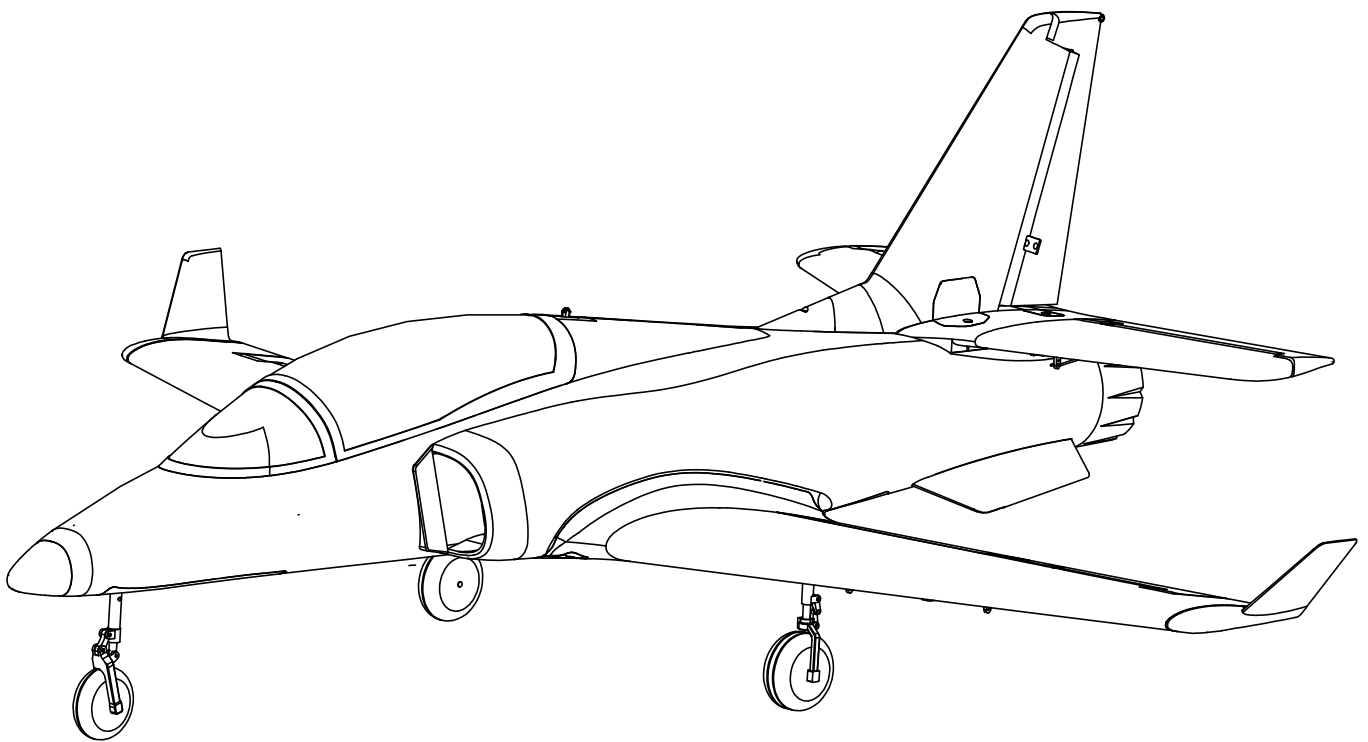


FMS

70mm

Super Viper V2

FMS 15th Anniversary Edition



Instruction Manual
Bedienungsanleitung
Manuel d'utilisation
操作手册

REALISTIC
• Retracts installed

RIGID
• Durable EPO material

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 at a temperature range of 40-120F. Do not store the battery or model in a car or in direct sunlight. If stored in the battery or model in a car or in direct sunlight. If stored
- 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.
- 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.

Introduction

The 70mm Viper was not always the first choice for players transitioning from prop-driving airplane to jet – the original wire landing gear was not so friendly to pilots unfamiliar with jet takeoffs and landings – but now, she is! FMS 15th Anniversary Edition 70mm Viper, here we go!

