BVM PNP F-16

1/4 Scale

GO FLY GOLD

Length: 149”, Wingspan: 93” with Missile Rails

Weight: 78-80# Dry

Fuel Capacity: 9L, Smoke Capacity: 2L
This is an LTMA 2 Aircraft

ASSEMBLY AND OPERATING MANUAL

Version 1 2026

Vne: Speed to Never Exceed= 175 MPH

LTMA 2 Limit

Equipped with HV Servos and should not be operated below 7.2 volts
CCU Pressure should be 75 PSI MAX

BVM

3481 State Road 419 • Winter Springs, FL 32708 USA
tel. 407-327-6333 • fax. 407-327-5020

Contents

INTRODUCTION

Thank you for purchasing the BVM 1/4 scale F-16. This model represents the latest in manufacturing technology and completion for the R/C jet enthusiast. The factory has expertly crafted this Aircraft to the best of their abilities. Please check over all aspects of the aircraft before flight. This manual will help guide you through the finishing process. A few evenings of work is all that is left to complete your BVM 1/4 F-16.

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

Please read the entire manual to become familiar with the processes and procedures before you begin to assemble your aircraft.

DISCLAIMER

Bob Violett Models Inc. assumes no liability for the operation and use of these products. The owner and operator of these products should have the necessary experience to operate an LTMA 2 aircraft and exercise common sense. Said owner and operator must have a valid Academy of Model Aeronautics license and a “Turbine Waiver” as well as LTMA 2 certification for operation 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 1/4 F-16 has been thoroughly flight tested and has logged many flights on a 320 class turbine.

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List of BVM Supplied Items

Assembly and Operating Manual

Static Wick Wire

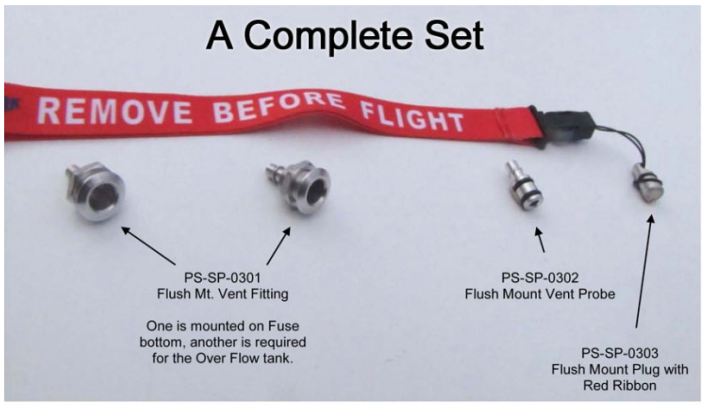
Carbon Tube for Servo Pushrods.

Carbon L brackets / screws for nose cone support

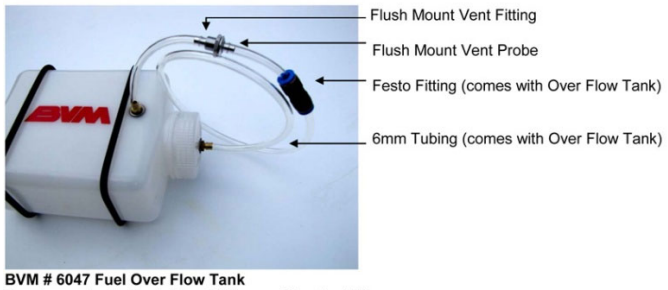
Recommended Accessories

You may have some of these products in your shop, but if not, refer to this list.

- ☐ 300-400 Class engine of your choice.
- ☐ BVM Hi-Flow U.A.T. (#TA-SR-1001)
- ☐ BVM GFG Over Flow Tank (#6047)
- ☐ (2) 7.4v Batteries 3600-5000 Mah Capacity
- ☐ (1) ECU Battery 11.1v or 9.9 Life
- ☐ Safety Wire (BVM# 3030)
- ☐ BVM Over Flow Tank (for Smoke System) (BVM# 6037)



A **Smoke System** will require a complete second set of the parts.



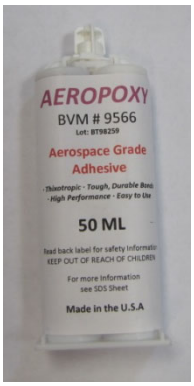
BVM # 6047 Fuel Over Flow Tank
Can be used with Flush Mount fittings or Standard fittings.

Required Tools

A combination of Metric and SAE hex socket and drivers along with a small standard and Phillips head drivers will be necessary.

List of Adhesives/Lubricants
Available at BVMJets.com

☐ BVM Qt Poxy	# 9580
☐ Zap-A-Goo	# PT12
☐ Pacer Z-42	# PT42
☐ Super O-Lube	BVM # 5779
☐ BVM Thin Lube for “O” Rings	BVM # 1945
☐ Axle Super Lube	BVM # 5784
☐ Dry Lube	BVM # 1947



Available Options
Available at BVMJets.com

1/4th Pilot (15”) BVM# V-WB 15 Jet Pilot

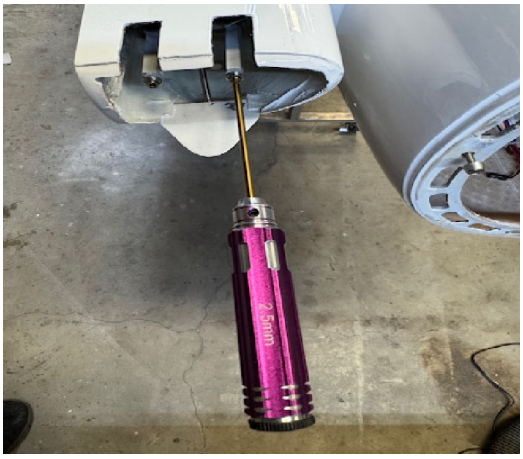
Unpacking

Carefully remove items from the box. Open each package and inspect for shipping damage. After reading this entire manual, get familiar with the major kit components.

Note: Damaged parts must be reported to BVM within 7 days of receiving your kit.

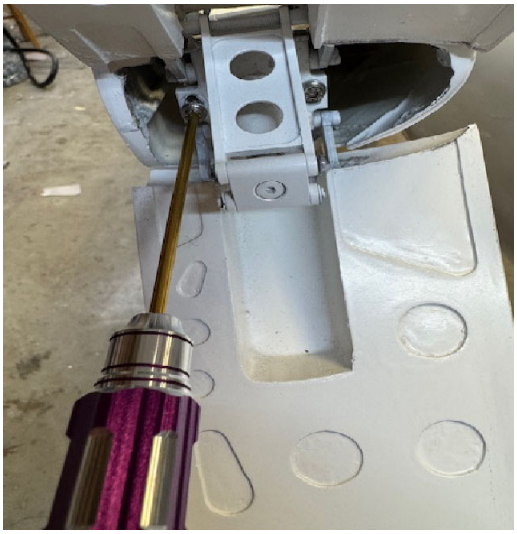
Become familiar with the work completed at the factory. It is important that you inspect and approve this work now.

Installing the Speed Brakes



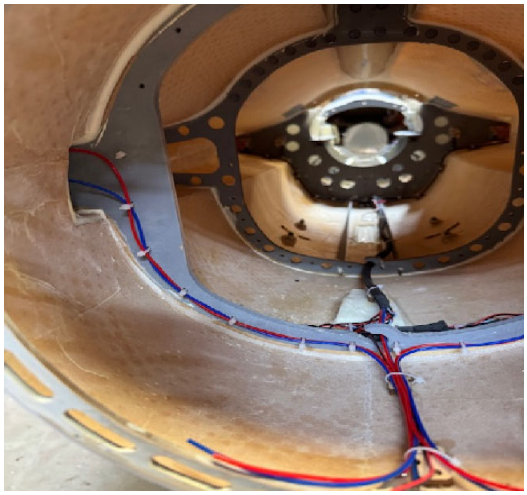
Each Speed Brake is held to the bracket with (2) 3mm bolts. You will need a 2.5mm allen driver for this step.

Remove the 2 bolts in each bracket.



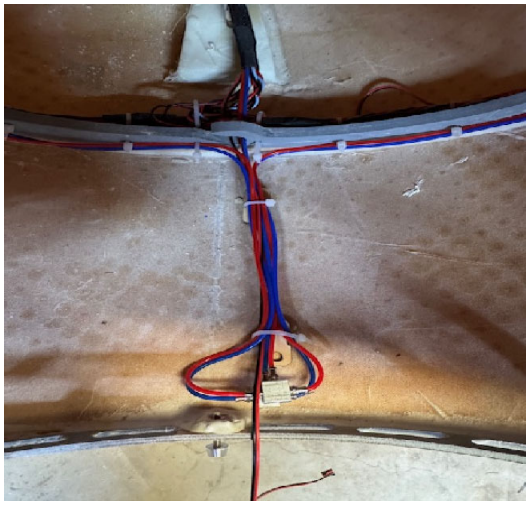
Route the red and blue hoses into the fuse around the bracket. Attach the Speed Brake to the bracket. Use a small drop of Loctite on each bolt to help secure these in place.

Once the Speed Brake is attached to the bracket you can route the red and blue hoses down the bulkhead towards the bottom of the fuselage



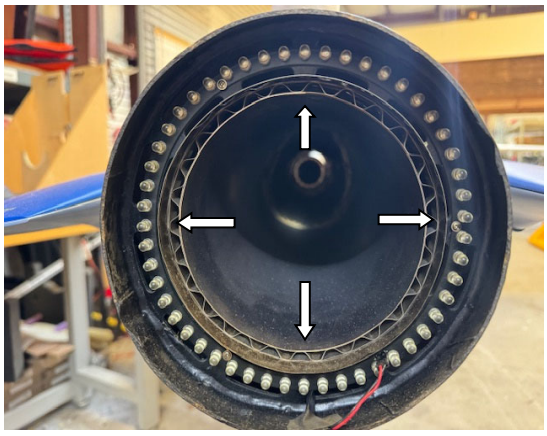
Join the Red and Blue Hose to the T fittings in the bottom of the fuselage. After this is done, you should pressure check these connections before moving on.

