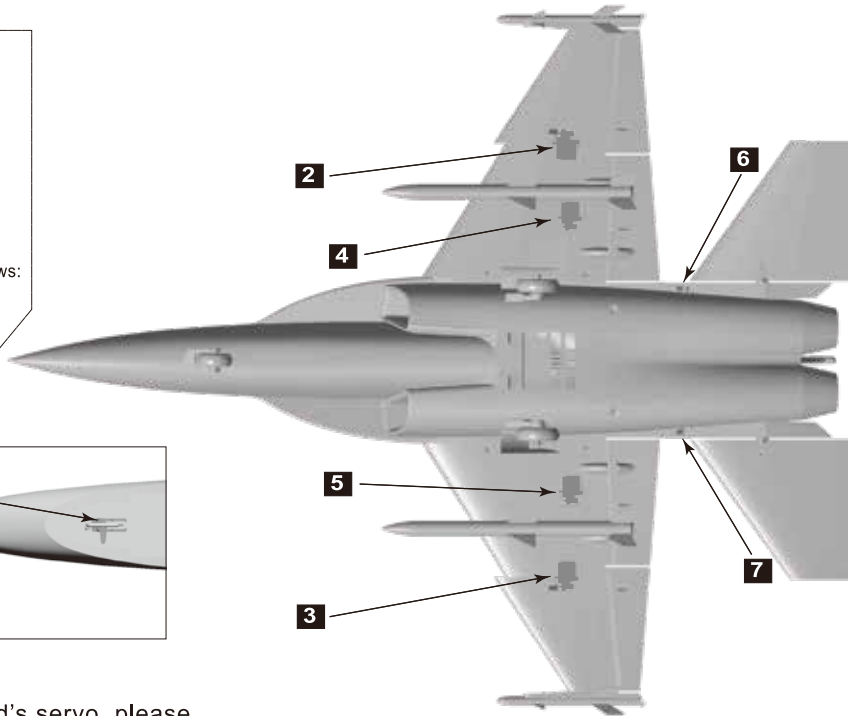
- Please refer to the right photo and adjust the flaps and elevator to the correct center position.

Distance from the front point of the horizontal tail to the lower surface of the fuselage: 6.5mm  
Distance from the lower surface of the flaps to the lower surface of the fuselage: 3mm



## Servo Direction

The servo positive or reverse rotation is defined as follows:  
 When servo input signal change from 1000μs to 2000μs,  
 The servo arm is **rotated clockwise**, its **positive servo**.  
 The servo arm is **rotated counterclockwise**, its **reverse servo**.



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

Position	Servo regulation	No.	Pos. / Rev.	Cable length
Nose gear steering servo	9g plastic servo	1	Reverse	100mm
Aileron(L)	9g plastic servo	2	Positive	200mm
Aileron(R)	9g plastic servo	3	Positive	200mm
Flap(L)	9g plastic servo	4	Positive	100mm
Flap(R)	9g plastic servo	5	Positive	100mm
Elevator(L)	9g plastic servo	6	Positive	100mm
Elevator(R)	9g plastic servo	7	Reverse	100mm
Rudder	9g plastic servo	8	Positive	100mm

## Motor Specification

**2840-2850**

2840-2850KV 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.

Model	KV Value	Volute (V)	Current (A)	Pull (g)	RPM	Weight (g)	No Load Current	Propeller	ESC
2840-2850KV	2850RPM/V	14.8	40	1350	42180	145	2.7A	64mm Ducted Fan	40A



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