

BVM PNP F-86

1/7 Scale

For EVF-3- 10S Power

GO FLY GOLD



Length: 60", Wing Span: 63"

Weight: 17.5 lbs

CONSTRUCTION AND OPERATING MANUAL

Version 2

April 2024

Vne 175 MPH Limit Thrust to 16 lbs.

Equipped with HV Servos and should not be operated below 7.2 volts

CCU Pressure should be 75 PSI MAX

BVM

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INTRODUCTION

Thank you for purchasing the BVM PNP F-86. This model represents the latest in manufacturing technology and completion for the R/C jet enthusiast. The factory has expertly crafted and thoroughly inspected all aspects of the model. Only a small amount of work is required to complete the assembly of your F-86.

This manual contains instructions for safety, operation, and maintenance. It is essential to read and follow all the instructions and warnings in the manual.

Please read the entire manual to become familiar with the processes and procedures before you begin final preparations for flight.

DISASSEMBLY OF ANY COMPONENT

It is good practice to photo each stage of removing a component so that the reassembly process is easier.

DISCLAIMER

BVM Inc. assumes no liability for the operation and use of these products. The owner and operator of these products should have the necessary experience and exercise common sense. Said owner and operator must have a valid Academy of Model Aeronautics license in the U.S.A.

This is a sophisticated jet model aircraft. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property.

NOTICE: Do not use incompatible components or alter this product in any way outside of the instructions provided by BVM, Inc. The BVM F-86 has been designed and flight tested with a 10s EVF.

Required Tools

- Metric Allen wrench set
- Needle nose Pliers
- 3/32 Ball Driver
- 1.5mm Hex Driver
- 2mm Hex Driver
- 6" long 1/16th drill
- BVM Collar Tool # PA-SR-0095



List of Adhesives/Lubricants

- Pacer Z-42 # PT-42
- ZAP ZAP GOO # PT-12
- Super O-Lube BVM # 5779
- BVM DRY LUBE BVM # 1947
- Axle Super Lube BVM # 5784
- BVM QT Poxy BVM # 9580



ITEMS NEEDED

- 10s EVF fan unit # E1300-95
- 12 channel RX
- 10s flight batteries
- Rx Battery(s) 3000 MAH
- Power Plug 2 # E1000-22

AVAILABLE OPTIONS

MGA Pilot - bust painted BVM5732



Demon Cortex V-DA-BD-CCORTEX PRO



WING PREPERATION

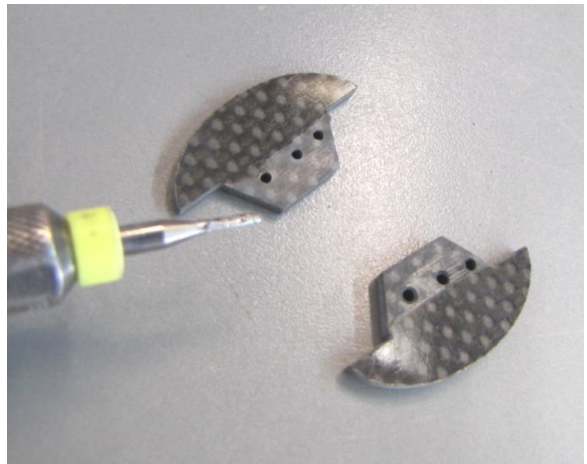
TIP SKIDZ

If you fly off a grass field there is no need to install these. If you fly from a paved runway and don't always make perfect landings, especially in a crosswind you can add the BVM#2197 Carbon Fiber Skidz for extra protection. Follow the instructions that come with the Skidz plus the work shown below.

- Make the required notch in the bottom skin as shown. Note the location relative to the panel lines.



- Use a 1/16" Carbide Cutter to add some glue holes as shown.



- Use ZAP-RT or similar rubberized glue to attach the Skidz as shown. Wipe away excess before it cures.

