

BVM PNP L-39 Albatross

1/5 Scale

GO FLY GOLD



Length: 94", Wing Span: 74" With Wing Tip Tanks

Weight: 32lbs Dry

Fuel Capacity: 4.0L

Smoke Capacity: 2.5L

CONSTRUCTION AND OPERATING MANUAL

Version 2

April 2024

Vne 170 MPH Limit Thrust to 32 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 L-39 Albatross. 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 L-39.

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 and exercise common sense. Said owner and operator must have a valid Academy of Model Aeronautics license and a "Turbine Waiver" 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 L-39 has been designed and flight tested around 140N class engines. Damage to the aircraft may result from exceeding this thrust limitation (32 lbs).

BVM Products

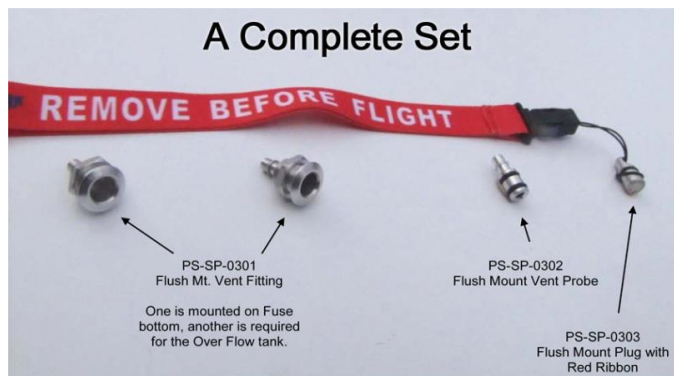
Received with the Instruction Package that is sent from BVM

- Assembly and Operating Manual Package
- .020 Polyply Cockpit parts
- 1/4" Ply RX Battery Tray
- Heat Blanket
- Aluminum Tape 2.5" x 6"
- Jet Foam 2"x 4"x 0.8"

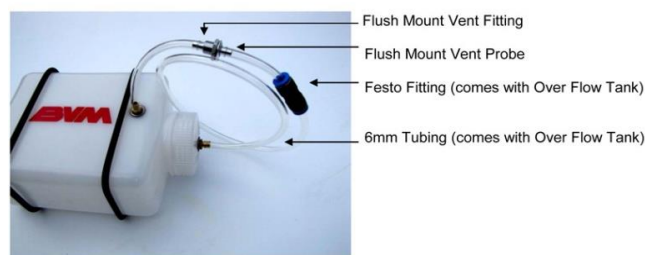
Recommended Accessories

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

- 140N engine of your choice.
- #2 x 7/16 SSSH (Servo Screws) (BVM # 2865)
- #2 x 3/16 Button Head SMS Package (BVM # 5625)
- L-39 Standard Flow 16oz. Header Tank W/Hardware (#PA-SR-0093)
- BVM UAT (BVM# 6044)
- Spektrum 12120 Power Safe Receiver (# VJ-SPMAR12120)
- Spektrum X-Plus 8 Expansion Module (# VJ-SPMXP8000)
- Spektrum Flight Log (#SPM9540)
- (2) 7.4v Batteries 3000 mAh Magnum Ion (# VU-7304EXB-EC3)
- Fuel Pump/Filter Mount (# PA-SR-0064)
- Demon Aero Cortex Gyro (# V-DA-BD-Cortex)
- BVM Over Flow Tank (BVM # 6037)
- Flush Mount Vent Fitting (For Over Flow Tank) (# PS-SP-0301)
- Flush Mount Vent Plug (For Over Flow Tank) (# PS-SP-0302)

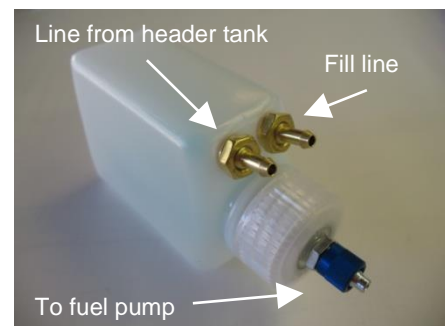


A **Smoke System** will require a complete second set of the parts.



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

BVM Ultimate Air Trap



Velcro Package



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/Heat Shield+ Available at BVMjets.com

- BVM Aeropoxy (BVM # 9566)
- BVM Qt Poxy (BVM # 9580)
- Slo-Zap (# PT20)
- Pacer Z-42 (#PT42)
- Super O-Lube (BVM #5779)
- BVM Thin Lube for "O" Rings (BVM # 1945)
- Axle Super Lube (BVM # 5784)
- BVM Dry Lube (BVM # 1947)



Available Options

1/6th Pilot (12")

(# V-WB 1/6 Jet Pilot)

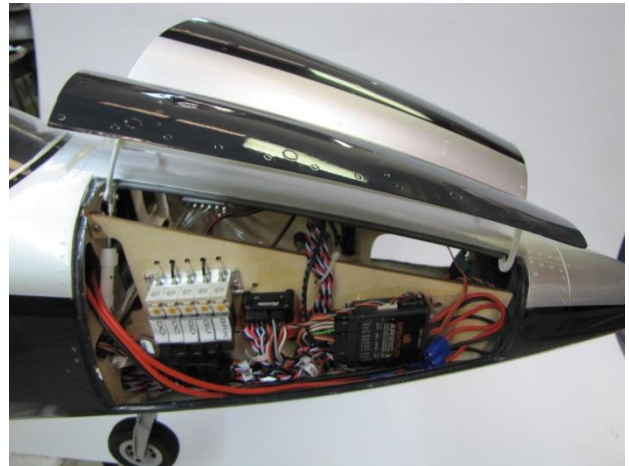


Fwd Fuselage

Canopy Latch Mechanism

The forward equipment access is via these two swing up and open doors. Each is held open and closed by a spring-loaded cylinder. There is no extra retention required for high-speed flights.

Cortex Gyro is shown mounted between Receiver and Pneumatic valves.



Canopies are released and allowed to swing up and open from the left side of the model by pulling this spring-loaded lanyard. Look under canopy rails to get familiar with the latching mechanism.

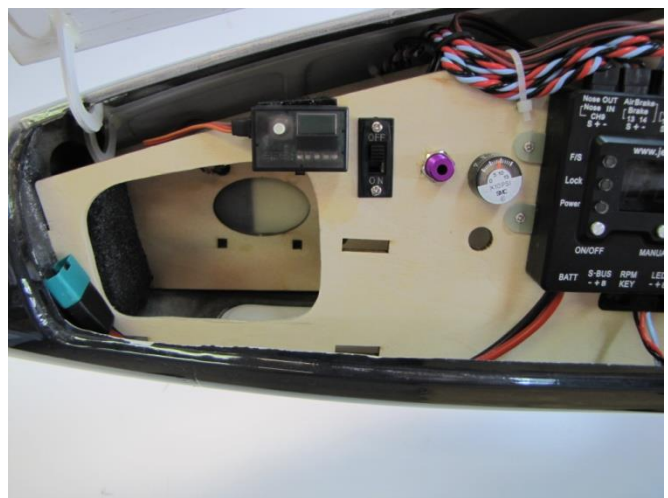


Fwd Fuse Access

This enlarged opening in the left vertical plywood panel allows access to the very front of the model.

BVM's prototype has a Spektrum remote receiver mounted there with sticky back Velcro and a piece of Jet-Foam helps hold it in place. If a few ounces of ballast are necessary, this would be a convenient location.

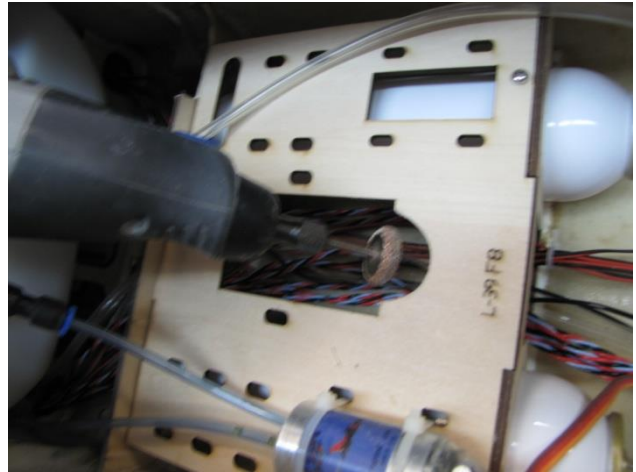
Note also in this photo the Spektrum Data Logger next to the ON/OFF switch. We check it after a range check and after each flight before turning off the radio to make sure the radio system is performing properly.