There are a lot of FMS jet machines, but the 70mm Viper always soars above the crowd. The comment from players that the Viper “does any acrobatic trick you can throw at it” is a true portrayal of the excellent performance of this aircraft. The 15th anniversary edition of the Viper has been improved based on the previous work – switching out wire landing gear for a full set of CNC metal shock absorbing landing gear (A.K.A kneeling nose) – achieving simplicity, stability and ease of handling during the entire process of takeoff, flight and landing.

Digital metal-toothed steering gear and ball-head joint rods provide precise control. The clip-on cockpit design facilitates battery access, and also effectively ensures that the cockpit will not fall off during violent flight. Lightweight EPO materials increase the durability and precision of the aircraft. The optimized airframe curves, long wings and wingtips reduce wind resistance and make the flight attitude of the entire aircraft clearer. 70mm 12-blade EDF unit, high speed brushless 3060 in-runner motor, 80A ESC, in combination with the recommended 6S 3300mAh lithium polymer battery, provide excellent vertical performance, speed range and instantaneous throttle response in flight. Perhaps even more fascinating is the sound the powertrain makes --it’s almost like a real turbine.

Key Features:

- FMS 15th Anniversary Edition.
- High quality 80A ESC, powerful KV1900 in--runner motor with the latest 70mm 12-blade EDF;
- A full set of CNC metal shock absorbing landing gear (A.K.A kneeling nose);
- With flaps (servo-installed);
- Screw-together construction;
- Clip-on cockpit design;
- Pre-installed ball-head joints provide precise surface control;

Table of Contents

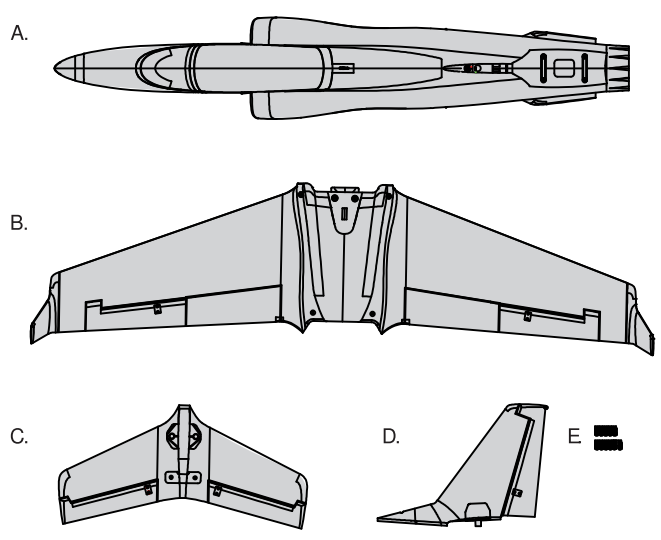
Introduction	03
Kit contents	03
Model assembly	04
Battery installation	06
Connectors diagram	06
Get your model ready to fly	07
Important ESC and model information	07
The transmitter and model setup	07
Check the control throws	08
Clevis installation	08
Control horn and servo arm settings	08
Center of gravity(CG)	08
Before flying the model	09
Flying your model	09
Troubleshooting	10
Spare parts list content	10

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.

Specifications
Wingspan: 1100mm (43.30in)
Overall length: 1025mm (40.4in)
Flying weight: ~ 1795g (63.32oz)
Motor size: Brushless 3060-KV1900
Wing load: 93.5 g/dm ² (0.21oz/in ²)
Wing area: 19.2 dm ² (297.6 sq.in)
ESC: 80A
Servo: 9g servo x 8

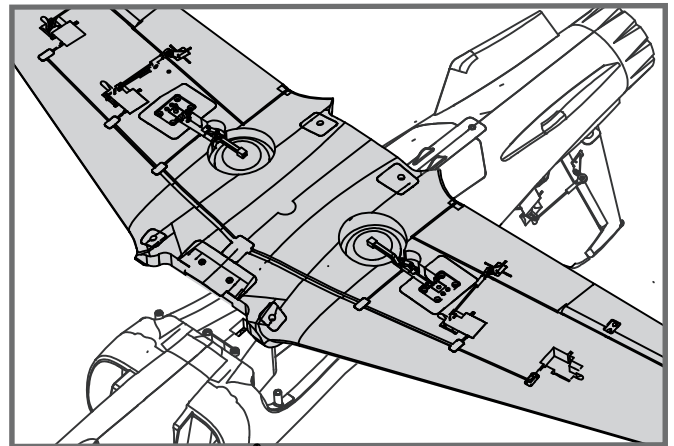


- A: Fuselage
- B: Main Wing Set
- C: Horizontal Stabilizer
- D: Vertical Stabilizer
- E: Screws (11-HKM3.0*16)