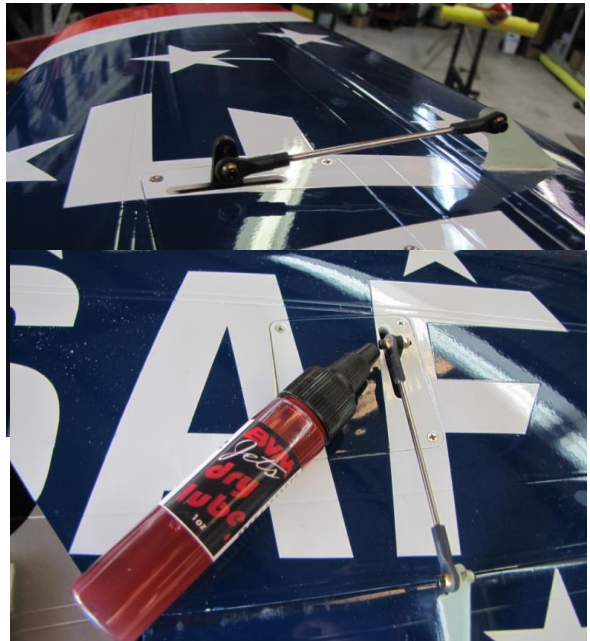


AILERON CONTROL OPTIONS

NOTE: The Location of the Ball Link on the servo arm.

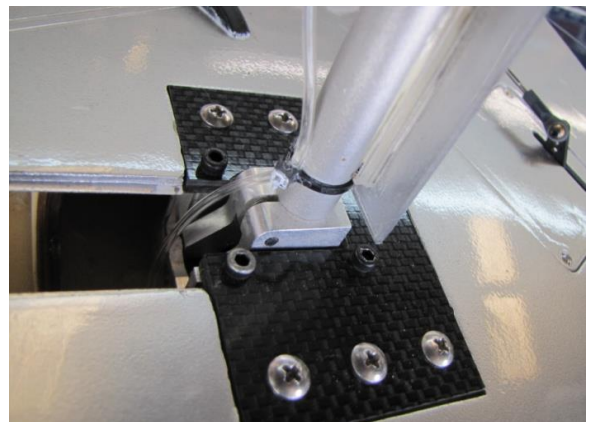
This yields proper resolution on the Aileron travels.

It is also good to apply the Dry Lube to all control linkages that are metal to metal or plastic to metal. It is greaseless, yet a very good lubricant. BVM #1947 does not attract dust or dirt.



MAIN WHEELS, AXLES AND BRAKES

- Before disassembly, note (photograph) the routing of the brake tubing on the strut.



- Use a 1.5mm hex wrench to loosen the set screw that retains the axle. Check to see if there is a flat spot ground in the axle. If not, use a Dremel cutting disc to make one as shown. A matching cutter mark on the end of the axle helps to properly orient it.



- Apply Parker Super "O"Lube to the brake "O"Ring and on wheel inner drum. BVM #5779



- Apply Super Axle Lube BVM # 5784 to the axle from inside and outside access. Note the nylon spacer.



- Reassemble the wheel, brake, and axle. Use a small drop of thread locker on the set screw. Check for free spin of wheel and brake application.

Accomplish for both mains and the nose wheel. Of course, the nose wheel does not have a brake.



WING SPAR AND CONNECTORS

To ease the wing attachment, slightly bevel the ends of the carbon rods with sandpaper (320 grit) then apply BVM Dry Lube (#1947) to the rods.

Put a small tie wrap on the connectors to keep them from falling into the wing.



FUSELAGE / WING MATING SURFACES

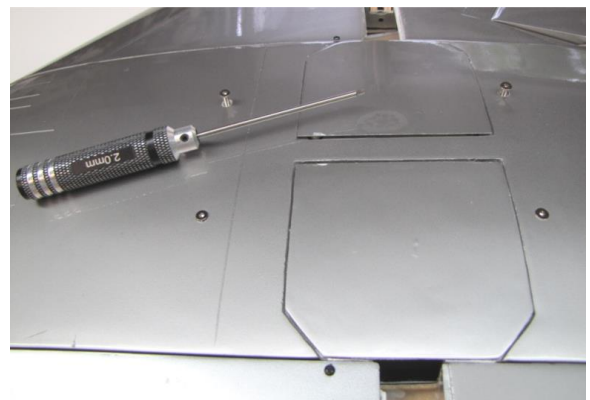
Be sure that they have a small tie wrap on each set as shown. This will keep them from getting lost in the fuse. Small forceps can be used to retrieve them if necessary.

The electrical and pneumatic connectors exit the fuse as shown.



WING MOUNTING

The wings are retained to the fuse with (2) 3mm X 25mm front and (2) 3mm X 16mm screws at the rear. Use a 2.0 mm hex wrench.



FUSELAGE

COOLING OPTION FOR EVF

- This step is optional, but we found it reduced the temperature of the battery packs on warmer days. You can make the cut out using a BVM 1/16 Carbide Cutter. After you make the cut out, you can use tester's flat black on the inside to clean up the flange.

