

FLY-MODEL

1800MM TWIN OTTER

Overall Length: 1457mm/57.4in

Wingspan: 1800mm/70.9in

操作手册

Instruction Manual

Must-read

Warnings

Please read through the whole user manual carefully and follow the instructions strictly for product installation and operation. Improper operation may lead to product damage or property loss or even severe personal injury. Xfly-model and its distributors will not assume responsibility if damage or loss is caused by violating the instructions listed.

Caution

This product is Not a toy! Flying experience is required by users. Beginners should only operate the product under the supervision of professionals.

This product is not intended for use by children under 14 years!

Safety Precautions

This product is radio-controlled and subject to interference from other signal sources which may result in momentary loss of control or even crash. So please always keep a safe distance in all directions around your model in order to avoid unexpected collision or injury.

- NEVER operate your model with low transmitter batteries.
- Always operate your model in an open area with the sun behind you away from cars, traffic or people.
- Do not operate your model in bad weather such as wet weather, thunderstorm, strong wind or heavy snow.
- Always follow the instructions and pay attention to the warnings for this product and other associated devices you use (charger, rechargeable battery pack, etc.)
- Always keep all chemicals, small parts and electronic components out of reach of children.
- Do not expose the electronic components to moist environment in case of damage.
- This model kit contains small parts, plastic bags, and materials that can be harmful to children if swallowed.
- ALWAYS ensure the transmitter is turned ON with the throttle at its lowest setting before connecting model battery.

Lithium-Polymer (Li-Po) Battery Use

Caution: Always follow the manufacturer's instructions for safe use and disposal of batteries. Improper use of Li-Po batteries may cause a fire, property damage, or severe injury.

- Do not use the battery that is swollen, or overcharged, or has been damaged. Keep in mind to discharge the battery to storage voltage (3.8-3.85V per cell) if they are not in use for a long time and as soon as possible after use for safe storage. Always store the battery at room temperature in a cool dry area to extend the lifespan of the battery. Do not store the battery in a car or expose it to direct sunlight. For maximum safety Xfly-Model recommends storing Li-Po batteries in a proper battery bunker, or sealed (not airtight) fire resistant container.
- Only use a Li-Po compatible charger to charge & discharge Li-Po batteries - NEVER try to use any other charger in case of personal injury and property damage.
- Do not discharge the Li-Po to below 3V per cell or irreversible damage can occur to the battery.
- NEVER leave charging battery unattended.
- Do not charge damaged battery - instead dispose of Li-Po batteries by fully discharging then taking to an appropriate disposal agent.

Warning for Battery Charging

As stated previously ONLY use a Li-Po compatible charger to charge the battery. Be sure to read and understand the charger instruction manual carefully before charger use. Make sure battery is on a heat-resistant surface when being charged. It is highly recommended to place the Li-Po battery inside a fire-resistant charging bag readily available at hobby shops or online stores.

Product Overview

Modeled after DeHavilland DHC-6 Twin Otter, XFly Model Twin Otter 1800mm was developed by their team with the intention to make it true-to-scale, from design features such as cockpit with clear windows, control surfaces, fixed tricycle landing gears, twin power system setup, to STOL(Short Takeoff and Landing) capabilities.

Powered by a single 6S 5000-6000mAh LiPo battery, the combination of twin 3541-KV550 motors, twin 40A ESCs and 3-blade propellers brings RC pilots the optimum setup for power and duration. XFly Twin Otter is capable of aerobatic maneuvers including loops, 4-point rolls and inverted flight, despite of flying with landing gears or floats. Shock-absorbing metal front landing gear and rigid main landing gears are equipped for easy ground handling and more durability.

Two-piece wing, removable nose and stabs make it easy to assemble, disassemble and transport. Clear glass-like windows allow for FPV installation in the capacious cockpit for better visual experience. Clearly visible in both day and dusk conditions, the vigorous yellow/blue color scheme and the pre-installed LED lights not only add scale appeal but practical visual reference in the sky. With floats installed(available in the float version XF116PF), more fun can be explored and enjoyed from the XFly Twin Otter!

Features

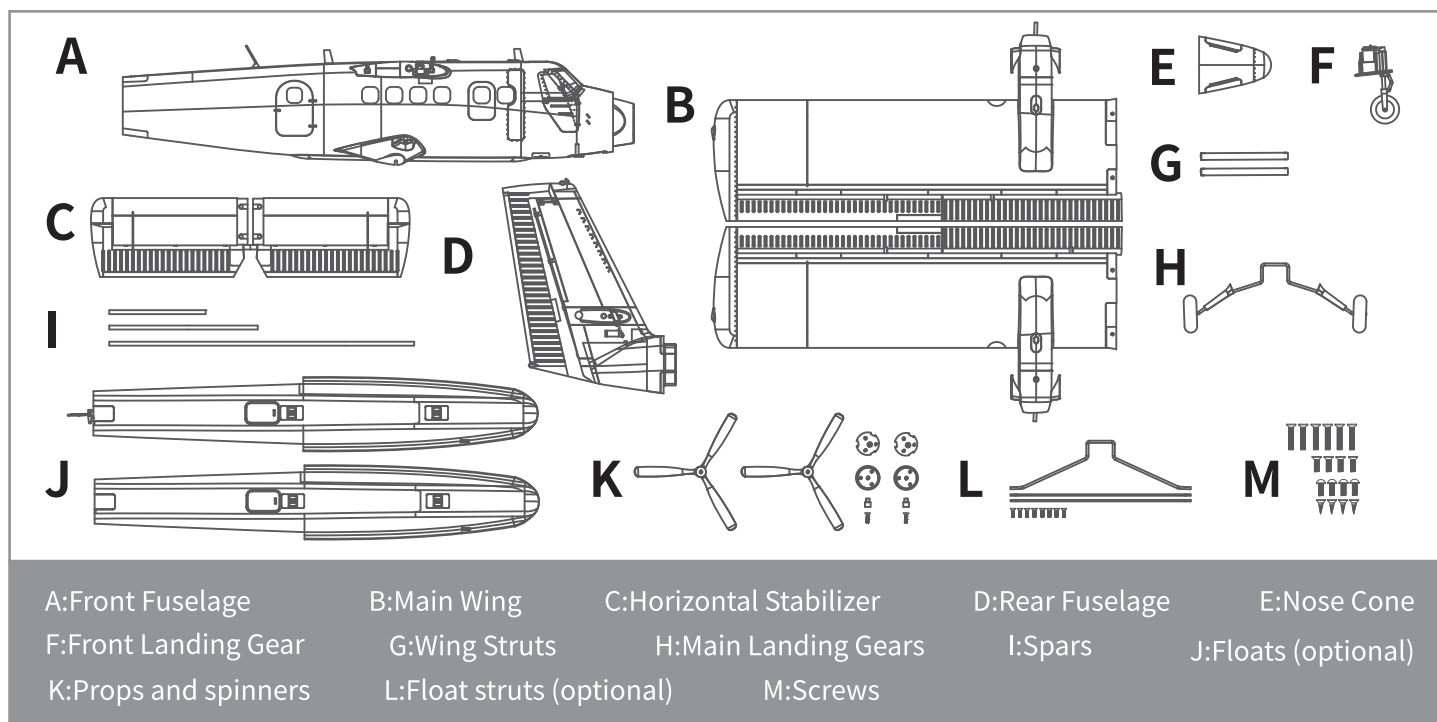
- Retaining scale features of the full scale Twin Otter
- STOL(Short Takeoff and Landing) capabilities
- Cockpit with clear windows, control surfaces, fixed tricycle landing gears
- Factory-installed twin efficient power system
- Capable of aerobatic maneuvers including loops, 4-point rolls and inverted flight
- Shock-absorbing metal front landing gear and rigid main landing gears
- Two-piece wing, removable nose and stabs
- Clear glass-like windows and capacious cockpit allow for FPV installation
- Pre-installed LED lights for added visibility
- Vigorous yellow/blue color scheme
- Floats available to install for more fun

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Box Contents

Please check the below parts carefully before assembly. If anything appears missing or damaged, please contact your distributor in the first instance, or send us an email (support@xfly-model.com) and advise the item name or part number of the missing or damaged part(s). (Please refer to the spare parts list on Page 11 of this manual for full parts listing). Please note that different versions can sometimes include slightly different items inside the package.