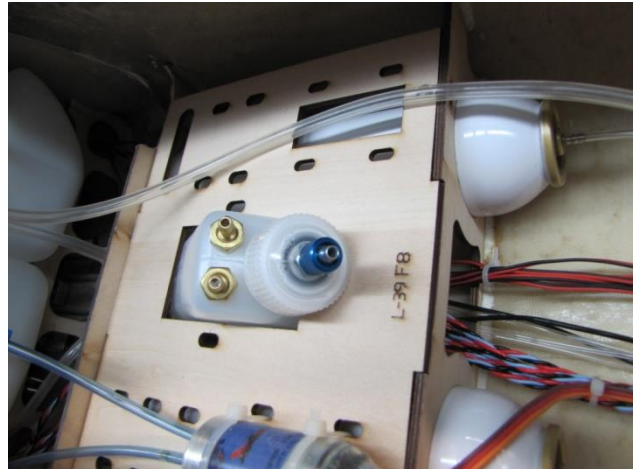
Fuel System

U.A.T.

- Use a Perma-Grit pancake rotary cutter to make a semi-circular notch in the UAT mount.



- UAT is positioned in the opening as shown. In the final installation it will need a thin pad of foam below it to protect the servo extension wires that are located underneath. Also, a restraining strap is installed to keep the UAT in place. See later in the manual.



- Apply a piece of fuzzy adhesive backed Velcro as shown to protect the servo extension wires below.



- The UAT is held in place with a Velcro strap and (2) small button head screws.

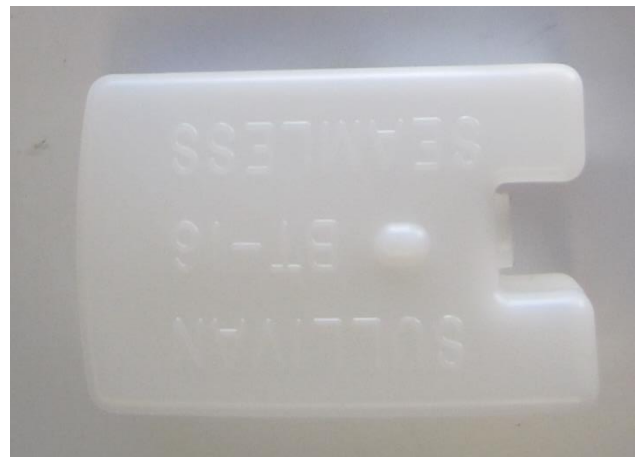


Header Tank

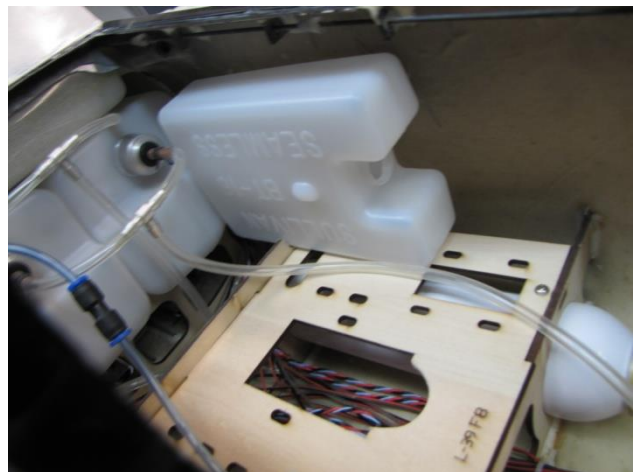
Adding a “Header Tank” to the fuel system allows all the fuel in the two main tanks to be “useable fuel” plus the extra 16 oz. tank allows additional flight time. Good flight planning would include landing with 1/2 - 3/4 of fuel in the Header Tank.

A Sullivan 16 oz. B.T. tank (with hardware) is available from BVM. (#PA-SR-0093)

See **Recommended Accessories** page 3.



- Use the Perma-Grit pancake rotary cutter to grind the fuse flange joint and plywood former to allow the Sullivan 16 oz. Header Tank to fit in as shown.



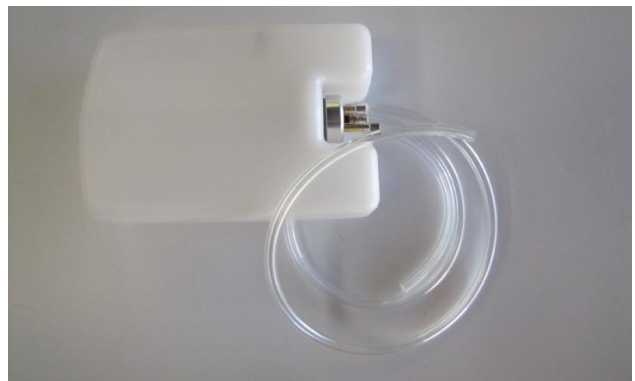
- Assemble the brass tubes per instructions that come with the Metal Cap Fittings. Bend as shown and bevel the top ends with a file so that the fuel from the main tanks flows freely. The brass clunk should reach within 1/2" of rear of the tank and still touch the tank bottom.



- The two top tubes accept fuel from the two main tanks. The third brass tube from the clunk line feeds into one brass fitting on the UAT. The length of the flexible clunk line is 3.25".

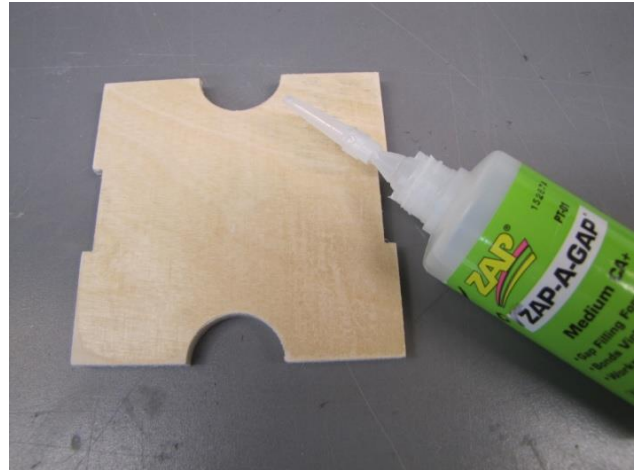


- Header Tank is shown ready to install into model.



Battery Mounting Tray (RX Batteries)

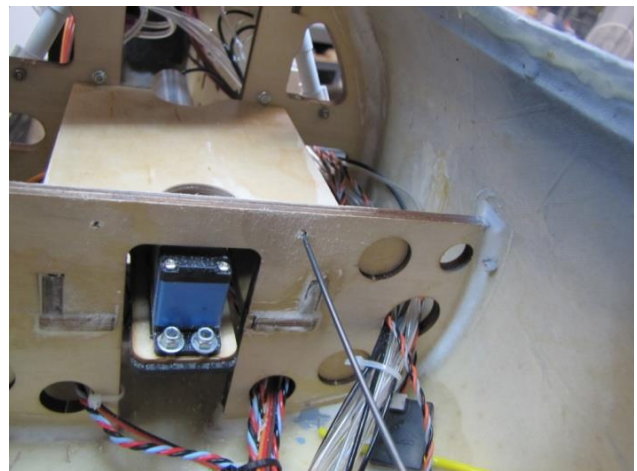
- Apply a ZAP finish to the top side of the 1/4" ply battery tray to allow better adhesion of the white Velcro tape. This part is supplied with the BVM Instruction Manual Package.



- Drill (2) 1/16" holes just above the 1/4" ply tray.