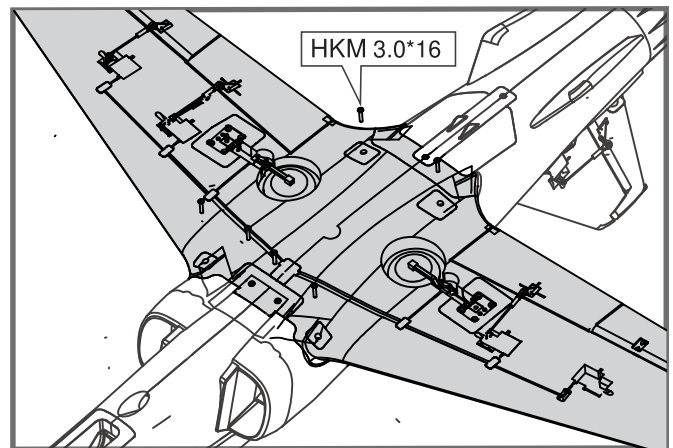
Model assembly

Main Wing Installation

1. Remove the canopy hatch.
2. Guide the Y-harnesses from main wing through the hole located in the bottom of the fuselage as shown.

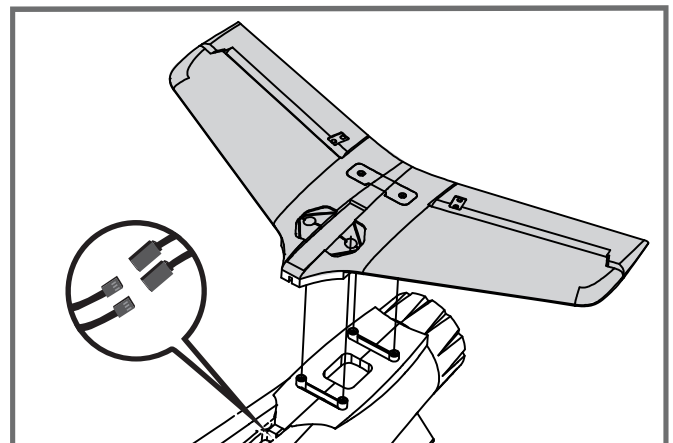


3. Align the wing with the fuselage and secure into position using screws included as shown.



Horizontal Stabilizer Installation

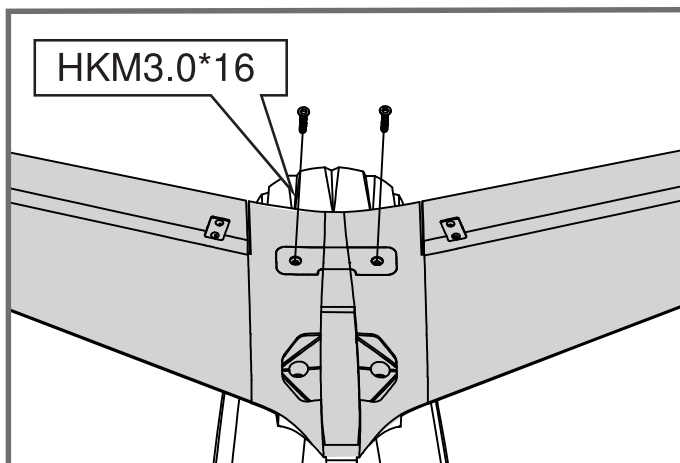
1. Connect the elevator servo connectors to the servo extensions in the fuselage.