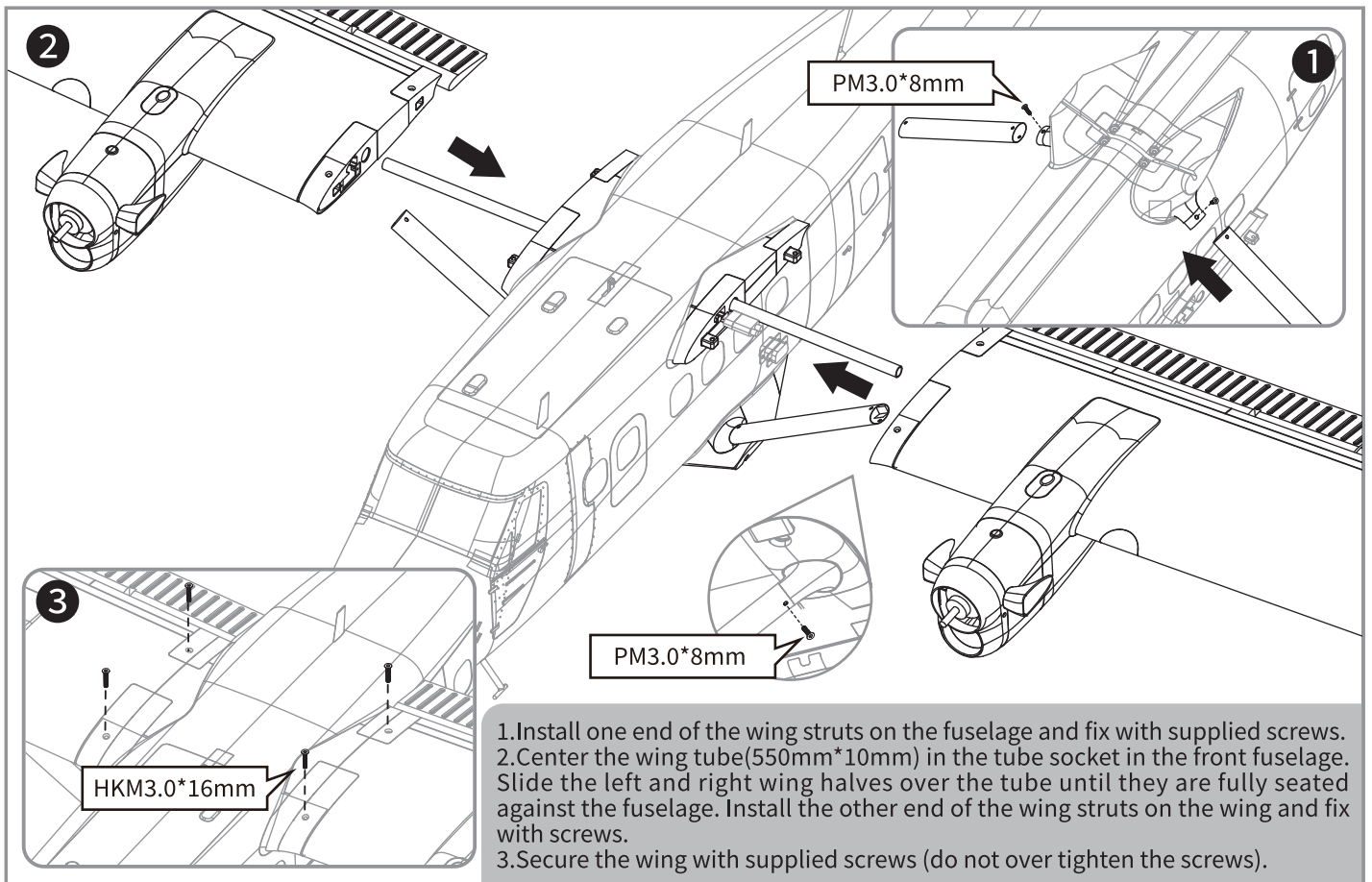
Specifications

Material:	Lightweight yet strong EPO, ABS engineering plastics
Wingspan:	1800mm/70.9in
Overall Length:	1457mm/57.4in
Wing Load:	87.5g/dm ²
Wing Area:	40dm ²
Flying Weight:	3700g/4000g(float version)
Propeller/EDF:	3-blade, 10*7"
Motor:	3541-KV550*2
ESC:	40A*2
Servos:	13g servos*2, 9g servos*5/6(float version)

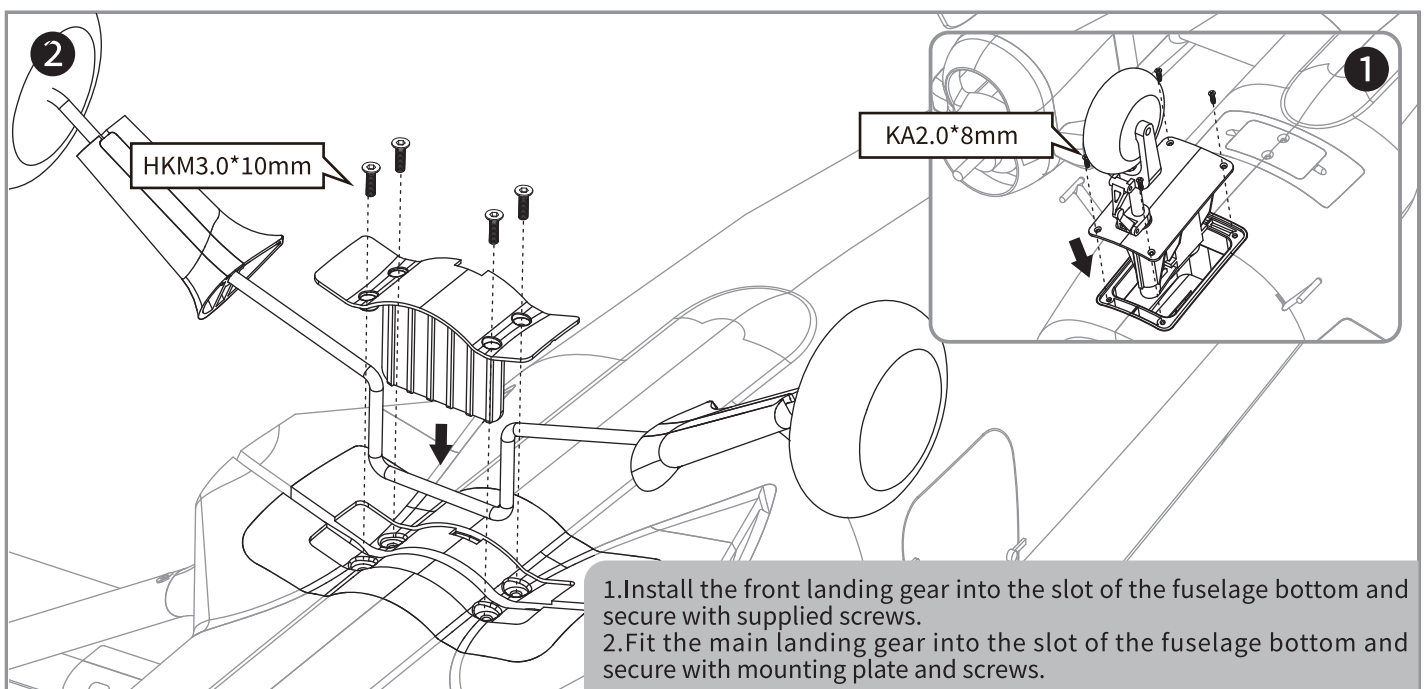
Flying Duration:	5-10 mins
Landing Gear:	Fixed main landing gear, steerable nose gear
LED lights:	Navigation lights *4
Other Electronics:	/
Channels:	5CH- aileron, elevator, throttle, rudder/steering, flap
Skill Level:	Intermediate
Recommended Battery:	6S 5000-6000mAh
Build&Test Time:	15mins