Note: The BVM demo plane has a small amount of foil tape covering the connections.



Installing the Tail cone and AB Ring

The Tail cone is held by (4) 3mm Bolts. Top, Bottom and sides. The Tail cone will slip over the bolts then twist slightly and lock into place. You will need a long 2.5mm Allen drive to secure the (4) bolts reach these once the cone is in place.



The AB Ring will be pre-installed into the Tail cone. However, there is a Red and Black wire that needs to be plugged in. This wire should be routed down the bottom right side of the Tail cone. The AB Ring has a polarity indicator on the ring.

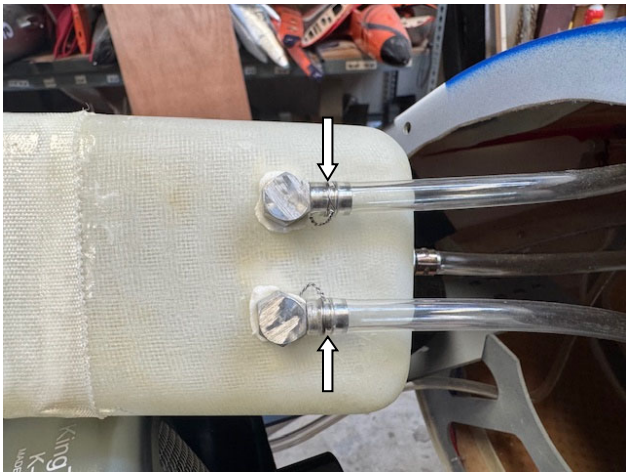
Fuel System

Remove the fuel bungs from each tank using an adjustable wrench or your socket of choice.

Check the length of the clunk hoses to ensure they are all equal or as close as possible. Safety wire all connections. Our normal is 2 wraps around each fitting. Re assemble and repeat this for remaining tanks.

Fuel flow

The F-16s fuel system has 3 tanks not counting the UAT. 2 mains and 1 header tank. The main tanks have separate fuel inlets into the Header tank. These hoses can be trimmed but should stay as equal length as possible. Your Header tank will feed your UAT.



Note: All fuel hoses are secured with Safety wire. Or your favorite method.

The stock location for the UAT is up front. You can leave it in this location, or you can move it back to the turbine bay. Both places work well.

Also, the UAT that comes with the model works very well. You must hold the Round UAT vertically to purge all the air from it. Best method for this is to remove it from the aircraft during the first run up. Failure to do so will leave air trapped in the filter.

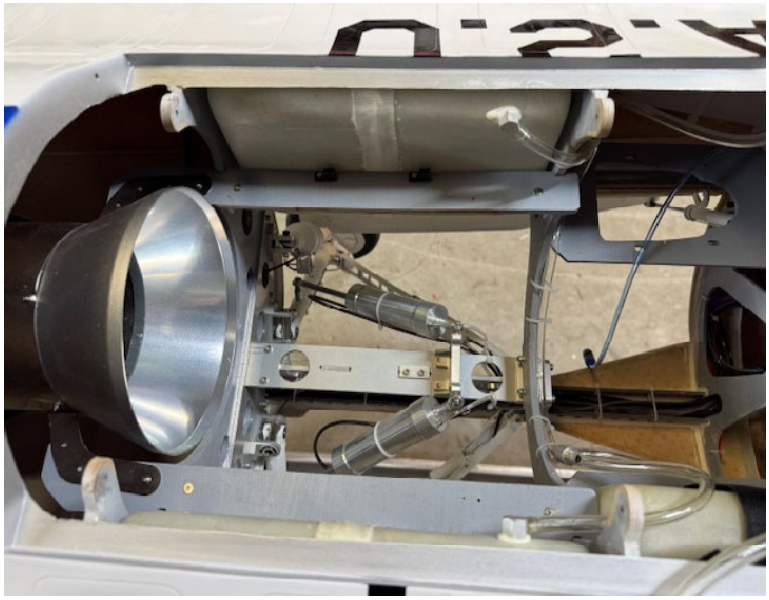
Picture shows the New High Flow UAT+ installed for testing.

Bypass Mounting

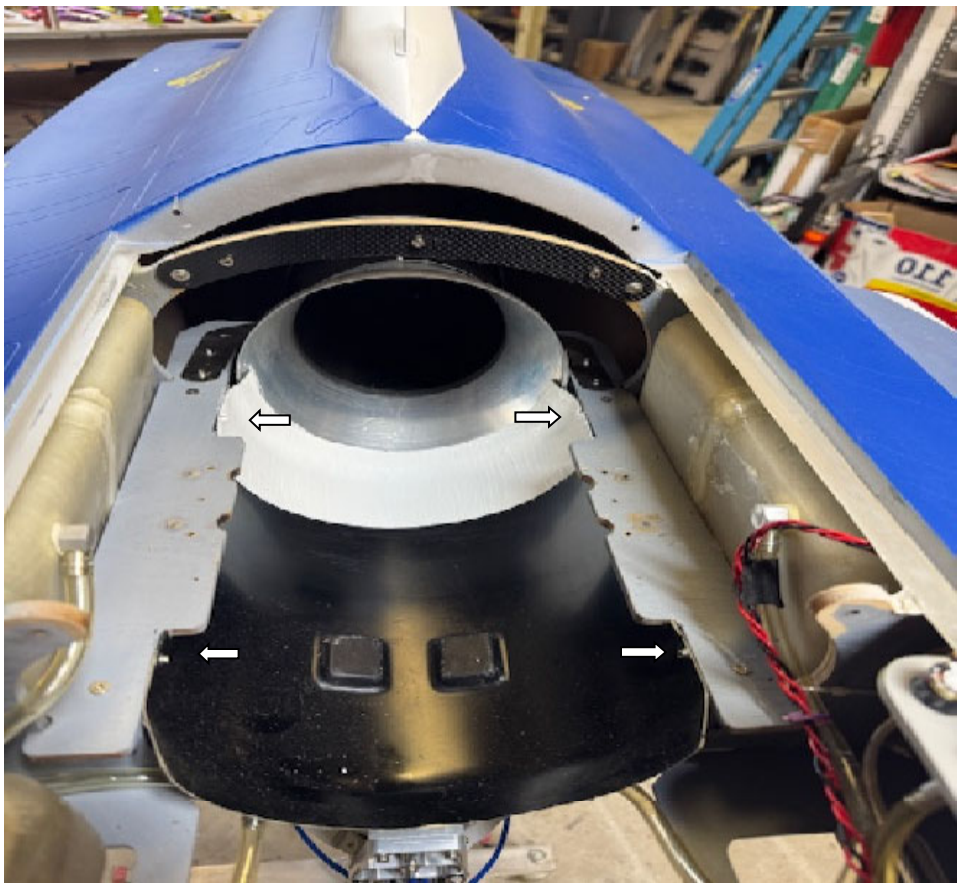
To use the bypass, you will need to do some minor fitting. You can choose to run a partial bypass or a full bypass. The lower bypass is good to use regardless as it will keep debris that the engine may suck in during takeoff. BVM hasn't used a complete bypass on anything bigger than the K320 to date.

This is the lower section of the bypass with the ears removed from it. Cut them flush to the side of the shield. The 2 indents sit over the main gear cylinders.

If you are using a K320 you can trim the Turbine rails off flush. This will make fitting the lower bypass section easier. You can also leave them on and trim the lower bypass around them.



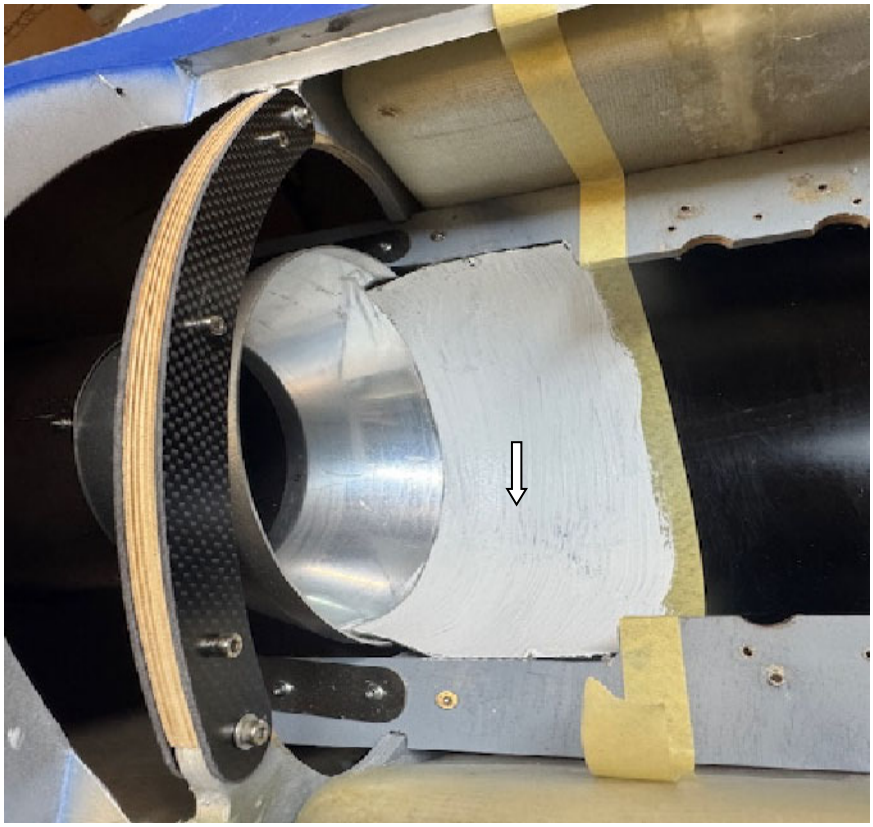
The lower bypass will sit inside the lip of the Metal Bell mouth where the flat section of the lip is. The bypass will get attached to the Turbine rails using (4) #2 sheet metal screws. Drill through the bypass into the Turbine rail. One in the front on each side and one in the back on each side. Also, the lower bypass will sit flush with the top of the turbine rails.