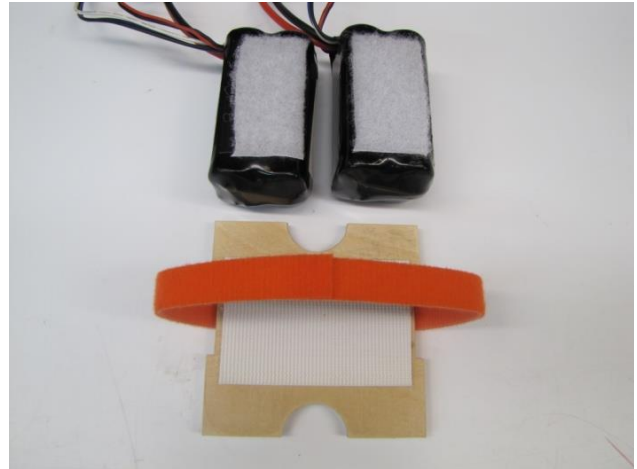
- Install (2) #2 servo screws to trap the tray on the Fwd. end. Drill (2) 1/16" holes through former into the aft end of the tray to secure the aft end.



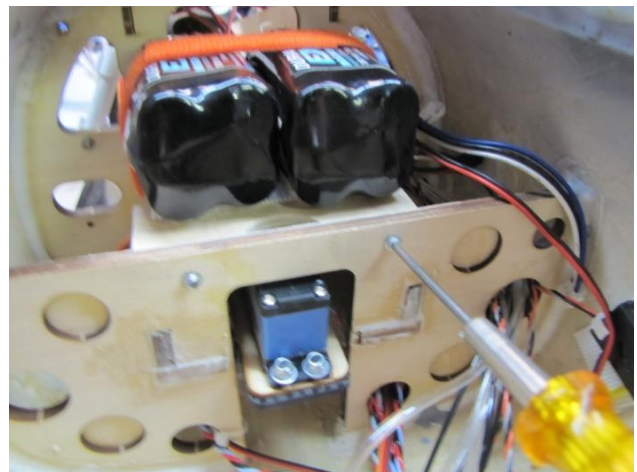
- The 1/2" x 12" Velcro is secured in two places on the bottom of the tray. This allows clearance also for the nose gear steering servo wire.



- Apply prickly white Velcro as shown to the top surface. Matching fuzzy is applied to batteries.

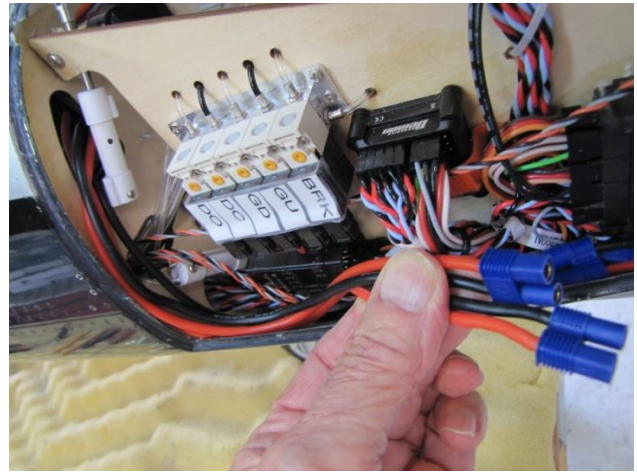


- Route all battery wires forward and to the "right" side of the nose.



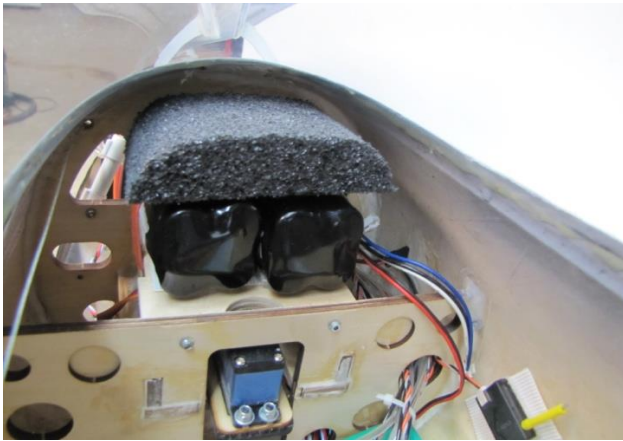
- Battery leads will connect to the receiver without extensions.

Cortex Gyro is shown here.



Cockpit

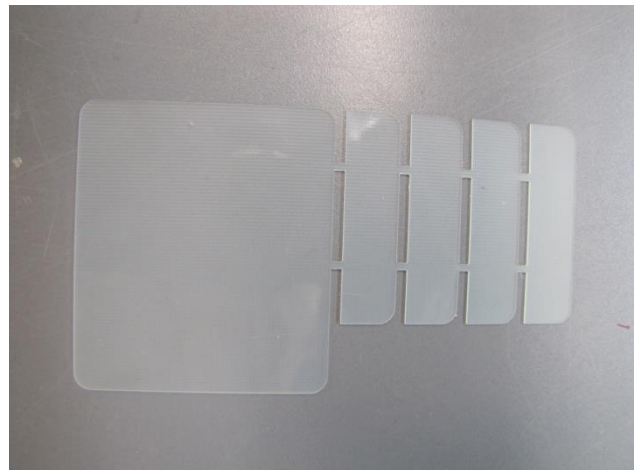
- The Fwd end of the cockpit is supported by this piece of Jet-Foam that is supplied with the BVM Instruction Manual Package.
- Secure with adhesive backed Velcro that attaches to the battery retaining strap. The aft end is supported by flanges of the fuse and 2 buttonhead screws as shown on page 12.



The Cockpit front and rear sections are supported and secured as follows and still offers easy access.

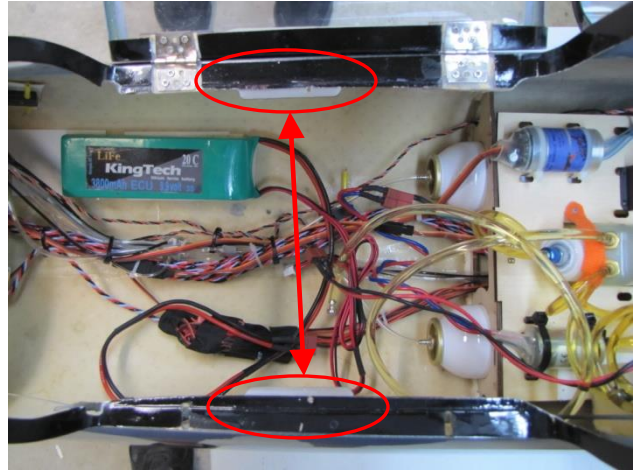
Removing the rear cockpit tub gains access to the fuel system and engine control and read out devices. Removing the forward cockpit gives access to radio and engine batteries.

- These .020 Polyply parts are supplied for (2) applications. For this section you will use the four smaller pieces.

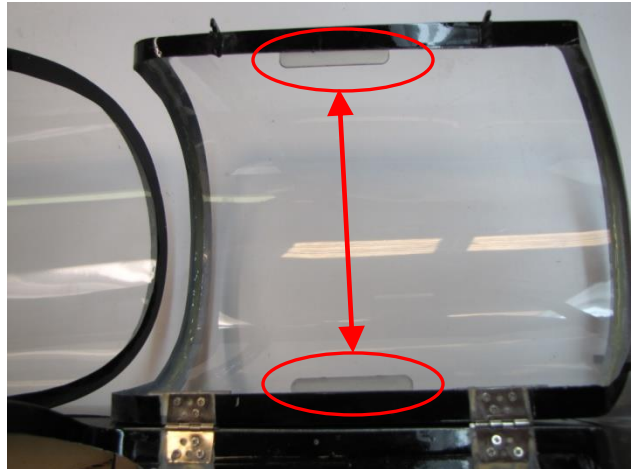


Cockpit Deck Support and Retention

- It is necessary to add tabs to the forward cockpit flanges to support the cockpit on the left and right side. Be careful not to interfere with the cable release mechanism. Locate the tab as shown. Glue the Polyply tabs to the underside of the fuselage flanges.



- For the rear cockpit tub retention, glue the Polyply tabs onto the top side of the canopy fiberglass flanges.



- Drill 1/16" holes were shown.
- Use one button head screw per side to secure the Fwd. cockpit.

