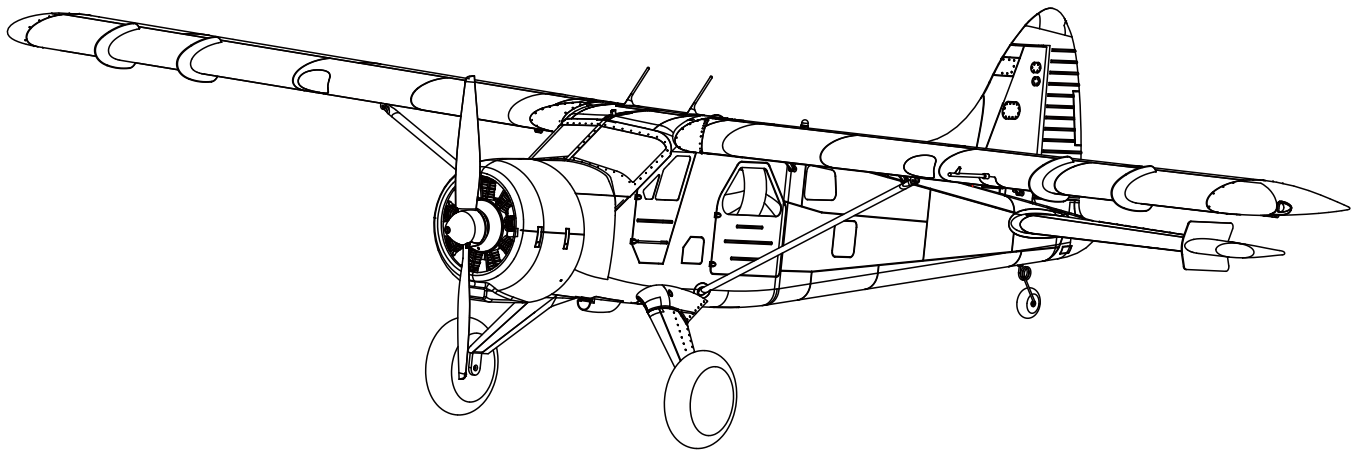




# **2000MM Beaver DHC-2**

## **Operating Manual**



**REALISTIC**  
• FLAPS INSTALLED

**RIGID**  
• STRONG DURABLE EPO

**STABLE**  
• SMOOTH FLYING PERFORMANCE

**FMSMODEL.COM**



## WARNING



**WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and failure to do so could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision.

This manual contains instructions for safety operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual prior to assembly, setup or use, in order to operate and avoid damage or serious injury.

### Safety Precautions and Warnings

As the user of this product, you are solely responsible for operating in a manner that does not endanger yourself and others or result in damage to the product or the property of others. This model is controlled by a radio signal subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is advisable to always keep a safe distance in all directions around your model, as this margin will help avoid collisions or injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

- Never operate your model with low transmitter batteries.
- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model in populated areas for any reason.
- Carefully follow the directions and warnings for this and any optional support equipment you use (chargers, rechargeable battery packs, etc.)
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.
- Never lick or place any part of your model in your mouth as it could cause serious injury or even death.

### Safety

#### Lithium Polymer (Li-Po) Battery Warning

**CAUTION:** Always follow the manufacturer's instructions for safe use and disposal of batteries. Fire, property damage, or serious injury can result from the mishandling of Li-Po batteries.

- By handling, charging or using a Li-Po Battery you assume all risks associated with lithium batteries. If at any time the batteries begin to swell or balloon, discontinue use immediately!
- Always store the batteries at room temperature in a dry area to extend the life of the battery. Always transport or temporarily store the battery in a temperature range of 40-120F. Do not store the battery or model in a car or in direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Never use a Ni-Mh Charger to charge Li-Po Batteries. Failure to charge the battery with a Li-Po compatible charger may cause fire resulting in personal injury and property damage.
- Never discharge Li-Po Cells below 3V.
- Never leave charging batteries unattended.
- Never charge damaged batteries.

#### Charging the Flight Battery Warning

- Use a battery charger that is designed to safely charge the Li-Po Battery. Read the charger instructions carefully before use. When charging the battery, make certain the battery is on a heat resistant surface. It is also highly recommended to place the Li-Po Battery inside a fire resistant charging bag readily available at hobby shops or online.

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## Introductions

Introducing FMS's latest jewel. The 2000mm Beaver is going to make its official debut!

The largest propeller aircraft offered in the FMS line features all of our latest concepts and technologies. After extensive tests and product development the Beaver shows excellent performance. While the measured thrust force can reach more than 5000g, the flying weight is only 3800g.

With a classic combination of black and yellow, the Beaver brings a visual wow factor, as well as impressive performance to the flying field. Capable of leisurely low/mid-speed flight this model still maintains aerobatic qualities.

With the latest FMS multi-connect technology, we have streamlined the wiring system making it easier to install, eliminating wiring problems. Easier plane transport is facilitated by the new connectors that allow pilots to remove and replace the wings with just one step. All channels on each wing are brought together in one port. The pilot can install the main wing simply by inserting the port and then securing with four screws.

To make flying the Beaver more fun at night, there are 5 LED lights located on the front of the main wing and at the rear of the fuselage.

The ailerons and flaps are designed to scale. Utilizing the latest EPO52 foam material as well as our new hollow main wing design greatly alleviates the airplane weight.

Electric Retracts and Floats can be purchased separately to modify your model. Electric Retracts will make your model ready to tow banners and gliders. The Beaver's high powered motor is ready to be put to the test for water take off.

Over the years, FMS has been committed to developing different types of products to meet the diverse needs and interests of pilots. For FMS' first large propeller aircraft, we adopted all of the latest concepts and technologies to bring you a wonderful casual flight experience.

### Features

- Multi-connector for easy installation
- Lighter EPO 52 foam
- Metal landing gear designed for hard landings
- Scaled LED night lights
- Large tires for any surface
- Servo box design for easy assembly & disassembly
- Scaled ailerons and flaps
- Newly developed lightweight hollow main wing
- Oversized battery hatch for 6s battery and 15 minutes of flying time
- Optional banner tow and floats upgrades

### History

The DHC-2 Beaver is a general purpose bush plane developed by de Havilland Canada. Though originally used for cargo/passenger hauling and crop dusting, it was also adopted by the United States Armed Forces as a utility aircraft and search and rescue unit. The single-engined, high-wing, propeller driven STOL aircraft appeared in both the Korean and Vietnam Wars and was popular amongst front line men. When production finally ceased in 1967, only 1,657 DHC-2 Beavers had been built.



## Specifications

**Wingspan: 2000mm (78.7in)**

**Overall Length: 1304mm (51.3in)**

**Flying Weight: Around 3800g (134oz)**

**Motor Size: Brushless 4258-KV550**

**Wing Load: 71.1 g/dm<sup>2</sup> (0.16oz/in<sup>2</sup>)**

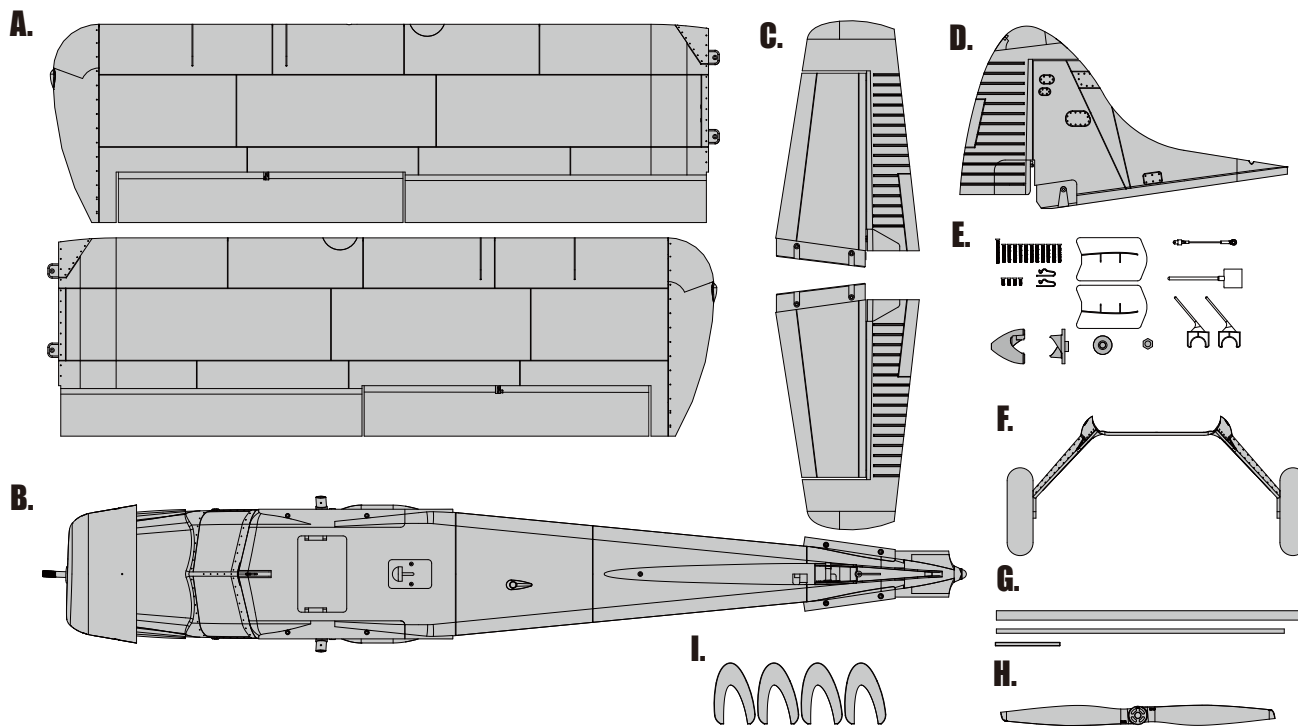
**Wing Area: 53.4 dm<sup>2</sup> ( sq.in)**