Model Assembly

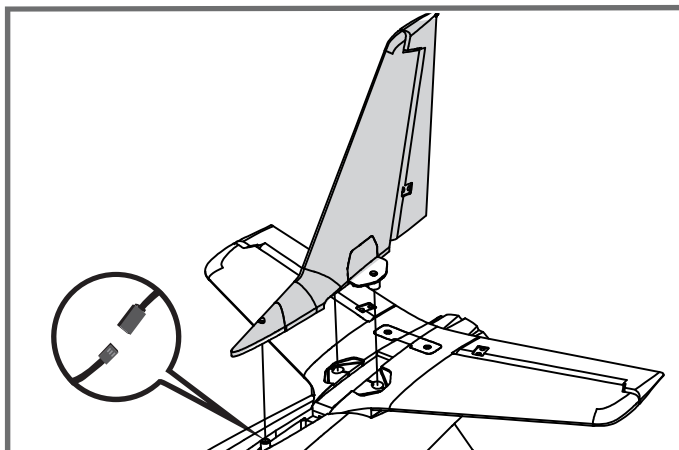
2. Secure the horizontal tail in place using the included screws.

Note: Ensure the control horn faces down as shown.



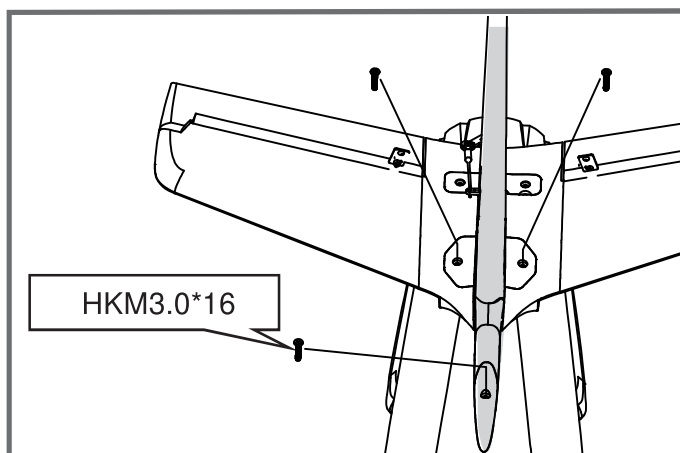
Vertical Stabilizer Installation

1. Install the vertical tail into the slot in the fuselage.



2. Secure the vertical tail in place using the included screws.

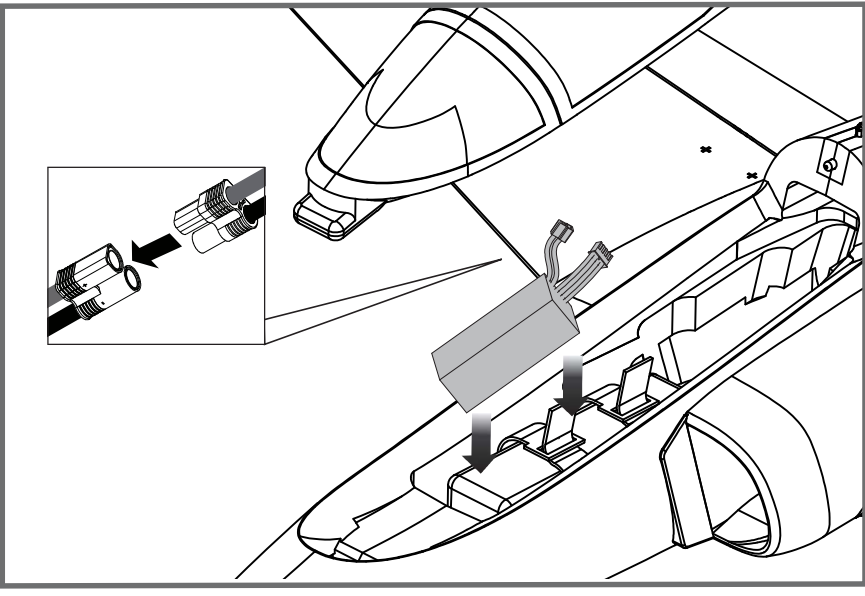
Note: Connect the rudder servo connectors to the servo extensions in the fuselage.



Battery installation

1. Apply the hook tape to the cable end of the battery.
2. Slide the battery into the battery hatch with the power supply cable toward the rear end of the plane and the hook tape facing the bottom of the battery hatch.

Note: You may need to relocate the battery position to achieve the correct CG for your model.



Connectors Diagram

Attach aileron servo to the aileron channel of your receiver. Elevator harness goes to elevator channel of your receiver. Steering servo goes to the rudder channel. Attach the ESC connector to the throttle channel of the receiver. The LED to any spare channel. Tuck the wire leads into the recessed cavity at the rear end of the battery hatch.

Note: Seat the receiver into the aside chamber as the picture shows.

		Receiver
Aileron	1	Channel-1 — Aile
Elevator	2	Channel-2 — Elve
Throttle	3	Channel-3 — Thro
Rudder	4	Channel-4 — Rudd
Gear	5	Channel-5 — Gear
Flap	6	Channel-6 — Flap

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 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 3300mAh 35C Li-Po battery. If using another battery, the battery must be at least a 22.2V 3300mAh 35C battery. Your battery should be approximately the same capacity, dimension and weight as the 22.2V 3300mAh 35C Li-Po battery to fit the fuselage without changing the center of gravity significantly.

The transmitter and model setup

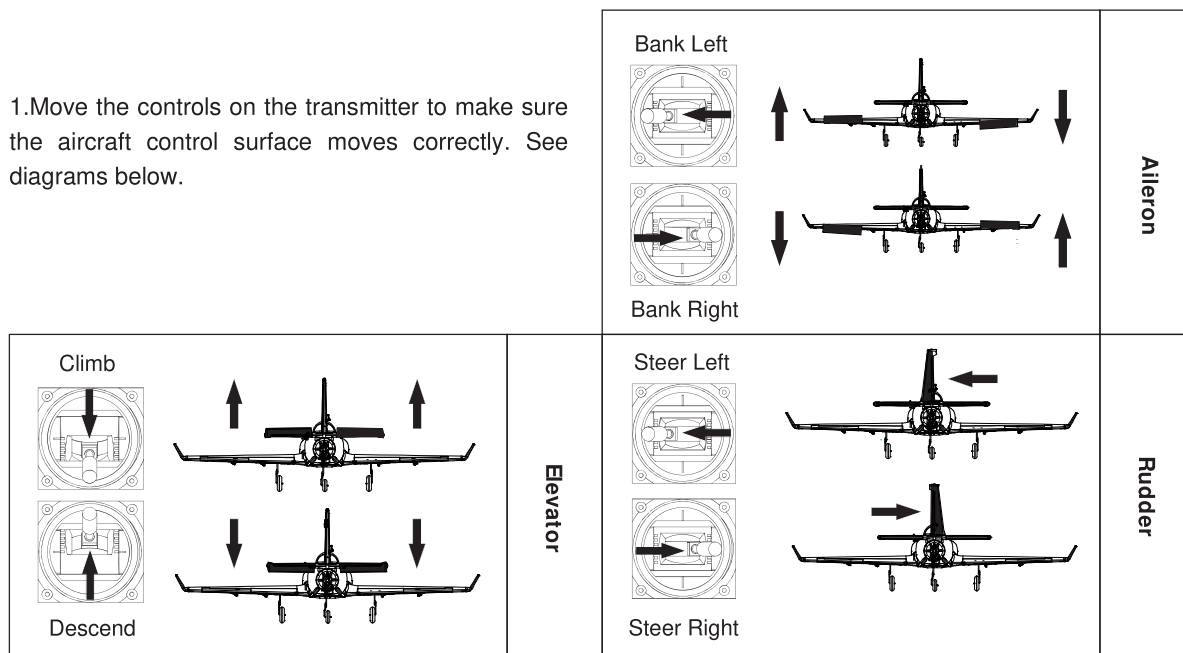
Before getting started, bind your receiver with your transmitter. Please refer to your Transmitter Manual for proper operation.

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.



Get your model ready to fly

Check the control throws

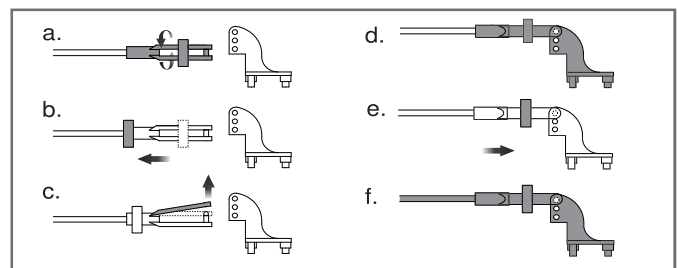
The suggested control throw setting for this model are as follows (dual rate setting):

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.