Assembly Instructions

Main Wing Installation

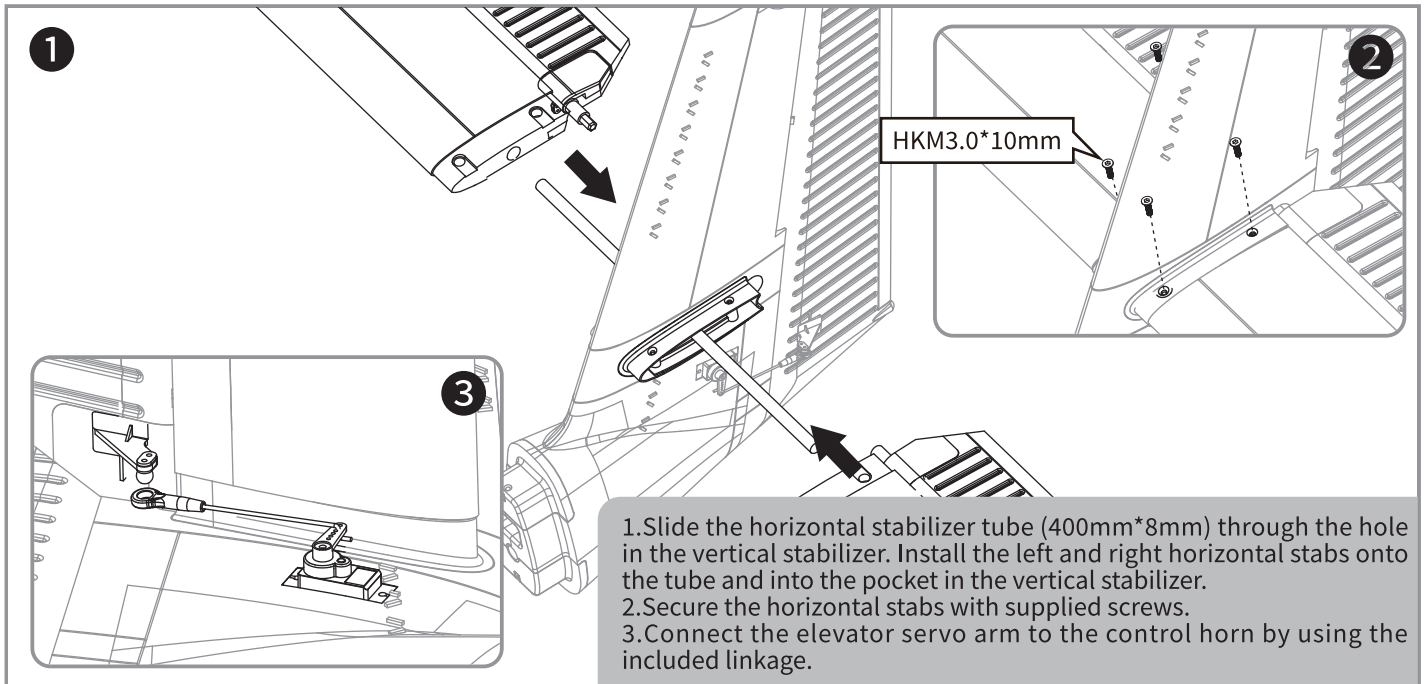


Landing Gear Installation

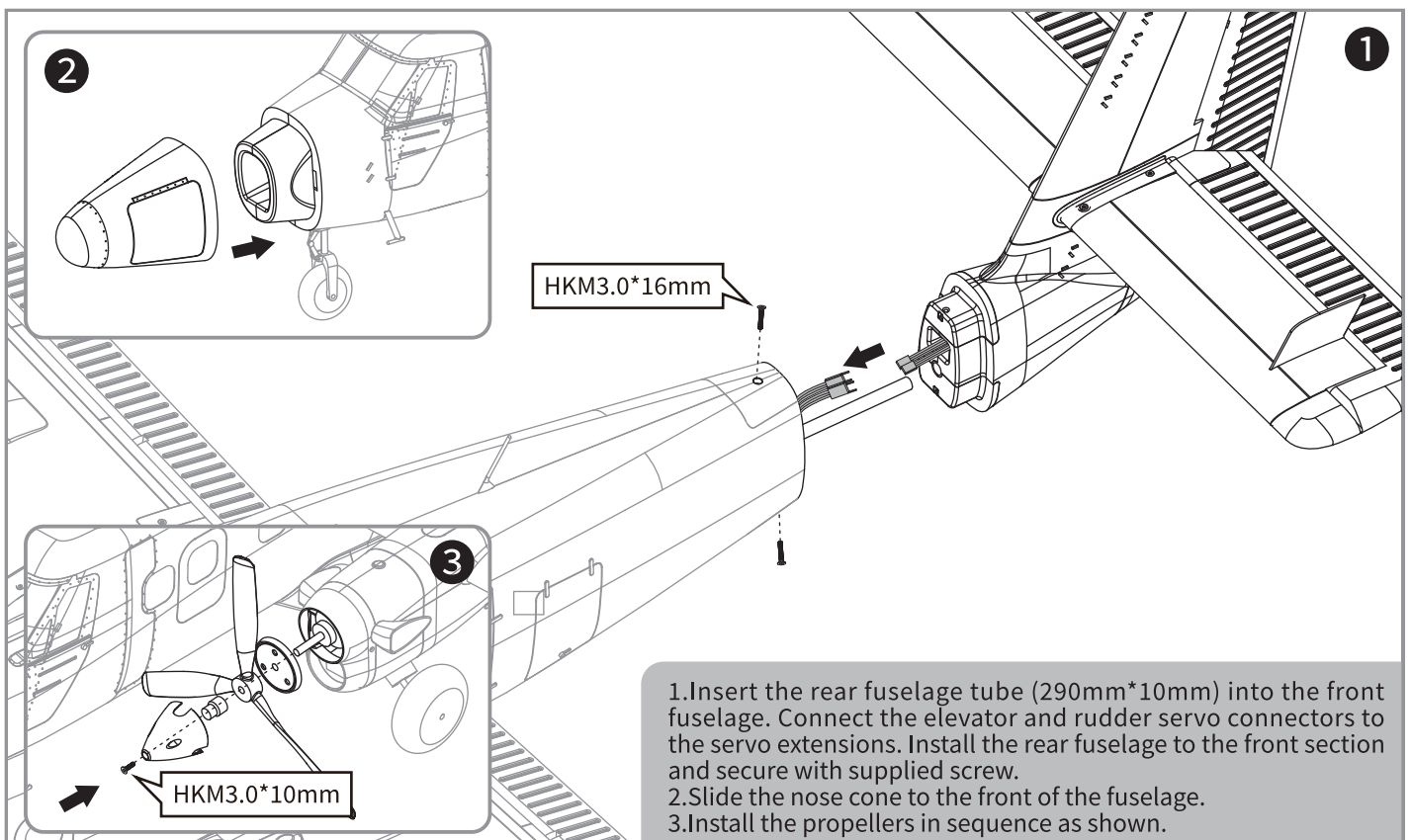


Assembly Instructions

Horizontal Stabilizer Installation

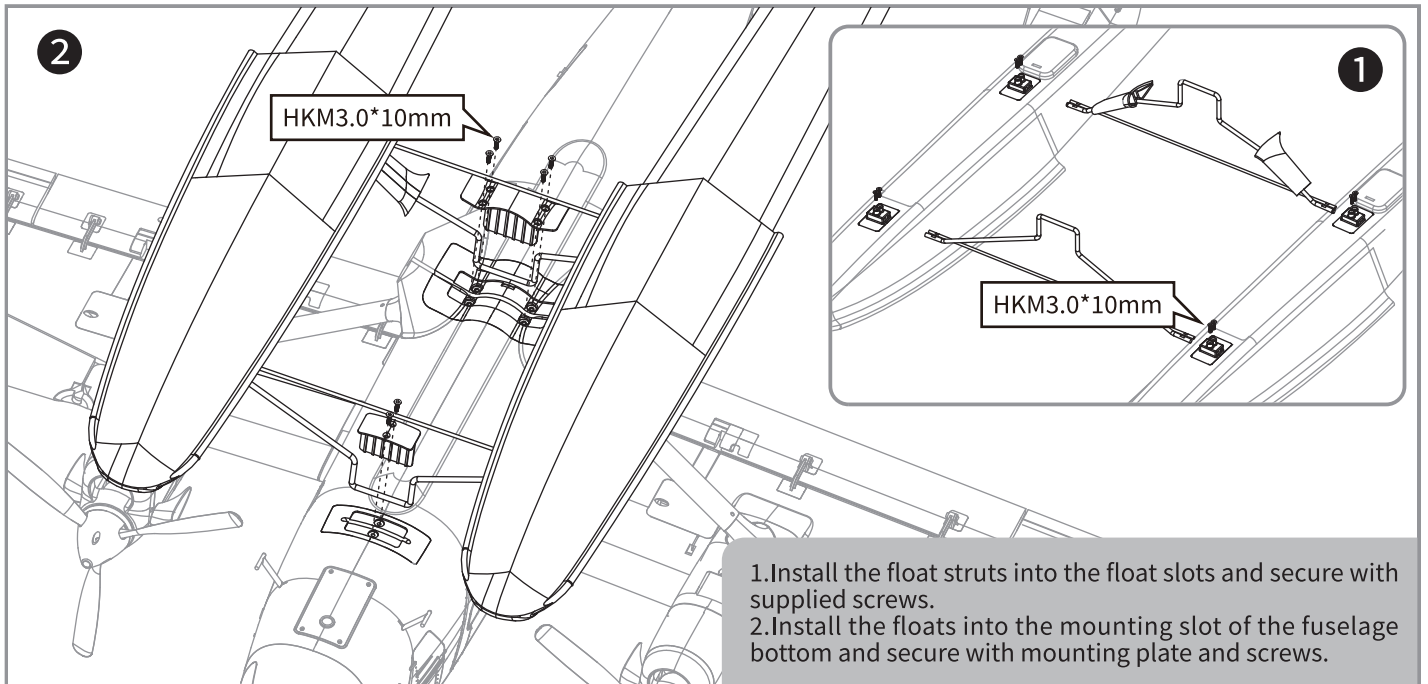


Rear Fuselage, Nose Cone and Props Installation



Assembly Instructions

Optional Float Installation

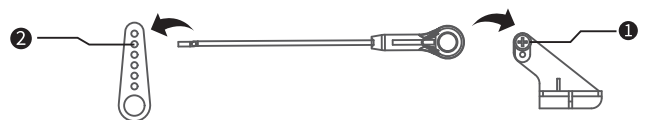


Control Horns Installation

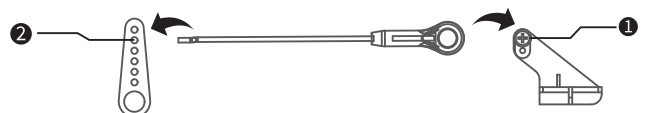
Make sure all servos are in their central position and adjust the linkages to the indicated positions.

The following pictures show the default factory settings for the control horns and linkages recommended for use for initial flight.

Hole reference for elevator servo linkage

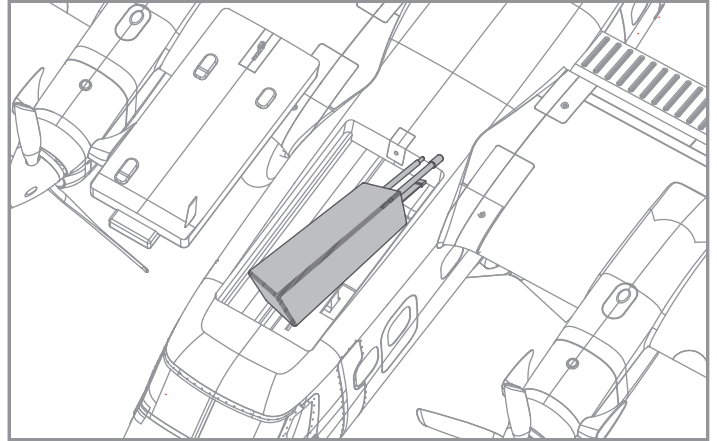