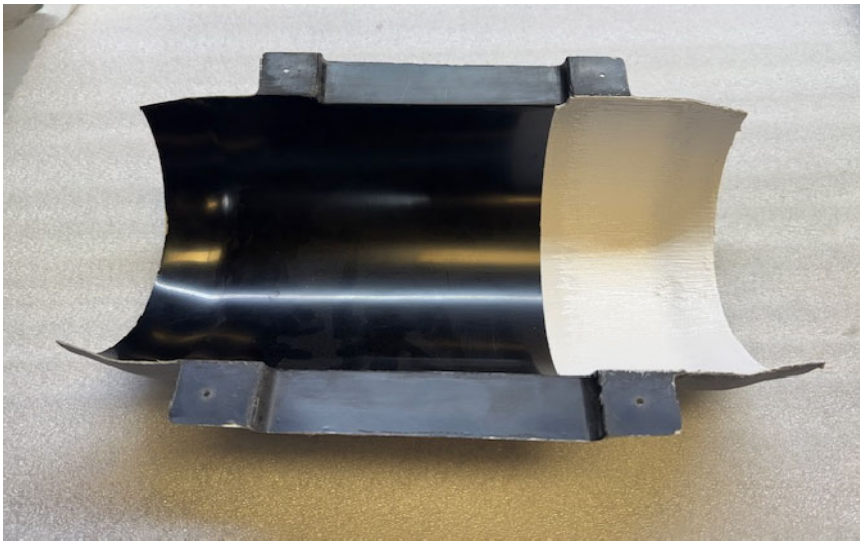
A small amount of sanding to fine tune the lower bypass to the top of the turbines rails is not uncommon.

Here is another picture of how the lower bypass sits inside the edge of the Bell Mouth.

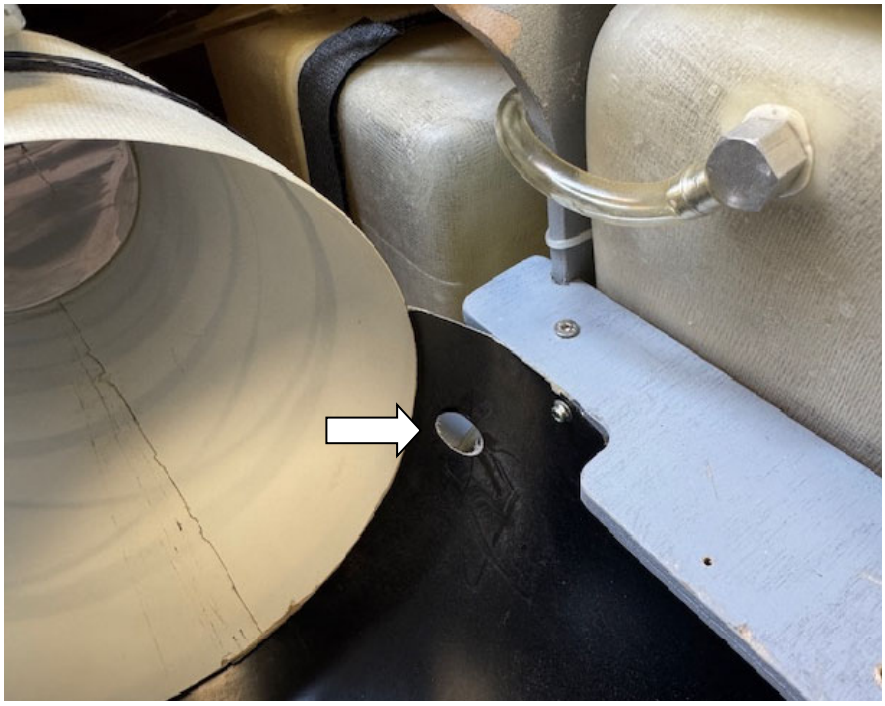
Note: Drill a small 1/16 hole for drainage.



You will also notice that Heat Shield has been painted onto the lower bypass. This will be the same for the top section as well. We use 3 coats to protect these areas.

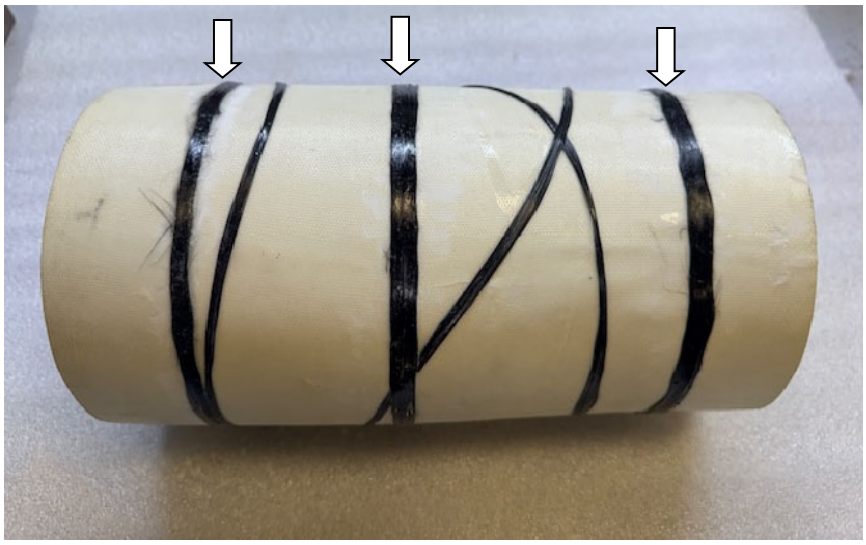


A small opening for the fuel line to pass through the lower bypass is needed. You will want to use some type of anti chafing tape or tubing on the fuel hose where it pases throught the fiberglass.

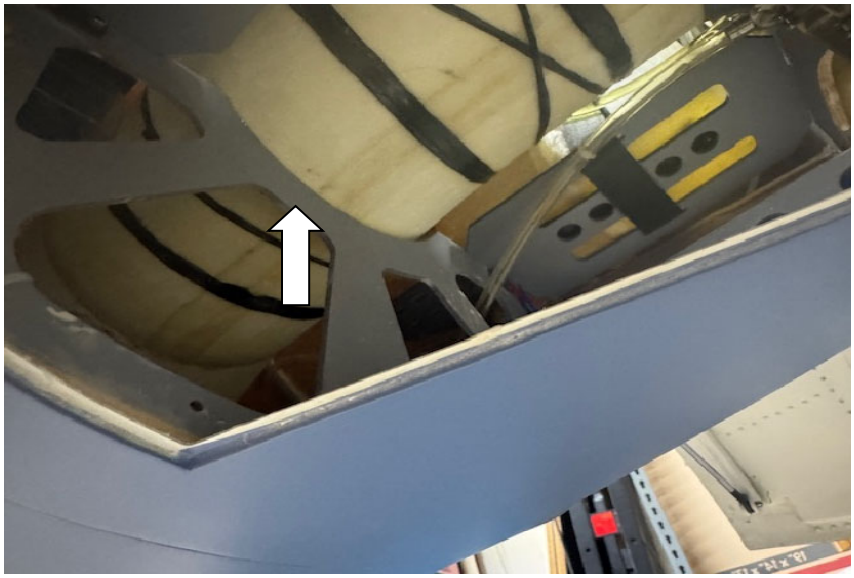


S-Inlet Extension

The S inlet extension will fit better in one direction than the other. If the back of the inlet sits up in the air instead of being flat and inline, flip it over and try it the other direction. The inlet will fit and stay in line with the bypass. If you use a full bypass you will want to reinforce the inlet with some carbon cord. BVM used 3 additional wraps of cord. One on each end and one in the middle. Sand and clean the part before applying any glue to the surface. We applied the carbon cord using the Thin and Medium CA method.

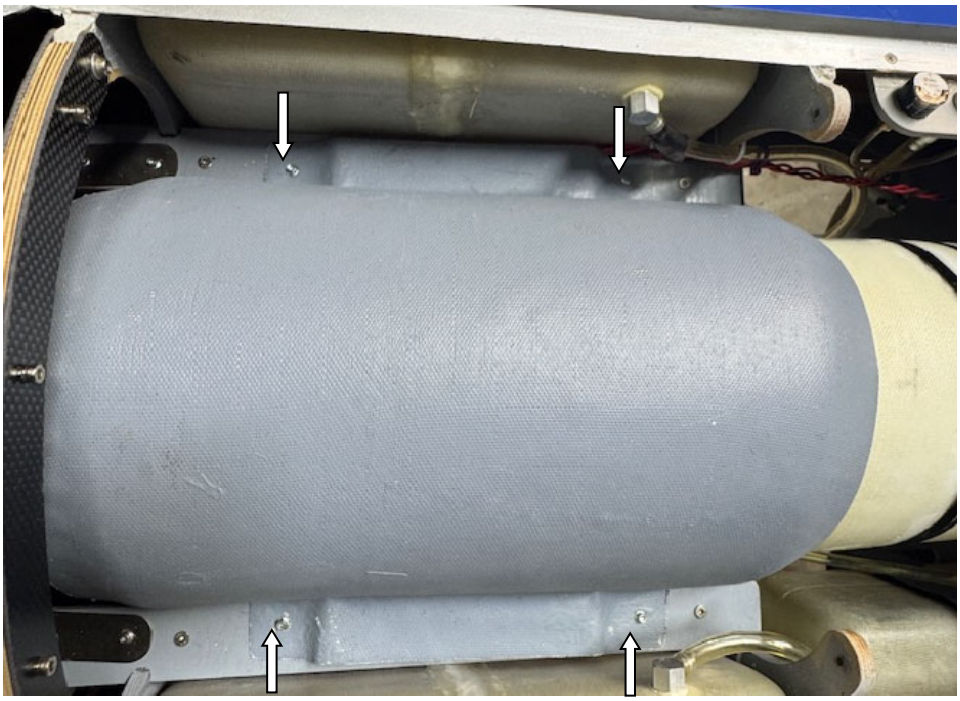


The S inlet extension is secured to the front section of the inlet with (4) dabs of Zap-Goo. Top, bottom and sides. It will also touch the small former below the S inlet, we use a thin wipe across the former on to the Extension. The arrow points to former.