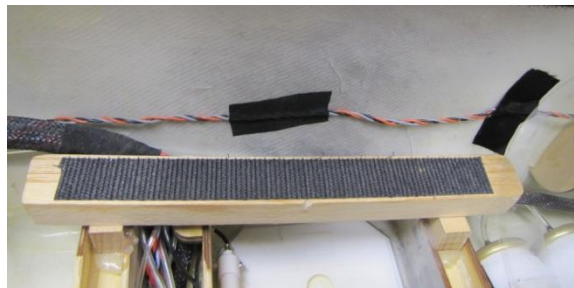
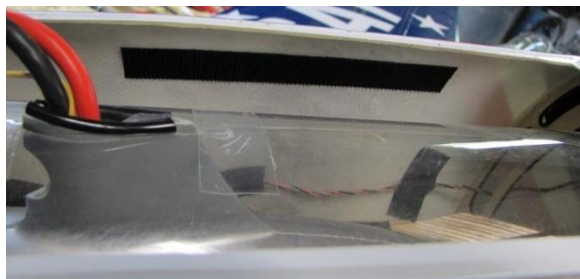


CANOPY COOLING OPTION

- There is a “molded- in’ detail on the back of the canopy that can be cut out for battery cooling air exit.



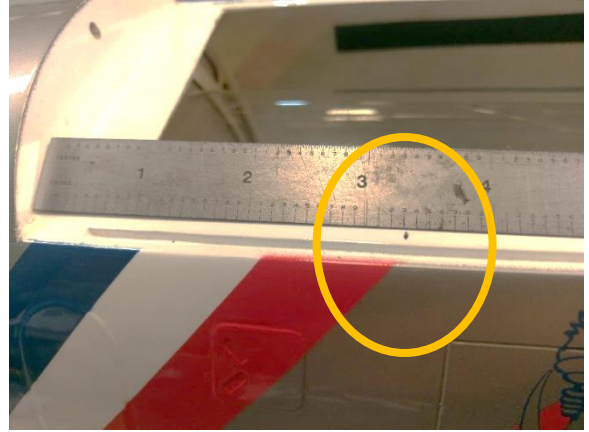
BATTERY LOCATION FOR EVF



- A strip of Velcro on the side of the fuse and the top of the battery rail is all that is required. Apply a C.A. or epoxy finish to the tops of the wood rails to improve Velcro adhesion.

NOTE: 3.3" dimension (circled)

. This is a good starting point for EVF Batteries.
Your Center of Gravity can be fine-tuned aft or forward of this position with EVF Battery placement.

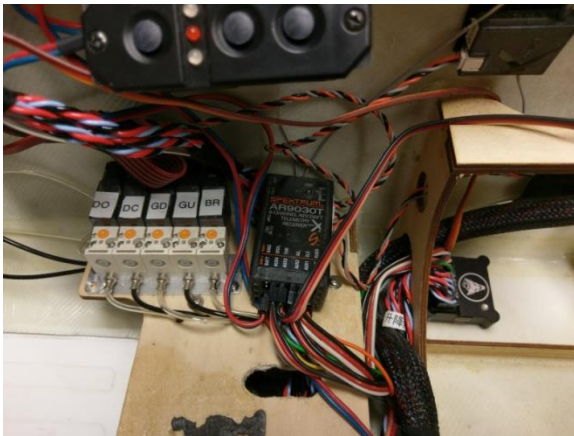


RX BATTERY LOCATION

Located on the left side of the fuse in front of the fan mount.



RX MOUNTING AND GYRO



This



example on a BVM plane used a regular Spektrum 9030 Rx and an X-plus expander.
You can find the Rx channel mapping under Connecting Rx wires later in this manual.

NOTE: These components are constantly changing, adapt as necessary.

We Used the Demon cortex gyro on the demo model. Located on the right side of the model, under the fan mount. The cortex gyro will come with its own wire harness to hook up to the Rx. Follow mounting and wire diagram from Demon.

NOTE: Gyro technology is also changing constantly, adapt as needed.