**ESC: 70A**

**Servo: 6g Servo x 17**

## Contents of Kit

Before assembly, please inspect the contents of the kit. The photo below details the contents of the kit and labels. If any parts are missing or defective, please identify the name or part number (refer to the spare parts list near the end of the manual) then contact your local shop or email us: [support@fmsmodel.com](mailto:support@fmsmodel.com)

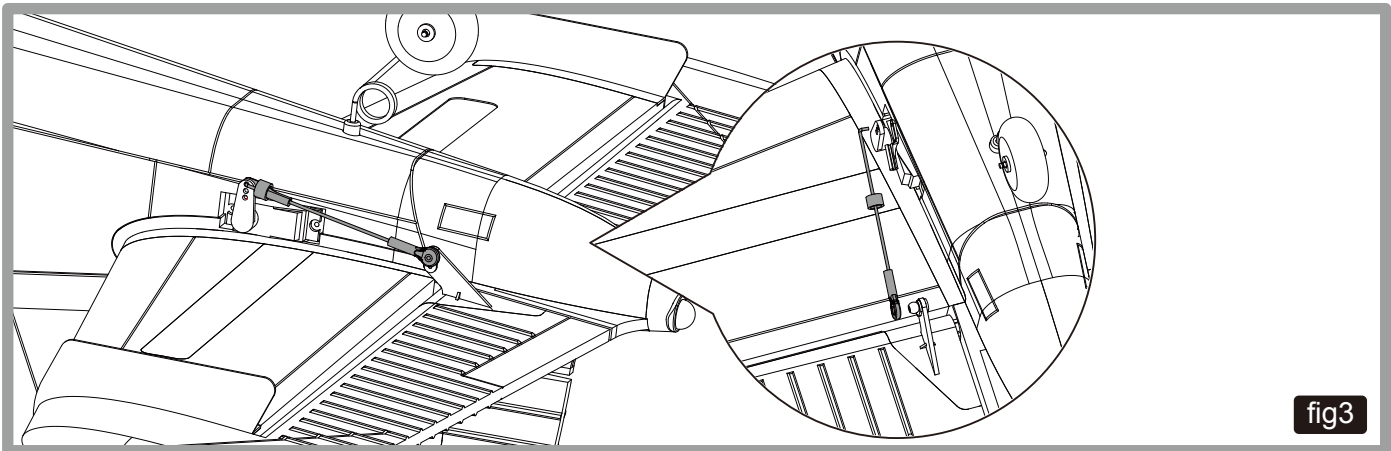
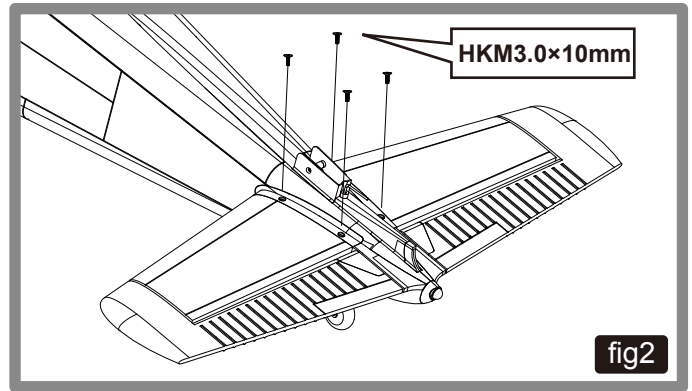
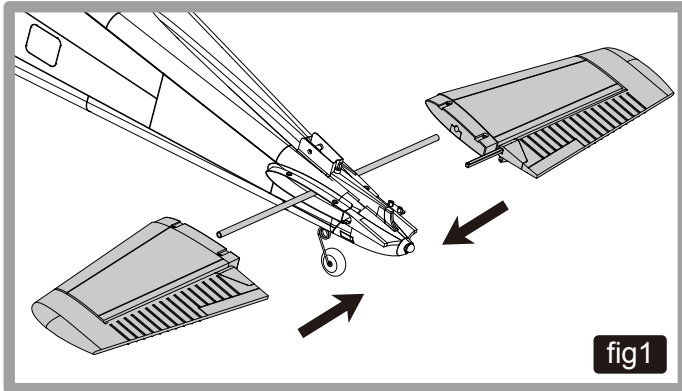


- A: Main wing
- B: Main fuselage
- C: Horizontal stabilizer (Left and Right)
- D: Vertical Stabilizer
- E: Spinner set and hardware (Screws 4-PA2.6\*10MM, 5-HKM3.0\*25MM)

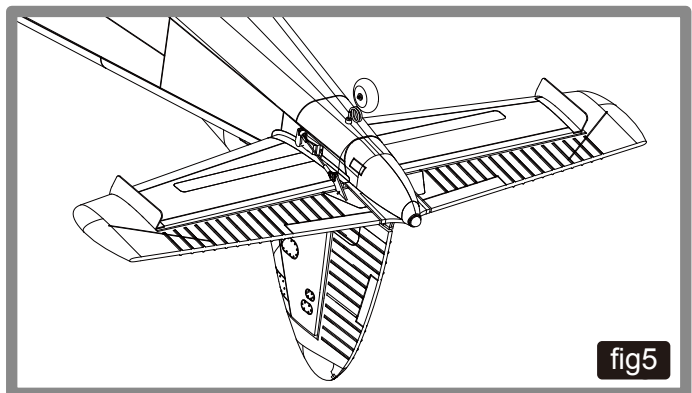
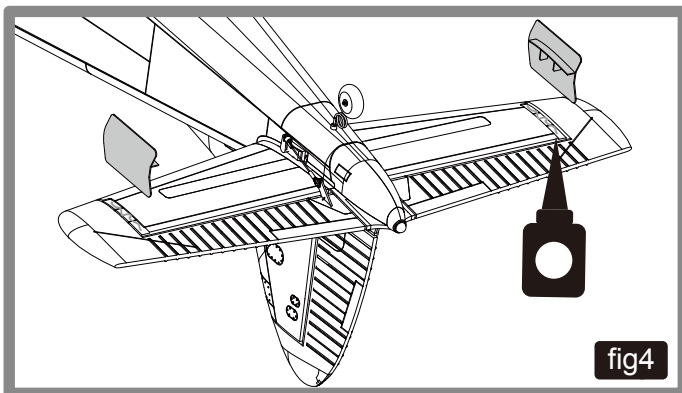
- F: Main Landing gear
- G: Tubes
- H: Propeller
- I: Vortex Generator

## Horizontal Tail Installation

1. Slide the horizontal tail tube into the hole in rear of the fuselage
2. Install the 2 piece (left and right) horizontal tail as shown. Ensure the control horn faces down.
3. Install 4 screws in the front and rear holes in the button of the horizontal tail.
4. Attach the ball link to the elevator control horn's outermost hole using the included nut and screw.