Hole reference for rudder servo linkage



Battery Installation

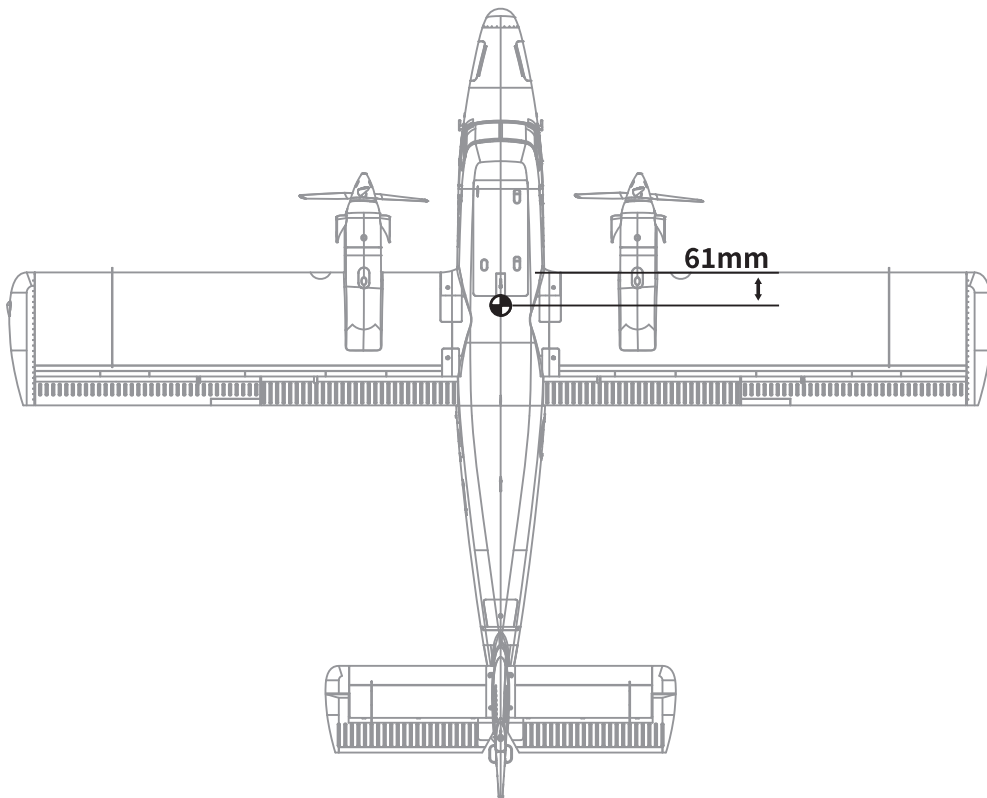
1. Before connecting the battery to the plane, power on the transmitter and ensure throttle lever in the lowest position.
2. Remove the battery hatch.
3. Insert battery into the battery compartment with the power cable towards the rear of the plane and use straps to secure the battery.
4. If necessary reposition battery to adjust the center of gravity (CG) by moving the battery forward or backward.



CG Setting

Correct center of gravity is very essential for a successful flight. Please refer to the below diagram to adjust the CG of the plane.

— Adjust the CG position by moving the battery forwards or backwards. If necessary add ballast weight to achieve the correct CG position before flight.