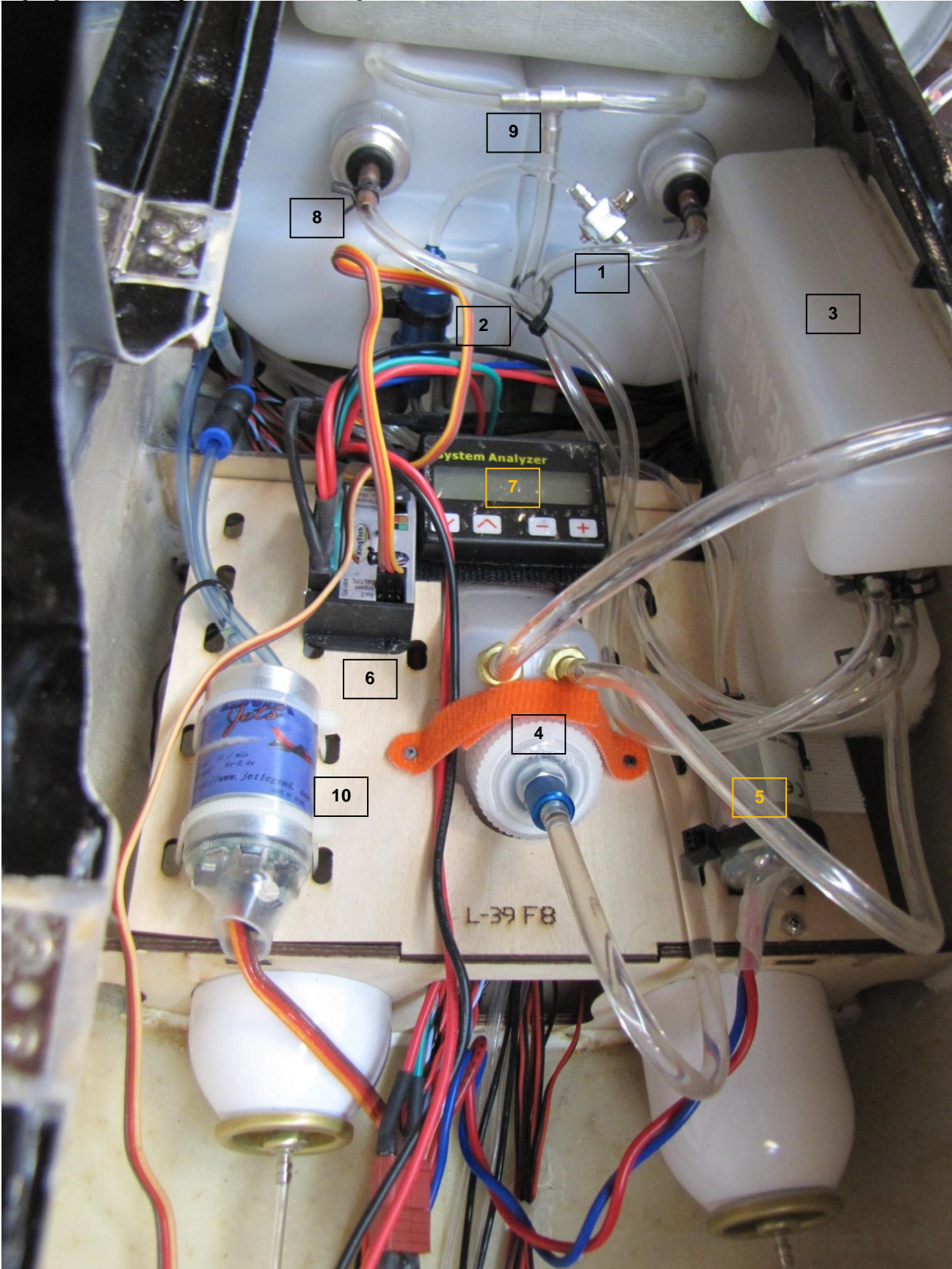


I.D. of Equipment Bay Components

See photo next page.

1. Mechanical Fuel On/Off Valve.
2. Fuel Filter: Mounted vertically on a BVM Plastic Pump Mount (BVM # PA-SR-0064) with a tie wrap.
3. 16oz Header Tank (BVM # PA-SR-0093) Held in place with sticky-back Velcro.
4. BVM U.A.T. (BVM# 6044): Held in place with (2) 2-1/2" straps of 1/2" wide Velcro. Note how the straps are attached to plywood with (2) Button Head Socket Screws (BVM# 5625).
5. Engine Fuel Pump.
6. Engine ECU: Held in place with (3) Button Head Socket Screws.
7. Engine Read Out Box: System Analyzer held in place with adhesive backed Velcro.
8. Fuel Line Pinch Clips (BVM # PA-SR-0094): Used on 4mm Fuel Tubing connections.
9. Fuel Vent Overflow Lines: Exits bottom of the fuse with a Flush Mount Fitting. Note that the fuel system exits the port side fitting while the Smoke Tank System overflow exits out the starboard side fitting.
10. Smoke Pump: This is factory installed.

Equipment Bay Below Cockpit



Aft Fuselage

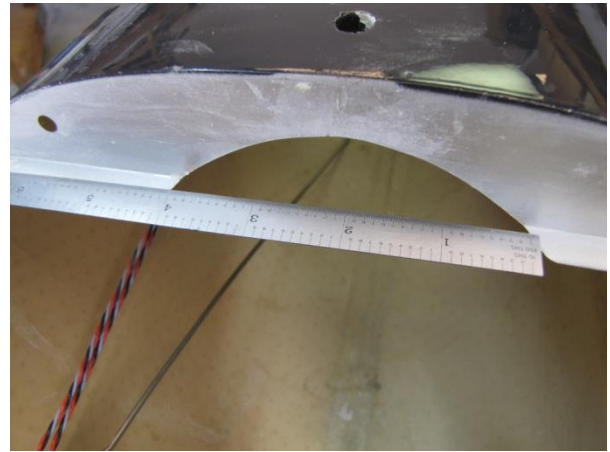
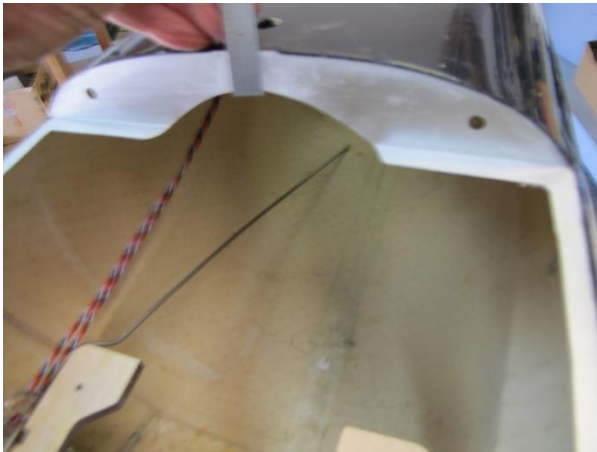
Tailpipe Removal and Installation

The tailpipe comes installed. To remove it and reinstall it allows servicing of the model and a tailpipe change if necessary.

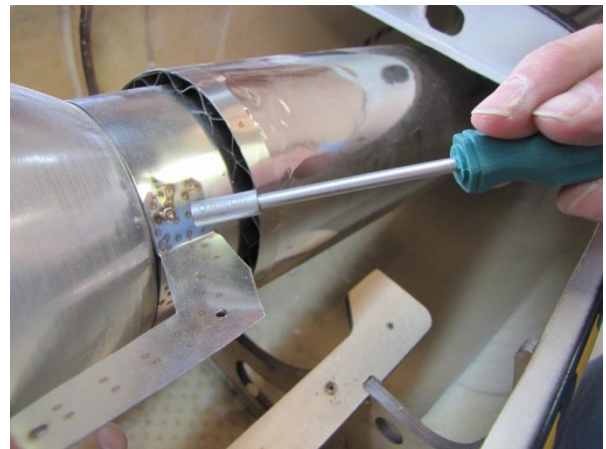
NOTE: The aluminum cone on the Fwd end must be removed to allow the S.S. tailpipe to be installed or removed.