5. Carefully apply CA to the base and side of the rear Horizontal stabilizer
6. Carefully place the Vortex Generator into the pocket



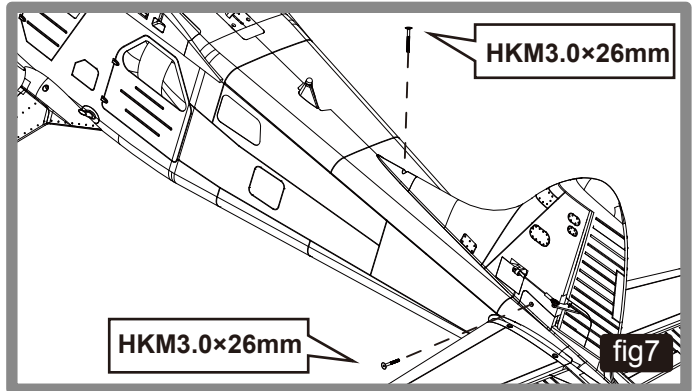
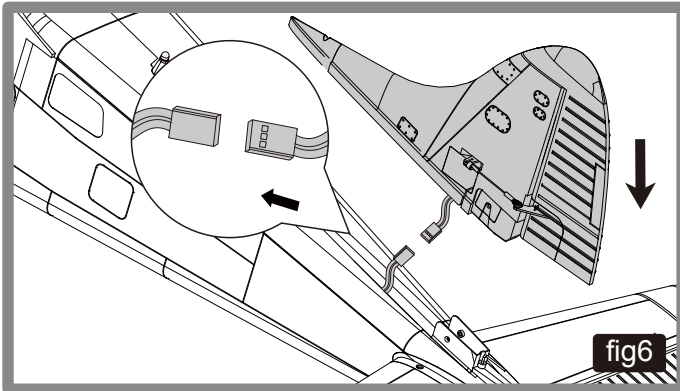
## Vertical Stabilizer Installation

1. Connect the rudder and elevator servo connectors to the servo extensions in the fuselage.
2. Slide the vertical tail assembly into the slot in the fuselage.

**CAUTION:** DO NOT crush or damage the wiring when attaching the vertical tail assembly to the fuselage.

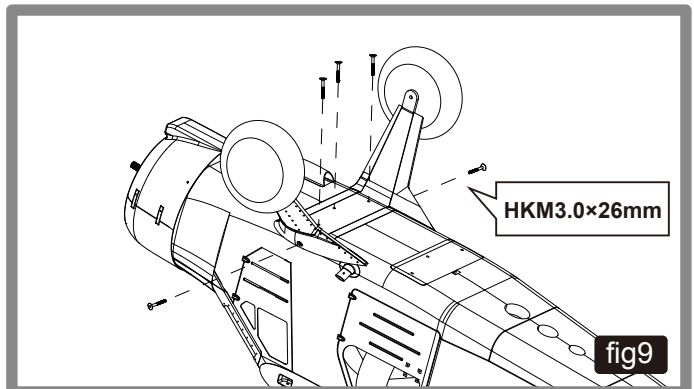
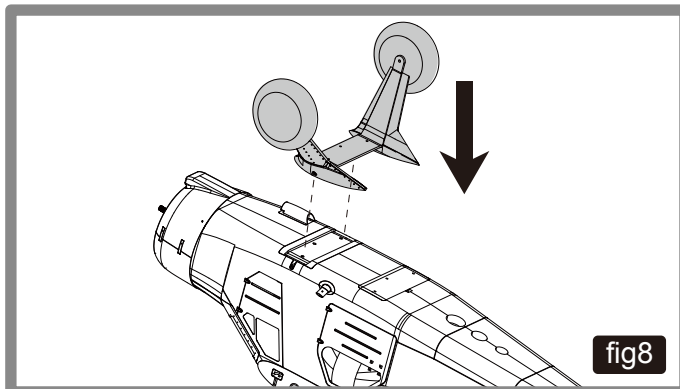
3. Secure the assembly to the fuselage using 2 screws as shown. Long screw in front hole, shorter screw in rear hole.

**CAUTION:** Make sure the screw is tight enough, or it may cause a crash. When needed, disassemble in reverse order.



## Landing Gear Set Installation

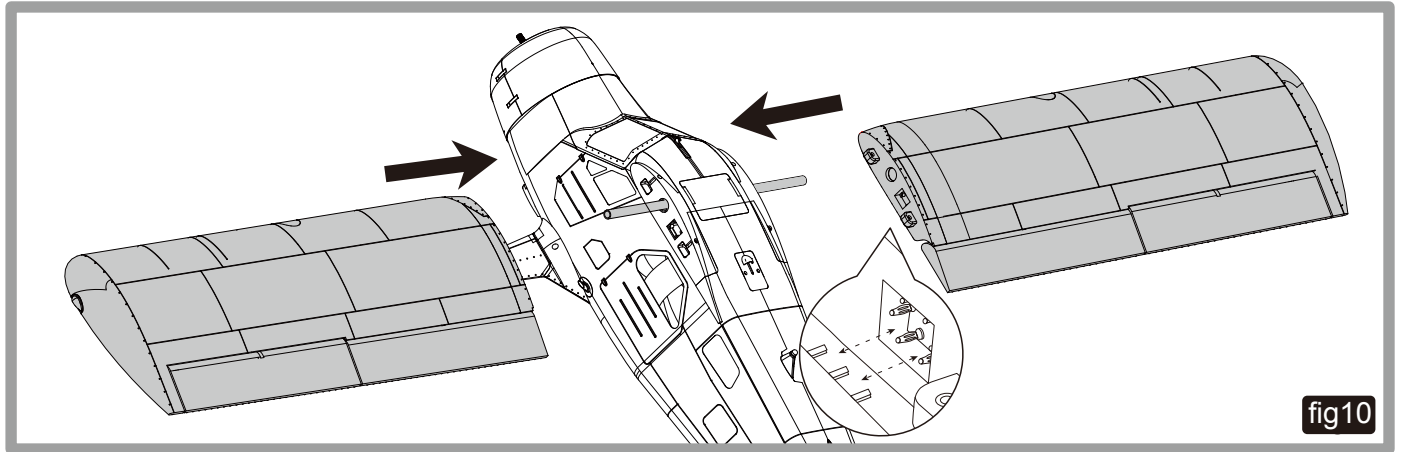
Attach the landing gear set on the bottom of fuselage. Install three screws in the landing gear flat side and two screws in both sides.



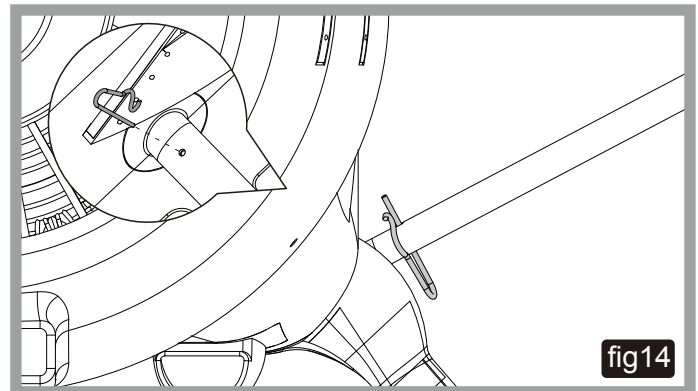
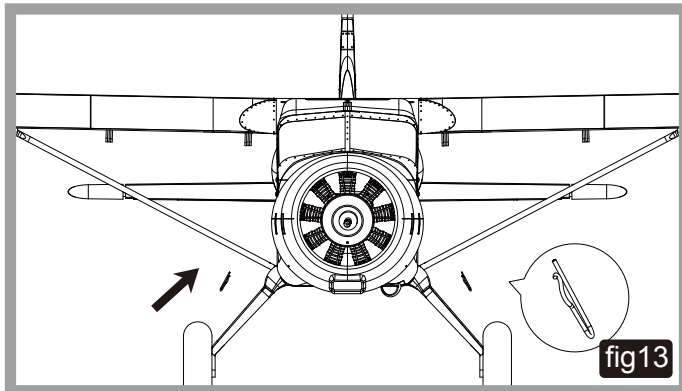
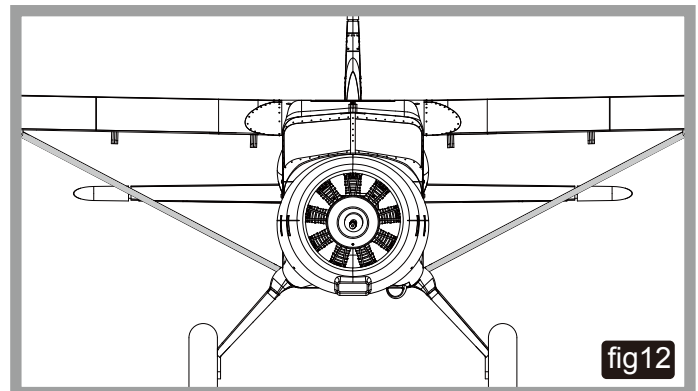
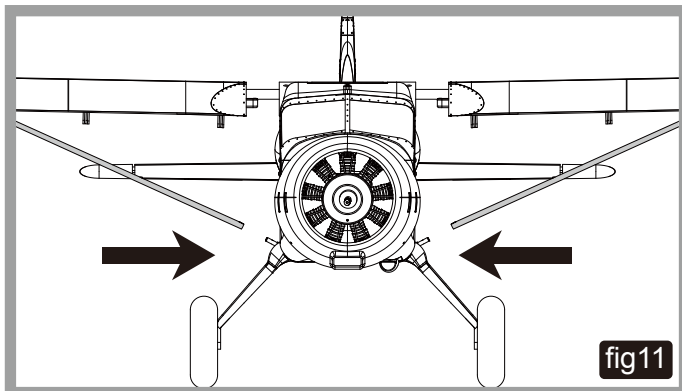
## Wing Installation