Control Surface Testing

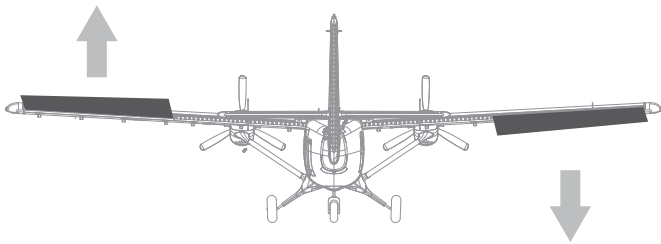
Before each flight turn on the transmitter BEFORE connecting a fully charged battery and perform a full pre-flight functional check-pay attention to all control surfaces for correct direction of operation.

Xfly-Model Strongly recommends you also perform a full range test prior to each flight!

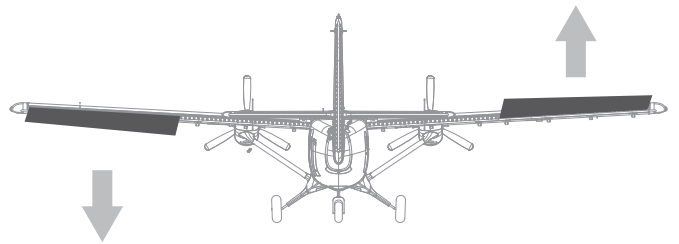
Note: SAFETY FIRST!! Please remove the propeller(where applicable) before carrying out any pre-flight maintenance to the power system to prevent potential injury from unintended propeller operation.

ALWAYS CHECK CONTROL SURFACE DIRECTION FROM BEHIND THE MODEL LOOKING FORWARD TO ENSURE CORRECT OPERATION

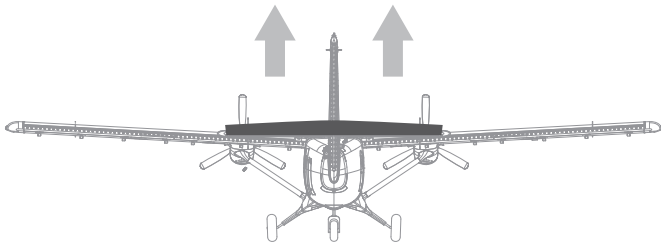
Aileron control lever moving leftward



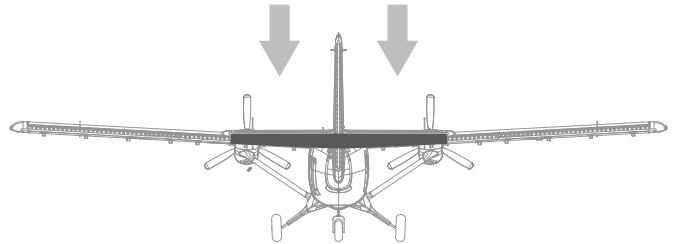
Aileron control lever moving rightward



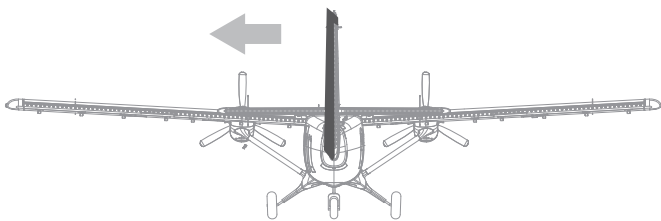
Elevator control lever moving downward



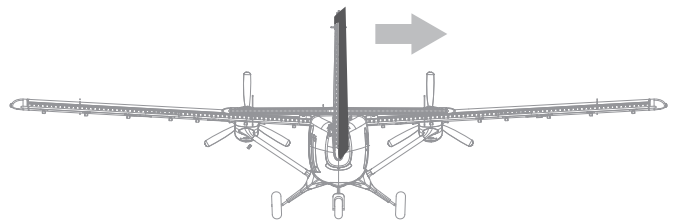
Elevator control lever moving upward



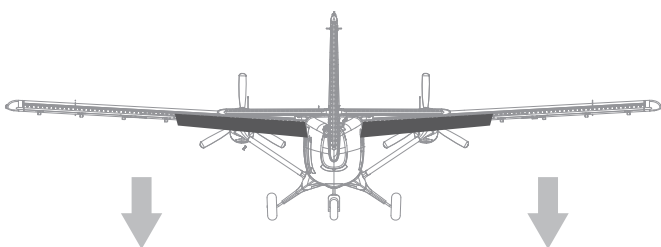
Rudder control lever moving leftward



Rudder control lever moving rightward



Flaps deployed

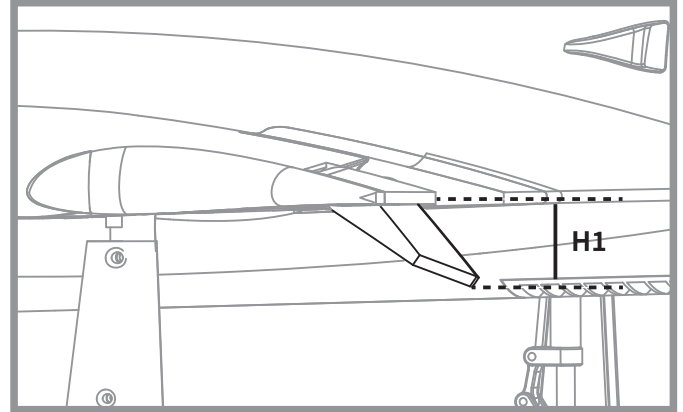
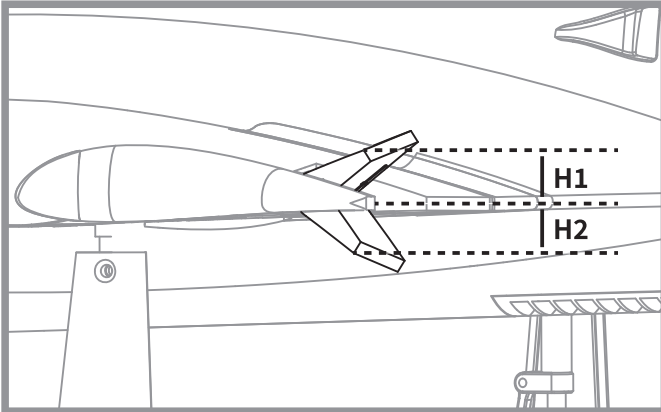


Dual Rate Setting

Based on Xfly Model's testing experience, the following rates are recommended for optimum performance. Operation on airplanes with low rates is usually clumsy while on those with high rates is usually agile. It is suggested that initial flights are carried out using high rates until you are comfortable with the flight characteristics of the plane.

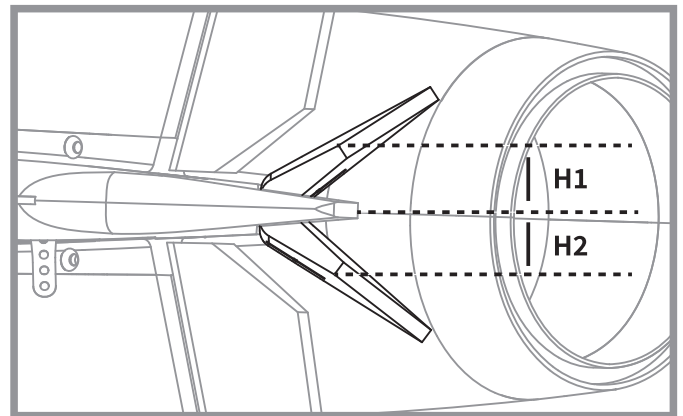
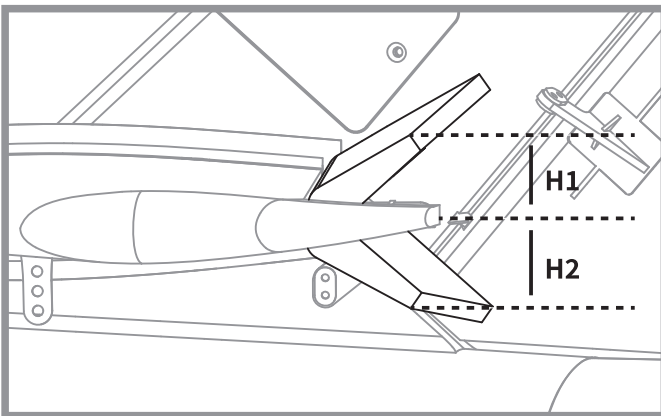
Aileron

Flap



Elevator

Rudder



Note: When flaps are released, the aircraft will be heading up, so mixed elevator control is required for good landings. It requires 1mm height lower for high dual-rate flap and 2mm lower for low dual-rate flap.

	Aileron	Elevator	Rudder	Flaps
Low dual rate(H1/H2)	15mm/100%	15mm/80%	15mm/100%	18mm
High dual rate(H1/H2)	18mm/120%	18mm/100%	20mm/120%	35mm

\ Trouble Shooting /

Problem	Possible Cause	Solution
Aircraft not responding to the throttle but responding to other controls	-ESC not calibrated -throttle deactivated on radio -motor wire disconnected	-Calibrate ESC according to manual -activate throttle on radio -check motor wires and connect/repair as required
Excessive propeller noise or Excessive vibration	-Propeller/EDF loose or damaged -Propeller/EDF out of balance -Propeller/EDF fan incorrectly installed or mounting loose	-Tighten and/or Replace damaged parts -balance propeller/EDF unit -Remove and install the propeller correctly -ensure mounting tight and parts correctly fitted
Reduced flight times or aircraft underpowered	-Low battery charge -ESC overheating -Defective battery	-Recharge battery -Ensure adequate cooling to ESC -Replace battery with new one
Control surface not moving, or responds slowly to control inputs	-Control surface, control horn, linkage or servo damaged -Wire damaged or connector loose	-Replace or repair damaged parts and adjust controls -Check all wires and ensure connections are secure -Repair/replace damaged wires or connectors
Control surface reversed	Channels reversed on the transmitter	-Check transmitter settings and adjust as required
Motor losing power in flight	-ESC not calibrated correctly -ESC LVC low voltage cutoff activated -Defective motor, ESC, or battery	-Recalibrate ESC -Check the battery, transmitter, receiver, ESC, motor and replace it if defective -Get the aircraft land immediately and recharge the battery
Slow LED flash on the receiver	Receiver power loss	-Check the connection between ESC and receiver -Check if servo is damaged -Check if the linkages are in place

\ Spare Parts List /

XF116-01	Front Fuselage	XF116-20	Decal Sheet
XF116-02	Rear Fuselage	XF116-21	LED Light Set
XF116-03	Main Wing Set	XF116-22	Wing Connector Set
XF116-04	Horizontal Stabilizer	XF116-23	FPV Platform (optional)
XF116-05	Battery Hatch	XFYLEAD	Y Power Lead
XF116-06	Nose Cone	XF5AUBEC	5A UBEC
XF116-07	Float Set	XFKV550	3541-KV550 Motor
XF116-08	Windshield	XFESC40A-2	40A ESC(6S version)
XF116-09	Spar Set	XF9P-200	9g Digital MG Servo Positive w/200mm Lead
XF116-10	Linkage Set		
XF116-11	Screw Set	XF9P-330	9g Digital MG Servo Positive w/330mm Lead
XF116-12	Control Horns & Hinges		
XF116-13	Wing Strut (1pc)	XF9P-450	9g Digital MG Servo Positive w/450mm Lead
XF116-14	10*7 3-blade Propeller (1pc)		
XF116-15	Spinner (1pc)	XF13P-330	13g Digital MG Servo Positive w/330mm Lead
XF116-16	Cowl (1pc)		
XF116-17	Wheel Set	XF13P-550	13g Digital MG Servo Positive w/550mm Lead
XF116-18	Front Landing Gear		
XF116-19	Main Landing Gear	XF9RWP-450	9g Digital MG Servo Reverse w/450mm Lead(Water-proof)

BRUSHLESS ESC User Manual

Thank you for purchasing XFly Model Brushless Electronic Speed Controller(ESC).

High power systems for RC model can be very dangerous and we strongly suggest that you read this manual carefully. XFly Model have no control over the use, installation, application, or maintenance of these products, thus no liability shall be assumed nor accepted for any damages, losses of costs resulting from the use of this item. Any claims arising from the operating, failure or malfunctioning etc. will be denied. We assume no liability for personal injury, property damage or consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation for compensation is limited to the invoice amount of the product in question.

The XFly Model ESC's high power BEC has been specifically designed for extreme aerobatics and therefore has the capability to support the higher momentary peak demand loads to eliminate the possibility of unwanted shutdowns. It is also capable of supporting continuous simultaneous multiple servo operations typically found in CCPM equipped hardcore 3D E-helicopters.

Wires Connection:

The 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 tube. The maximum length of the battery pack wires shall 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.
- Controller Red and Black wires connect to battery pack Red and Black wires respectively.

Brushless Speed Controller



Specification:

Type	Cont. Current(A)	Burst Current (A) 10 sec	Battery cell NiXX/Lipo	Weight (g)	BEC Output	Size(mm) W*L*H	User Program
12A BEC	12A	16A	5-12NC\2-4Lipo	8	5.0V/1A	21x22x4	yes
20A BEC	20A	30A	5-12NC\2-4Lipo	18	5.0V/2A	23x33x6	yes
30A BEC	30A	40A	5-12NC\2-4Lipo	28	5.0V/3A	23x43x6	yes
40A SBEC	40A	60A	5-18NC\2-6Lipo	32	5.5V/4A	23x52x7	yes
50A SBEC	50A	70A	5-18NC\2-6Lipo	45	5.5V/4A	31x58x11	yes
60A SBEC	60A	80A	5-18NC\2-6Lipo	45	5.5V/4A	31x58x11	yes
70A SBEC	70A	90A	5-18NC\2-6Lipo	53	5.5V/5A	31x57x12	yes
85A SBEC	85A	100A	5-18NC\2-6Lipo	62	5.5V/5A	36x62x16	yes

Features:

- ◆ Extremely low internal resistance
- ◆ Super smooth and accurate throttle linearity
- ◆ Safety thermal over-load protection
- ◆ Auto throttle shut down in signal loss situation
- ◆ Supports high RPM motors
- ◆ Power arming protection (prevents the motor from accidentally running when switched ON)
- ◆ New Advanced programming software

Our ESC allows you to program all functions to fit your specific needs, which makes it very efficient and user friendly:

1. User programmable brake setting (we recommend using brake for only folding props applications)
2. User programmable battery type (LiPo or NiCad/NiMH)
3. User programmable low voltage cutoff setting
4. User programmable factory default setup restore
5. User programmable timing settings (to enhance ESC efficiency and smoothness)
6. User programmable soft acceleration start ups (for delicate gearbox and helicopter applications)
7. User programmable governor mode (for helicopter applications)
8. User programmable motor rotation (clockwise \ counterclockwise)
9. User programmable switching frequency
10. User programmable low voltage cutoff type (power reduction or immediate shutdown)

Settings:

1. Brake: ON/OFF

- * ON - Sets the propeller to the brake position when the throttle stick is at the minimum position (Recommended for folding props).
- * OFF - Sets the propeller to freewheel when the throttle stick is at the minimum position.

2. Battery type: LiPo or NiCad/NiMH

- * NiCad/NiMH - Sets Low Voltage protection threshold for NiCad/NiMH cells.
 - * LiPo - Sets Low voltage protection threshold for LiPo cells and automatically detects the number of cells within the pack.
- Note: Selecting the NiCad/NiMH option for the battery type, triggers the ESC to automatically set the cutoff threshold to the factory default of 60%. The cutoff threshold can then be subsequently altered through the Low Voltage protection function, if required. The ESC will read the initial voltage of the NiCad/NiMH pack once it is plugged in and the voltage read will then be used as a reference for the cutoff voltage threshold.

3. Low Voltage Protection Threshold (Cutoff Threshold):

Low/Medium/High

- 1) For Li-Po packs - number of cells are automatically calculated and requires no user input apart from defining the battery type. This ESC provides 3 setting options for the low voltage protection threshold; Low (2.8V) / Medium (3.0V) / High (3.2V) For example: the voltage cutoff options for an 11.1V / 3 cell Li-Po pack would be 8.4V (Low) / 9.0V (Med) / 9.6V (High)
- 2) For Ni-MH packs - low / medium / high cutoff voltages are 50%/60%/65% of the initial voltage of the battery pack. For example: A fully charged 6 cell NiMH pack's voltage is $1.44V \times 6 = 8.64V$ when "LOW" cutoff voltage is set, the cutoff voltage is: $8.64V \times 50\% = 4.32V$ and when "Medium" or "High" is set, the cutoff voltage is now $8.64V \times 65\% = 5.616V$.

4. Restore factory setup defaults:

Restore - Sets the ESC back to factory default settings;

Brake:	OFF
Battery type Detect:	LiPo with Automatic Cell
Low voltage cutoff threshold:	Medium (3.0V/60%)
Timing setup:	Automatic
Soft Acceleration Start UP:	Soft Acceleration
Governor mode:	RPM OFF
Frequency:	8kHz
Low voltage cutoff type:	Reduce power

5. Timing setup : Automatic/ Low / High.

- * Automatic (7-30deg) - ESC automatically determines the optimum motor timing.
- * Low (7-22 deg) - Setting for most 2 pole motors.
- * High (22-30 deg) - setting for motors with 6 or more poles.

In most cases, automatic timing works well for all types of motors. However for high efficiency we recommend the Low timing setting for 2 pole motors (general in-runners) and high timing for 6 poles and above (general outrunners). For higher speed, High timing can be set. Some motors require different timing setups therefore we suggest you to follow the manufacturer recommended setup or use the automatic timing setting if you are unsure.

Note: Run your motor on the ground first after making any changes to your motor timing!

6. Soft Acceleration Start ups: Very Soft / Soft Acceleration/ Start Acceleration

* Very Soft - Provides initial slow 1.5 sec ramp-up from start to full rpm intended to protect delicate gears from stripping under instant load. This setting is recommended for either fixed wing models equipped with gearboxes and / helicopters.

* Soft Acceleration- Provides initial slow 1 sec ramp-up from start to full rpm. This setting is recommended for either fixed wing models equipped with gearboxes and or helicopters.

* Start Acceleration - Provides quick acceleration start ups with a linear throttle response. This is recommended for fixed wing models fitted with direct drive setups.

7. Active RPM Control (Heli Governor mode)

*RPM Control OFF

*First Range: There will be a 5-second delay from start to full rpm, but if the throttle is cutoff after starting, then the next start will be as normal start.

*Second Range: There will be a 15-second delay from start to full rpm, but if the throttle is cutoff after starting, then the next start will be as normal start.

Note: Once the Governor Mode is enabled, the ESC's Brake and Low Voltage Cutoff Type settings will automatically reset to No Brake and Reduce Power respectively regardless of what settings they were previously set.

8. Motor Rotation: Forward /Reverse

In most cases motor rotation is usually reversed by swapping two motor wires.

However, in cases where the motor cables have been directly soldered to the ESC cables, motor rotation can be reversed by changing the value of setting on the ESC.

9. Switching Frequency: 8kHz/16kHz

* 8kHz - Sets ESC switching frequency for 2 pole motors, e.g. in-runners.

* 16kHz - Sets ESC switching frequency for motors with more than 2 poles, e.g. out-runners.

Although 16kHz is more efficient with our Thrust motors, the setup default is 8kHz due to the higher RF noises caused by 16kHz.

10. Low Voltage Cutoff Type : Reduce Power / Hard cutoff

* Reduce Power - ESC reduces motor power when the pre-set Low Voltage Protection Threshold Value is reached (recommended).

* Hard Cutoff - ESC instantly cuts motor power when the pre-set Low Voltage Protection Threshold value is reached.

Programming Mode Audible Tones

	Programming Mode Audible Tones	ESC Functions
	Throttle Calibration	
	(within the first 4 Sec) ●● ●● ●● ●●	
1	Brake	
	* * * *	Brake On/Off
2	Battery type	
	~ ~ ~ ~	NiCad/NiMH
	~~ ~~ ~~ ~~	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	Forward/Reverse
9	Switching Frequency	
	// // // //	8kHz
	\\ \\ \\ \\	16kHz
10	Low Voltage Cutoff Type	
	- - - -	Reduce Power
	- - - -	Hard Cut Off

Using Your New ESC

Improper polarity or short circuit will damage the ESC therefore it is your responsibility to double check all plugs for proper polarity and firm fit BEFORE connecting the battery pack.

Alert Tones

1. The ESC is equipped with audible alert tones to indicate abnormal conditions at power up.
2. Continuous beeping tone (****) - Indicates that throttle stick is not in the minimum position.
3. Single beeping tone followed by a one second pause (* * * *)- Indicates that the battery pack voltage exceeds the acceptable range. (The ESC automatically checks and verifies the battery voltage once the battery is connected).

Built-in Intelligent ESC Safety Functions

1. Over-heat protection: When the temperature of ESC exceeds 110 deg C, the ESC will reduce the output power to allow it to cool.
2. Lost Throttle signal protection: The ESC will automatically cut power to the motor when it detects a loss of throttle signal for 2 seconds, then motor will emit continuous beeping tone.

Powering up the ESC for the first time and setting the Automatic Throttle Calibration

The ESC features Automatic Throttle Calibration to attain the smoothest throttle response and resolution throughout the entire throttle range of your transmitter. This step is done once to allow the ESC to "learn and memorize" your Transmitter's throttle output signals and only repeated if you change your transmitter.

1. Switch your Transmitter ON and set the throttle stick to its maximum position.
2. Connect the battery pack to the ESC. Wait for about 2 seconds, the motor will beep for twice, then put the throttle to the minimum position, the motor will also beep, which indicates that your ESC has got the signal range of the throttle from your transmitter.

The throttle is now calibrated and your ESC is ready for operation.

Entering the Programming Mode:

1. Switch your Transmitter **ON** and set the throttle to its **maximum** position.
2. Connect the battery pack to the ESC.
3. Wait until you hear two short beeps (•• •• •• ••) confirming that the ESC has now entered the programming mode.
4. If the throttle stick is left in the **maximum** position beyond 5 seconds, the ESC will begin the sequence from one function and its associated setting options to another. (Please refer to the table below to cross reference the functions with the audible tones).
5. When the desired tone for the function and setting option is reached, move the throttle stick down to its **minimum** position. ESC will emit two beeps (**) confirming the new setting has been stored.
6. The ESC only allows the setting of one function at a time. Therefore should you require making changes to other functions, disconnect the battery pack and wait 5 seconds to reconnect the battery and repeat the above steps.

Normal ESC start up procedure:

1. Switch your transmitter **ON** and set the throttle to its **minimum** position.
2. Connect the battery pack to the ESC.
3. When the ESC is first powered up, it emits two sets of audible tones in succession indicating the status of its working status.

* The first set of tones denotes the number of cells in the Li Po pack connected to the ESC. (Three beeps (***) indicates a 3 cell LiPo pack while 4 beeps (****) indicates a 4 cell LiPo pack)

* The second set denoting Brake status (one beep(*) for Brake "ON" and two beeps (**) for Brake "OFF").

* The ESC is now ready for use.

General Safety Precautions

- Do not install the propeller (fixed wing) or drive pinion(helicopter) on the motor when you test the ESC and motor the first time to verify the correct settings on your radio. Only install your propeller or pinion after you have confirmed that the settings on your radio is correct.
- Never use ruptured or punctured battery cells.
- Never use battery packs that are known to overheat.
- Never short circuit battery or motor terminals.
- Always use proper insulation material for cable insulation.
- Always use proper cable connectors.
- Do not exceed the number of cells or servos specified by the ESC.