NOTE: The arch cut into the Fuse Hatch aft flange is necessary to remove the tailpipe and give better access to the Fwd fin retaining screw.

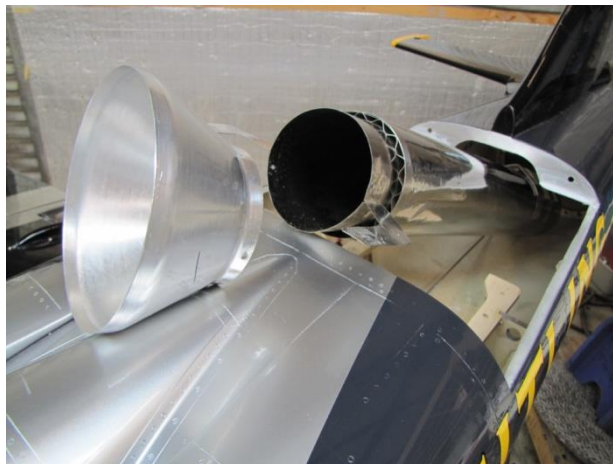
□ This 0.75" x 4" opening is necessary to remove the tailpipe.



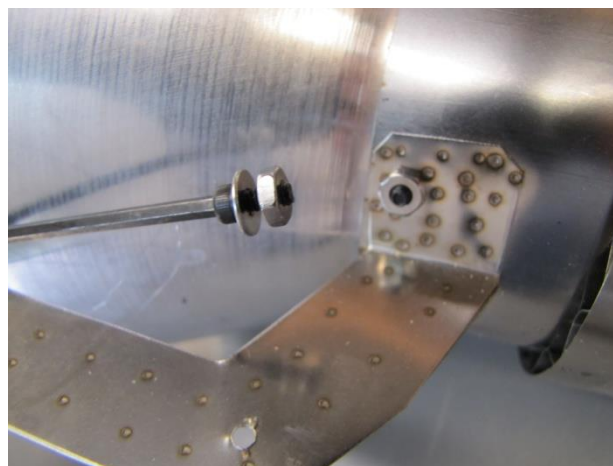
□ To allow removal of the tailpipe, the front flared aluminum cone must be removed by releasing the small screws and nuts at the 3 and 9 o'clock positions.
#4-40 x 1/4" SHCS with nuts can replace the smaller factory installed phillips head screws.
See next page.



- After the first time you remove the aluminum cone, replace the small metal screws with #4-40 x 1/4" SHCS with washers and hex nuts. Enlarge the holes in the tailpipe with a #33 bit.



- Reinstall with the 4-40 parts as shown. Apply a drop of Z-42 to secure the threads.



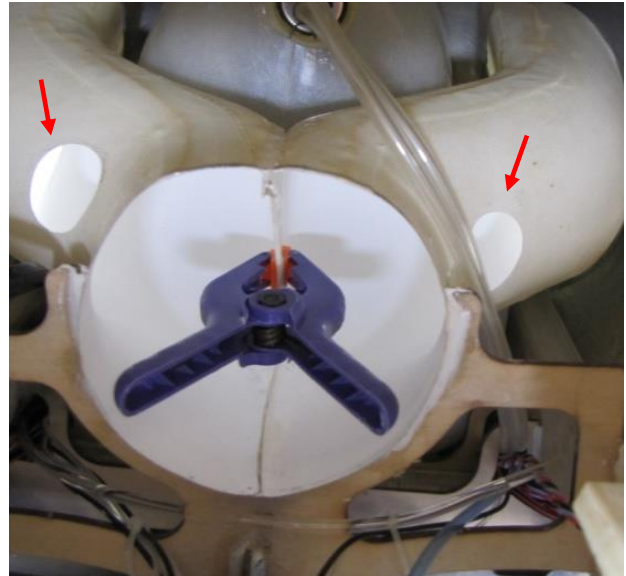
NOTE: Engine and Bypass must be removed to remove or install the tailpipe.

Engine Bypass Preparation and Mounting

The installation shown here describes the use of a King-Tech KG 140 engine. Most engines in this power range are very similar in size. Always consult the manual for the engine of your choice for possible variances.

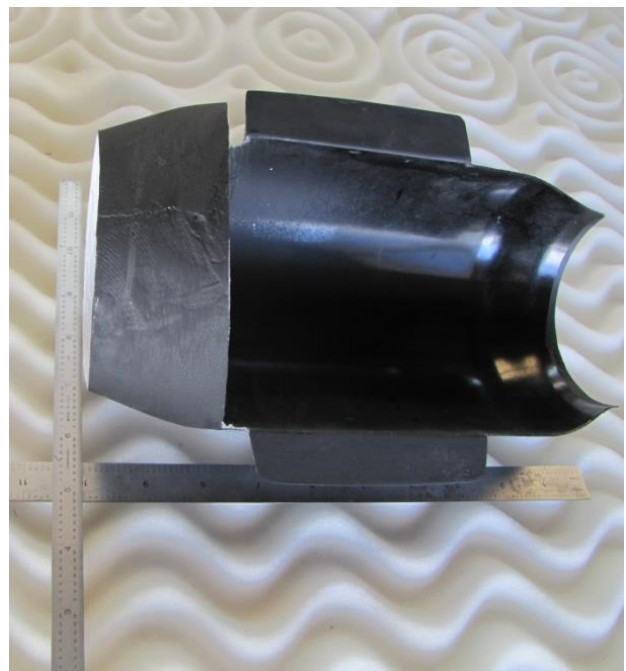
The use of a lower half Bypass system protects the engine from Foreign Object Damage (F.O.D) and allows operation from a wet grass strip or asphalt runway.

- Inject Aeropoxy into the center flanges of the inlet ducts and hold with a plastic clip until cured. Wipe away any excess glue.
- Trim forward if necessary to clear the engine starter.
- The arrows point to 1-1/4" diameter holes that provide cooling air to the fuselage and engine bypass system. If not provided by the factory, use Dremel tools to accomplish.



The aft end of the inlet duct should be 1/2" aft of the plywood former. See supplemental drawing #IK6400-01.

- Cut the aft end of the Bypass duct (lower half) such that the total length of the piece is 10" long.



- Scuff the inside aft section with medium sandpaper or a 3M #7447 red scuff pad. Brush-on 3 coats of BVM “Heat Shield” (BVM# PA-MA-1940).

NOTE: A modeling heat gun will accelerate drying between coats.



- Drill (2) 3/32” holes in the bottom of Bypass to allow a fuel spill to drain out. Make a clearance hole for the fuel line hook up to the engine. This may not be necessary for some engines.



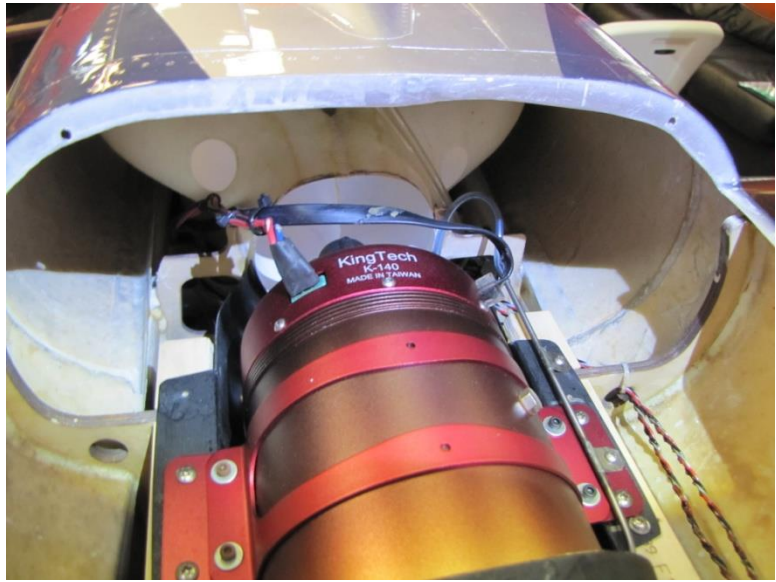
- Use a Dremel “dish” cutter or similar tool to bevel the upper inside edge of the engine mounting rails to accept the Bypass.