1. Slide the tube into the fuselage then install both wings over the wing tube and into the wing slot of the fuselage.

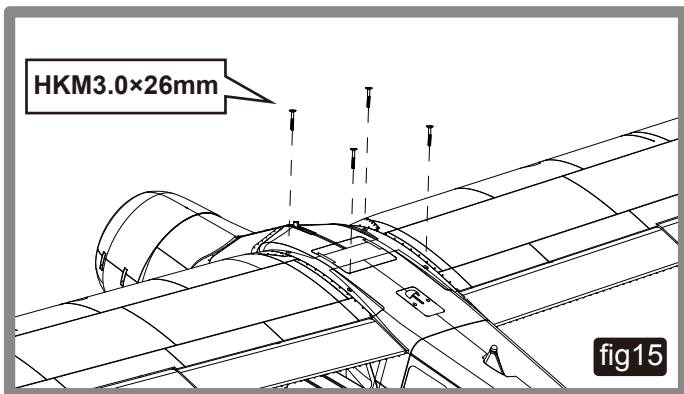
**Notice:** The connectors on both side should be attached precisely and firmly.



2. Install the 2 wing struts on the fuselage mount using 2 R-clips. Make sure it is installed precisely.



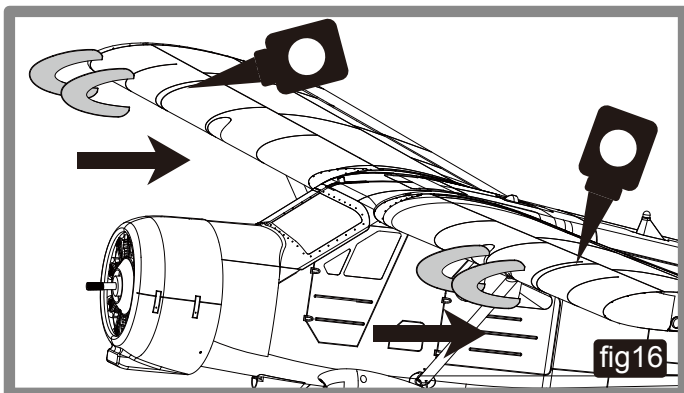
3. Secure the wings on the fuselage using 4 screws in the top of the wings. Make sure it is tightened enough.



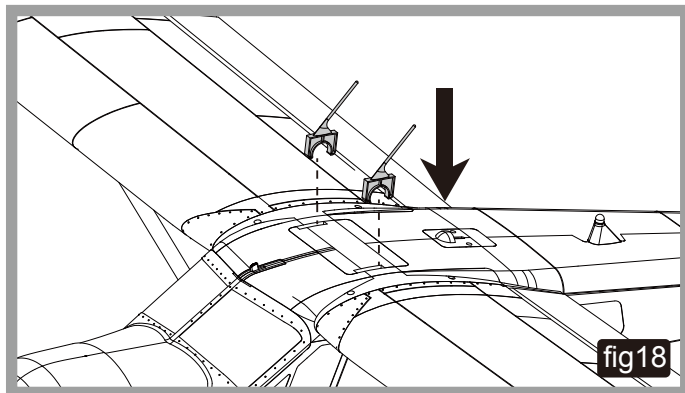
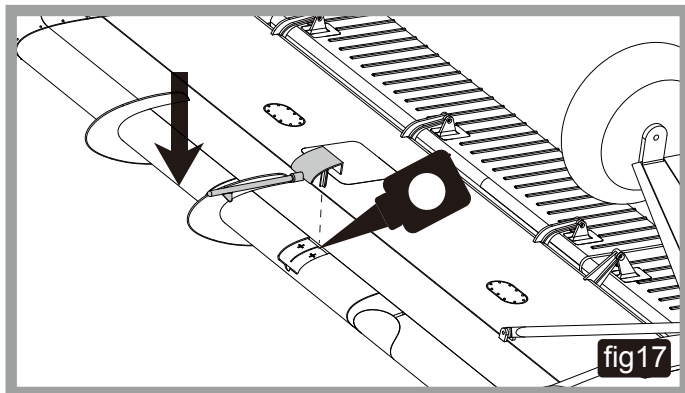
### Removal

We recommend removing the wings from the fuselage for storage or transport of the aircraft.

1. Carefully apply CA to the base and side of the front main wing
2. Carefully place the Vortex Generator into the pocket

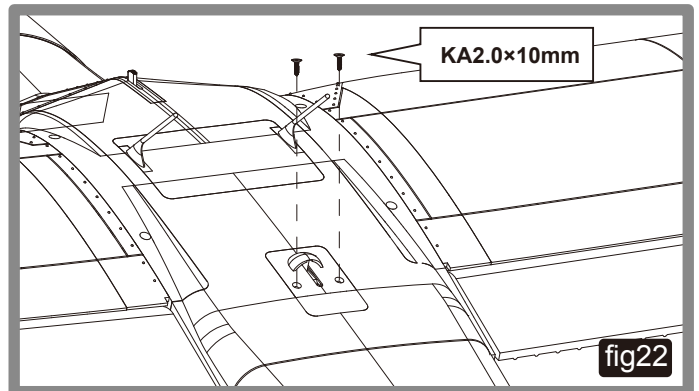
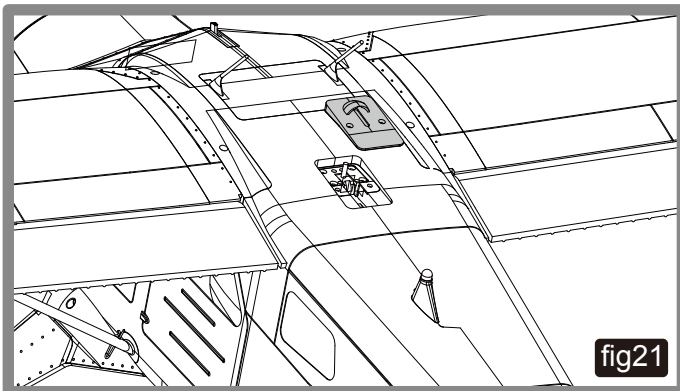
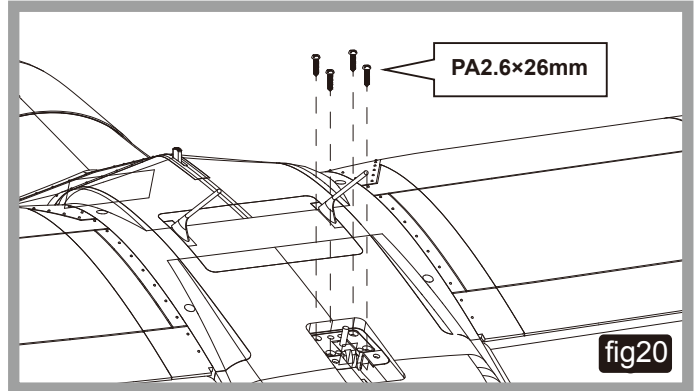
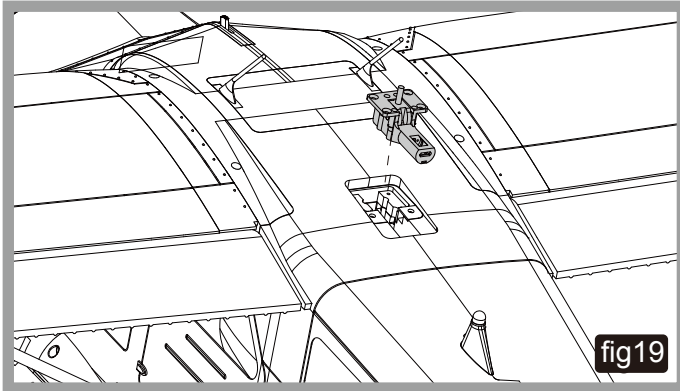


1. Carefully apply CA to the base and side of the air speed pocket.
2. Carefully place the Vortex Generator into the pocket.
3. Install the antenna on the top of the fuselage.