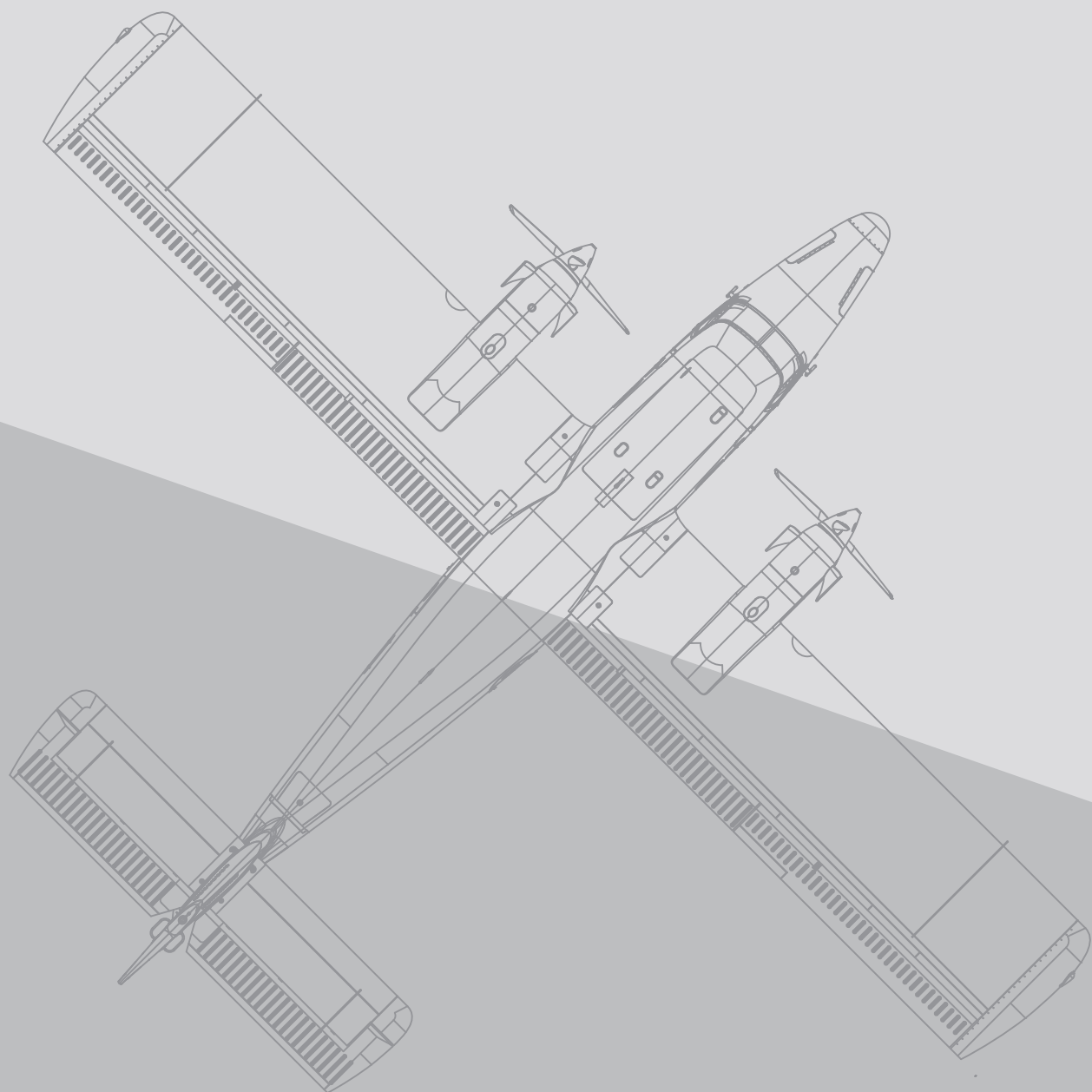
Wrong battery polarity will damage the ESC and void the warranty.

- Install the ESC in a suitable location with adequate ventilation for cooling. This ESC has a built-in over temperature cutoff protection feature that will immediately cut power to the motor once the ESC temperature exceeds the 230 Deg F/ 110 Deg C high temperature limit.
- Use only batteries that are supported by the ESC and ensure the correct polarity before connecting.
- Switch your Transmitter ON and ensure the throttle stick is in the minimum position before connecting the battery pack.
- Never switch your transmitter **OFF** while the battery is connected to your ESC.
- Only connect your battery pack just before flying and do not leave your battery pack connected after flying.
- Handle your model with extreme care once the battery pack is connected and keep away from the propeller at times. Never stand in-line or directly in front of any rotating parts.
- Do not immerse the ESC underwater or allow it to get wet while powered up.
- Always fly at a designated flying site and abide by the rules and guidelines set by your flying club.

Trouble Shooting

Trouble	Possible Reason	Action
Motor doesn't work, but there are audible tones signalling the number of cells after Powering up ESC.	The ESC throttle calibration has not set up.	Set up the ESC throttle calibration
Motor doesn't work and no audible tone emitted after connecting the battery. Servos are not working either	Poor / loose Connection between battery Pack and ESC	Clean connector terminals or replace connector
	No power	Replace with a freshly charged battery pack
	Poorly soldered connections (dry joints)	Re-solder the cable connections
	Wrong battery cable polarity	Check and verify cable polarity
	ESC throttle cable connected to receiver in the reverse polarity	Check the ESC cable connected to the ESC to ensure the connectors are in the correct polarity
	Faulty ESC	Replace ESC
Motor doesn't work and no audible tone emitted after connecting the battery BUT servos are working. Or motor doesn't work after powering up the ESC. An alert tone with single beeping tones followed by a short Pause (****) is emitted,	Poor / loose connection between ESC and motor	Clean connector terminals or replace connectors
	Burnt motor coils	Replace motor
	Poorly soldered connections(dry joints)	Re-solder the cable connections
	The battery pack voltage exceeds the acceptable range.	Replace with a freshly charged battery pack Check battery pack voltage
Motor doesn't work after powering up the ESC. An alert tone with continuous beeping tones (****) is emitted.	The throttle stick is not in the minimum position at power up	Move the throttle stick to the minimum position.

Trouble	Possible Reason	Action
Motor doesn't work after powering up the ESC. ESC emits two audible tones followed by short beeps (.. ..)	Reversed throttle channel caused the ESC to enter the Programming mode.	Enter the servo reverse menu on your transmitter and reverse the throttle channel! Note:For Futaba radios set the throttle channel to Reverse.
Motor runs in reverse rotation	Wrong cables polarity between the ESC and the motor.	Swap any two of the three cable connections between the ESC and the Motor or access the Motor Rotation function via the ESC programming mode and change the pre-set parameters.
Motor stops running in flight	Lost throttle signal	Check proper operation of the radio equipment. Check the placement of the ESC and the Receiver and check the route of the receiver's aerial and ESC cables to ensure there is adequate separation to prevent RF interference. Install a ferrite ring on the ESC's throttle cable.
	Battery Pack voltage has reached the Low Voltage Protection threshold.	Land the model immediately and replace the battery pack.
	Possible bad cable connection	Check and verify the integrity of the cable connections
Motor restarts abnormally ESC Overheats	Possible RF Interference at the flying field.	The normal operation of the ESC may be susceptible to surrounding RF interference, Restart the ESC to resume normal operation on the ground to verify recurrence, If the problem persists, test the operation of the ESC at a different flying field.
	Inadequate Ventilation	Relocate the ESC to allow better ventilation
	Servos drawing too much current and over loading the ESC.	Use servos that are adequately sized for the ESC. The maximum BEC current drawn should be within the BEC limits.
	Over sized motor or prop	Reduce Prop size or resize the moto



XFLY-MODEL



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