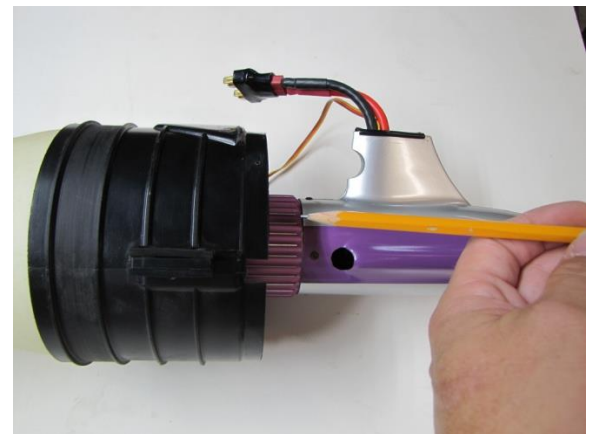


INTAKE AND EVF INSTALLATION

Before installing the intake, insert the intake into the fan and check for rubbing of the spinner or the fan on the intake spike..

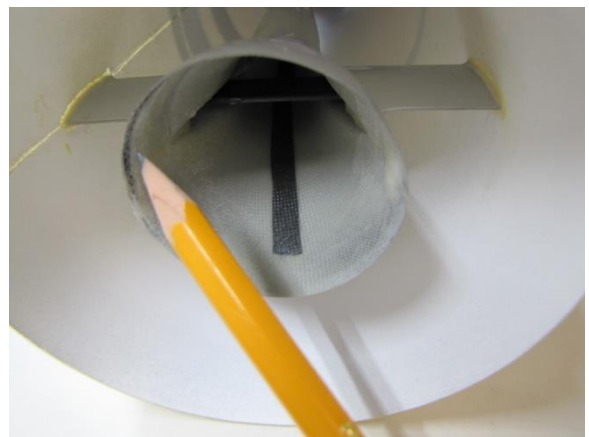


You can use a pencil or a wood dowel to spin the rotor to check for rubbing.



If the spinner is rubbing on the spike, you can use a sanding block to remove the flange on the back of the spike.

NOTE: On the first run up go slowly and listen for any indication of rubbing. If you hear anything stop and repeat this step.



- When mounting the fan, slide the intake into position, then slide the fan onto the inlet. This will become the location for your fan to sit. Use a 1/16 drill bit to mark the location of the mounting holes.



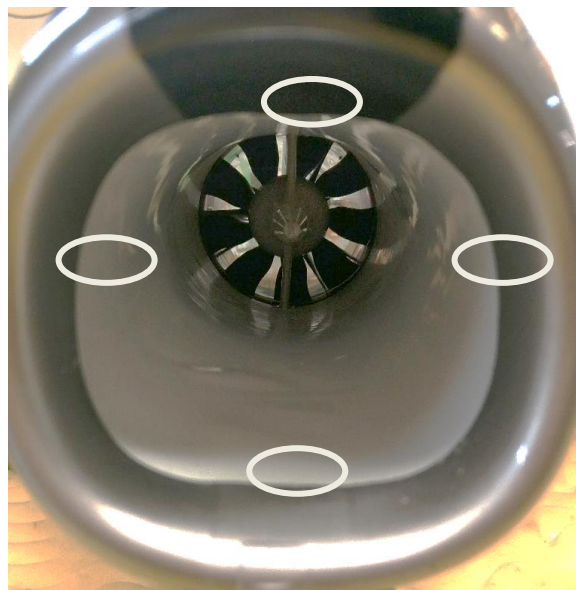
- Use 4-40 bolts and blind nuts to mount your EVF unit in place.



We recommend using some Qt poxy to hold the blind nuts in place. BVM # 9580.



When you are ready to install the duct, we recommend that you use a few dabs of Zap Goo on the intake lip and slide it in to position. Make sure the Intake spike is vertical. This should only be done after all the test fitting is complete.



EVF unit installed.



TAILPIPE INSTALLATION

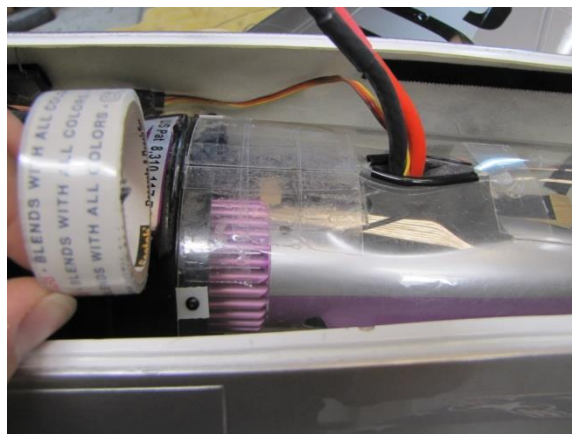
NOTE: See instructions that come with the mylar tailpipe

The tailpipe is rolled in on the bottom and installed through the opening of the rear fuse. The pipe is held to the fan shroud using two Button head screws. These screws are provided in the tailpipe installation kit. You will need to drill two 1/16th holes for these screws.