	High Rate	Low Rate
Elevator	16mm up/down	12mm up/down
Aileron	14mm up/down	10mm up/down
Rudder	16mm left/right	12mm left/right

Clevis installation

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



Control horn and servo arm settings

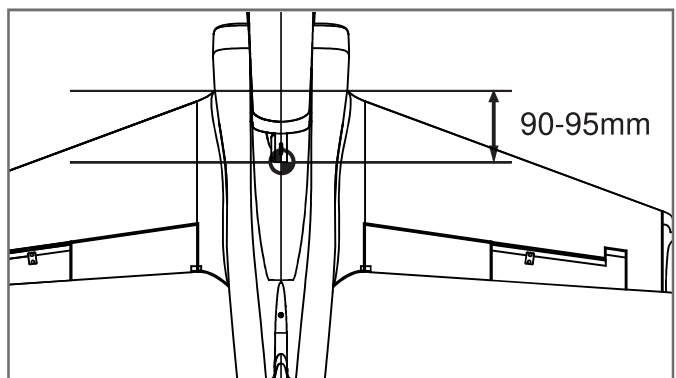
1. The table shows the factory settings for the control horns and servo arms. Fly the aircraft at the factory settings before making changes.
2. After flying, you may choose to adjust the linkage positions for the desired control response. See the table to the below.

	Horns	Arms	
Elevator			More control throw
Rudder			
Ailerons			Less control throw
Flap			

Check the C.G. (Center of Gravity)

When balancing your model, adjust the 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 (90-95mm) 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 your model

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. It 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.

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"> - ESC is not armed - Throttle channel is reversed 	<ul style="list-style-type: none"> - Lower throttle stick and throttle trim to lowest settings - Reverse throttle channel on transmitter
Excessive vibration or noise from the fan unit	<ul style="list-style-type: none"> - Damaged blades - loose motor mount - Reversed polarity 	<ul style="list-style-type: none"> - Replace damaged fan unit - Inspect and tighten bolts for the motor or fan assembly - Reverse motor polarity (only if confirmed)
Reduced flight time or aircraft underpowered	<ul style="list-style-type: none"> - Flight battery charge is low - Flight battery damaged 	<ul style="list-style-type: none"> - Completely recharge flight battery - Replace flight battery and follow flight battery instructions
Control surface does not move, or is slow to respond to control inputs.	<ul style="list-style-type: none"> - Control surface, control horn, linkage or servo damage - Wire damaged or connections loose 	<ul style="list-style-type: none"> - Replace or repair damaged parts and adjust controls - Do a check of connections for loose wiring
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"> - Motor loses power - Motor power pulses then motor loses power 	<ul style="list-style-type: none"> - Damage motor, or battery - Loss of power to aircraft - ESC uses default soft Low Voltage Cutoff(LVC) 	<ul style="list-style-type: none"> - Do a check of batteries, transmitter, receiver, ESC, motor and wiring for damage (replace as needed) - Land aircraft immediately and recharge flight battery
LED on receiver flashes slowly	Power loss to receiver	<ul style="list-style-type: none"> - Check connection from ESC to receiver - Check servos for damage - Check linkages for binding

Spare parts list content

FMSEM101	Fuselage	FMSEM114	Screw Set
FMSEM102	Main wing set	FMSEM115	Decal Sheet
FMSEM103	Vertical stabilizer	FMSREX040	EL Retract
FMSEM104	Horizontal stabilizer	FMSREX038	EL Retract
FMSEM105	Cockpit	FMSDFX003	70mm Ducted fan
FMSEM106	Front Landing Gear Set	PRKVX1900-1	3060-KV1900 inner runner motor
FMSEM107	Main Landing Gear Set	PRESC023	80A ESC
FMSEM108	Front Landing Gear System	FMSSER015	9g digital metal gear servo positive
FMSEM109	Main Landing Gear System	FMSSER020	9g digital metal gear servo reverse
FMSEM110	Landing Gear Cover		
FMSEM111	Linkage Rod		
FMSEM112	Control Horns		
FMSEM113	Wheel Set		

Visit our website: www.fmshobby.com to see photo of this product.

Enter the key word "ESC" in the search bar for the stock ESC instruction manual.