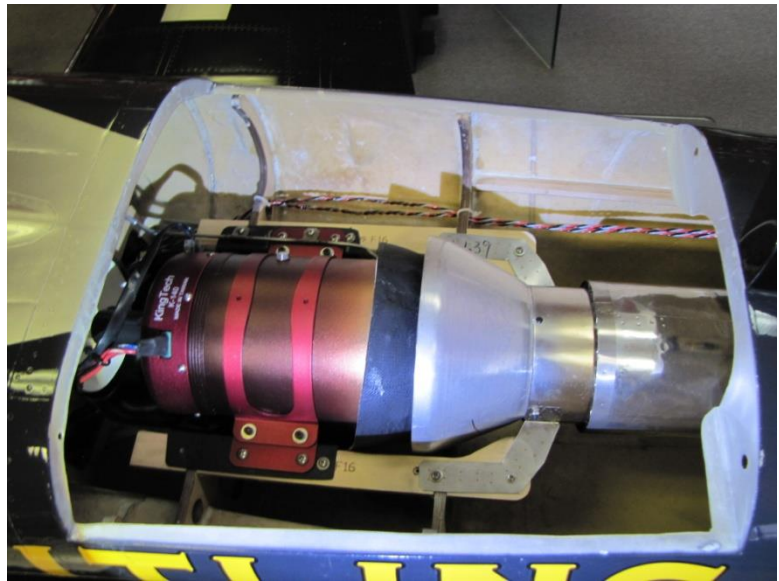
Engine Installation

View of forward end of the engine. The lower half of the Bypass protects from runway F.O.D.

The electrical cables are zip tied together to prevent being sucked into the engine.



Overall view of the engine installation. It runs cool enough that the aluminum bell mouth and front few inches of the inner tail pipe are barely warm to the touch while the engine is running.



Stab and Elevators

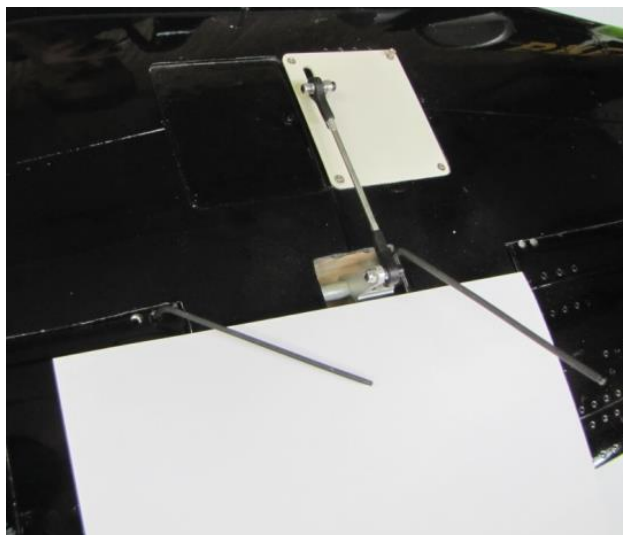
- Remove the elevator servo mount and check that the servo arm screw is tight. Add a drop of Zap-A-Gap to each screw hole. Push it in with a toothpick, and then wipe away any excess glue. Reinstall the (4) screws to secure the servo to the stab.



- Apply a drop of BVM “Dry lube” (BVM # 1947) to both aluminum / plastic ball linkages. NOTE: Do this for all metal-to-metal or metal-to-plastic linkages on the model.



- Use hex wrenches to securely tighten the control arm to the elevator coupling shaft and to secure each elevator to the shaft.



Stab Servo Protection Heat Blanket

Although cooling air does pass through the fuselage, adding this bit of Heat Blanket further insulates the servo.

- Cut a 3-1/2" x 5" piece of BVM Heat Blanket (BVM # 1710). Apply 1" x 6" strips of aluminum tape as shown. A 3/8" x 3/8" x 10" wood stick (made from scrap) is used to space the heat shield off the stainless-steel tailpipe. This allows cooling air to pass between the T.P. and the heat blanket.

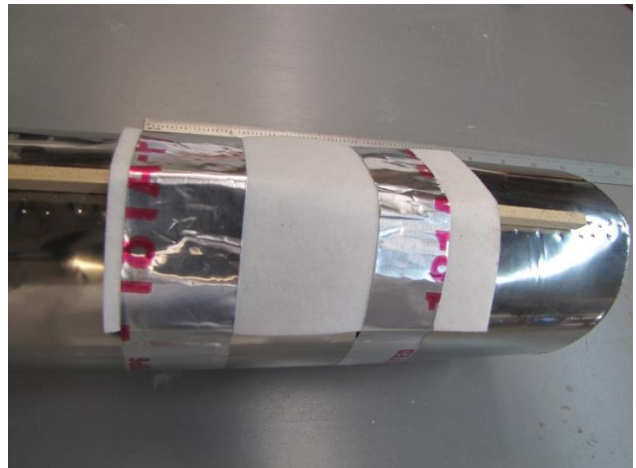
- Place the spacer stick in position as shown.



- Heat blanket (3-1/2" x 5") is held to the tailpipe outer shroud with (2) 1" x 6" strips of aluminum tape. 3/8" spacer is used to set the clearance between blanket and tailpipe to allow cooling air to pass through. Then the spacer is removed after adhering to the tailpipe. This protects the elevator servo from excess heat.

NOTE: BVM measured the temp in this area, and it was 20 °F above ambient. This was measured without the heat blanket in place.

NOTE: Aluminum tape strips are 1" x 6" long.

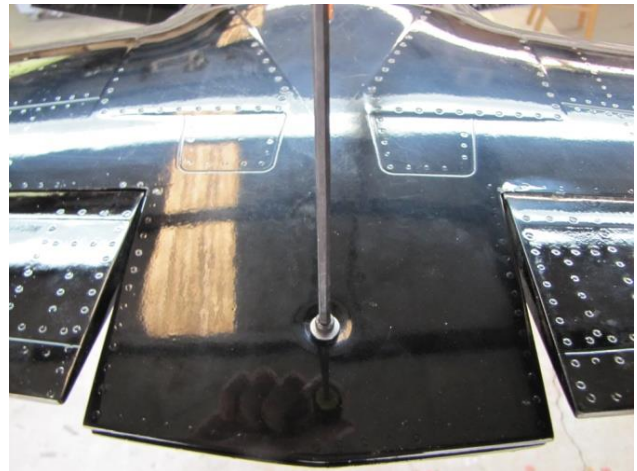


- You can enlarge the hole in the aft 1/8" ply former as shown to increase cooling air exit flow.



Stab and Fin Mounting

- Slide the stab onto the fuselage. (2) Aluminum dowels secure the front of the stab to the fuselage. Use a 9/64" hex driver to secure the aft of the stab with the 8-32 x 1" SHCS and washer.



- Connect the elevator servo to the extension protruding out of the fuse. Use a safety clip or tape around the servo connection to secure it.
- Connecting the rudder servo lead to the extension coming out of the fuselage; use a safety clip or tape to secure the connection.



- Slide the fin onto the model and tighten the clamp. Use a 9/64" hex driver.

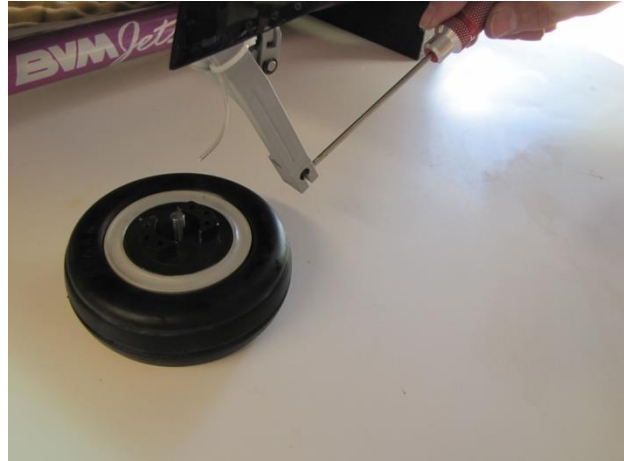


- An 8-32 x 3/4" SHCS secures the front of the fin from the inside of the model. Start the screw by hand, then use a 9/64" "L" wrench to snug it tight.