Looking at the inlet from the side it should fit in the aircraft like this.

Top lid of bypass is held with (4) #2 sheet metal screws. One in each corner is all that is needed.

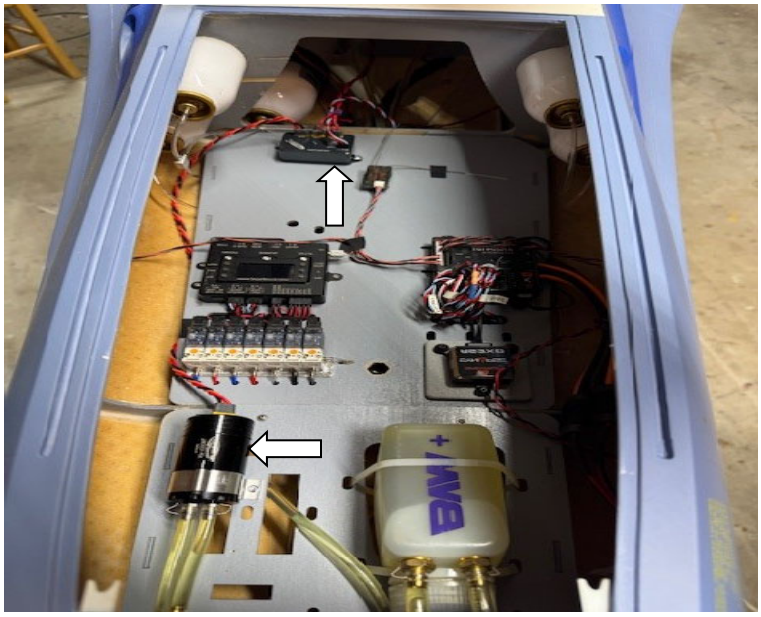


Turbine/ Pump/ Ecu mounting

The turbines mounted position is from the aft of the Turbine Tail cone to the start of the Tailpipe, not from the front of the Bell Mouth. Follow your manufacturer's instructions on this dimension. BVM always uses .75 inches as a standard for our demo aircraft.

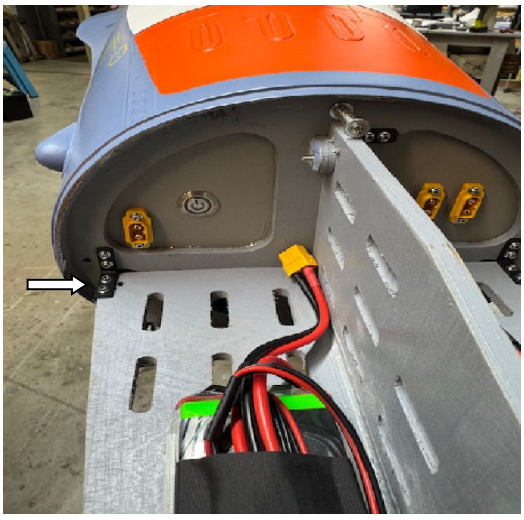
We mounted the ECU and the Fuel pump just behind the aft opening of the Cockpit. You can mount your components wherever you like to make it convenient for you.

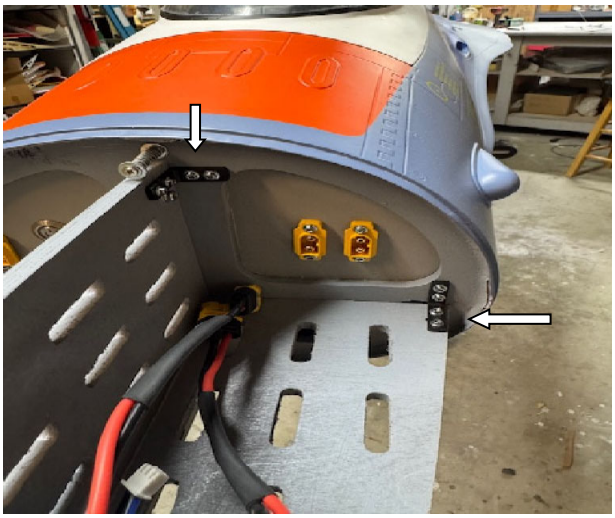
This is another option for ECU and Pump mounting. In this location you may need an extended data wire for your turbine. BVM does have these in stock for G4 and G5 Kingtechs.



Nose cone layout

We made some inserts to accept our battery connections for our (2) RX batteries and Turbine battery. It also has the RX power button. You will also notice there are (3) Carbon L brackets that support the Nose cone former. They are held with #2 self-taping screws. These are supplied with our Manual package.

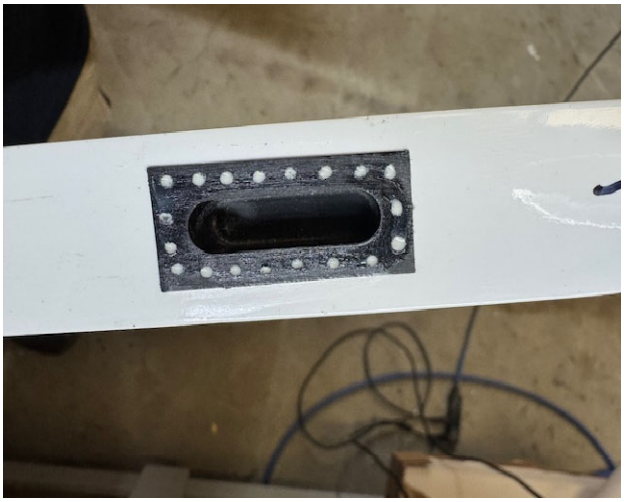




On the BVM demo the RX batteries and the ECU battery are on the front tray. We used some 3d printed battery boxes to hold them in place with some Velcro strapping. Here is a left and right view of their position. You will also see there is lead ballast on there as well. This will vary depending on your setup. On the demo model we have no smoke system installed. This weight was needed to get to our recommended nose wheel weight of 13.5 lbs. We will cover more of this in the CG setup section.

Installing the Stabilators

Check your Stab drive pockets. If you want to reinforce the pocket use a small 1/16 bit and make some holes around the perimeter. Then squeeze a small amount of Aeropoxy into each hole and wipe the surface clean.

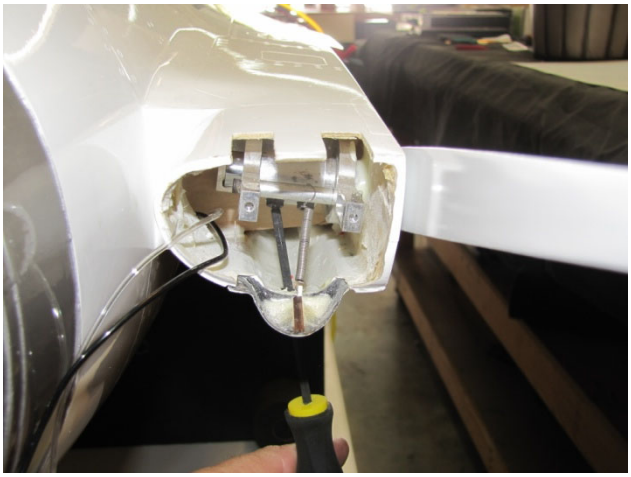


Note the Stabilators do not need to be balanced since they are direct drive.

NOTE: As per the real F-16, the Stabilators are identical both left and right. You didn't get 2 lefts or 2 rights.

Slide the Stabilator tube into the receptacle while lining up the servo pin into its slot.

Insert a 9/64 ball end hex driver through the small hole on the bottom of the fuselage and tighten the SHCS on the tube clamp.

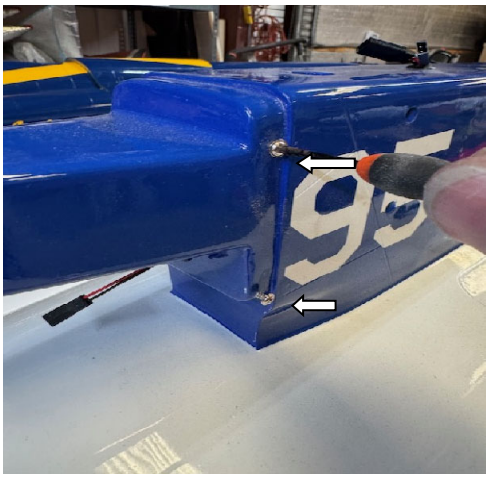


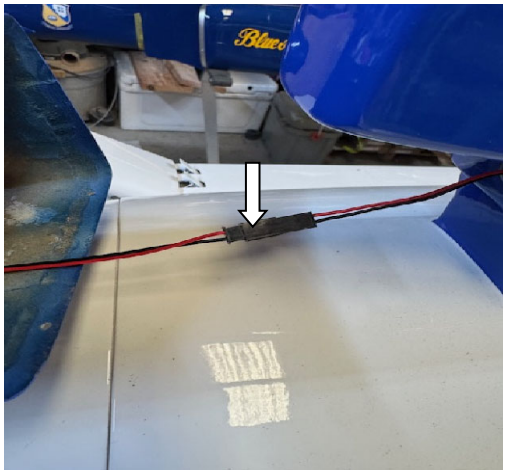
NOTE: Servo/Stab adjustments are set later in this manual using templates provided.

Repeat for the other side.

Install the Tail Fairing.

You have (2) self-taping screws on each side the Fairing and (1) LED connection.





Installing the Vertical Fin

Set the Vertical Fin partially on to the fuse. Connect the LED light wire and servo wire and secure with your preferred method.

The rudder is held in 3 places. Use a 9/64 allen wrench to tighten the clamping bolts.

Using the supplied Carbon tube make a sleeve to cover the Rudder Pushrod. You can glue this to the original pushrod if you like.

Installing Ventral Fins

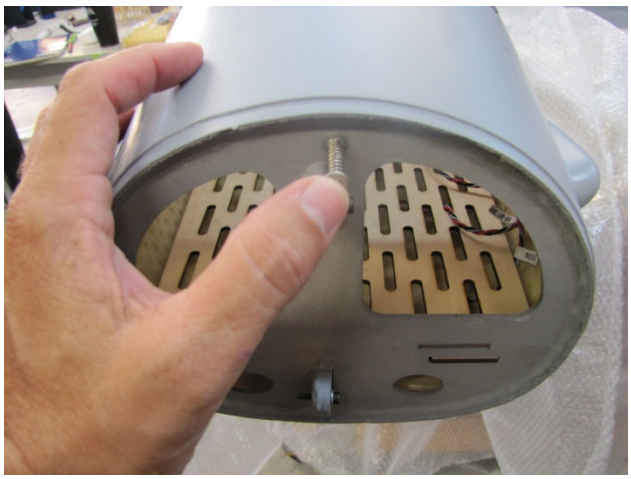
The Ventral Fins are held to the fuselage with (2) small self-tapping screws. There is also a single screw that holds the metal tab to the Ventral Fin.

(2) Carbon dowels align the fins to the bottom of the Fuselage

Gently install the Ventral Fins, a rocking motion may help. Use a small Phillips screwdriver to install the screws.

Canopy/Cockpit Access

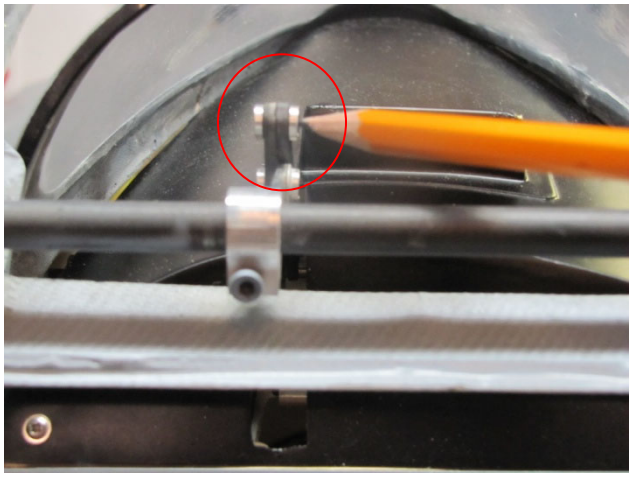
Removing the Canopy will allow easy access to the cockpit area while installing your components.



To release the Canopy manually, push on the spring-loaded Retaining Rod in the Nose Cone area.

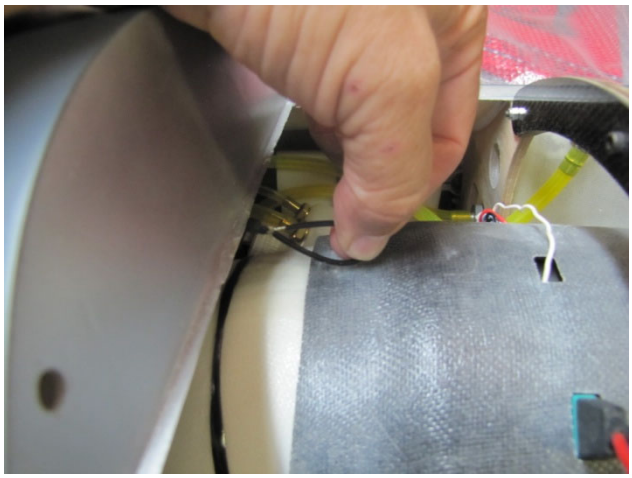
Use the BVM Canopy Jet Foam Support to hold the canopy in the up position when the power is off.

Remove one of the canopy actuation arm cam screws using a 1.5mm hex wrench.



To release the Canopy, pull on the release spring loaded cable located under the forward engine hatch fuselage flange.

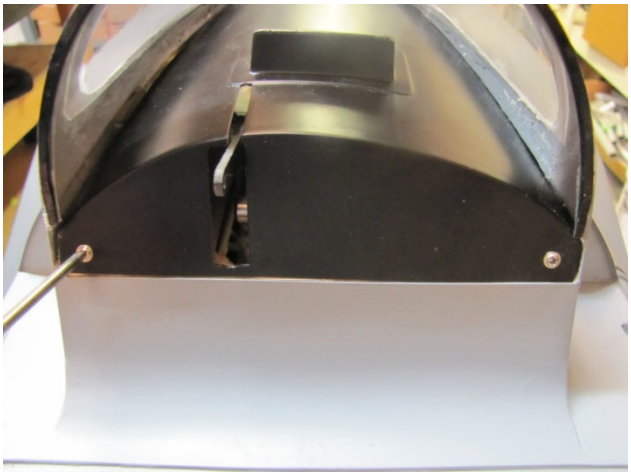
NOTE: This picture is from the 1/5 but it still applies the same.



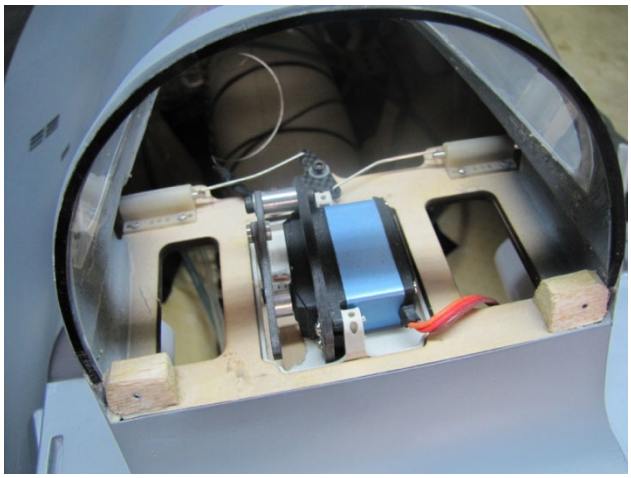
Pull the Canopy forward in an almost closed position.

Canopy Servo Access

Removing the cover panel from the aft cockpit area gives access to the mid-section of the fuse and the canopy actuating servo.



Remove the (2) Phillips screws that hold the Rear Deck in place.



Remove the Rear Deck to access the servo.

Note: Your Servo may look different from the one in the picture.

Important Note:

Do not rely on the servo operated latching mechanism to fully hold the Canopy down and locked. Always manually push down on the front of the Canopy Hatch as it lowers to ensure that the 2 locking pins are fully engaged.

We also have a detailed latch guide posted on our website as well. It's for the 1/5 F-16 but It's the same process.

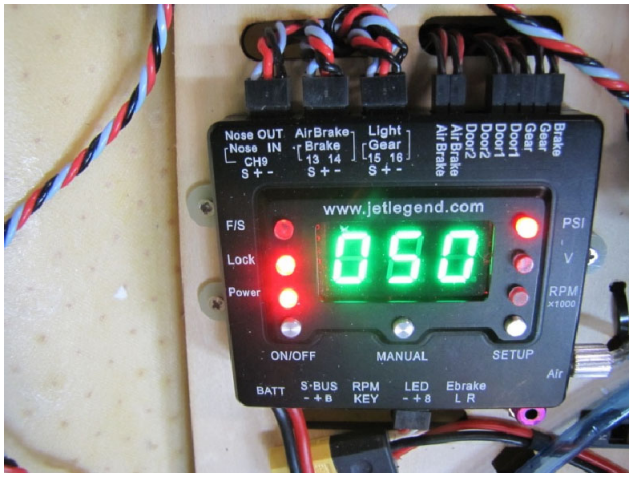
Equipment Board Layout

The Demo F-16 is fitted with a Spektrum 20ch RX system with Synapse Gyro.

The Air Gauge and Air Fill Valve have all been moved to the engine bay for ease of access. This doesn't need to be done as it works fine where it's located.

Central Control Unit

Follow the instructions in the Central Control Unit Manual that was provided along with this manual.



CCU Pressure should be 75 PSI MAX

The CCU will come preset from the factory. You can alter timing and Fail-Safe pressure in the menu if choose to do so.

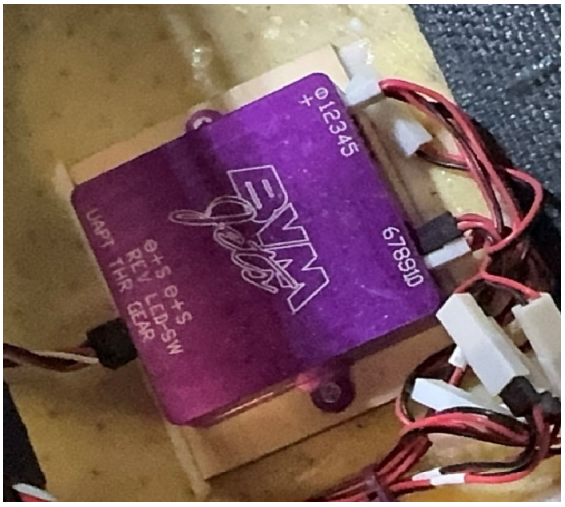
NOTE: BVM does have a new LED control module now. It is a standalone from the original. The New LED controller does not go through the CCU unit like the original one did.

You will see new labels as such

LED Switch (this is for the Master ON/OFF for all lights)

LGL IN (this is for your landing lights. On the demo we tie it to our gear channel)

ABL (this is for your Afterburner ring control. We use a sperate channel for control)

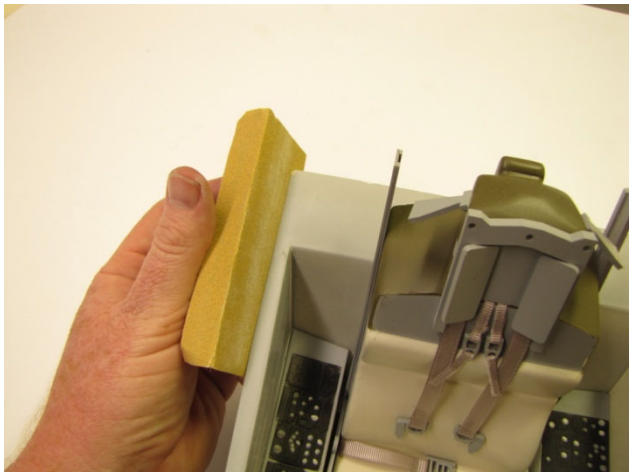


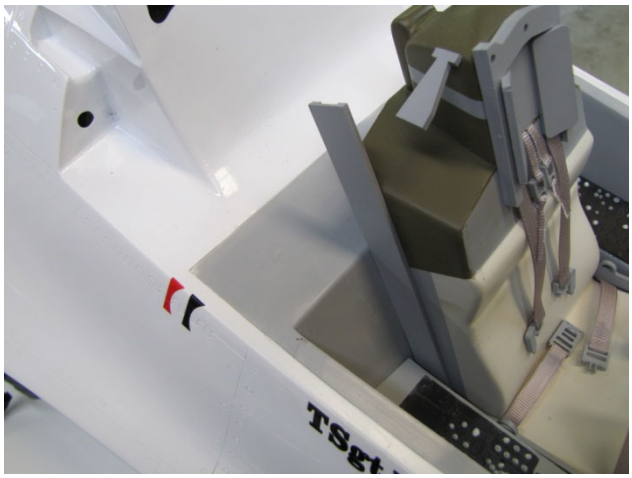
Cockpit/Pilot

The ¼ scale uses a Warbird Pilot ¼ scale jet pilot.

We use a mixture of a Velcro strip on his back and Zap Goo to hold the straps across his legs and shoulders.

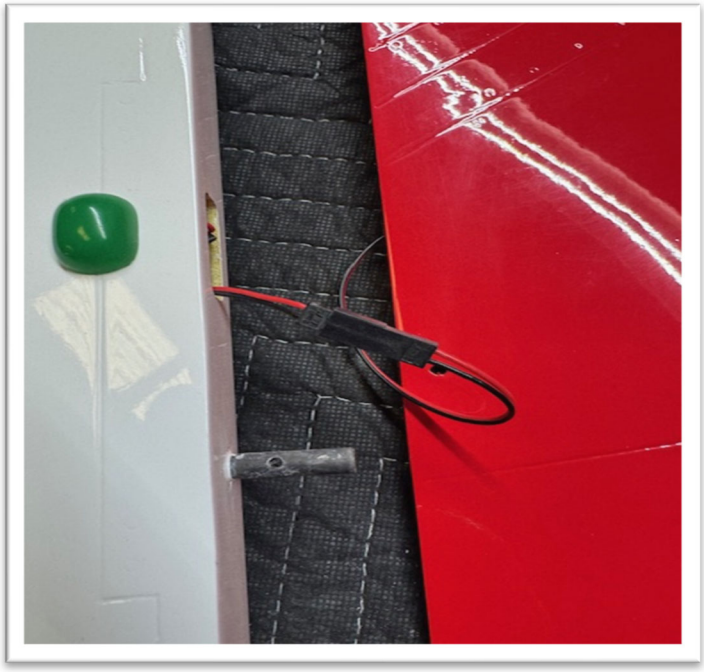
A small amount of sanding may be necessary for the cockpit tub to fit perfectly in the recessed flange of the fuse opening.





Attaching Wing Tip Rails

To determine the left and right Missile Rail (Green is on the Right wing)

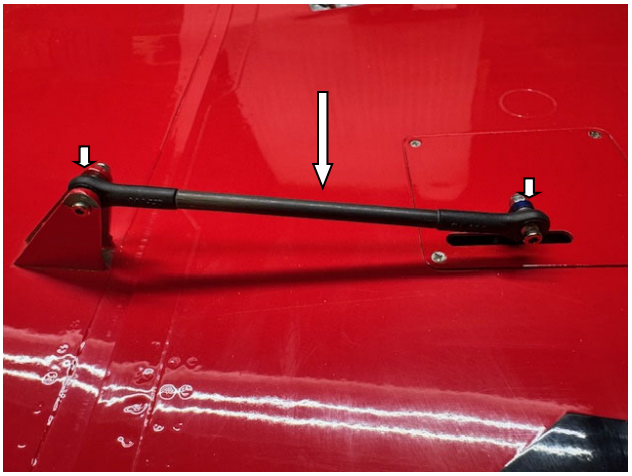


The Missile Rails are held to each wing with (2) Self tapping screws.

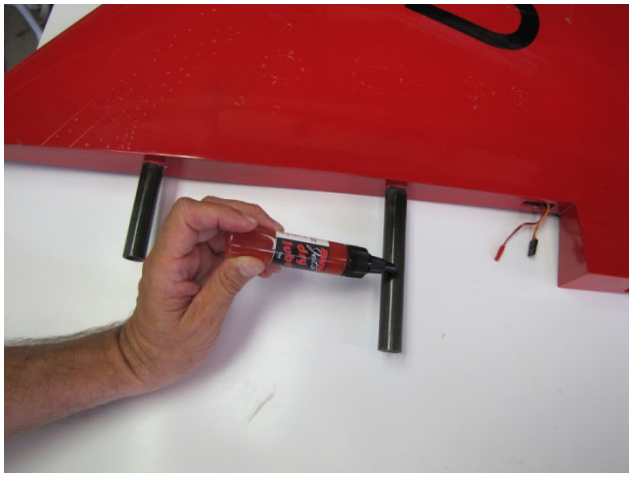
Wing prep and Installing Wings

Check your linkage for smooth movement. Your Aileron pushrod should have a carbon sleeve over it already. If it doesn't, please contact BVM and we will send some to you.

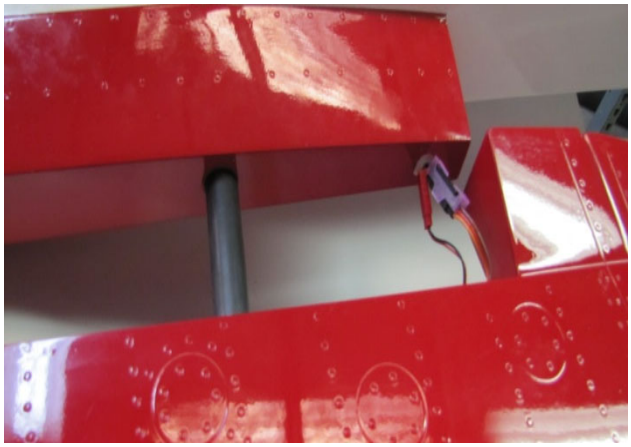
NOTE: A small drop of BVM Dry Lube on your links will help keep your linkage smooth.



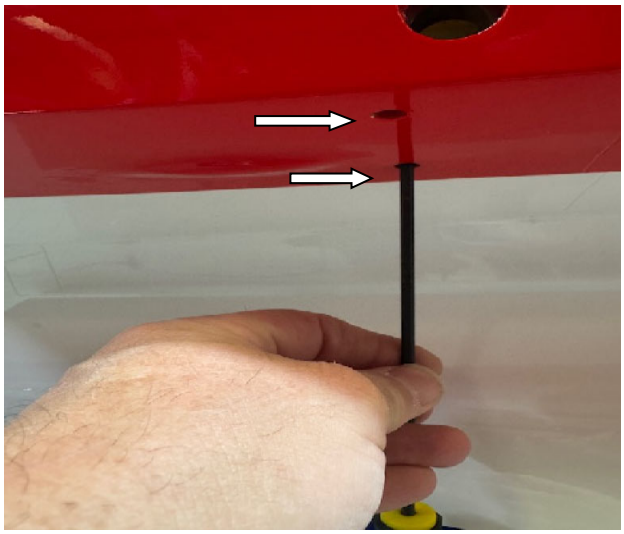
Lubricate the wing tubes with Dry Lube to ease installing and removing the wings.



Aileron servo connection and Nav Light is all that you have to hook up. Secure these connections with your favorite method

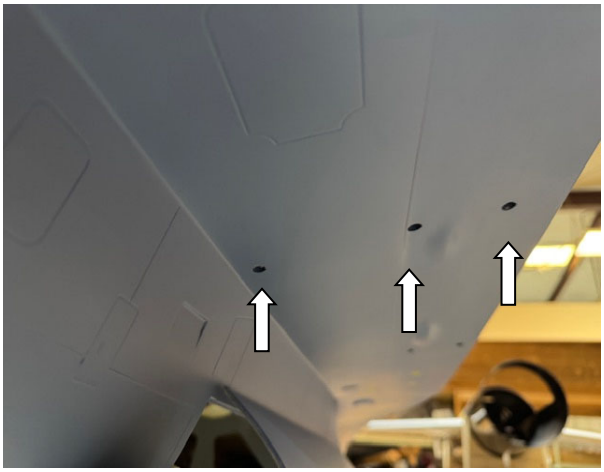


The wings are held to the fuse with (5) clamp bolts per side. (3) in the Rear and (2) in the front. This is the front (2). The rear will be the same with one extra spot inboard on the fuse.

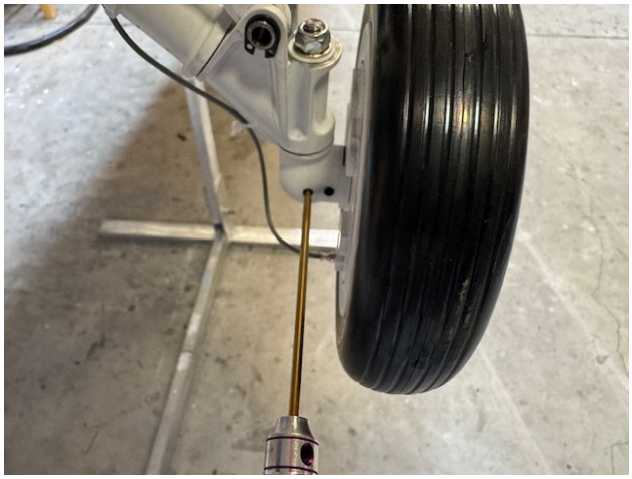


A 9/64 Allen wrench is needed to tighten the bolts.

Rear wing clamp bolt location.



Lubing the brakes



Note: The main wheel brakes are activated by a simple on/off control or a pulsing action through the Central Controller if a slide lever is used on the transmitter.

Sufficient lubrication applied to the wheel drum and the brake “o” ring allows smooth, straight stops. After dozens of flights, the prototype model’s tires show little wear.

Remove the wheel by loosening the (2) set screws, using a 2.0mm hex driver.

Important: Do not lose the Nylon washers.

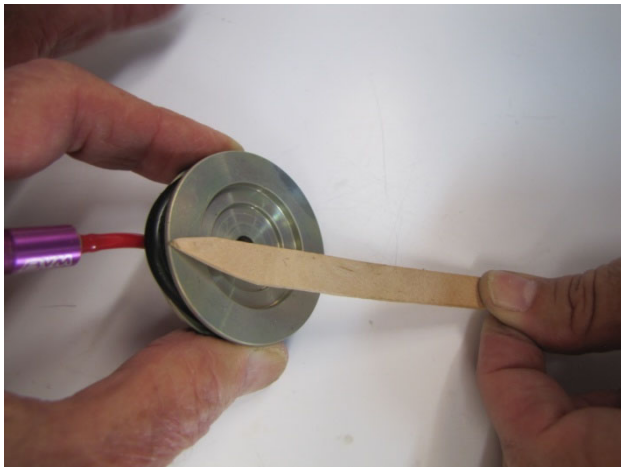
Apply a thin layer of Super O-Ring Lube (BVM #5779) to the wheel drum surface.

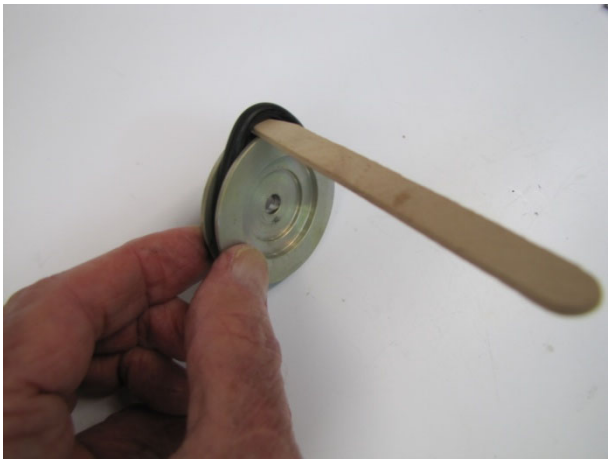
Apply Super Lube (BVM #5784) into the wheel bushings.

The “O” Ring Brake hub will slide off the axle. Note the location of the thin white Teflon washer for reassembly. Sharpen one end of a wood mix stick as shown.

NOTE: Do not touch the “O” Ring or aluminum groove with any other kind of tool.

Some air pressure will help get the O-ring to come up.



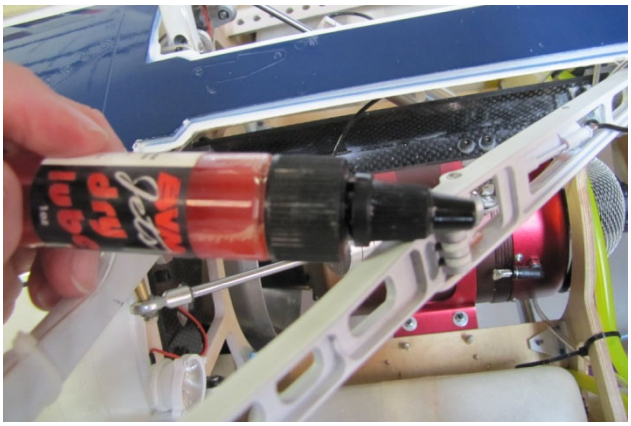


Massage Super O-Ring Lube (BVM #5779) onto the entire O Ring.

Clean the Brake Hub and install the O Ring.

Install the Brake Hub onto the wheel assembly and ensure it moves freely.

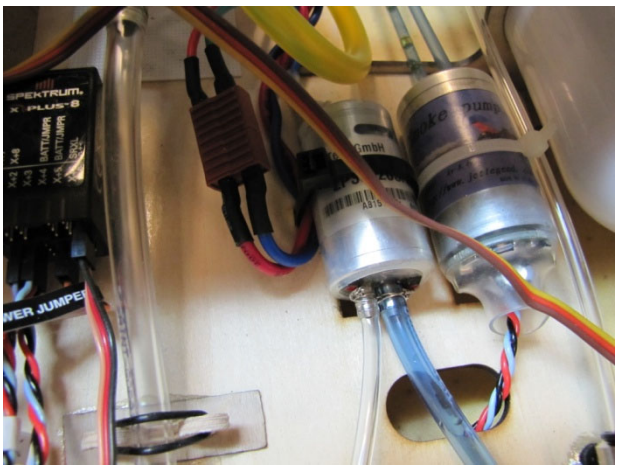
Reinstall the wheel. Use a drop of Z-42 on the threads of the set screws and secure them with the 2mm hex wrench.



Lubricate the moving parts on the landing gear using BVM Dry Lube.

Smoke Pump

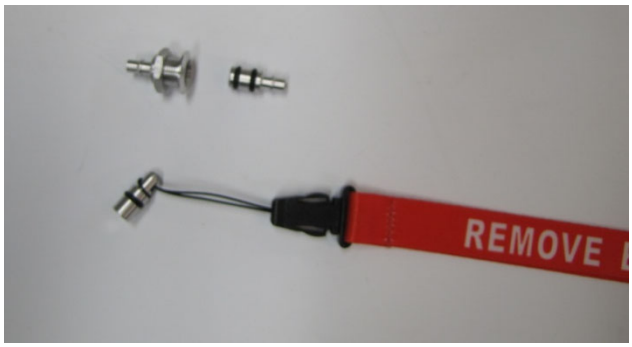
A single connection to the receiver is all that is required for operation. The pump draws power directly from the receiver. The speed of the pump is variable based on the travel adjustment on the radio. BVM uses a simple on/off switch to turn smoke On and Off. This can be tailored using the ATV on the radio.



Note: you will need to install a Shutoff Valve near the Turbine. You will also need a fill-line for the smoke system. We install the fill line before the pump.

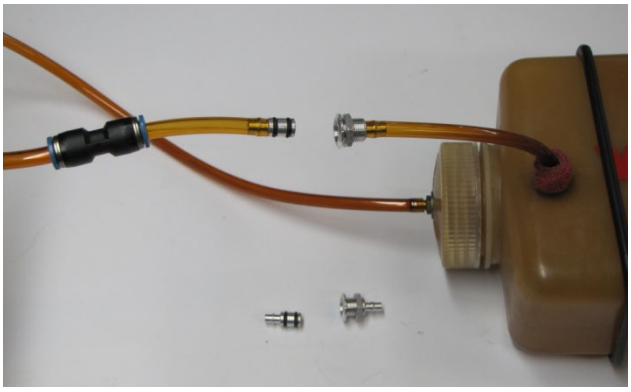
Flush Mount Vent and Overflow System

A flush mounted vent system is used on both the fuel and smoke systems. A magnetic vent plug with a red “Remove Before Flight” tag and BVM Overflow/Taxi tank conversion fittings are provided. (Tank not included)



Install the fittings to your overflow/taxi tank. Use an overflow tank while fueling to prevent spillage and to ensure fuel tanks are full before flight.

Use BVM GFG Overflow tank Part #BVM6047

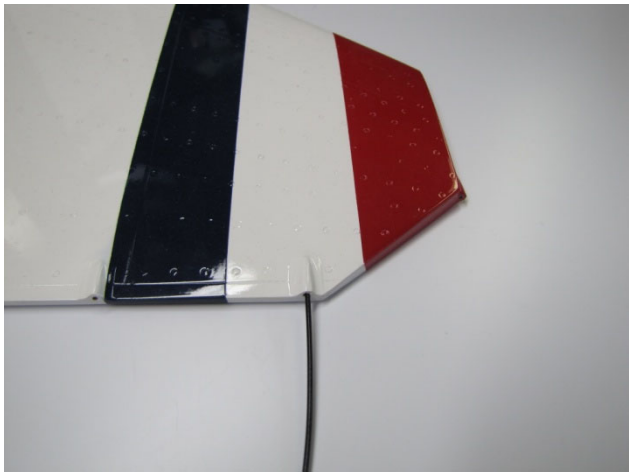


Static Wicks

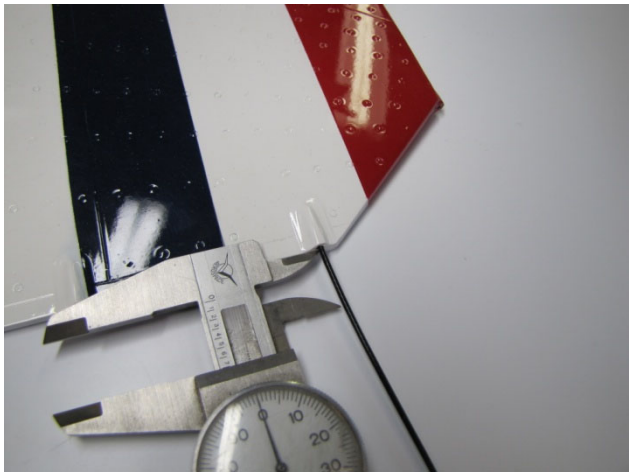
Static wicks can be added to enhance the scale appearance of your F-16. Use the supplied 20” Black plastic-coated cable. The same procedure can be used to create static wicks for the stabilizers, wings, and rudder.

Open a holes using a 0.070” drill. Use a pin vice to control the drill bit. 1/4”-3/8” of insertion is required.

Insert the black plastic-coated cable until it bottoms.



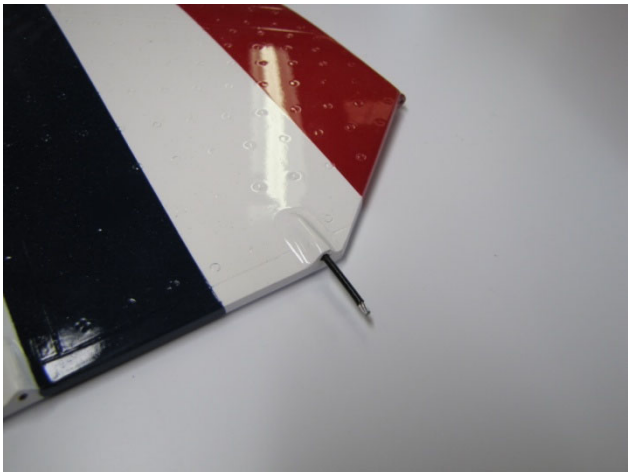
Measure .84” from the edge of the control surface. Mark the cable at this location.



Cut the cable on the mark and then strip 1/8” of the black plastic to expose the cable.

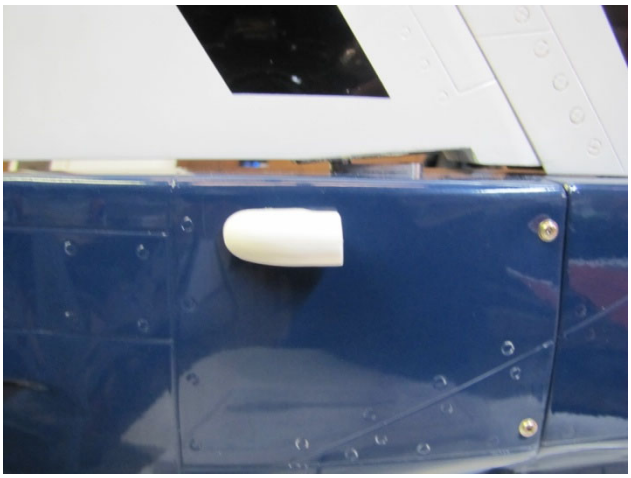
Insert the finished static wick, a drop of glue is required to secure.

Repeat this section for each location.



Scale Accessories

This is located between the panel lines on the upper part of the vertical fin.



Upper Interrogator Antenna

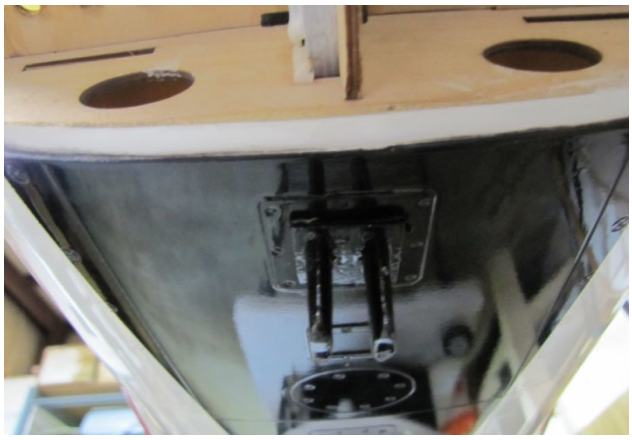
These are spaced evenly apart. The fuse does have a marked location for them.

Air Data Probe

This has an indentation on the fuse below the Wing Strake on the starboard side.

Glideslope Antenna

This is located just after the Nose Cone on the bottom of the fuse in the panel lined space.



Stabilator Neutral Location

Your Neutral position is set from the top of the fuse down 1.7 inches.

Control Surface Deflections

Note: The BVM Demo plane is set up using the following. These values are in degrees.

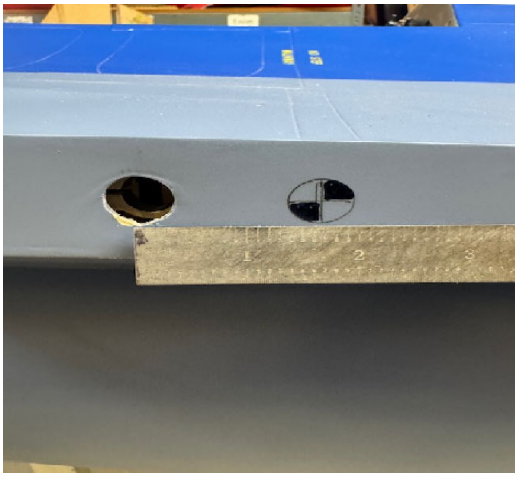
Control	High Rate	Mid Rate
Aileron	Up 20º Down 18º	
Elevator	Up 10º Down 6º	Up 6º Down 4º
Flaps	Take Off 12º Landing 12º	

Note: This model's single flap setting was based on the full scale F-16. Anytime the gear was lowered or raised, the flaps went to a preset position.

Connecting RX wires

The wires are labeled from the factory. For the IX20 this is how we are hooked to the RX

IX-20 Connection Chart						
RX Port	1	2	3	4 r	5	6
Surface	Throttle	Right Ail (Ail 2)	Right Elev (Elev 2)	Rudder	Gear Seq.	Left Ail (Ail 1)
RX Port	A7	A8	A9	A10	A11	A12
Surface	Brakes	Speed Brakes	Left Elev (Elev 1)	NSW steering	Canopy	LED Lights
RX Port	A13	A14	A15	A16	A17	A18
Surface	Landing Light	AFTB Ring	Smoke			
RX Port	A19	A20				
Surface		Gyro				



Center of Gravity

CG of the plane weighed on the nose wheel should be between 14-15 Lbs. You can fly it further back but use caution on landing as the tail will start to sink as you get slower. BVM's demo F-16 is at 13.5 Lbs on the nose wheel.

Balance the model fully assembled, empty fuel tanks, gear down, and a full UAT.

Switch Functions.

A Landing Gear, Timer start/stop and Landing Lights On/Off.

B Nav Lights

C Speed Brakes

D Flaps, Flight Modes and Gyro gain levels

E Main wheel Brakes

F Smoke System

G Master On/Off Gyro Switch

R Knob Canopy Open/Close

LTT Nose steering trim

Radio Mixes.

On the BVM Demo F-16 we do have some radio mixes that we use.

Mix 1 Rudder to Nose Wheel for ground steering. This Mix has On/Off assigned to the Gear switch for control. Gear up Nose Wheel is OFF.

Mix 2 Throttle to A14. This is for Afterburner control. We use a curve mix so we can set the On point where we want it to activate. This is also controlled by Switch B the same as the Nav Lights.

Mix 3 Aileron to Left Elevator. This is for Taileron Control. This is controlled by switch D (FM). Taileron Control is only present in Takeoff and Landing configuration. We use 4 degrees of Taileron control on our Demo F-16.

Flaperon Setup

Flaperon setup is an essential step to do.

Start by setting your max Flap travel, in this case its 12 degrees.

Next you want to make sure that when you move the Aileron Stick for roll that your UP movement comes back to at least the level position of the trailing edge of the wing.

As for your downward movement you want it to remain in place or as close as possible This can be adjusted in Absolute Travel for Spektrum Radios. You will also need to watch that as you remove Absolute travel that you do not take away from your regular Aileron Travel. Take your time with this step as it makes a difference.

First Flight Profile

Make the first takeoff with the gyro “off”. See also BVM article “Gyro Sense”.

Flight Time

The BVM demo model’s transmitter timer is set for 7 min. On the first flight, land a minute early to check fuel consumption. Adjust the flight timer accordingly. This is with a K320.

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. Be sure to shake the aircraft and push fore and aft with the engine at half power, this will remove any trapped air bubbles in the fuel system. Check the fuel line to the engine for “no bubbles”.

Takeoff
Begin the takeoff roll by slowly advancing the throttle. Maintain runway center while holding about 1/2 stick up elevator; the F-16 will rotate when it is ready. If there is a cross wind, hold a small amount of aileron into the wind, be prepared with opposite rudder. The aircraft does not need flaperons during Takeoff, however it does greatly help. The F-16 will break ground in a very predictable manor.

Trim
Once in the air, find a medium cruise speed to set the trims. The aircraft should fly straight and level “hands off”. When the landing gear comes down, you will need some up trim for compensation. This can be mixed in the flap system menu, or use flight modes to trim automatically.

Flying

The F-16 is a delight to fly. From shooting touch and goes to advanced maneuvering it doesn’t disappoint. The large control surfaces give excellent control feel in flight slow or fast. The slow speed handling (The most important part) is incredible and is very easy to get comfortable with.

Landing
The landing is like most jets, “power on” during the approach. The F-16 does not stall easily, it is best to land nose high, touching on the main wheels first.

The majority of the first flight should be spent trimming and practicing for the first landing. Save the aerobatics and air show stuff for later flights

X Battery Consumption
The average flight using the lights the entire flight consumes about 500 mAh. BVM recommends a few flights and then charge to see your burn rate. Use this data to calculate how many flights you can achieve from your system. The use of the smoke pump will consume more mAh per flight. BVM recommends (2) 5000 mAh batteries.

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.