NOTE: ONLY USE 3M CLEAR TAPE.



Use the 3M tape to seal the front opening of the tailpipe. Use one piece on the forward seam of the opening and then three pieces across the opening. This is a time-tested method that works.



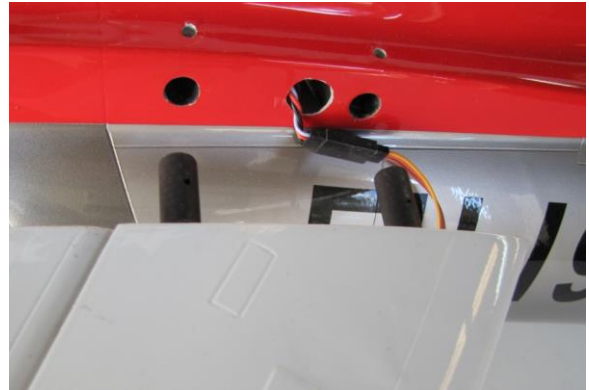
Once the pipe is in you can trim the pipe to match the rear opening of the fuselage. You can also remove the pipe and use flat black testers to paint the pipe on the outside.



STABS AND ELEVATORS

NOTE: Stab retaining bolts should be packaged with the wing retaining bolts. They are 2mm X 16mm socket head machine screws that require a 1.5mm hex wrench to install.

- Chamfer the ends of the (2) carbon rods and lube with BVM Dry Lube as done with the wing tubes. Make the electrical connection as shown and insert the carbon rods. Use a servo lead connector lock or tape to secure the connections.



- Use a 1.5mm hex wrench to insert and snug tight the 2mm bolts.



NOTE: The elevator neutral position is located as shown.



See controls Set-Up page later in the manual for proper Elevator, Aileron, Rudder, and Flap Travels.

Control Surface Deflections and Expo Settings

| Control | High Rate | Expo | Medium Rate | Expo | Low Rate | Expo |
|--|--------------------------|-------------------------|--|--------------------|-----------------------|--------------------|
| Elevator (measured at the Root) | Up .75" Down .5" | Up 20% Down 20% | Up .5" Down .5" | Up 15% Down 15% | | Up 10% Down 10% |
| Aileron (measured at the Ail/Flap Junction) | Up .80" Down .80" | 20% / 20% | Up .60" Down .60" | 15% / 15% | Up .50" Down .50" | 10% / 10% |
| Rudder (measured at the Bottom of the top rudder) | Left 1.0" Right 1.0" | 20% / 20% | Left .75" Right .75" | 15% / 15% | Left .5" Right .5" | 10% / 10% |
| Control | Take-Off Position | Landing Position | | | | |
| Flaps | .70" | 1.8" | measured at the Ail/Flap Junction | | | |
| Elevator Mix with flaps | .20" Up | .25" Up | measured at the Root | | | |

Note: The BVM Demo plane is set up using the above Expo percentages. Positive values are used on Spektrum and JR radios, Futaba uses negative.

Connecting RX wires

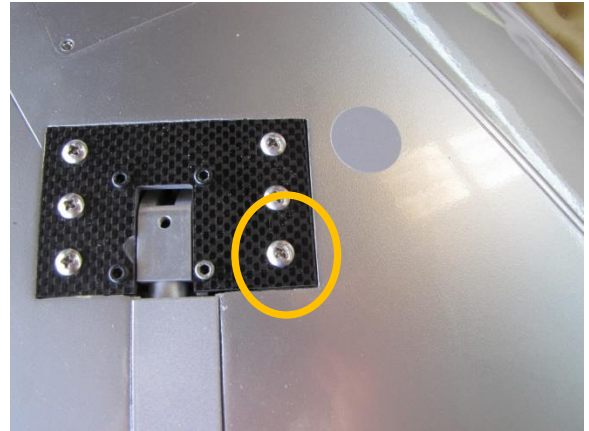
The wires are labeled from the factory. If you are using the DX18, the program is available from BVM. Follow the chart below to connect the servos.

| DX18 Connection Chart | | | | | | | | |
|-----------------------|----------|---|----------|--------|--------|-------------------------------------|--------|------|
| RX Port | Throttle | Aileron | Elevator | Rudder | Gear | Aux1 | Aux2 | Aux3 |
| Surface | Throt | R Ail | R Elev | Rudd | L Flap | L Ail | R Flap | Gyro |
| | | | | | | | | |
| RX Port | Aux4 | Aux5 | X+1 | X+2 | X+3 | X+4 | X+5 | X+6 |
| Surface | L Elev | | | Gear | Brake | NG Steering Mixed with Rudder | | |
| | | | | | | | | |
| RX Port | X+7 | X+8 | | | | | | |
| Surface | | Batt 2 PowerBox Switch 2 Batts | | | | | | |

CENTER OF GRAVITY

The Center of Gravity is located on the forward inboard screw of the main gear flex plate.

NOTE: Your final C.G. can be fine-tuned by moving your BVM Flight packs forward or aft.



FUSELAGE AND COMPONENTS

NOSE GEAR SYSTEM

The nose gear, strut, and its flex arm mounting system comes installed and ready to use. The following instructions will help you remove and replace the system should that become necessary.

NOTE: Inlet duct must be removed.

- Disconnect the forward folding door spring from the strut.
- The nose gear flex arms are as shown here. Use a 2.5mm hex wrench to remove the bolts.



- Disconnect the nose gear steering linkage from the tiller arm.
- Remove the (4) flat head machine screws that mount the retract unit to the flex arms.
- Remove the flex arms from the model one at a time. They must slide outboard and aft to disengage the slot in the most forward bulkhead.

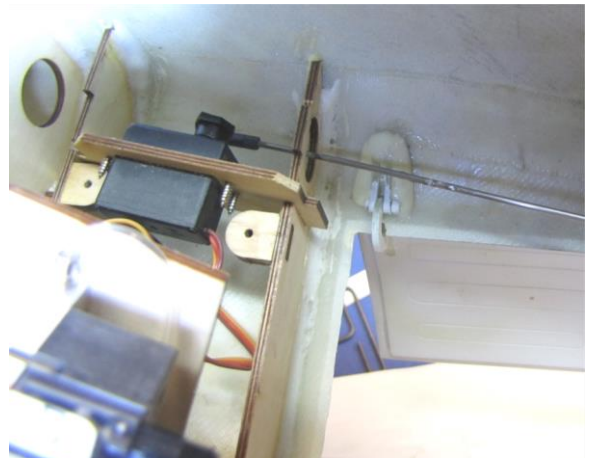


- Maneuver the retract unit to get it out of the model. Use a BVM Collar Tool to disconnect the pneumatic lines from the nipples on the cylinder.

NOTE: The steering arm linkage may differ from that shown here. Disconnect the steering linkage from the steering arm.

STEERING SERVO ACCESS

- Remove the plywood plate above the nose gear steering servo.



- Lift the servo mount up as shown. The wire linkage should slide out of the slot in the #3 bulkhead. The servo could be changed with this access.



First Flight Profile

Flight Time

The BVM demo model's transmitter timers are set for 5 min. On the first flight, land a minute early to check battery consumption. Adjust the flight timer accordingly. BVM uses the 80% rule for battery usage.

Taxi Test/Engine Run Up

A taxi test should include a radio range check with the engine running at various power levels. Check that the wheel brakes are adequate, and the stopping action is without skidding or pulling left or right.

Takeoff

Make the first takeoff and climb out with the gyro off. Begin the takeoff roll by slowly advancing the throttle. Maintain runway center while holding about 1/2 stick up elevator; the Sabre will rotate when it is ready. If there is a cross wind, hold a small amount of aileron into the wind, apply opposite rudder as necessary.

Trim

Once in the air, use a medium cruise speed to set the trims. The aircraft should fly straight and level when "hands off". When the landing gear comes down, a few clicks of up trim will be needed. This can be mixed in or use flight modes to trim automatically.

Practice Approaches

Plan to allow at least one half of the first flight to practice approaches and go arounds. It is beneficial to become familiar with the low-speed handling of the aircraft at altitude first. Save the aerobatics and air show stuff for later flights.

Landing

Landing is like most jets, "power on" during the approach. The Sabre is very resistant to stall, it is best to land nose high, touching on the main wheels first.

RX Battery Consumption

The average flight consumes about 500 mAh. We recommend three flights and recharge. Use this data to calculate how many flights you can achieve from your system.

BVM is synonymous with "Success Jets." It is very important to us that you are successful with our products. This extensive manual reflects our sincerity. As always, your comments and suggestions on BVM products are appreciated.