Wheel Brake Servicing

Check the operation of the main wheel brakes. If they are functioning properly, that is, the wheels are hard to turn when the radio command is given and they release and spin freely when the “Brakes Off” command is given, then the following procedure is not necessary. However, this service may be necessary some time in the future.

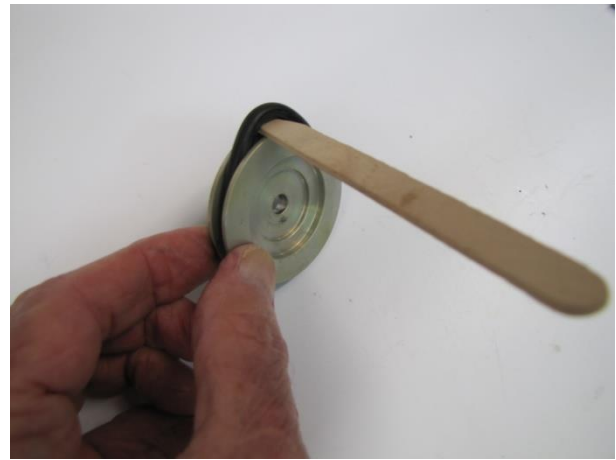
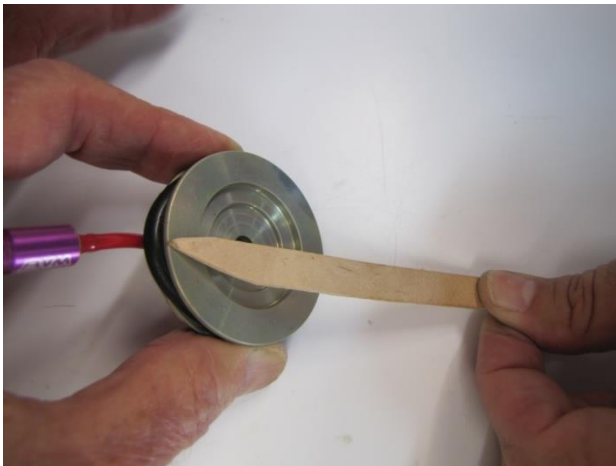


- Remove the wheel with axle with a 2mm hex wrench.

- 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.

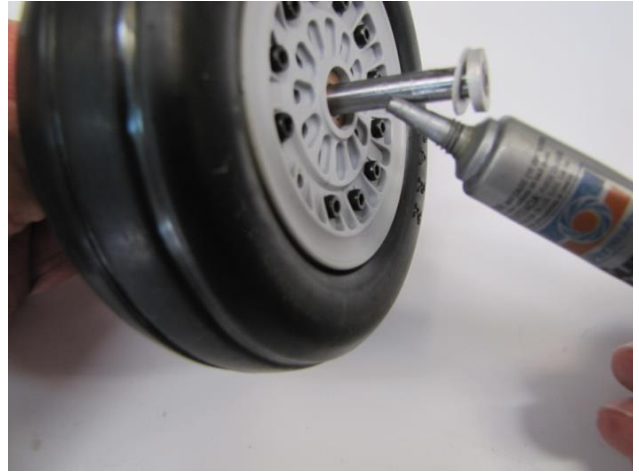
- Apply air pressure to the nipple to push “O” Ring out then pinch with fingers while prying the “O” Ring off the disc with the wood stick.



- Apply “O” Ring lube (BVM # 1945) to the “O” Ring and massage thoroughly to fully “wet” the “O” Ring. Use a cotton Q Tip to apply the lube to the “O” Ring groove in the disc. Reinstall the “O” Ring onto the disk.

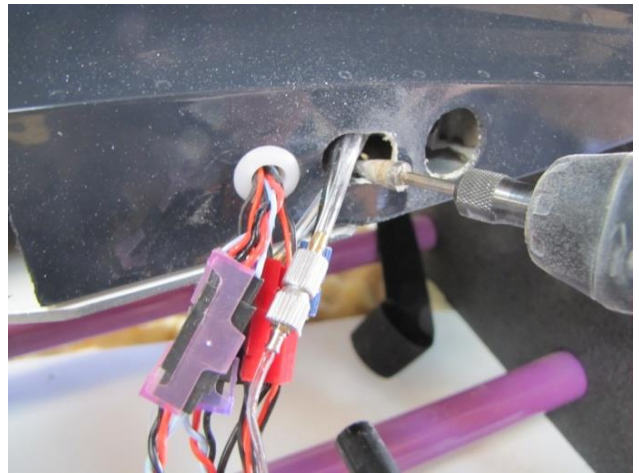


- Apply Axle Lube (BVM #5784) to the steel axle and bronze bushing. Use a 2mm “L” hex wrench to secure the axle in the landing gear strut. Apply the brake tubing and check for proper function.



Pneumatic Line Identification at Wing Root

- For convenience, we opened the hole in the fuselage wing fairing. Be very careful not to injure the tubing.



Main Gear Tubing/Connector Identification

- Black Tubing - Blue Connector- GEAR UP
- Clear Tubing - Gold Connector- GEAR DOWN
- Clear Tubing - Silver Connector- WHEEL BRAKES

Pneumatic Pressure

(See also Central Controller Instructions)

Fill the pneumatic system to 90 PSI on the Central Controller read out. For taxi out, use the brakes sparingly. We prefer to use them only in a full on or off position activated by a slide switch.

The automatic pulsing brake feature is deactivated with the gear up. Upon landing touchdown, move the transmitter control to the mid position and the brakes will be applied with an automatic pulsing action that will bring the model to a smooth stop.

After engine shutdown, check the pressure remaining and adjust braking techniques accordingly.

Wing Retention

Each wing is retained with one clamping fixture that squeezes tight onto the carbon rod main spar. Access is through the main gear doors.

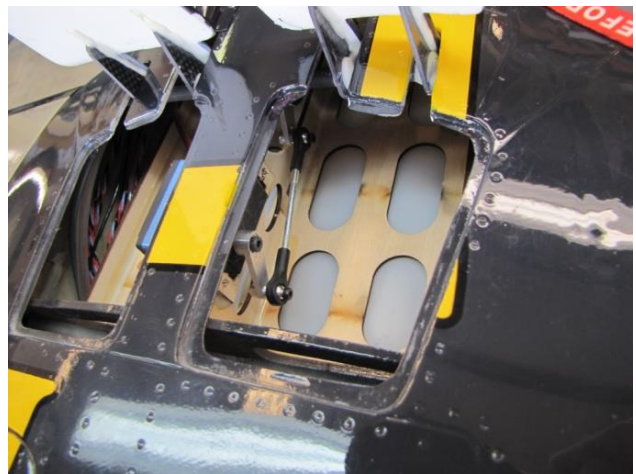
- Tighten the hex head bolt securely with a 9/64" hex wrench.



Speed Brakes

The L-39 has two aerodynamic Speed Brakes on the bottom of the fuselage. Activate them with a switch operated channel to be either closed, or open about 70° deflection.

Use them for slow fly-bys and on final approach and landing. There is no elevator trim change required. Lubricate the linkages with BVM Dry Lube.



Flush Mount Vent and Overflow System

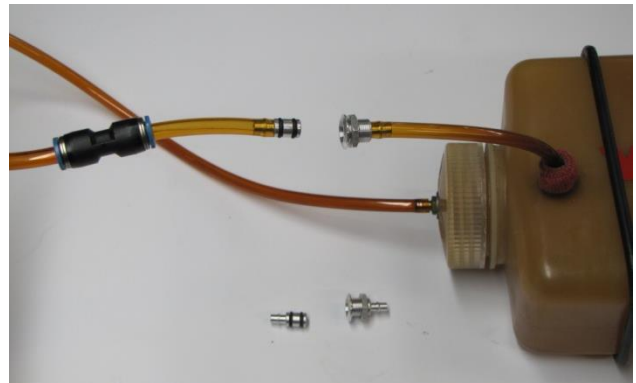
- A flush mounted vent system is used on both the fuel and smoke systems. A magnetic vent plug with red “Remove Before Flight” tag and BVM Overflow/Taxi tank (Tank Not Included) conversion fittings are provided. Also listed in the “**Recommended Accessories**” on page 3.