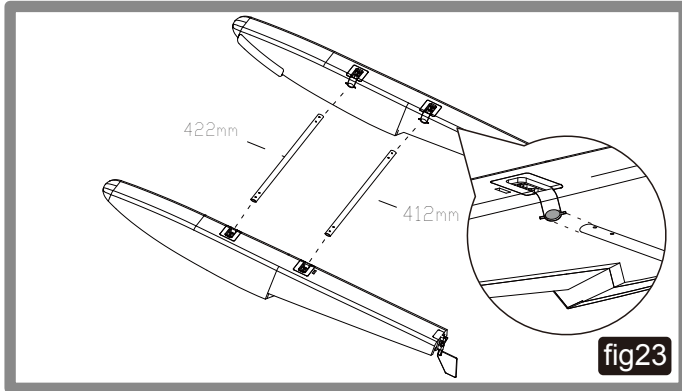
## Optional Towing Retract Installation

1. Install the retract to the top of fuselage with four screws as photo shows.
2. Install the cover on the retract with two screws.

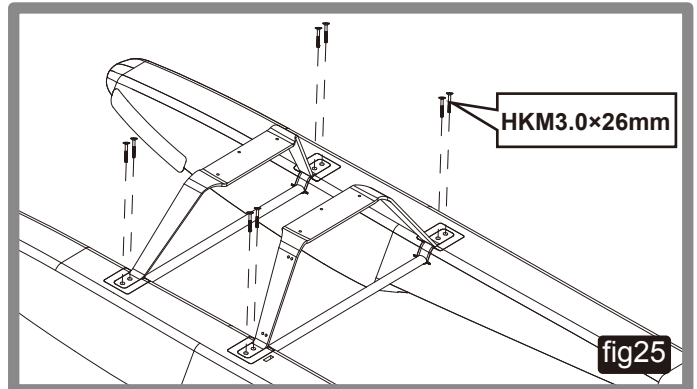
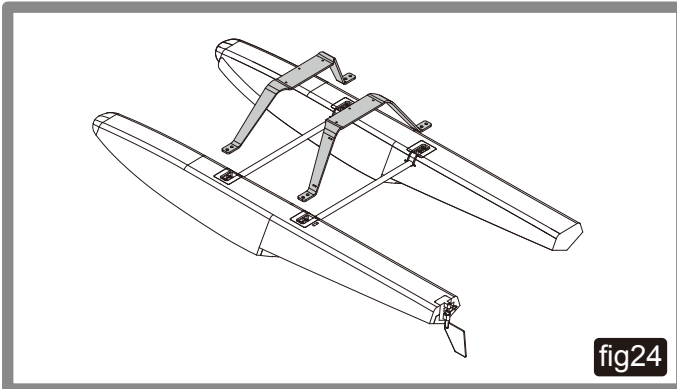


## Optional Float Installation

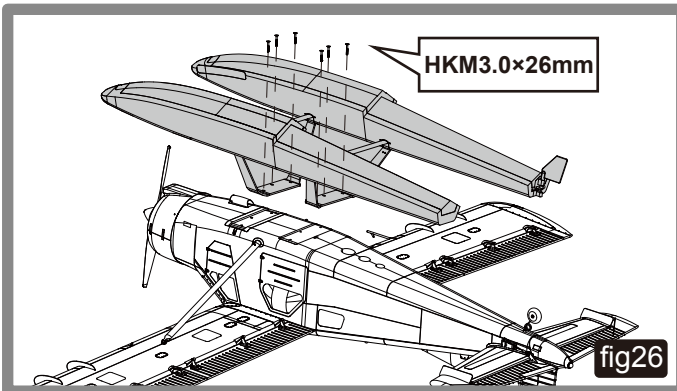
1. Install the strut bar to both sides of the float. The front bar is longer with 422mm length, the rear bar is shorter with 412mm length. Wrong installation will cause difficulty landing and taking off (fig.24)



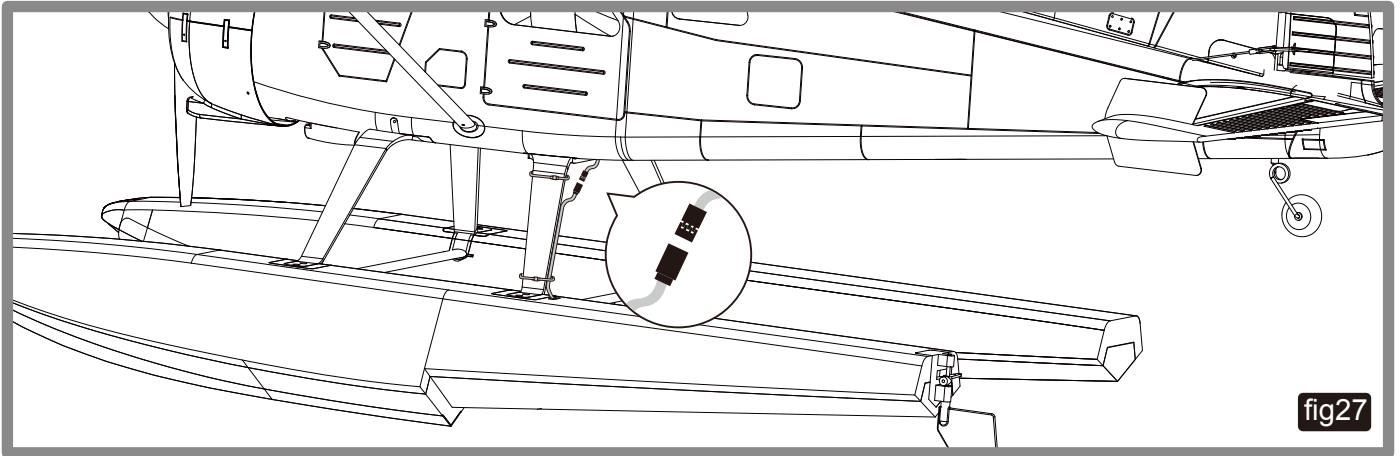
2. Install the float strut to the float with 8 screws as picture shows. (fig26)



3. With the fuselage bottom facing up, carefully install the float set to the fuselage with 6 screws.



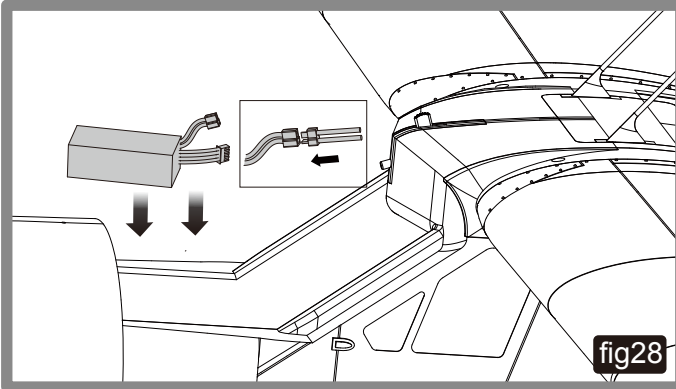
4. Connect the float rudder servo connector then tighten it on the strut with included cable ties.



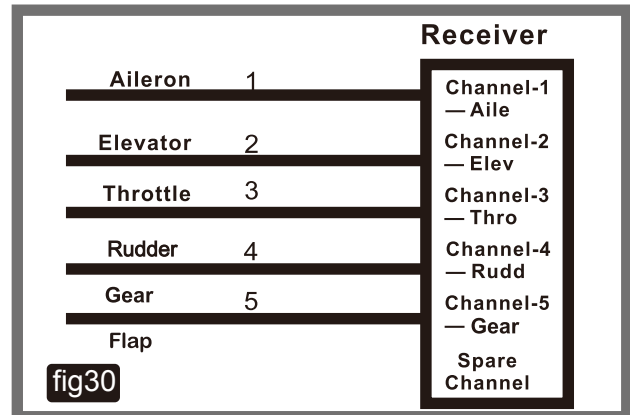
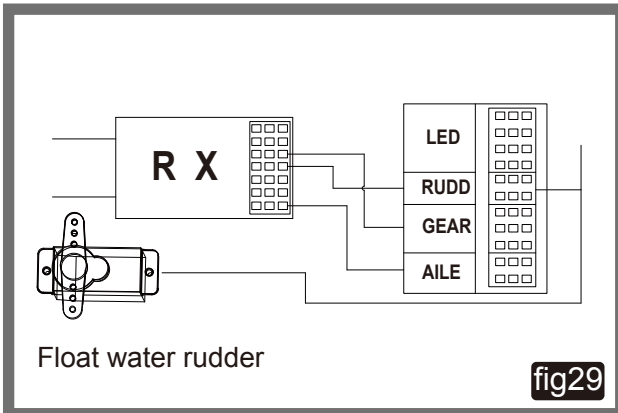


## Battery and radio installation

1. Pull back on the release button and remove the battery hatch.
2. Apply the hook tape to the cable end of the battery (fig28).
3. Make sure the battery is secured using the hook. Note: you may need to relocate the battery position to achieve the correct CG for your model.



4. Check the connection diagram below for more information.



Note: If you have installed the optional retract for towing, use Channel 5 to operate.

## Get your model ready to fly

### Important ESC and model information

1. The ESC included with the model has a safe start. If the motor battery is connected to the ESC and the throttle stick is not in the low throttle or off position, the motor will not start until the throttle stick is moved to the low throttle or off position. Once the throttle stick is moved to the low throttle or off position, the motor will emit a series of beeps. Several beeps with the same tune means the ESC has detected the cells of the battery. The count of the beeps equals the cells of the battery. The motor is now armed and will start when the throttle is moved.
2. The motor and ESC come pre-connected and the motor rotation should be correct. If for any reason the motor is rotating in the wrong direction, simply reverse two of the three motor wires to change the direction of rotation.
3. The motor has an optional brake setting. The ESC comes with the brake switched off and we recommend that the model be flown with the brake off. However, the brake could be accidentally switched on if the motor battery is connected to the ESC while the throttle stick is set at full throttle. To switch the brake off, move the throttle stick to full throttle and plug in the motor battery. The motor will beep one time. Move the throttle stick to low throttle or the off position. The motor is ready to run and the brake will be switched off.
4. Battery Selection and Installation. We recommend the 22.2V 4000mAh 35C Li-Po battery. If using another battery, the battery must be at least a 22.2V 4000mAh 35C battery. Your battery should be approximately the same capacity, dimension and weight as the 22.2V 4000mAh 35C Li-Po battery to fit the fuselage without changing the center of gravity significantly.

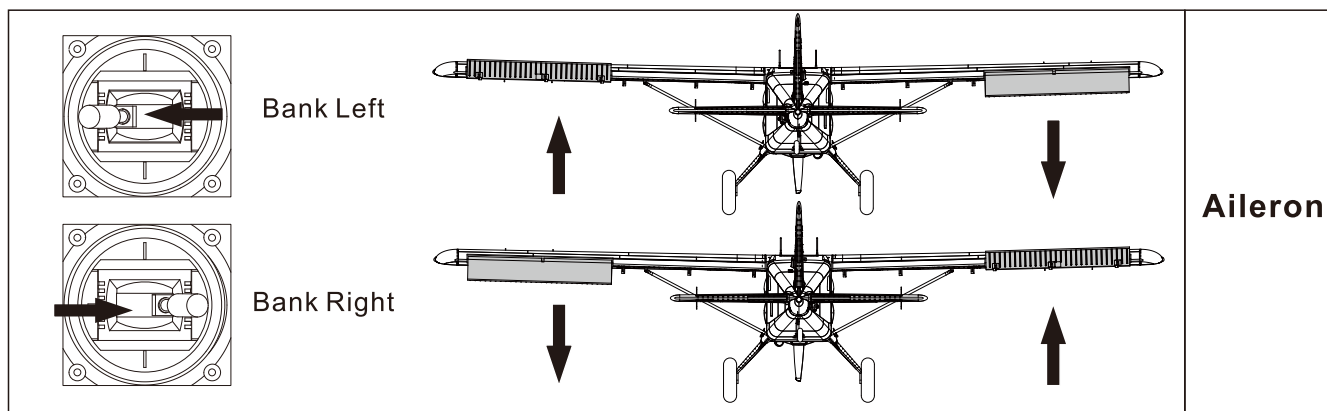
### The transmitter and model setup

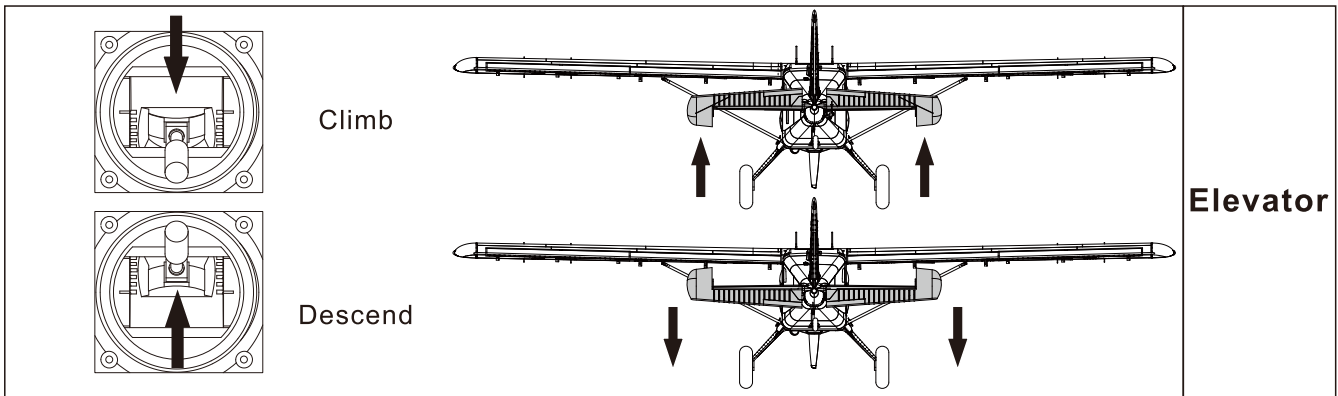
Before getting started, bind your receiver with your transmitter. Please refer to your Transmitter Manual for proper operation

**CAUTION:** To prevent personal injury, DO NOT install the propeller assembly onto the motor shaft while testing the control surfaces. DO NOT arm the ESC and do not turn on the transmitter until the Transmitter Manual instructs you to do so.

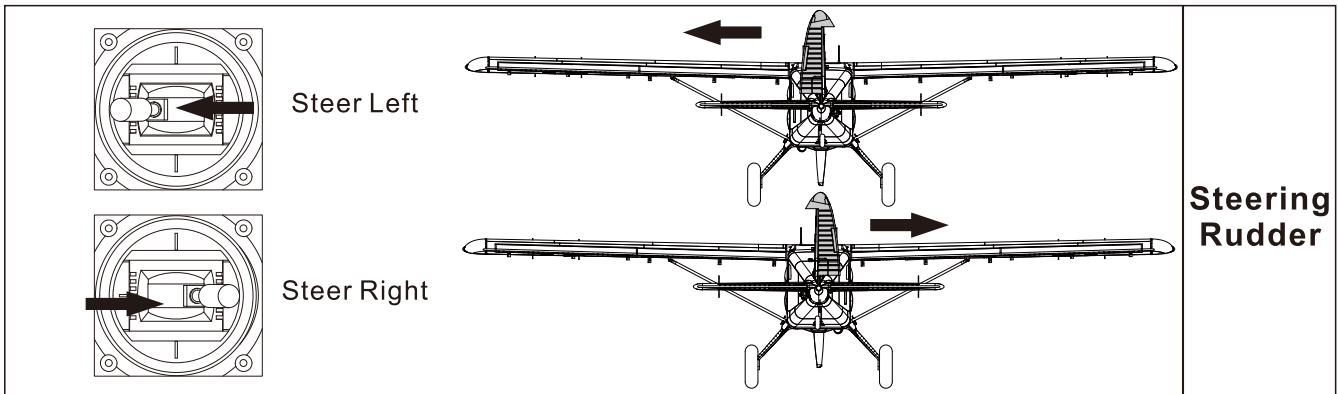
Tips: Make sure all control sticks on your radio are in the neutral position (rudder, elevator, ailerons) and the throttle is in the OFF position. Make sure both ailerons move up and down (travel) the same amount. This model tracks well when the left and right ailerons travel the same amount in response to the control stick.

1. Move the controls on the transmitter to make sure the aircraft control surface moves correctly. See diagrams below.





**Elevator**



**Steering Rudder**

### Check the control throws

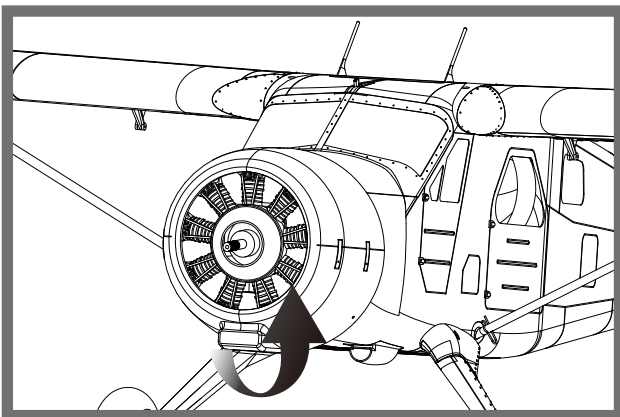
The suggested control throw setting for FMS MODEL are as follows (dual rate setting):

	High Rate	Low Rate
Elevator	16mm up/down	10mm up/down
Aileron	24mm up/down	20mm up/down
Rudder	16mm left/right	12mm left/right

Tips: On first flight, fly the model in low rate. The first time you use high rates, be sure to fly at low to medium speeds. High rate, as listed, is only for EXTREME maneuvering.

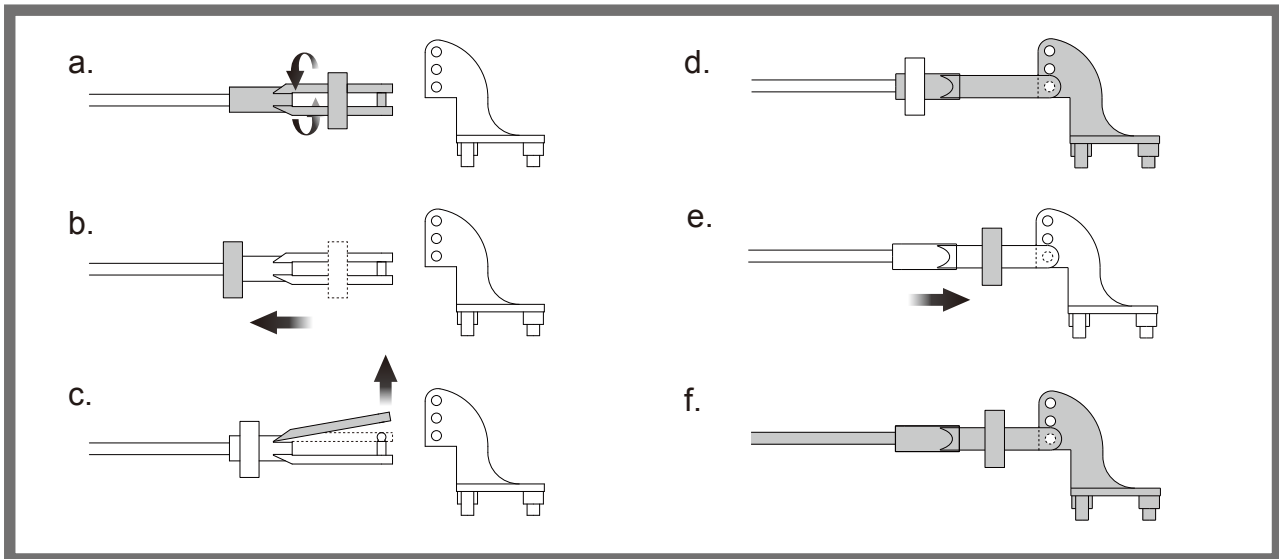
### Check the motor rotating direction

The motor should rotate clockwise when viewing the plane from the rear.



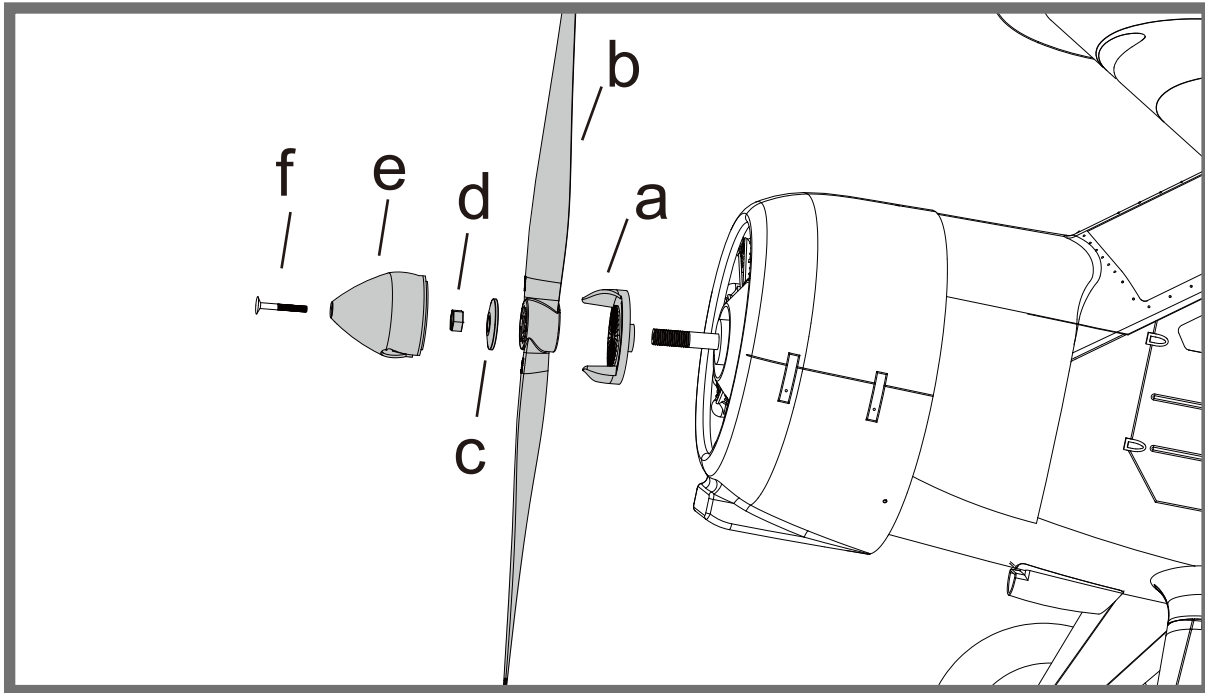
## Clevis Installation

- Pull the tube from the clevis to the linkage.
- Carefully spread the clevis, then insert the clevis pin into the desired hole in the control horn.
- Move the tube to hold the clevis on the control horn.



## Install the propeller and spinner

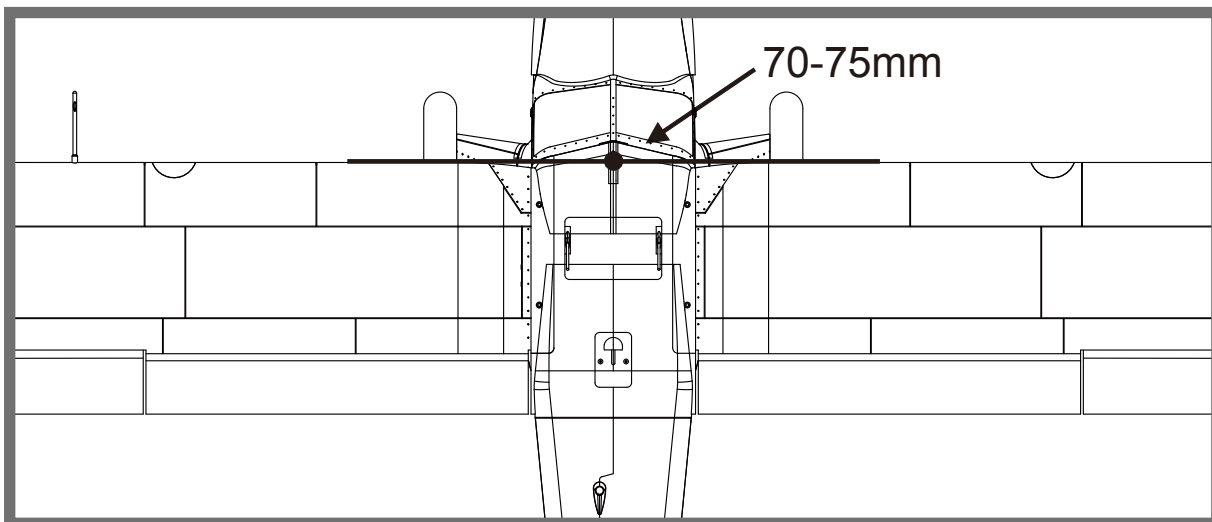
Assemble the spinner and propeller as shown below.



## Check the C.G. (Center of Gravity)

When balancing your model, adjust the motor battery as necessary so the model is level or slightly nose down. This is the correct balance point for your model. After the first flights, the CG position can be adjusted for your personal preference.

1. The recommended Center of Gravity (CG) location for your model is (70-75mm) forward from the leading edge of the main wing (as shown) with the battery pack installed. Mark the location of the CG on top of the wing.
2. When balancing your model, support the plane at the marks made on the bottom of the main wing with your fingers or a commercially available balancing stand. This is the correct balance point for your model. Make sure the model is assembled and ready for flight before balancing.



## **Before flying the model**

### **Find a suitable flying site**

Find a flying site clear of buildings, trees, power lines and other obstructions. Until you know how much area will be required and have mastered flying your plane in confined spaces, choose a site which is at least the size of two to three football fields - a flying field specifically for R/C planes is best. Never fly near people - especially children, who can wander unpredictably.

### **Perform the range check for your plane**

As a precaution, an operational ground range test should be performed before the first flight each time you go out. Performing a range test is a good way to detect problems that could cause loss of control such as low batteries, defective or damaged radio components, or radio interference. This usually requires an assistant and should be done at the actual flying site you will be using.

First turn on the transmitter, then install a fully-charged battery into the fuselage. Connect the battery and install the hatch.

Remember, use care not to bump the throttle stick. Otherwise, the propeller/fan will turn and possibly cause damage or injury.

Note: Please refer to your Transmitter Manual that came with your radio control system to perform a ground range check. If the controls are not working correctly or if anything seems wrong, do not fly the model until you correct the problem. Make certain all the servo wires are securely connected to the receiver and the transmitter batteries have a good connection.

### **Monitor your flight time**

Monitor and limit your flight time using a timer (such as on a wristwatch or in your transmitter if available). When the batteries are getting low you will usually notice a performance drop before the ESC cuts off motor power, so when the plane starts flying slower you should land. Often (but not always) power can be briefly restored after the motor cuts off by holding the throttle stick all the way down for a few seconds.

To avoid an unexpected dead-stick landing on your first flight, set your timer to a conservative 4 minutes. When your alarm sounds you should land right away.

## **Flying course**

### **Take off**

While applying power, slowly steer to keep the model straight. The model should accelerate quickly. As the model gains flight speed you will want to climb at a steady and even rate. The Beaver will climb out at a nice angle of attack (AOA).

### **Flying**

Always choose a wide-open space for flying your plane. It is ideal for you to fly at a sanctioned flying field. If you are not flying at an approved site always avoid flying near houses, trees, wires and buildings. You should also be careful to avoid flying in areas where there are many people, such as busy parks, schoolyards, or soccer fields. Consult laws and ordinances before choosing a location to fly your aircraft. After takeoff, gain some altitude. Climb to a safe height before trying technical manoeuvres, including high speed passes, inverted flight, loops, and point rolls.

### **Landing**

Land the model when you hear the motor pulsing (LVC) or if you notice a reduction in power. If using a transmitter with a timer, set the timer so you have enough flight time to make several landing approaches. Recharge the battery and repair the model as needed. The model's three point landing gear allows the model to land on hard surfaces. Align model directly into the wind and fly down to the ground. Fly the airplane down to the ground using 1/4-1/3 throttle to keep enough energy for proper flare. Before the model touches down, always fully decrease the throttle to avoid damaging the propeller or other components. The key to a great landing is to manage the power and elevator all the way to the ground and set down lightly on the main landing gear. After a few flights you will find the model can be set down lightly on the mains and you can hold the nose wheel off balancing the model on the mains until it slows and gently settles the nose.

### **Maintenance**

Repairs to the foam should be made with foam safe adhesives such as hot glue, foam safe CA, and 5min epoxy. When parts are not repairable, see the Spare Parts List for ordering by item number. Always check to make sure all screws on the aircraft are tightened. Pay special attention to make sure the spinner is firmly in place before every flight.

## Troubleshooting

Problem	Possible Cause	Solution
Aircraft will not respond to the throttle but responds to other controls.	<ul style="list-style-type: none"> <li>- ESC is not armed.</li> <li>- Throttle channel is reversed.</li> </ul>	<ul style="list-style-type: none"> <li>- Lower throttle stick and throttle trim to lowest settings.</li> <li>- Reverse throttle channel on transmitter.</li> </ul>
Extra propeller noise or extra vibration.	<ul style="list-style-type: none"> <li>- Damaged spinner, propeller, motor, or motor mount.</li> <li>- Loose propeller and spinner parts.</li> <li>- Propellor installed backwards.</li> </ul>	<ul style="list-style-type: none"> <li>- Replace damaged parts.</li> <li>- Tighten parts for propeller adapter, propeller and spinner.</li> </ul>
Reduced flight time or aircraft underpowered.	<ul style="list-style-type: none"> <li>- Flight battery charge is low.</li> <li>- Propeller installed backward.</li> <li>- Flight battery damaged.</li> </ul>	<ul style="list-style-type: none"> <li>- Remove and install propeller correctly.</li> <li>- Completely recharge flight battery.</li> <li>- Replace flight battery and follow flight battery instructions.</li> </ul>
Control surface does not move, or is slow to respond to control inputs.	<ul style="list-style-type: none"> <li>- Control surface, control horn, linkage or servo damage.</li> <li>- Wire damaged or connections loose.</li> </ul>	<ul style="list-style-type: none"> <li>- Replace or repair damaged parts and adjust controls.</li> <li>- Do a check of connections for loose wiring.</li> </ul>
Controls reversed.	Channels are reversed in the transmitter.	Do the Control Direction Test and adjust controls for aircraft and transmitter.
<ul style="list-style-type: none"> <li>- Motor loses power.</li> <li>- Motor power pulses then motor loses power.</li> </ul>	<ul style="list-style-type: none"> <li>- Damage to motor, or battery.</li> <li>- Loss of power to aircraft.</li> <li>- ESC uses default soft Low Voltage Cutoff(LVC).</li> </ul>	<ul style="list-style-type: none"> <li>- Do a check of batteries, transmitter, receiver, ESC, motor and wiring for damage (replace as needed).</li> <li>- Land aircraft immediately and recharge flight battery.</li> </ul>
LED on receiver flashes slowly.	Power loss to receiver.	<ul style="list-style-type: none"> <li>- Check connection from ESC to receiver.</li> <li>- Check servos for damage.</li> <li>- Check linkages for binding.</li> </ul>



## Spare parts list content

FMSPQ101	Fuselage
FMSPQ102	Main Wing Set
FMSPQ103	Horizontal Stabilizer
FMSPQ104	Vertical Stabilizer
FMSPQ105	Battery Hatch
FMSPQ106	Antenna Foam Cover
FMSPQ107	Cowl
FMSPQ108	Spinner
FMSPQ109	Engine
FMSPQ110	Vortex Generator
FMSPQ111	Airspeed Head Set
FMSPQ112	Antenna
FMSPQ113	Servo Cover
FMSPQ114	Main Landing Gear Set
FMSPQ115	Wing Strut Set
FMSPQ116	Linkage Rod
FMSPQ117	Screws Set
FMSPQ118	Pipe
FMSPQ119	Decal Sheet
FMSFLT002	Float Set
FMSFLT003	Float Strut Set
FMSPROP035	Propeller
FMSBM029	Motor Board
FMSDJ014	Motor Mount
FMSDZ005	Motor Shaft
FMSKV550	Brushless Motor
PRESC003	70A ESC
FMSSER17MGD	17g digital metal gear servo
FMSCON003	Multi Connector System
FMSRE015	Retract

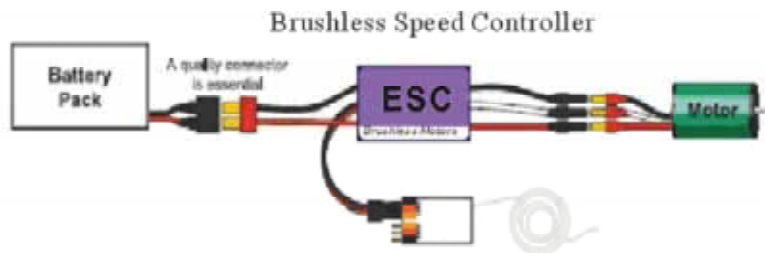
Visit our website to see photos of this product: [www.fmsmodel.com](http://www.fmsmodel.com)

# ESC instruction

## Wires Connection:

The electronic speed controller can be connected to the motor by soldering directly, or with high quality connectors. Always use new connectors, which should be soldered carefully to the cables and insulated with heat shrink tubes. The maximum length of the battery pack wires should be within 6 inches.

- Solder controller to the motor wires.
- Solder appropriate connectors to the battery wires.
- Insulate all solder connectors with heat shrink tubes.
- Plug the "JR" connector into the receiver throttle channel.
- Speed Controller Red and Black wires connect to battery pack Red and Black wires respectively.



## Programming Mode Audible Tones

Programming Mode Audible Tones	ESC Functions
0 Throttle Calibration (within the first 4 Sec) ● ● ● ●	
1 Brake * * * *	Brake On /Off
2 Battery type ~ ~ ~ ~ ~ ~ ~ ~	NiCad LiPo
3 Low Voltage Cutoff Threshold *	Low 2.8V/50% Medium 3.0V/60% High 3.2V/65%
4 Restore Factory Setup Defaults - - - - -	Restore
5 Timing Setup - - - - - - - - - - - - - - -	Automatic (7-30°) Low (7-22°) High (22-30°)
6 Soft Acceleration Start Ups ∨	Very Soft Soft Acceleration Start Acceleration
7 Governor Mode * * * * * ** ** ** ** *** *** *** ***	Rpm off Heli first range Heli second range
8 Motor Rotation W W W W	Positive/Reverse
9 Switching Frequency // // // // // // // //	8kHz 16kHz
10 Low Voltage Cutoff Type X X X X X X X X	Reduce Power Hard Cut Off





**MADE IN CHINA**