- 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.

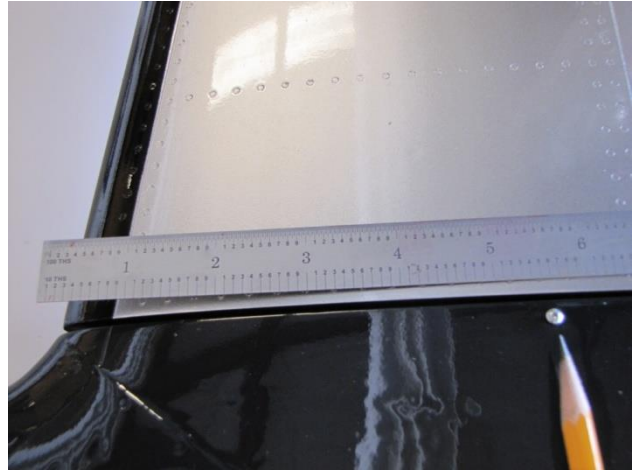
Use BVM Overflow tank Part #BVM6037

The Smoke System will need a complete second overflow set up.



Center of Gravity, Control Surface Deflections and Expo Settings

The factory puts an inked C.G. mark on the fuselage wing fairing. It is better to transfer that location to the bottom of the fuse fairing. As the photo shows, make a 1/16" hole 5.6" aft of the wing L.E. at the root on the fuse. Install a small button head screw on both sides of the fuse. A helper is necessary to balance the model with fuel only in the UAT and a half full 16oz. header tank. Our demo model needed no ballast. Minor adjustments of the ECU battery location will suffice.



Control	High Rate	Expo
Elevator (Measured at the Root)	Up 1.5" Down 1.25"	Up 30% Down 0%
Aileron (Measured at the Ail/Flap Junction)	Up 1" Down 0.9"	25% / 25%
Rudder (Measured at the bottom of the top rudder)	L/R 1.4"	10% / 10%
Control	Take-Off Position	Landing Position
Flaps (Measured at Fuse root)	1.2"	3.1"
Speed Brake	70° open	

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.

NOTE: This chart reflects only medium rates for the ailerons, elevator, and rudder. Higher rates and expo settings are at the pilot's discretion but not necessary for safe aerobatic flight.

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	
Surface	Throttle	Right Ail (Ail 2)	Elevator	Rudder	-----	Left Ail (Ail 1)	
RX Port	Aux2	Aux3	Aux4	Aux5	Aux6	Aux7	
Surface	Right Flap (Flap 2)	Left Flap (Flap 2)	Brakes	Gyro (Optional)	Steering	Speed Brake	
X+1	X+2	X+3	X+4	X+5	X+6	X+7	X+8
-----	-----	LED	Smoke	Gear	-----	-----	-----

DX18 and DX18QQ Transmitter File

The BVM Demo models are set up on Spektrum DX18 transmitters. The file, if requested, has all the mixes, rates, expos, and settings done for you. Setting the sub trim and travel adjustment must be accomplished by the modeler for the specific aircraft. Each aircraft is tested at the factory using a similar program.

Important!!! Check the directions of all flight controls before each flight.

Switch/Lever/Trimmer	Channel	Output
Switch A	X+5/Channel 15/Gear	Landing Gear, Down is Down
Switch B	X+3/Channel 13/Aux 6	Lights, Down is off, Up is on
Switch C	Elevator Rates	Up (0) is High
Switch D	Flaps	(0) Up is Normal flight (1)Mid is Flaps Take-Off (2)Down is Landing Flaps
L. Trim	Steering Trim/Aux 6	Down for Right Steering Trim Up for Left Steering Trim
Switch F	Aileron Rates	Up (0) is High
Switch G	Rudder Rates	Down/Away (0) is High
Switch H	X+4/Smoke	Down (0) Smoke off Up (1) Smoke on
Right Lever	Aux 4/Brakes	Up/Away – Brakes off Mid—Brakes Pulse (Refer To “Pneumatic Pressure) Down/Pulled – Brakes on

First Flight Profile

Make the first flight with the gyro “OFF”.

Flight Time – There is 9 minutes of fuel on board.

The BVM demo model's transmitter timer was set for 6.5 min for a “Top Gun” routine. On the first flight, land a few minutes early to check fuel consumption. Adjust the flight timer accordingly.

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 help remove any trapped air bubbles in the fuel system.

Takeoff- Set the flaps at take off position.

Begin the takeoff roll by slowly advancing the throttle. Maintain runway center while holding about 1/2 stick up elevator; the L-39 will rotate when it reaches flying speed, then relax the up elevator a bit for a smooth climb. If there is a cross wind, hold a small amount of aileron into the wind, be prepared with opposite rudder.

Trim

Your radio should be set up to remember trim settings for each flap setting. So, at a medium speed, trim the model in the clean configuration, then at take-off flaps with gear down, then with landing flaps and gear down.

Practice Approaches

Save several minutes at the end of your first flight to practice approaches and go arounds. It is beneficial to become familiar with the low-speed handling of the aircraft.

Landing

Landing is like most jets, leaving a small amount of “power on” during the approach. The L-39 does not stall easily, it is best to land nose high, touching 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.

RX Battery Consumption

The average flight using the lights the entire flight consumes 400 mAh. We recommend two flights and recharge. 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. (2) 3000 mAh batteries is the **minimum** BVM recommends.

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.

Wing Mounting Bracket Addendum

See Also: bvmjets.com/Tips and How to's /Things still come loose.

As pointed out in the “Things Still Come Loose” article, we have to be aware that all model jets will need attention to fasteners, holding brackets, landing gear parts, and etc as a result of passage of time and cycles of operation.

The L-39 may need to have the wing retention bracket tightened and glue reinforced. You know from handling this model that both the wing tubes, Aluminum (front) and Carbon Fiber (rear), are snug to slide on and off. So, if the bracket in question needs to be reset and glued, it's not a crisis.

To accomplish the reset and gluing procedure, use a Dremel cutter to make a rectangular hole just aft of the plywood bulkhead to access the (2) hex nuts on the aft side.



Use a 2.5mm wrench to tighten the (2) Hex Head Bolts and a 5.5mm open end wrench on the nuts (aft side).

Slide wing on to test alignment.

Use a glue syringe (BVM#PA-SR-0072) to apply Aeropoxy to the perimeter of the Bracket-to-Former joint and to assure that the nuts on the aft side of the bulkhead stay affixed.



Conservative Turbine Operation

will increase reliability and extend engine life.
by Bob Violett 2016

It has been a practice at BVM to operate our turbine engines a bit more conservative than the manufacturers published limits. Most recently, we applied this practice to the PNP L-39 Albatros powered by a KingTech K-140G. The factory set idle RPM is 33,000, we bumped it up to 34,500. The factory set maximum RPM is 123,000, we trimmed it down to 121,000.

Most jet airframes feature high drag devices such as open landing gear bays (gear down), landing flaps, and speed brakes. Additionally, high angles of attack on landing induce drag. So, the slight increase in idle thrust is not noticed. The benefit is a more reliable idle RPM - it's not searching or surging, and, if a "go-around" is commanded, the engine spool-up time is reduced.

The 32 pound L-39 has all of the high end performance it needs with the 2,000 RPM reduction. We proved that with a good showing at Top Gun 2016 and with air show routines at the "First In Flight" event during very hot weather conditions.

Removing that extra bit of centrifugal stress on the engine's spinning parts and about 50C of temperature stress goes a long way toward ultimate engine life and reliability.

Know that when you fly commercially, the pilots are selecting reduced power for take-off unless the gross weight, runway length, and pressure altitude do not allow. This extends engine life and time between major maintenance checks.

Conclusion

This conservative turbine engine operation is working for BVM.

NOTE: For operation at high elevations (above 3000ft. M.S.L.), do not use reduced power for first few flights. Then, re-evaluate the application.

NOTE: Consult your engine's operation manual for how to adjust the engine RPM limits.

Pilot's Notes: