

FLEX

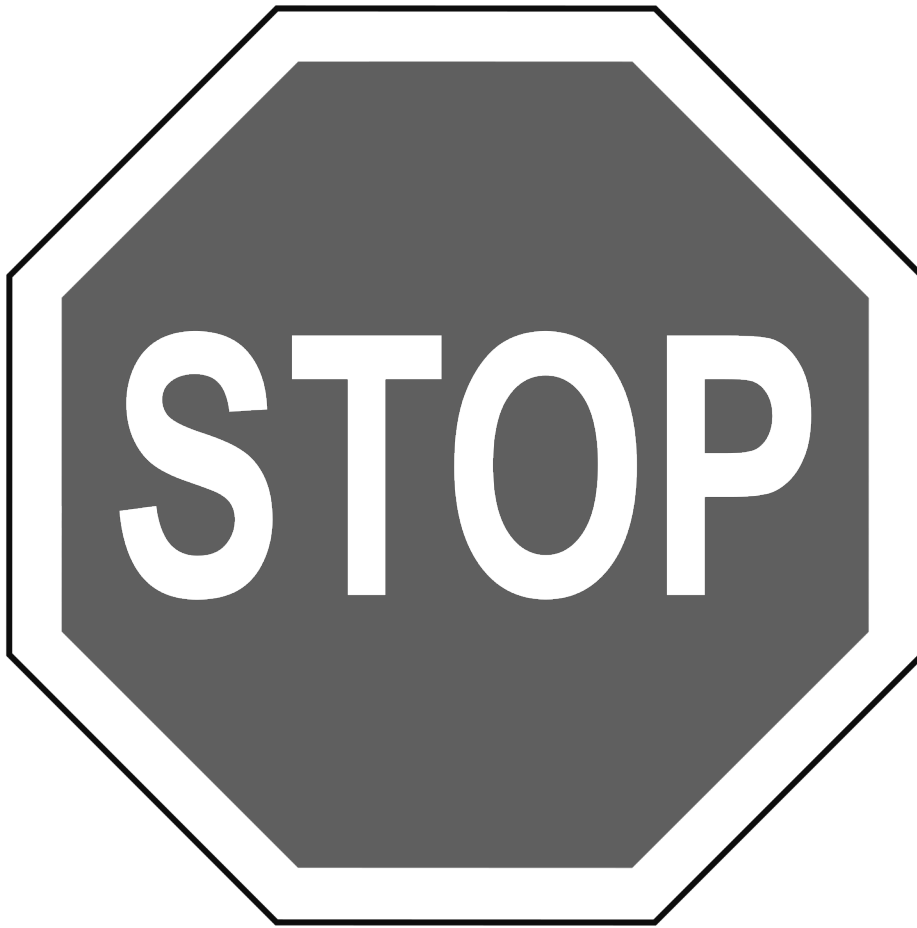
TM

FLEX TV



SUPER PNP
Instruction Manual

FLEX
INNOVATIONS



The FlexJet TV is designed to be a high-performance, 3D-capable (post-stall maneuvering) EDF. It is capable of aerobatics and 3D maneuvers such as hovers, flat-spins, pin-wheels, tumbles, and more!

To achieve this maneuvering capability, The FlexJet TV has approximately **90% more power** than the original FlexJet while remaining **very light**. This excess power is intended for uplines and 3D maneuvers only. Because of this, the pilot is required to limit the speed of the aircraft, and the G-Load on the Aircraft.

- **Powered dives are not permitted**
- **Extended level flight at full throttle is not permitted**
- **High-Speed, High-G maneuvers are not permitted**
- **Limited to maximum of 20MPH (32km/h) of wind speed or gust**

Over-speeding or over-stressing the aircraft can result in structural failure and a crash, which may also cause personal injury and/or property damage.

NOTICE

DAMAGED PRODUCT(S), INJURY AND/OR PROPERTY DAMAGE CAUSED BY FAILURE TO FOLLOW THE ABOVE GUIDELINES IS NOT COVERED UNDER WARRANTY.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of the Product, you are advised to return this product immediately in new and unused condition to the place of purchase. In the event you wish to return this product, as the Purchaser or user, you are responsible for return shipping.

**For more information regarding returns please visit:
<https://www.flexinnovations.com/returns.asp>**



BEFORE CONTINUING WITH THIS INSTRUCTION MANUAL OR ASSEMBLY OF YOUR AIRCRAFT, PLEASE VISIT OUR WIKI SUPPORT SITE FOR THE LATEST PRODUCT UPDATES, FEATURE CHANGES, MANUAL ADDENDUMS AND FIRMWARE CHANGES FOR BOTH YOUR AIRCRAFT AND THE INSTALLED AURA 8 ADVANCED FLIGHT CONTROL SYSTEM.

**wiki.flexinnovations.com/wiki/FlexJetTV
wiki.flexinnovations.com/wiki/Aura**

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INTRODUCTION

On behalf of Flex Innovations, thank you for purchasing the FlexJet TV!

The FlexJet TV combines a proven platform of modern aerodynamics with sport jet practicality and performance with an 8s Power System with a thrust vectoring nozzle for added capability in post-stall flight.

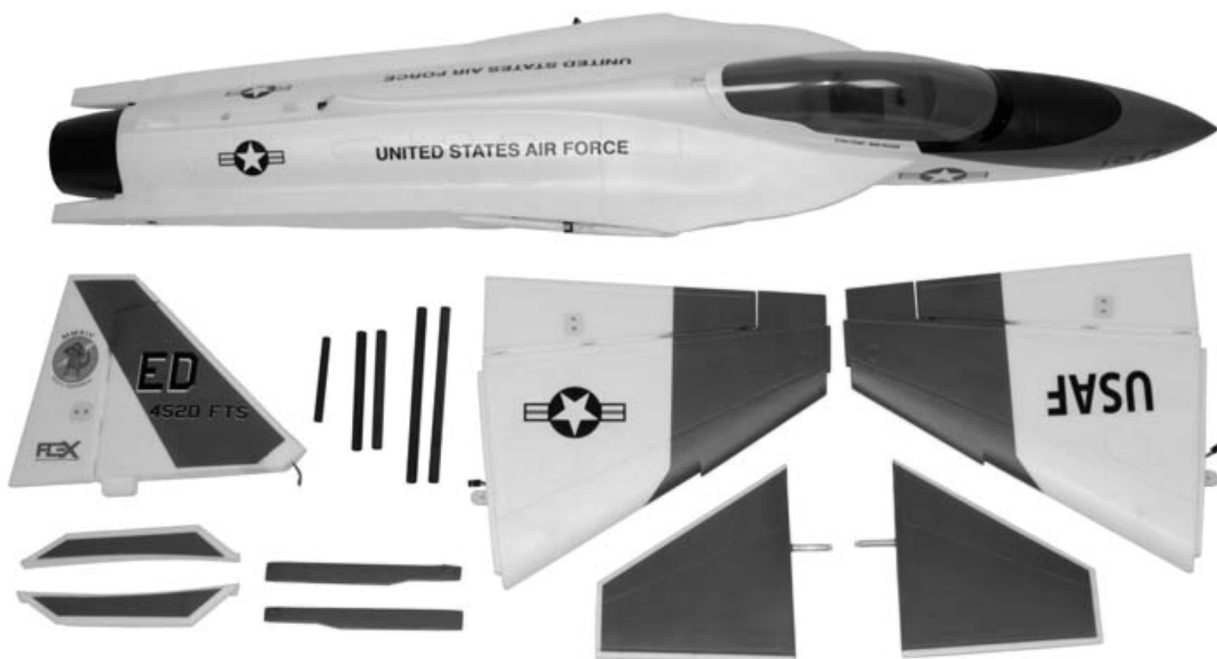
Trailing link landing gear, and the wing's wide angle of attack range, along with Aura 8 make takeoffs and landings easy. Aerobatics are effortless and impressive. The FlexJet TV excels at harriers, hovers, flat-spins, tumbles, unlimited vertical maneuvers, and high alpha maneuvers.

For the latest updates, features, addendums and more, before assembly, please visit:

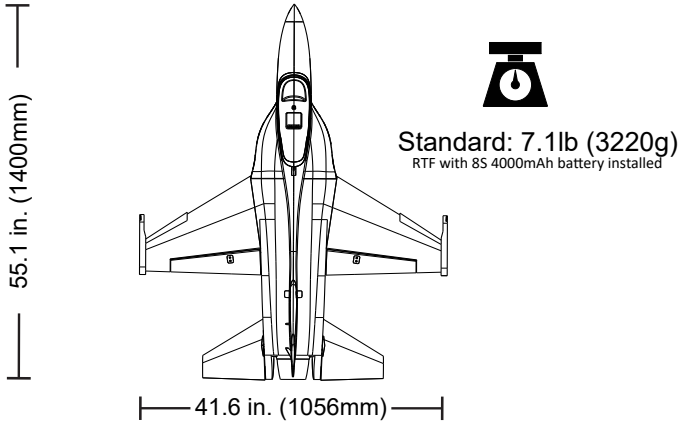
<http://wiki.flexinnovations.com/wiki/FlexJetTV>

- Custom-tuned Aura 8 gyro stabilization system provides the ultimate in stability and control
- Powerful 80-sized in-runner motor provides efficient power
- 120amp 8s ESC provides reliable power
- 11-bladed 90mm fan for outstanding thrust and sound
- Electric retracts with metal pivot
- High deflection thrust vector nozzle gives unparalleled control in post-stall flight.
- Electric gear doors with sequencer installed
- Embedded carbon fiber spars in wings and stabilizer
- Custom-designed control horns to optimize control geometry and performance
- High-precision digital servos with metal gears
- Lightweight EPO foam is stiff and tough

BOX CONTENTS



SPECIFICATIONS



REPLACEMENT PARTS

FPM344001	FlexJet TV Fuselage Orange (No Hatches)
FPM344007	FlexJet TV Canopy and Fan Hatch Orange
FPM344014	FlexJet TV Nose Cone / Tail Pipe Orange
FPM344015	FlexJet TV Pushrod Set
FPM347018	FlexJet TV Light Weight Wire Strut Set
FPM347019	FlexJet TV Light Weight Foam Wheel Set
FPM347020	FlexJet TV Fwd. Wing Skin Reinforcement
FPMADFTV90	FlexJet TV Thrust Vectoring Nozzle
FPM347003	L+R Wing Set Orange
FPM347005	L+R Stab and Fin Set Orange
FPM347009	Ventral Fin and Missile Rail Set Orange
FPM347011	Wing + Fin Carbon Fiber Tube Set
FPM347012	Orange Decal Set
FPM347015	Pushrod Set
FPM347016	Hardware Package
FPM347017	Landing Gear Struts
FPM347018	Landing Gear Rubber Strut Downstop Set
FPM347019	Wheel Set
FPM347020	Doors, Hinges, Misc. Plastic Parts
FPMA0004	Metal Clevis Set (4)
FPMDF90A	90mm EDF Fan Assembly (No Motor)
FPZA1020	Potenza 3-Piece Retract Set
FPZA1020S	Potenza Electric Retract (single)
FPZA1021	Potenza Gear/Door Sequencer
FPZA1023	Potenza DS15 Servo Arm and Screws Kit
FPZDS15B	Potenza DS15 MG Digital Servo w/165mm
FPZDS12	Potenza DS12 MG Sub-Micro Servo
FPZDS12R	Potenza DS12 MG Sub-Micro Reverse Servo
FPZEDFVG120BEC	V-Good 120 HV ESC
FPZEDFW120BEC	HobbyWing 120 HV ESC
FPZAURA08ZZFJTV	Aura 8 AFCS for FlexJet TV
FPZM180DFA	Potenza 80 1500KV EDF Inrunner Motor

OPTIONAL ACCESSORIES

FPZB40008S75	Potenza 8S 4000mAh 75C Li-Po
FPZB40004S75	Potenza 4S 4000mAh 75C Li-Po (QTY:2 Required to make 8S pack)
FPZA1026	Potenza EC5 Series Connector
FPZA1010	Potenza Digital Battery Analyzer (Not compatible with 8S Li-Po)
SPMAR8010T	Spektrum AR8010T Receiver (Recommended Spektrum Receiver)
FUTR7008	Futaba R7008SB Receiver (Recommended FASSTest Receiver)
FUTR2008	Futaba R2008SB Receiver (Recommended S-FHSS Receiver)
FPZA1012	Potenza 2" Y-Harness (QTY:2 Required for JR DMSS Mode B)
ISDTD2	iSDT D2 Smart AC Charger 100w x2 6s

OPTIONAL ACCESSORIES (CON'T)

ISDTT8 iSDT T8 Smart DC Battery Charger 1000w 8S

COMPLETION ITEMS

INSTALLED!		Aura 8 Advanced Flight Control System (FPZAURA08ZZFTV)
INSTALLED!		Potenza 80-DF BL 1500 Kv Brushless In-runner Motor (FPZM1080DFA)
INSTALLED!		Potenza DS15 Digital Servos (QTY: 7) (FPZDS15B)
INSTALLED!		Potenza DS12 Digital Servos (QTY: 4) (FPZDS12 / FPZDS12R)
INSTALLED!		HobbyWing 120 HV ESC (FPZEDFW120BEC) OR V-Good 120 HV ESC (FPZEDFVG8S120BEC)
INSTALLED!		90mm EDF Fan Assembly (FPMDF90A)
NEEDED TO COMPLETE		3500-4200mAh 8S 29.6V 40C+ Li-Po (8S 4000mAh 70C: FPZB40008S75)
NEEDED TO COMPLETE		6CH + MODERN DIGITAL CONNECTION: SRXL, Futaba or Hitec S.Bus, Graupner HOTT, Jeti UDI, JR DMSS XBus
NEEDED TO COMPLETE		6+ Channel Computer Transmitter WITH 6+ Ch. Receiver with 6-output ports and Modern Digital Connection

BATTERY CHARGING GUIDELINES

! WARNING

FOLLOW ALL INSTRUCTIONS PROVIDED BY YOUR BATTERY AND CHARGER MANUFACTURER. FAILURE TO COMPLY CAN RESULT IN FIRE.

The assembly of the FlexJet TV can be accomplished in 1-2 hours. Prior to assembling the airplane, it is advisable to charge your battery so that you are ready to begin setup upon completion of the assembly of your model.

We recommend the use of an advanced Li-Po balancing charger capable of 8S. A 4S charger can be substituted if using QTY:2 4S Li-Po's in series.

The FlexJet TV was designed around the Potenza Li-Po Hyper Series 8s 4000mAh 75C Li-Po battery (FPZB40008S75) or QTY:2 Potenza Li-Po Hyper Series 4s 4000mAh 75C Li-Po batteries (FPZB40004S75) in series. In our extensive testing and development of the FlexJet TV, these batteries provided the best combination of power, weight, and flight time. In addition, these batteries feature an EC5 connector, so no soldering is required for use in your FlexJet TV.

Potenza Li-Po batteries are available at www.flexinnovations.com

SPECIAL LANGUAGE DEFINITIONS

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

- NOTICE:** Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.
- CAUTION:** Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.
- WARNING:** Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of serious injury.

WARNING

AGES 14+

This product is not intended for use by children under 14 years without direct adult supervision.

ATTENTION

Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to assemble or operate the product correctly can result in damage to the product, personal property, and cause serious or fatal injury.

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Flex Innovations, LLC. For up-to-date product literature, please visit our website at www.flexinnovations.com, click on your aircraft and the Aura 8 AFCS product pages.

IMPORTANT INFORMATION REGARDING WARRANTY

Please read our Warranty and Liability Limitations section before building this product. If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this product immediately in new and unused condition to the place of purchase.

SAFETY WARNINGS AND PRECAUTIONS

Protect yourself and others by following these basic safety guidelines.

1. 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 correctly and avoid damage or serious injury.
2. This model is not a toy, rather it is a sophisticated hobby product and must be operated with caution and common sense. This product 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.
3. This model must be assembled according to these instructions. Do not alter or modify the model outside of these instructions provided by Flex Innovations, Inc. as doing so may render it unsafe and/or unflyable. It is your responsibility to ensure the airworthiness of the model.
4. Inspect and check operation of the model and all its components before every flight.
5. If you are not an experienced pilot or have not flown a high-performance model before, it is recommended that you seek assistance from an experienced pilot in your R/C club for your first flights. If you're not a member of a club, the Academy of Model Aeronautics (AMA) has information about clubs in your area whose membership includes experienced pilots.
6. Keep the propeller area clear from such items as loose clothing, jewelry, long hair, or tools as they can become entangled. Keep your hands and body parts away from the propeller as injury can occur.
7. Never fly in visible moisture, or submerge the airplane or any of its electronic components in water. Permanent damage to electronic components may occur, or corrosion of components may lead to intermittent failures.

LOW VOLTAGE CUTOFF

Li-Po batteries have a nominal (rated) voltage of 3.7V per cell, and fully charged, reach 4.2V per cell. Batteries are designed to be discharged below the nominal voltage, however, if they are discharged below 3.0V per cell, damage will occur and the pack will lose capacity. For best long term battery life, set a timer and land after a time that leaves approximately 15% of the battery's capacity remaining.

Low voltage cutoff is a feature that is built into the included ESC that is designed to protect the connected battery from being discharged too far and causing permanent damage to the cells. Circuitry within the ESC will automatically detect when the input voltage from the battery pack reaches below 3.15V per cell (average) and will remove power to the motor, but still deliver power to the servos so that a safe landing may be made. If the motor begins to lose power rapidly during flight, the LVC has sensed that the total voltage of the pack has dropped below 3.15V per cell average, and the airplane should be landed immediately.

AURA 8 AFCS

The Aura 8 Advanced Flight Control System (AFCS) installed in your FlexJet TV is a giant leap forward in aircraft flight control system technology. Compatible with virtually every receiver on the market today, the Aura features special configuration for serial data connection for Futaba or Hitec S.Bus, Spektrum SRXL, Graupner HOTT (Sum D of 8), JR XBus (Mode B), and Jeti UDI12 (standard) systems.

The Aura 8 advanced flight control system installed in your aircraft has been pre-tuned for ease of use, eliminating many hours of tedious setup. For the latest Aura features, programs, transmitter downloads, and instructions, please visit wiki.flexinnovations.com/wiki/Aura

The Aura is programmable through any Windows based PC or tablet. All dual rate, expo, travel and assignable mode programs are adjusted inside the Aura through the PC application. An assignable master gain that is OFF by default can be enabled by the Aura application. If desired, assign CH 8/AUX 3 on a proportional dial or slider.

By default, CH6/Aux1 is used to select the 3 flight modes by 3 position transmitter switch. CH5/Gear is used to retract/deploy the landing gear.

- Works conveniently with all major radio systems
- Accepts signals from Spektrum SRXL, Futaba S.Bus, Graupner Hott (Sum D of 8), JR XBus (Mode B), Jeti UDI12 (standard), Hitec S.Bus, PPM Stream
- Expertly tuned and ready to use
- USB port allows loading model configurations, user programming, and firmware updates (cable included)
- Flexible and extensive programming through Windows-based PC or tablet
- 3+ flight modes allow precise or aggressive settings to be selected in flight
- 3-axis gyro utilized in FlexJet TV programming
- Powerful 32-bit processor and multi-axis sensor for future updates.

Visit wiki.flexinnovations.com/wiki/Aura for the latest Aura-related product information and tips for your particular radio brand.

Description of Pre-Loaded Aura Flight Modes (FM)

Flight Mode 1 (Test / Safety):

Gyro gain is set to off. All rates are set to low for general flight. Exponential is tuned for comfortable flight. Tailerons are active. Thrust Vectoring is deactivated.

Flight Mode 2 (Sport / Precision):

Gyro gain is set to low. All rates are set to low for sport / precision flight. Exponential is tuned for comfortable flight. Tailerons are active. Thrust Vectoring is active and set to moderate rates.

Mode 3 (3D Rate):

Gyro gains are high and tuned for low-speed post-stall flight. All rates are set to highest. Exponential is tuned for comfortable flight. Tailerons are active. Thrust Vectoring is active and set to high rates. **Do NOT fly at High Speed. Doing so may induce gyro oscillations!!**

Each of the modes has been tuned by the Flex Team to offer a solid start. Because tastes in control feel are unique, if changes in rates and expo are needed, adjustments should be made through the **Aura 8, not the transmitter.**

Changes in gain value can only be made through the Aura or via *master gain (if activated)*.

⚠ CAUTION

During radio setup ensure motor is disengaged by unplugging all wire leads that connect the ESC to the motor.

TRANSMITTER SETUP

The Aura 8 AFCS is designed to work seamlessly with all major transmitter and receiver brands. When programming your transmitter, start with a **freshly reset new model** memory in your transmitter. **Make ONLY the changes shown in the Transmitter Configuration Guide unless otherwise noted.**

The Aura 8 in your FlexJet TV defaults to 3 flight modes that are switched via **CH6/Aux1** in your transmitter. You may need to reassign CH6/Aux to a 3-position switch.

The retracts in the FlexJet TV are operated via CH5/Gear in your transmitter. You may need to reassign that CH5/Gear in your transmitter to a 2-position switch.

Consult your transmitter manual if you have questions on how to change the switch or channel assignments.

The Aura comes pre-programmed with dual rates and expos specifically designed for your aircraft. For large (greater than 5%) changes in expo or dual rates, it is highly recommended to reset all expos and rates to default in the transmitter, and tune through the Aura Config Tool.

The Aura Config Tool is free to download, and can be used on any Windows-based PC or tablet. Download at:

www.flexinnovations.com/AuraConfigTool

TRANSMITTER CONFIGURATION GUIDE	
	Spektrum, Futaba & Graupner ¹
Wing/Tail Type	1-Aileron, 1-Elevator, 1-Rudder (No Flaps)
End Points (Travel Adjust or ATV)	Ail/Ele/Rud/Gear 125%
	Throttle 100%
Reversing	None Required ²
Sub Trim	Verify at zero, NOT ALLOWED
Trim Levers	Verify at zero
CH.5 (Gear)	Assigned to a 2-position switch
CH.6 (FM)	Assigned to a 3-position switch
Timer	Set to 2:10 for initial flights ³

1. JR transmitter users that use Spektrum DSM2/DSMX receivers should follow the Spektrum information in the chart above.
2. If you are using a Futaba transmitter, please note that some Futaba transmitters have the throttle set to reversed by default. Leave reversing set to defaults to start, and reverse as needed.
3. This aircraft can fly anywhere between 2:30 and 4 minutes (w/8S 4000mAh Li-Po), depending on flying style.

NOTICE

FOR CUSTOMERS USING TRANSMITTERS OTHER THAN WHAT IS LISTED IN THE CHART ABOVE, PLEASE VISIT OUR WIKI PAGE FOR INSTRUCTIONS SPECIFIC TO YOUR TRANSMITTER AND RECEIVER BRAND

JETI	wiki.flexinnovations.com/wiki/Aura/JetiUse
HITEC	wiki.flexinnovations.com/wiki/Aura/HitecSbusUse
FRSKY	wiki.flexinnovations.com/wiki/Aura/FrSkyUse
JR DMSS	wiki.flexinnovations.com/wiki/Aura/JRUse

RECEIVER INSTALLATION / AURA 8 INSTALLATION NOTE

Throughout the assembly process, we will ask you to power up the radio system. In order to assemble your FlexJet TV properly, it is critical that the receiver is bound to your transmitter and is communicating with Aura 8. **Please do not proceed until the Aura 8 emits a solid green LED (Aura received valid signal from receiver) and solid orange LED (Aura has power and calibrated sensor) when powered up.** Please note, for all systems EXCEPT JR DMSS MODE B, you can temporarily plug a servo into the receiver's aileron port to verify that your receiver is bound to your transmitter. In the event that you are having difficulties with radio or Aura 8 installation please see the following:

For issues with your transmitter and/or receiver, please review your transmitter/receiver manual or contact the manufacturer directly.

For issues regarding Aura 8 please reference the following:

- Wiki page: wiki.flexinnovations.com/wiki/Aura
- Email us at support@flexinnovations.com
- Contact Aura Support at 866-310-3539

CONNECTING A BATTERY/ARMING THE ESC

Observe the following procedures to safely power up your model after it has been bound. **Ensure the motor is unplugged from ESC unless sequence is followed to power up before flight.**

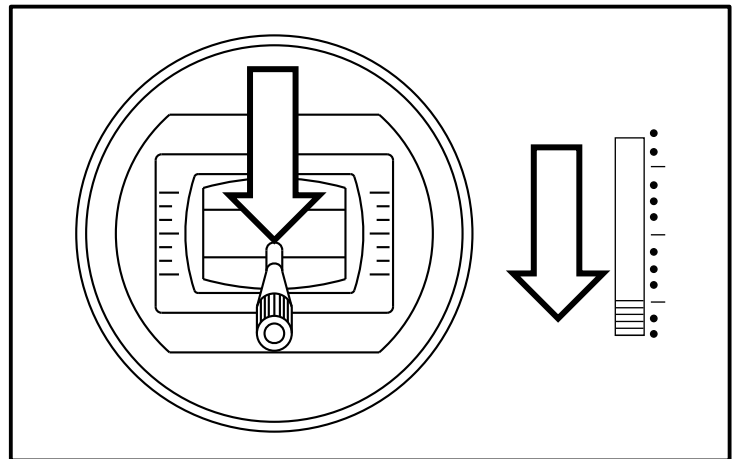
1. Lower the throttle stick and trim to their lowest setting and turn on the transmitter. Wait for your transmitter to indicate the radio signal is being broadcast before proceeding.

If a battery is connected to the ESC with the throttle fully open on the active transmitter, the ESC will enter programming mode. If this occurs, simply disconnect the battery, lower the throttle, and reconnect the battery.

2. Ensure the aileron, elevator and rudder gimbals are centered.
3. With the airplane on a solid surface, connect the battery to the ESC and wait. The ESC will make the motor emit a series of audible tones during its initialization process.
4. The ESC will make the motor emit a short, final tone sequence indicating that the ESC is now armed, and the motor will spin in response to throttle stick movement.

⚠ WARNING

When making adjustments to linkages, transmitter settings or the Aura 8 flight control system, disengage motor by unplugging from ESC to guard against accidental spool up.



⚠ CAUTION

Always connect the battery when the throttle stick and throttle trim is in the idle/cut-off position.

⚠ WARNING

Hold the aircraft securely when connecting the battery before flight. Always ensure any and all objects are clear of the duct inlets and EDF fan unit as they may become entangled.

⚠ CAUTION

While assembling the FlexJet TV, ensure motor is disengaged by unplugging all wire leads that connect the ESC to the motor.

RECEIVER INSTALLATION/SERVO CONNECTIONS

Aura will auto-detect modern digital receiver connection(s). Using a modern digital receiver connection gives the Aura access to precise data of each channel for additional gyro-enabled outputs, simplifies wiring, and allows for more advanced features. To connect a modern digital receiver connection, follow the steps on this page.

Supported Modern Data-Linked Receivers

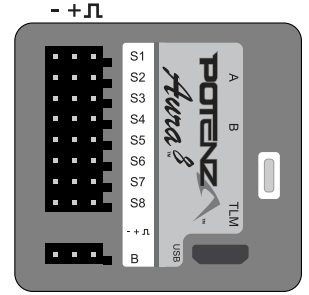
Aura will auto-detect these modern digital receiver connections:

Futaba or Hitec S.Bus	Spektrum SRXL
Graupner HOTT (Sum D of 8)	JR XBus (Mode B)
	Jeti UDI12 (standard)*

A PPM (8CH, negative shift, approximately 22ms/frame) receiver may also be connected into Port 'B', however Aura will not auto-detect and setup must be performed through the Aura Config Tool (Windows Application).

DEFAULT AURA CONNECTIONS

S1	Left Aileron
S2	Right Aileron
S3	Left Elevator
S4	Right Elevator
S5	Rudder
S6	Nosewheel steering
S7	Left Thrust Vectoring
S8	Right Thrust Vectoring
B	Rx Digital Connection



For specific information on receiver types and our recommended receivers for this aircraft, please visit the FlexJet TV Wiki page at the below URL:

wiki.flexinnovations.com/wiki/FlexJetTV

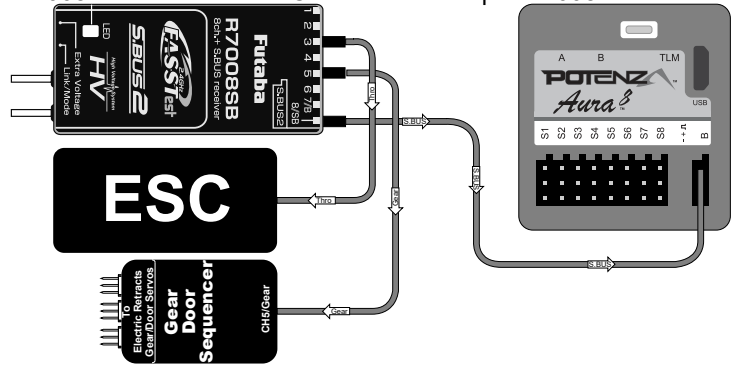
Connecting Your Receiver to Aura

Digital Receiver Connections

Examples of Recommended Receivers:

Spektrum SRXL AR8010T AR9030T	Futaba S.Bus S-FHSS - R2008SB T-FHSS - R7008SB FASST - R6208SB FASSTest - R7008SB
Jeti UDI EX R6i EX R11	Graupner SUMD GR-16L
JR DMSS 712BX 731BX	Hitec S.Bus Optima SL-8
FrSky S.Bus RX6R RX8R	

R7008SB must be set to Channel Mode B per R7008SB Manual



** Arrows indicate signal (data) flow. They do not necessarily indicate voltage (+) flow.

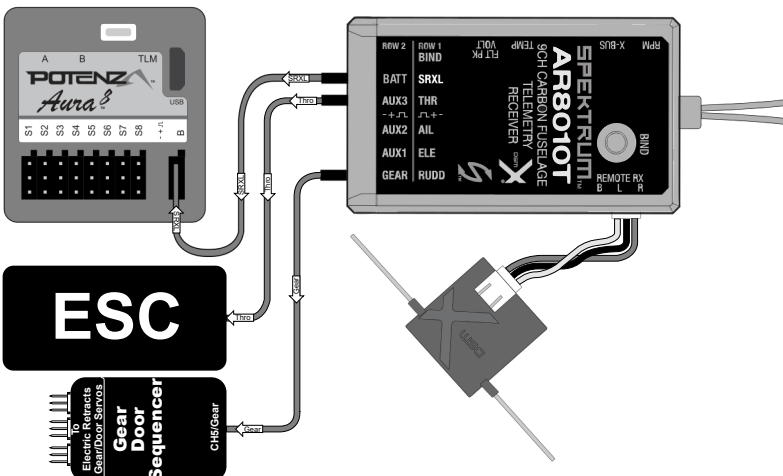
Note: If you are using Futaba S.Bus, be sure to use the proper S.Bus port in your receiver. DO NOT use the S.Bus 2 port, as it is not supported for use with the Aura 8. Refer to your manufacturer's instructions for proper S.Bus use.

1. While Spektrum usually outputs its digital data stream, it may be necessary for Futaba, JR DMSS, Graupner HOTT, and Jeti users to program the transmitter/receiver to output the correct digital format listed on the previous page. Consult your transmitter and receiver manuals for further details.
2. Bind your transmitter and receiver per your manufacturer's instructions.
3. Connect the included male to male servo extension to the receiver's data port (ex: S.Bus, SRXL etc.) and connect to servo port 'B' on the face of the Aura. Refer to your radio manufacturer's instructions for specific information on appropriate serial port connections and system settings.

A working throttle port and Retract port on the receiver is REQUIRED.
Consult your receiver and/or transmitter instruction manual for specific details on your radio system.

4. With the transmitter powered, power up the aircraft. Aura will search (sweeping LEDs) and lock onto the signal. You will then see solid orange (power) and calibrated sensor) plus solid green (valid radio source), and have control of the model.

Mount your receiver using double sided foam tape or hook and loop tape. Consult your receiver manual for proper mounting.



* Arrows indicate signal (data) flow. They do not necessarily indicate voltage (+) flow.

Note: When using Spektrum SRXL to connect to the Aura, always connect the remote receivers to the Spektrum receiver, NOT to the Aura.

RECEIVER INSTALLATION/SERVO CONNECTIONS (CONTINUED)

NOTICE

Due to the need of 10-servo ports for optimal performance, Spektrum Remote Receivers are NOT SUPPORTED for the FlexJet TV.
A Receiver with a Modern Digital Connection AND working servo ports is the preferred receiver connection method for the FlexJet TV.

NOTICE

Due to the servo port requirements, PWM is NOT SUPPORTED for the FlexJet TV.

PPM users should consult the Wiki Page
wiki.flexinnovations.com/FlexJetTV

RETRACTS AND GEAR SEQUENCER OPERATION

The following steps will be required EACH time the aircraft is powered for flight:

1. Ensure your radio has Ch5/gear assigned to a 2-position switch.
2. Hold the FlexJet in a manner that the gear doors and retracts are unobstructed and free to close and open.
3. Cycle your transmitters Ch5/Gear switch **from down to up, then down again waiting about 1 second in each position.** The gear sequencer is now armed and the gear will deploy or retract.
4. Test the retracts. Ensure the gear/doors open and close without binding or stalling the servos. Adjust ball links as necessary. When satisfied with the result, power off the aircraft.

Please note, Ch5/Gear can be reversed in the transmitter for user preference.

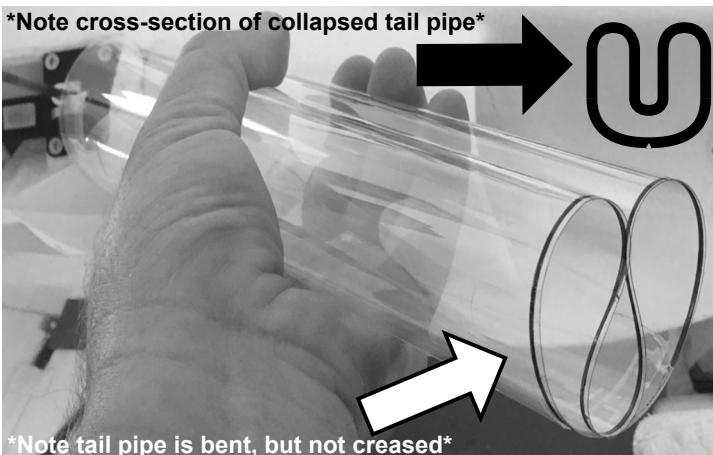
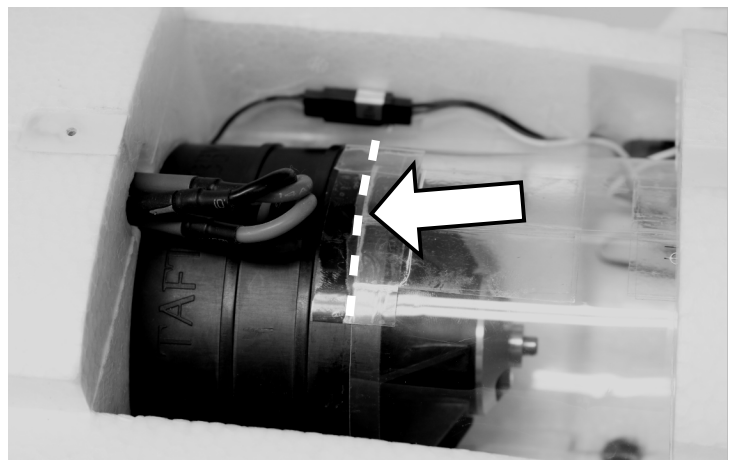
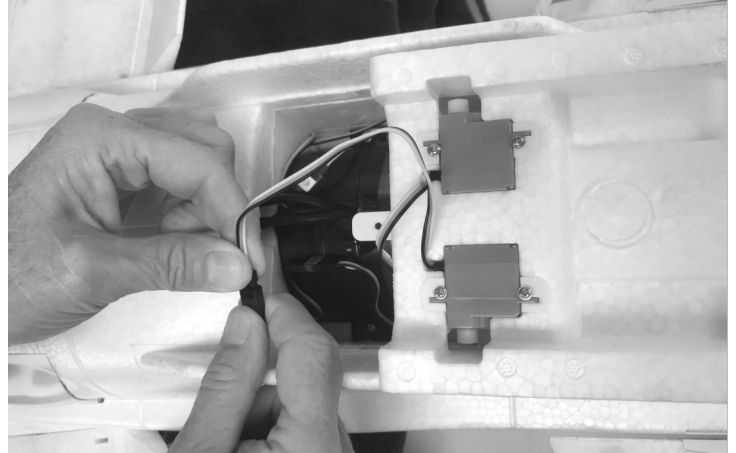


EDF ACCESS HATCH, TAIL PIPE, and THRUST VECTORING NOZZLE REMOVAL

Required Tools and Fasteners: #1 Phillips Screwdriver
#11 Hobby Knife

1. Remove the two M3x10 Phillips washer head self-tapping screws that secure the EDF access hatch to the fuselage. Unplug both thrust vectoring servos located on the EDF access hatch. Remove the screws that secure the thrust vectoring nozzle pushrods to the servo arm. Remove the EDF access hatch and place the hatch and screws in a secure location to be used at a later step in the assembly process.
2. Remove the two M3x25 Phillips self-tapping screws that secure the thrust vectoring nozzle to the fuselage. Remove the thrust vectoring nozzle and place the TV nozzle and screws in a secure location to be used at a later step in the assembly process.
3. Using a #11 hobby knife, cut the piece of tape that secures the thrust tube to the EDF fan housing and remove the tape from the ducted fan housing and thrust tube. **Be careful to only cut the tape. Do not cut through the thrust tube.**
4. Slide the tail pipe rearward until it is no longer connected to the ducted fan housing.
5. Carefully collapse the tail pipe (without creasing) and slide the tail pipe out the rear of the fuselage.

Please note, a video of the EDF access hatch, tail pipe, and exhaust nozzle installation/reinstallation is available at <http://wiki.flexinnovations.com/wiki/FlexJet>.



FLYING STABILIZER INSTALLATION

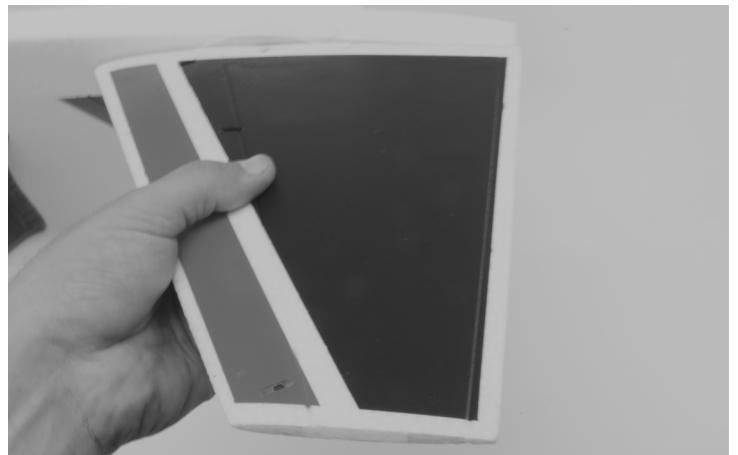
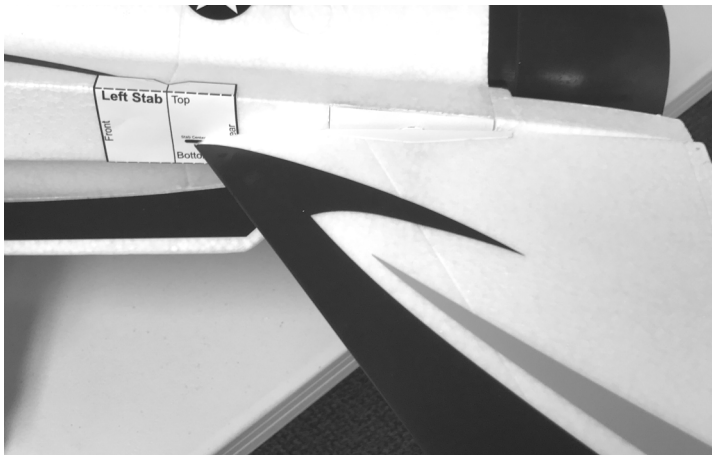
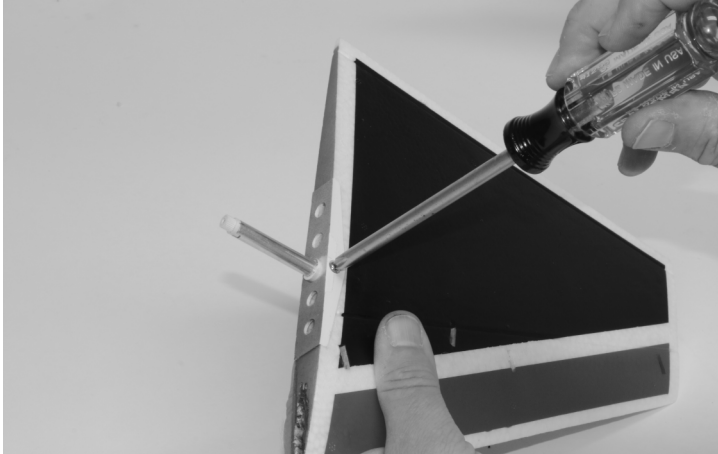
Required Tools and Fasteners:



#1 Phillips Screwdriver, 2mm Hex Driver
Blue Thread Locker, Low-Tack Masking Tape
(2) M3x10mm Phillips Machine Thread Screw (factory-installed)
(2) M2 x 6mm Cap Head Self-Tapping Screws

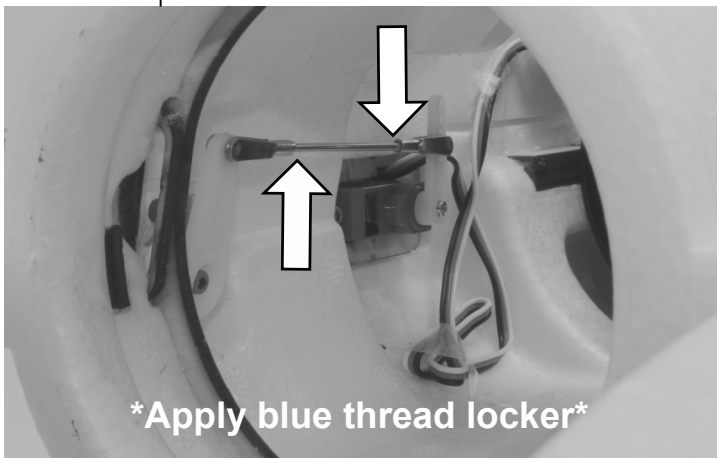
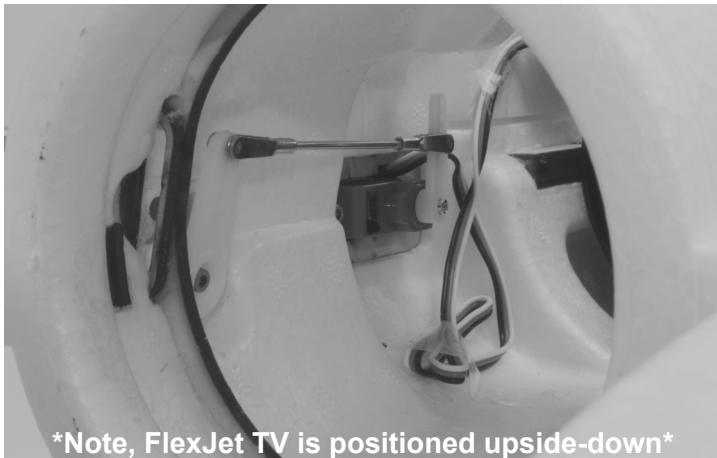
To reduce the assembly time of your FlexJet TV, the stabilizer tubes have been installed at the factory.

1. Confirm that (1) M3x10mm Phillips head machine screw is securely fastened to each stabilizer tube. **Do not overtighten.**
2. Power on the radio system. Ensure the elevator servo arm is installed on the correct spline. The servo arm should be perpendicular relative to the servo case and pointing toward the bottom of the fuselage.
3. Cut out the **elevator trim gauges** located on the rear cover of the manual. Align the center-line of the elevator trim gauge with the panel line just forward of the flying stabilizers. Tape the elevator trim gauges onto the fuselage using low-tack masking tape.
4. Power on the transmitter and aircraft, once powered, insert a stabilizer into the fuselage.



FLYING STABILIZER INSTALLATION (Continued)

5. Verify the transmitter elevator stick is set to neutral and trim is centered. Test fit the stab linkage arm onto the spline of the stab tube. The linkage arm should be parallel relative to the servo arm and pointing towards the bottom of the fuselage. Check the leading edge of the stabilizer relative to the elevator trim gauge. Remove the stab linkage arm and turn the clevis as necessary to center the stabilizer. **Please note, the stabilizer will hold a small amount of up elevator as indicated by the elevator trim gauge.**
6. Once satisfied with the mechanical trim of the stabilizer, use the included 2mm hex driver to secure the M2 x 6mm cap head self-tapping screw through the linkage arm and into the spline of the stab tube. **Be sure to avoid over-tightening the screw, do NOT use blue thread locker on this connection.**
7. Apply a drop of blue thread locker at the point where the clevis and control linkage meets.
8. Repeat steps 4-7 for the other stabilizer **ensuring the stab angle is the same for both left and right stabilizers before proceeding.**



Wing Installation

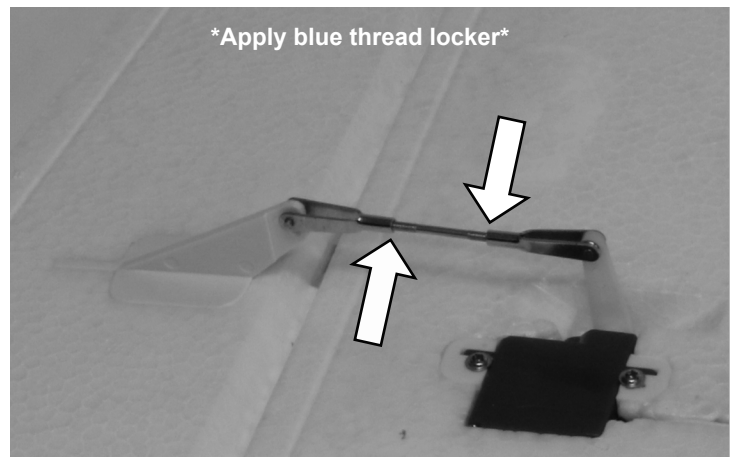
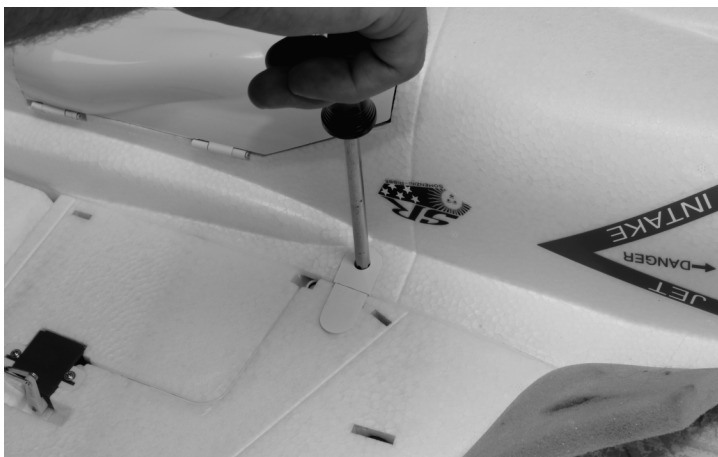
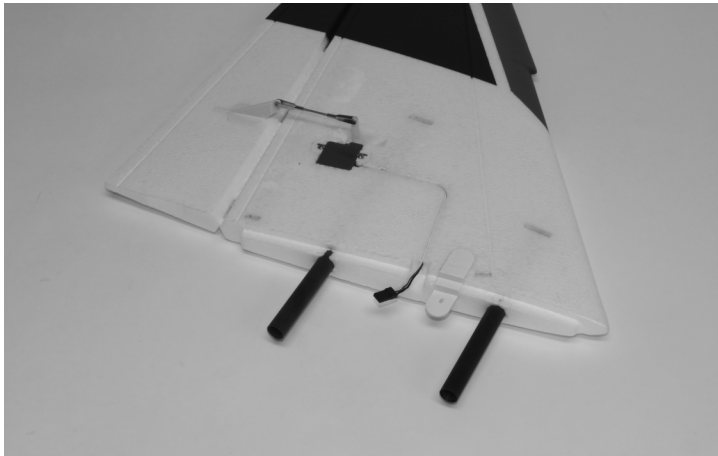
Required Tools and Fasteners:



#1 Phillips Screwdriver
Blue Thread Locker
(2) M3x10 Phillips Head Self-Tapping Screws

Thin CA
15 minute epoxy
CA accelerant (Optional)

1. Apply a small bead of CA to the outer edge of the plywood rib located in the fuselage wing pocket. Note, CA accelerant may be used to expedite curing time. **DO NOT CONTINUE UNTIL CA is fully CURED.**
2. Locate the four carbon fiber wing tubes. Using a **short** tube on each side of the fuselage **near the leading edge** and a **long tube on each side of the fuselage near the trailing edge of the wing**, test fit each wing tube, ensuring the tubes pass beyond the internal plywood supports. Please note, you may lightly bevel the end of the wing tubes on the side that will be inserted into the fuselage using 220 grit sandpaper, to allow the wing tubes to pass through the plywood supports easier.
3. Orient the servos toward the bottom of the fuselage and slide the left and right wing panels half-way onto the fuselage.
4. Connect the aileron servo lead to its respective extension in the fuselage.
5. Fully seat the wing panels into the fuselage, while being careful to align the wing mounting tab with the slot in the fuselage. Be sure to avoid pinching wires during this process.
6. Using a #1 phillips screwdriver, secure each wing panel to the fuselage with a M3x10 phillips head self-tapping screw. **Avoid over-tightening the screw, and do NOT use blue thread locker on this connection.** Once satisfied with the fit, glue the *wing tubes into the wings* for additional strength. Use 15-minute epoxy, to secure the wing tubes to the wing. Use isopropyl alcohol and a paper towel to wipe away any excess epoxy to ensure a flush fit.
7. Power on the radio system. Check the aileron trim by comparing the trailing edge of the aileron relative to the trailing edge of the wing.
8. If adjustment is needed, remove the clevis from the control horn, and turn the clevis. Re-attach the clevis to the control horn and inspect the mechanical trim of the aileron. Repeat this step until the aileron is flush with the trailing edge of the wing.
9. Once satisfied with the mechanical trim of the aileron, **apply a drop of blue thread locker at the point where the clevis and control linkage meet.**

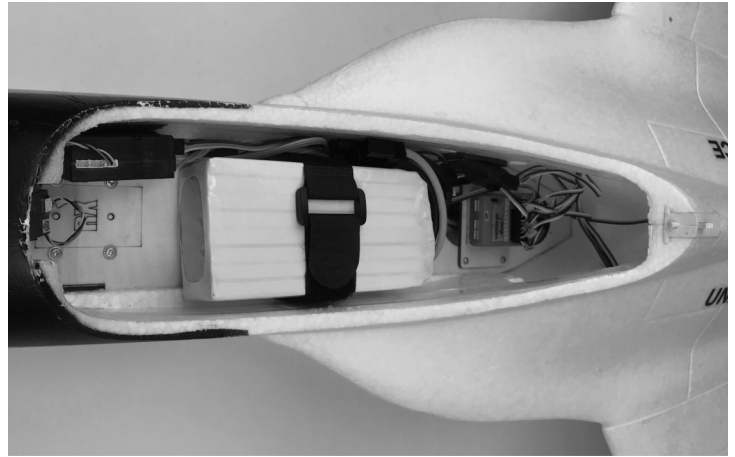
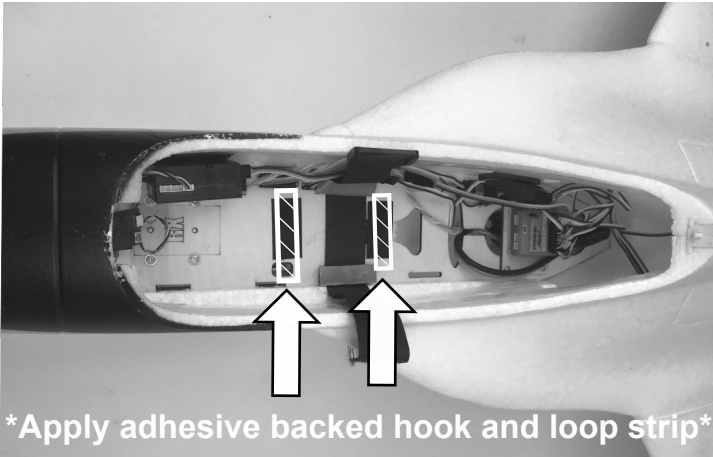


BATTERY INSTALLATION

Required Tools and Fasteners:

- (1) Hook Side Adhesive Backed Hook and Loop Strip
- (1) Hook and Loop Strap

1. Remove the canopy from the fuselage by pulling the canopy latch to the rear of the fuselage and lifting the canopy from the fuselage.
2. Apply a piece of hook-sided adhesive backed hook and loop strip to the battery tray.
3. Place the flight battery in the battery compartment and secure it with a hook and loop strap. Please note, the battery is placed toward the rear of the battery compartment.



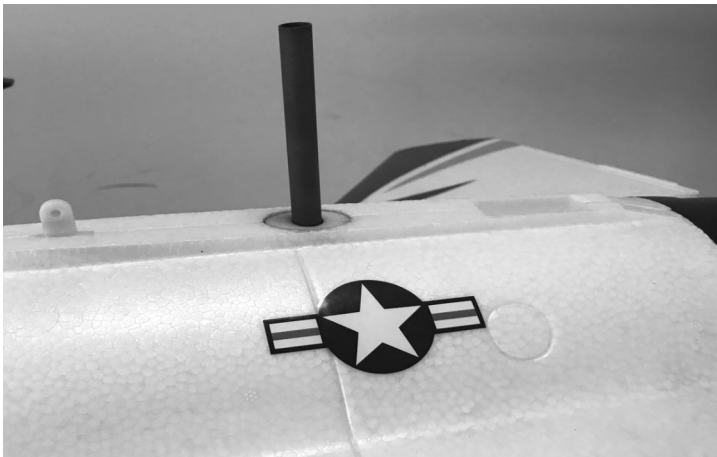
VERTICAL STABILIZER INSTALLATION

Required Tools and Fasteners:



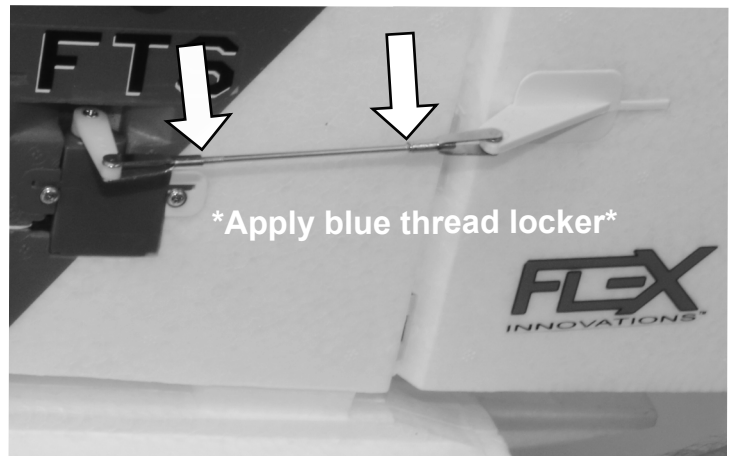
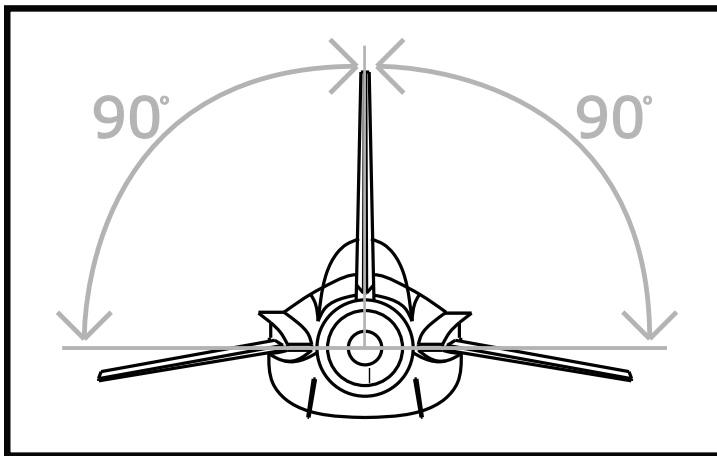
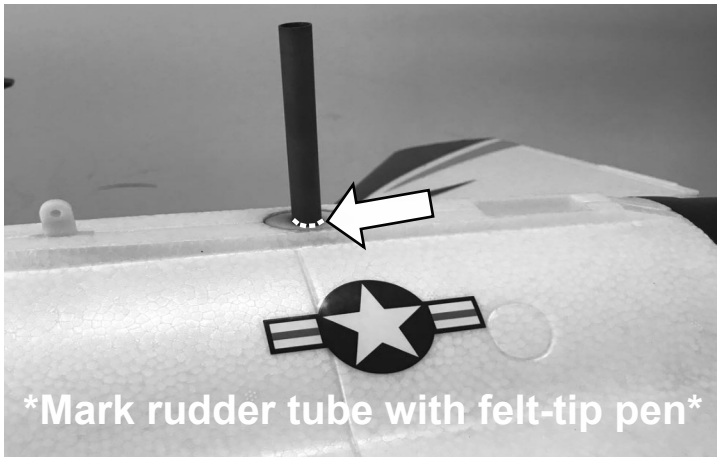
- #1 Phillips Screwdriver, Emery Board, Felt-Tip Pen
- 15-30min Epoxy, Low-Tack Masking Tape
- M3x20mm Phillips Head Self-Tapping Screw

1. Apply a piece of low-tack masking tape to the inside of the fuselage covering the hole for the stabilizer tube.
2. Test fit the carbon fiber vertical stabilizer tube by inserting it into the hole of the fuselage, until it is flush with the bottom of the fuselage (meets the tape applied in step 1). If there is anything obstructing the tube, use a # 11 hobby knife to remove the obstruction.
3. Orient the servo towards the left of the fuselage and slide the vertical stabilizer halfway onto the fuselage. Plug in the rudder servo and fully seat the stabilizer to the fuselage, while being careful to align the stabilizer mounting slot with the tab on the fuselage. Be sure to avoid pinching wires during this process. Secure the stabilizer to the fuselage using a #1 Phillips screwdriver with a M3x20 Phillips head self-tapping screw. **Avoid over-tightening the screw, and do NOT use blue thread locker on this connection.**



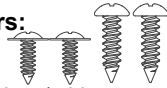
VERTICAL STABILIZER INSTALLATION (CON'T)

4. Position the FlexJet so that it is level. Standing approximately 10-20 feet (3-7 m) behind the aircraft, visually sight the vertical stabilizer, ensuring the installation is true and perpendicular relative to the fuselage. Use a file to fine-tune the plywood tube mount if needed.
5. After ensuring the vertical stabilizer is true, remove the stabilizer.
6. Mark the vertical stabilizer tube at the point where the tube exits the fuselage and remove it from the fuselage.
7. Mix and apply an appropriate amount of epoxy to the hole in the fuselage for the vertical stab tube and apply a thin coat to the tube that will be inserted into the fuselage. Insert the tube so that it is flush with the inner wall of the fuselage (touching the tape applied in step 1). Use a paper towel and isopropyl alcohol to wipe any excess epoxy off of the rudder tube that extends out of the fuselage and the fuselage itself. **Please note, if any excess epoxy remains on the vertical stabilizer tube and/or fuselage it will prohibit a flush fit of the fin to the fuselage as well as make vertical fin extremely difficult to remove. In addition, if the vertical stabilizer tube extends too far inside the fuselage, it will interfere with the thrust tube.**
8. Re-install the vertical stabilizer per step 3 and re-sight the stabilizer per step 4. It may be helpful to apply low-tack masking tape to the stabilizer and fuselage in a manner that temporarily holds the stabilizer in place as the epoxy cures.
9. Power on the radio system. Check the mechanical rudder trim by comparing the trailing edge of the rudder relative to the vertical stabilizer.
10. If adjustment is needed, remove the clevis from the control horn, and turn the clevis. Re-attach the clevis to the control horn and inspect the mechanical trim of the rudder. Repeat this step until the trailing edge of the rudder is centered relative to the vertical stabilizer.
11. Once satisfied with the mechanical trim of the rudder, apply a drop of blue thread locker at the point where the clevis and control linkage meets.
12. Inspect the glue joint of the fuselage and vertical stabilizer tube. If satisfied, remove the low-tack masking tape from inside of fuselage.



EDF ACCESS HATCH, TAIL PIPE, and THRUST VECTORING NOZZLE INSTALLATION

Required Tools and Fasteners:

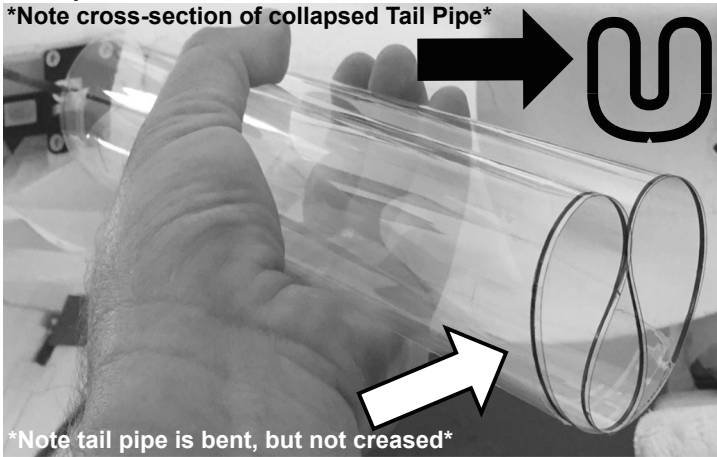


#1 Phillips Screwdriver
(2) M3x10 Phillips Washer Head Self-Tapping Screws, (2) M3x25 Phillips Self-Tapping Screws
General Office Tape

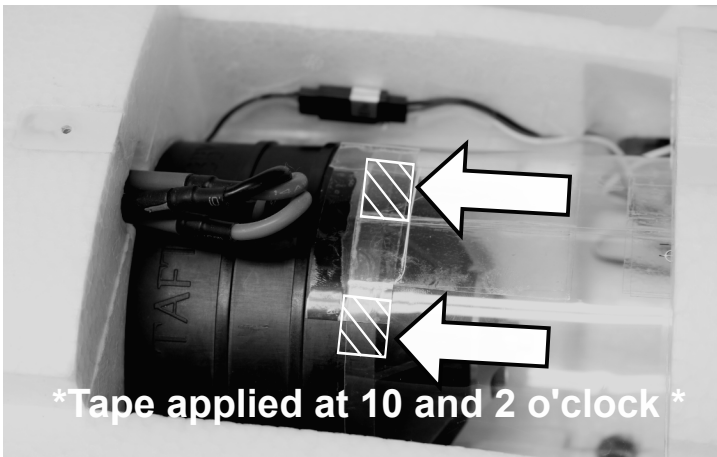
1. Carefully collapse the tail pipe (without creasing) and insert the tail pipe into the fuselage until it reaches the EDF fan housing. **Note, the tail pipe is asymmetrical and can only be installed in one orientation. Make sure the side with the wider opening is inserted towards the EDF fan housing.**
2. Un-bend the tail pipe. Align the tail pipe with the fan housing, and 'tap' on the tailpipe's aft edge with your palm to help it move forward. Slide the tail pipe over the EDF Fan Housing. Note, it may helpful to loosen the 4-EDF Housing screws to allow for more play.
3. Place the TV nozzle over tail pipe onto the fuselage. Secure the TV nozzle using a #1 Phillips screwdriver and (2) M3x25 Phillips self-tapping screws. **Note, the TV Nozzle is asymmetrical and will only fit the fuselage in one orientation. Do not use blue thread locker on this connection.**
4. Slide the tail pipe until it is flush with the end of the exhaust nozzle. Once satisfied with the finish, secure the tail pipe to the EDF fan housing using the two included pieces of clear tape at the 2 and 10 o'clock orientation.
5. Re-Connect the thrust vectoring servos to their respective extensions and secure the EDF access hatch to the fuselage using a #1 screwdriver and (2) M3x10 Phillips washer head self-tapping screws. **Note, the EDF access hatch is asymmetrical and will only fit the fuselage properly in one orientation. Do not use blue thread locker on this connection.**

Please note, a video of the EDF access hatch, tail pipe, and exhaust nozzle installation/reinstallation is available at <http://wiki.flexinnovations.com/wiki/FlexJet>.

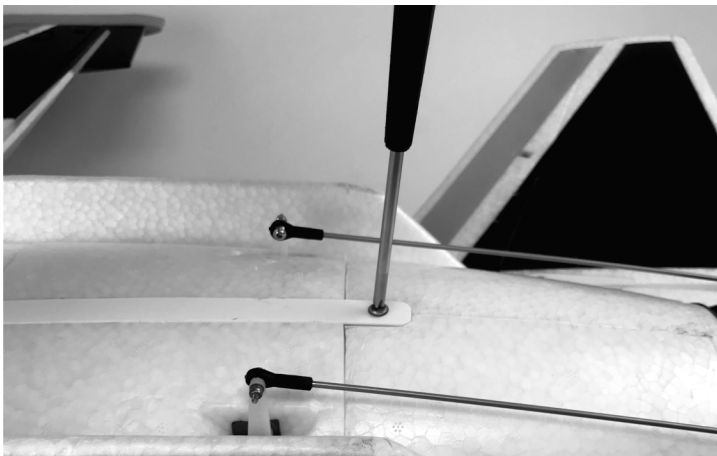
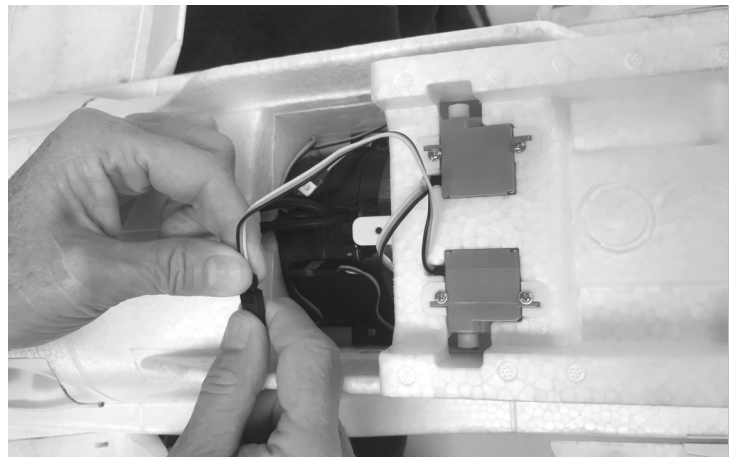
Note cross-section of collapsed Tail Pipe



Note tail pipe is bent, but not creased



*Tape applied at 10 and 2 o'clock *



THRUST VECTOR NOZZLE SETUP

Required Tools and Fasteners:

1. Position the FlexJet TV so that it is level. Standing approximately 10-20 feet (3-7 m) behind the aircraft, visually sight the Thrust Vectoring Nozzle:
 2. The Thrust Vectoring Nozzle should be perfectly centered from the left and right. Adjust the ball links as necessary to correct.
 3. The Thrust Vectoring Nozzle should carry approximately 1/16" (1.5 mm) up thrust at aft edge. Adjust the ball links as necessary to correct.
-

MISSILE RAIL INSTALLATION

Required Tools and Fasteners:

5-min Epoxy or Medium CA

1. Test fit the missile rails to the wings. **Please note, the missile rails are asymmetrical and will only fit properly in one direction.**
2. Mix and apply an appropriate amount of 5-min epoxy to the missile rail and wing. Place the missile rail onto the wing. **Avoid using too much glue as isopropyl alcohol will mar the paint of the FlexJet.**

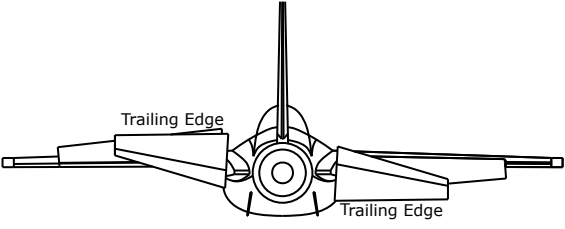
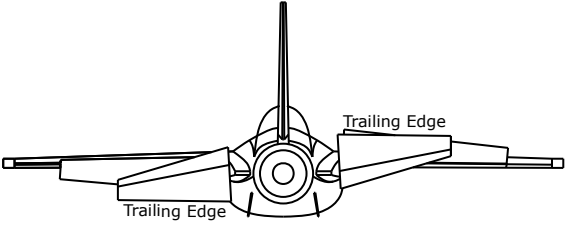
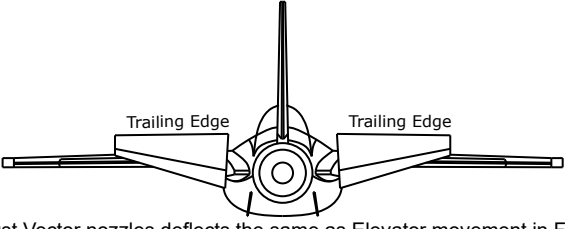
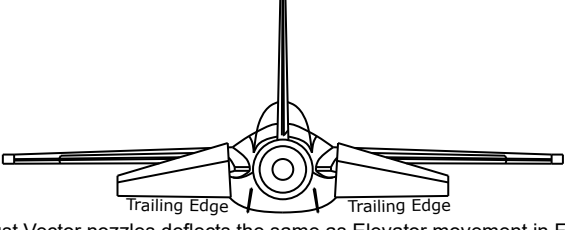
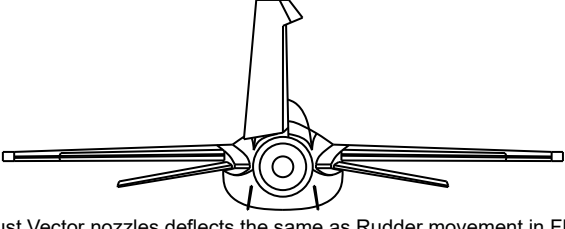
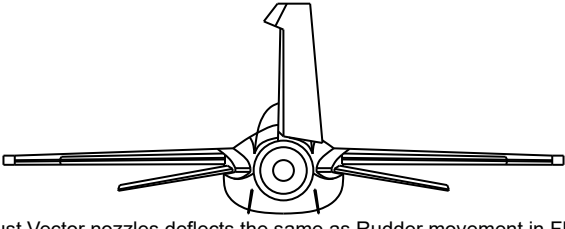


TRANSMITTER CONTROL DIRECTION TEST

Refer to the chart below to determine the proper control surface directions relative to *transmitter stick input*. Please note, control surface movements in the chart have been exaggerated for clarity. It is easiest to test control directions in Flight Mode 3.

If controls are reversed, DO NOT REVERSE CONTROLS IN THE TRANSMITTER OR THE AURA CONFIG TOOL. Email us at support@flexinnovations.com for corrective action. Please note, that BOTH the Transmitter Control Direction Test AND the Flight Controller Sensor Direction Test (page 20) MUST BOTH BE PASSED! IF ONE DOES NOT PASS, DO NOT FLY!

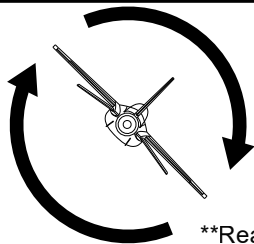
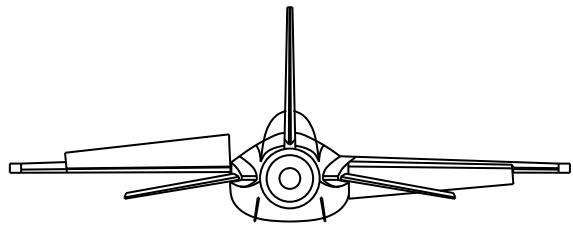
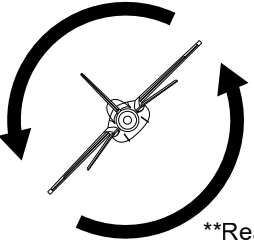
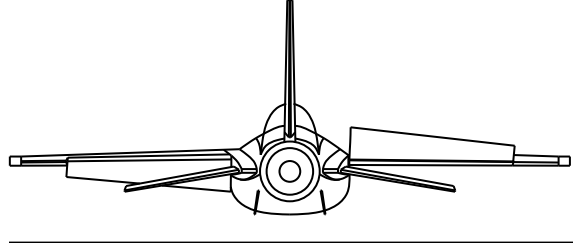
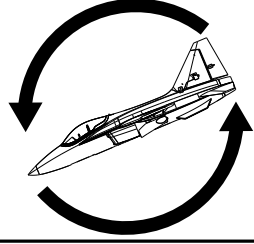
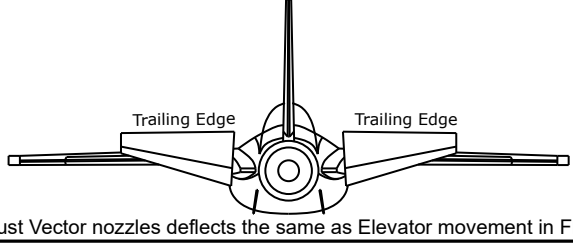
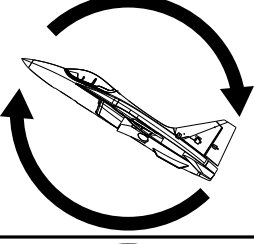
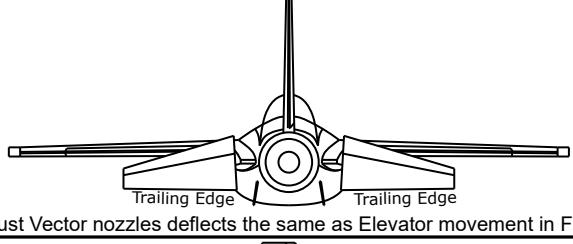
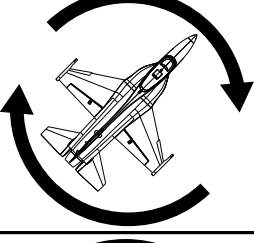
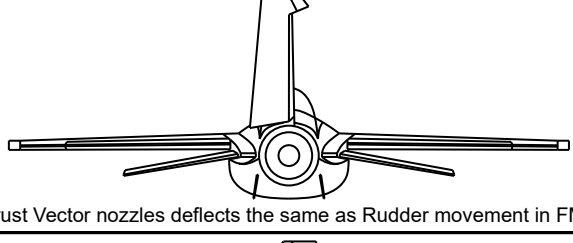
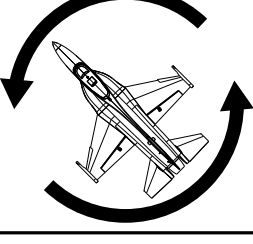
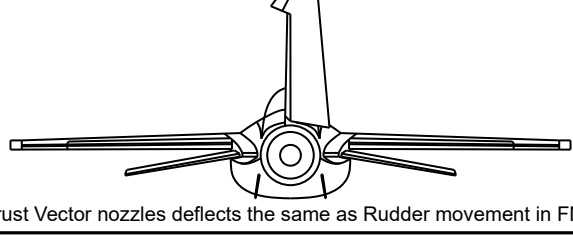
Note: There is pre-configured rudder to aileron and rudder to elevator mixing programmed into the Aura. If you see elevator or ailerons move with rudder stick input, this function is intentional and completely **NORMAL**.

		Stick Movement	Proper Control Surface Deflection
AILERON		Stick Left	
		Stick Right	
ELEVATOR		Stick Aft	 Note, Thrust Vector nozzles deflects the same as Elevator movement in FM2 + FM3
		Stick Forward	 Note, Thrust Vector nozzles deflects the same as Elevator movement in FM2 + FM3
RUDDER		Stick Left	 Note, Thrust Vector nozzles deflects the same as Rudder movement in FM2 + FM3
		Stick Right	 Note, Thrust Vector nozzles deflects the same as Rudder movement in FM2 + FM3

FLIGHT CONTROL SENSOR DIRECTION TEST

Perform a test of the gyro system to verify the corrections made for a given movement are correct. If any of the tests do not result in the correct reaction for the airplane's gyro system, **DO NOT FLY THE AIRPLANE**, and contact us via email at support@flexinnovations.com.

The flight control system activates with RF broadcast. Perform these tests in Flight Mode 3 (higher gain) for better visibility, and then again in Flight Mode 2, and Flight Mode 1. Control surface deflections are exaggerated in the drawings below for clarity. Please note that the control surfaces will move **ONLY** while the aircraft is **ROTATING**.

	Aircraft Movement	Proper Control Surface Deflection
AILERON	 <p>**Rear-View**</p>	
	 <p>**Rear-View**</p>	
ELEVATOR		 <p>Note, Thrust Vector nozzles deflects the same as Elevator movement in FM2 + FM3</p>
		 <p>Note, Thrust Vector nozzles deflects the same as Elevator movement in FM2 + FM3</p>
RUDDER		 <p>Note, Thrust Vector nozzles deflects the same as Rudder movement in FM2 + FM3</p>
		 <p>Note, Thrust Vector nozzles deflects the same as Rudder movement in FM2 + FM3</p>

CENTER OF GRAVITY VERIFICATION

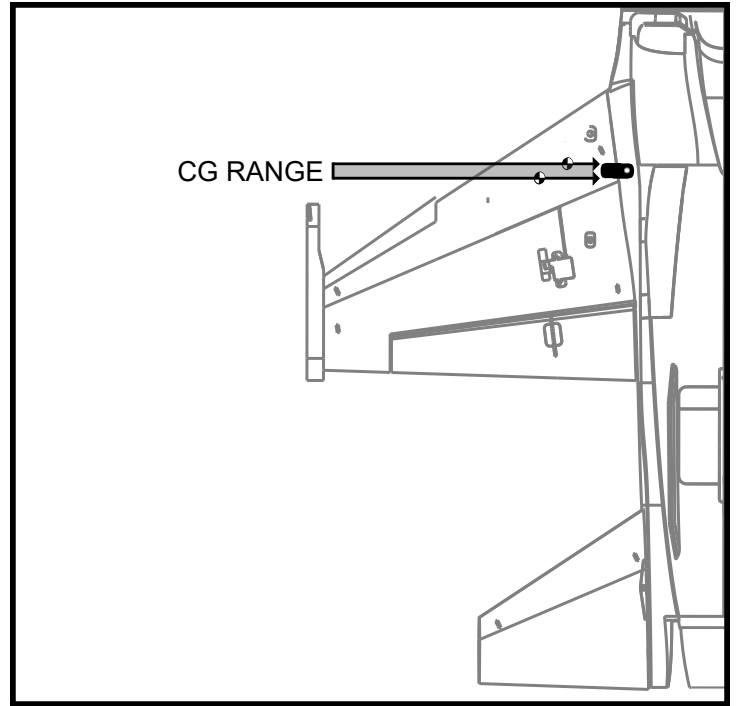
The FlexJet TV has a Center of Gravity (CG) range located from **the forward edge of the plastic wing bolt tab to trailing edge of the plastic wing bolt tab**. CG is measured by lifting the completed airplane upright, with all components installed and **the landing gear in the down position**. This location was determined from numerous test flights by designer and TopGun Champion David Ribbe.

Setting the center of gravity is one of the most important steps for success, particularly with a new airplane. The FlexJet TV is a high-performance airplane that can exceed speeds of 100mph. This makes it a very enjoyable aircraft to fly, but if the CG is not within an acceptable range, it will make the aircraft difficult, if not impossible to control. The desired CG can usually be accomplished by moving the flight battery forward or aft.

After flying the FlexJet TV you may adjust the CG further aft. It is safe and effective to fly the FlexJet TV at ANY CG that allows the nosewheel to stay on the ground. Even if the plane falls to the tail when lifted slightly!

NOTICE

The CG measurement should be made with the completed airframe with all components (batteries, servos, receiver, linkages, hardware, etc.) installed and the landing gear in the down position. Failure to do so will result in an inaccurate measurement.



PRE-FLIGHT CHECKS

To help ensure a successful first flight, as well as many flights after, perform a few simple pre-flight checks to ensure the aircraft is ready for flight.

1. Verify control surfaces are properly hinged and in good working order. Pinch a control surface between your thumb and fore-finger, and stabilize the wing with your other hand. Give the control surface a firm pull away from the wing. The control surface should not come unhinged from the wing. Be sure to avoid over-stressing the part, as an aggressive pull may cause the surface to come unhinged even though it is hinged properly.
2. Verify that all hardware and all other aircraft parts are properly secured. This includes hardware and parts installed by the factory.
3. Verify your battery is fully charged and in good condition. Avoid using batteries with swollen cells, or batteries that do not charge back to their full capacity.
4. Verify the CG is in the proper location, and the battery is secured in place.
5. Ensure the Aura is on and functioning properly. Power on your transmitter, followed by the aircraft. Ensure the Aura is calibrated properly and receiving a valid radio source (solid orange + solid green LEDs).
6. Verify **transmitter stick inputs** result in the proper control surface movements (reference page 19).
7. Verify Thrust Vectoring Nozzle is in correct position at center stick (reference page 18), and moves freely in all directions.
8. Verify aircraft movement results in proper **Aura sensor corrections** (reference page 20).
9. Verify the motor and ESC function properly. Point the aircraft in a safe direction, and away from any objects or limbs that could become entangled in the fan unit. Hold the aircraft firmly so that you are behind the aircraft. Smoothly advance the throttle to full and back to idle. Listen and watch for any odd or unusual behavior from the motor and ESC.

FLYING YOUR FLEXJET TV

Selecting a Flying Site

Selecting a flying site is critical to a successful flight. Airplanes require a lot more room than other R/C products, therefore, a neighborhood or parking lot is not recommended. A local AMA field is the best location for flying your FlexJet TV. If no AMA field is available in your area, a large open field with short grass and generous overfly area is the best candidate. Know your overfly area. Ensure that there are no houses, playgrounds, people or other buildings that may be damaged if the airplane were to crash.



Takeoff

Taxi or place the FlexJet TV on the runway centerline, with the nose pointed into the wind. Select Mode 1, then set throttle trim so that the motor spins at it's lowest RPM without stopping. Smoothly advance the throttle to full while maintaining directional control with the rudder and slight back pressure on the elevator. The FlexJet TV should lift off smoothly once flying speed is attained. Fly in Flight Mode 1 until the FlexJet TV is fully trimmed (**see special trimming instructions**), and you are comfortable with it's handling, then explore the other modes as desired.

Flying

Altitude is your friend on the first flight. Briskly climb to a safe altitude and trim the airplane. The FlexJet TV should fly straight and level at 1/2-3/4 power with no input from the sticks. Try some basic maneuvers, and slowly progress into the FlexJet TV's flight envelope as you become more comfortable with the airplane's flight qualities and perfect your setup. **Note: if at any time, such as after gain adjustments, you experience unexpected control system inputs or oscillations, switch to Flight Mode 1, land, and troubleshoot the issue. (Flight Mode 1 has the smallest sensor inputs with default programming)**

Landing

Be mindful of your flight time and allow adequate battery reserve for a couple of landing attempts, if necessary, on the first few flights. Select Flight Mode 1 and using 0 - 1/4 throttle slow the FlexJet TV to begin a landing approach. On the upwind leg, toggle Ch5/gear switch to deploy the gear. Visually confirm the gear are fully deployed. Once on final approach, smoothly apply up elevator as required to maintain 0-5 degrees of nose high angle of attack. Use throttle to control the descent speed. Once you are close to the ground, gradually reduce the throttle to idle and begin to smoothly apply up elevator as required to maintain 5-8 degrees of nose high angle of attack. The FlexJet TV should gently touch down and roll out with minimal elevator input. **Remember, you can always smoothly advance the throttle to full, and make a go-around to set up for another landing.** You don't have to land on the first attempt.

Trimming

The first several flights on your FlexJet TV should be dedicated to trimming and setup. It is critical the Thrust Vector Nozzle is aligned properly (reference page 18). If not, it will be extremely difficult to properly trim the airplane. Fly the airplane at 2/3 power in Flight Mode 1 and trim for level flight. Land, adjust linkages and return transmitter trim to zero, and fly again. Repeat until the airplane flies hands off, straight and level. Trim or sub-trim added via the transmitter will cause trim shifts when different flight modes are selected. To eliminate this trim shift, you have three options: **(1)** mechanically trim the model by turning the linkage clevises; **(2)** electronically trim the model via Subtrim Feature in the Servo Ports tab of the Aura Config Tool; **(3)** use the "Quick Trim" procedure below.

Trimming the Ailerons

Due to the FlexJet TV's large flight envelope, if your FlexJet is holding about 1/16th of an inch or more (1.5mm) of aileron trim it is likely that your Flexjet's aileron trim will change with speed changes. To properly trim the roll axis and prevent these trim changes, center the ailerons (mechanically or electronically) and use one of the techniques below to move the stabilizers in equal amounts in opposite directions to trim the roll axis: **(1)** mechanically trim the model by turning the linkage clevises; **(2)** electronically trim the model via Subtrim Feature in the Servo Ports tab of the Aura Config Tool; **(3)** use utilize the "Quick Trim" procedure below.

Please reference **page 12** to adjust the flying stabilizers.

Pilots can accomplish this easily using the **Quick Trim** procedure. Start as instructed with the Ailerons perfectly mechanically centered. Fly and trim. Perform the Quick Trim procedure. Aura will put in any AILERON trim (along with Elevator trim) into the tail stabilizers instead of the ailerons, so your ailerons will return to being perfectly centered!

Aura Quick Trim

The Aura 8 features a Quick Trim Mode that eliminates the need for

NOTE: Quick Trim can also be used BEFORE flying to make small changes to adjust the control surfaces before flight.

NOTE: ENSURE AILERON/ELEVATOR/RUDDER SUB-TRIMS ARE ZERO BEFORE FLYING FOR QUICK TRIM PROCESS

1. Fly the airplane in Flight Mode 1. Trim the aircraft with the transmitter and land. **DO NOT CHANGE FLIGHT MODES.**
2. Power off the Aura. Insert a bind plug into Aura Port S3 (you will need to remove the servo lead that is currently in S3). Check the transmitter is on and repower the Aura.
3. Wait 5 seconds for the Aura to completely initialize. Confirm Quick Trim mode is active by checking the Blue LED is slowly flashing.
4. Remove the bind plug from **Aura Port S3**, and re-install the servo that was previously removed into S3. Removing the bind plug stores the current trims in the Aura. The Blue LED will flash quickly after control surface trim values are store. While the trim values are stored in Aura, they are not applied to the control surface(s) until the Aura is repowered.
5. Remove power from the Aura and center all control surface trims on the transmitter.
6. Re-power the Aura. The control surfaces are now adjusted for proper flight trim, even though the trim has been centered on the Transmitter. Switch between other Flight Modes to ensure you do not see any changes in trim.

ADVANCED FLEXJET TV AURA CONFIGURATION

The Aura 8 installed in the FlexJet is equipped with two possible Aura configurations - Stock and Expert. These may be accessed **WITHOUT THE USE OF the Aura Config Tool (WINDOWS-BASED PC OR TABLET programming application)** by using the Aura Quick Set feature.

Description of Expert Profile Aura Flight Modes (FM)

Flight Mode 1 (Sport / Precision):

Gyro gain is set to low. All rates are set to low for sport / precision flight. Exponential is tuned for comfortable flight. Tailerons are active. Thrust Vectoring is active and set to moderate rates.

Flight Mode 2 (Mixed Flying):

Gyro gain is set to medium. All rates are set to medium for mixed flying. Exponential is tuned for comfortable flight. Tailerons are active. Thrust Vectoring is active and set to high rates.

Mode 3 (3D Rate):

Gyro gains are high and tuned for low-speed post-stall flight. All rates are set to highest. Exponential is tuned for comfortable flight. Tailerons are active. Thrust Vectoring is active and set to high rates. **Do NOT fly at High Speed. Doing so may induce gyro oscillations!!**

Each of the modes has been tuned by the Flex Team to offer a solid start. Because tastes in control feel are unique, if changes in rates and expo are needed, adjustments should be made through the **Aura 8, not the transmitter..**

Changes in gain value can only be made through the Aura or via *master gain (if activated)*.

For more information on available Expert Profiles or how to access the Expert program via the Aura Config Tool, please visit:

<http://wiki.flexinnovations.com/FlexJetTV>

Programming Expert Profile with Quick Set

1. Make sure all power is removed from the FlexJet. Be sure to unplug all three motor wires from ESC for safety.
2. Turn on your transmitter. Ensure you are on the correct model memory.
3. Remove the servo lead that is in Aura Port S2.
4. Insert a bind plug into Aura Port S2.
5. Power the FlexJet by plugging a battery into the ESC. The LEDs on the Aura will repeatedly double flash orange. This confirms you have entered Quick Set mode. The Green LED may be flashing, or solid. More information regarding the green LED is below.
6. Use the Aux1/CH6 switch (assigned earlier for Aura Flight Modes) to select the Expert or Stock Aura configurations.

If the green LED on the Aura is **SOLID**, the Aura is set to use the **STOCK** configuration.

If the green LED on the Aura is **FLASHING**, the Aura is set to use the **EXPERT** configuration.
7. You may optionally assign a Master Gain. (Before running Quickset, assign a proportional slider or knob to CH8/Aux3 in your transmitter). Master Gain will default to OFF when Quickset is run. **Sweep the CH8 Down and then UP. The RED LED will illuminate SOLID-ON for Master Gain ON, and OFF for master gain OFF.** Leave in the desired state/choice and continue.
8. Once you have selected your configuration, simply remove the bind plug from S2. All LEDs on Aura will be on while Aura is saving the settings. Once saved, the Aura will go back to its previous LED configuration from step 6. Power off the airplane and Aura, and replace the servo lead back into Aura Port S2.
9. Power on the radio system and verify that all controls function, and that both the transmitter direction test and Aura sensor direction test pass. Familiarize yourself with the new flight modes and their relative switch positions, and enjoy flying with your new flight modes!

The expert program is gyro-enabled in all 3 flight modes. If you wish to use a secondary switch to be able to turn the Aura off, we recommend using the Wizard in the Aura Config Tool, and setting up a Gyro Kill switch.

AIRFRAME REPAIRS

The FlexJet TV is molded from durable EPO foam and is repairable with most adhesives. Similar to building and repairing wood or composite aircraft, the correct glue for a given application is critical to the repair holding and not breaking again. For major repairs, such as a broken fuselage, epoxy is preferred because it allows time to correct any misalignment, and is less brittle than CAs. For smaller repairs, such as a cracked control surface or small chunk of material missing from the airframe, regular CA is very effective. The use of odorless (foam safe) CA is not recommended on EPO foam because it is weaker than regular CA, takes a longer period of time to cure and the bond tends to be weaker.

NOTE: Avoid the use of CA accelerant in repairs. It can damage paint and will weaken the bond of the glue. If CA accelerant is used, be mindful of the locations of CA to prevent premature bonding of parts or bonding a hand or clamp to the airframe.

If a part is damaged too badly to be repaired, please refer to **Page 3** of this manual for a complete listing of available replacement parts.

NOTICE

If a crash is imminent, fully reduce the throttle to prevent further damage to the power system and reduce energy to lessen impact damage.

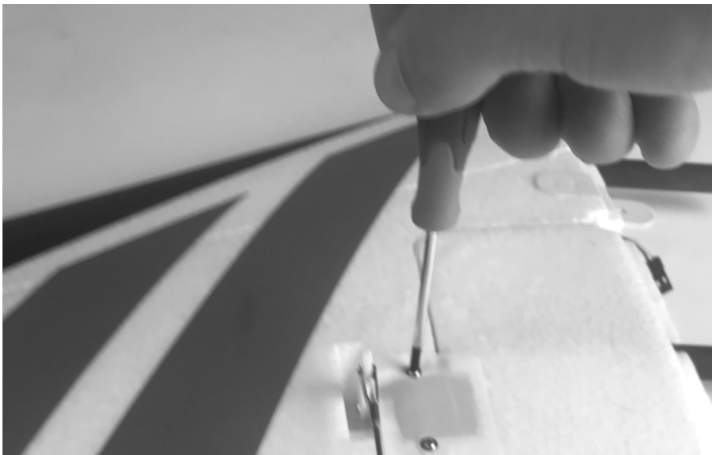
CRASH DAMAGE IS NOT COVERED UNDER WARRANTY

NOTE: Avoid keeping the aircraft in direct sunlight when not flying. Excessive heat can damage the airplane's structure, and UV light can permanently discolor decals.

REPLACING SERVOS

Required Tools and Fasteners: #1 Phillips Screwdriver

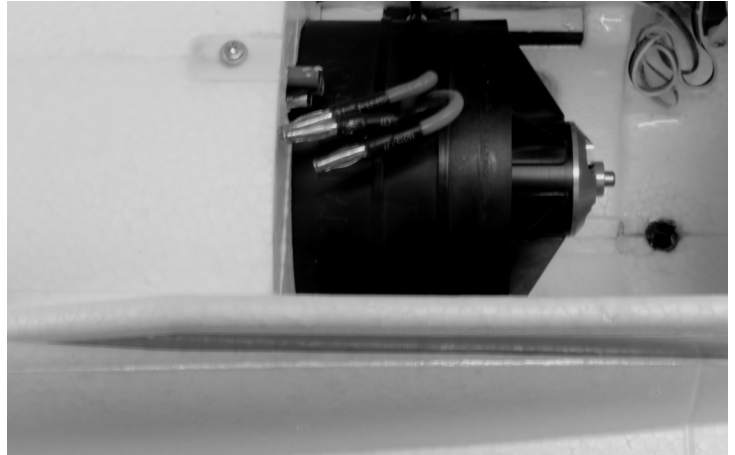
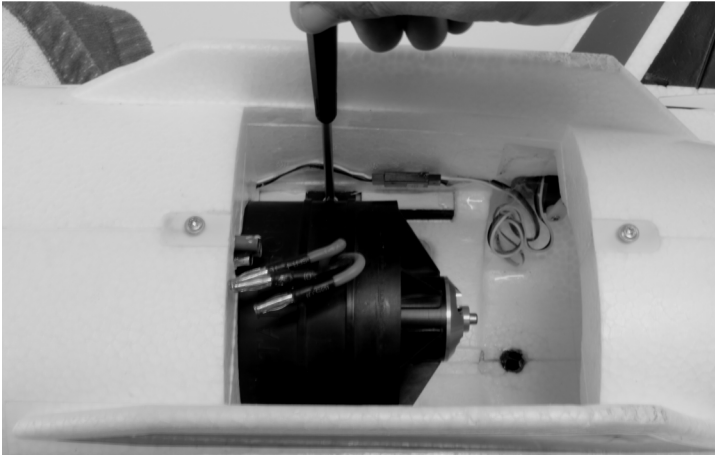
1. Disconnect the servo lead from its respective extension.
2. Unscrew the two servo mounting screws at each end of the servo case and remove.
3. Unscrew the servo arm screw from the servo, and remove the servo arm.



SERVICING THE POWER SYSTEM

Required Tools and Fasteners: #1 Phillips Screwdriver
M3 Hex Driver

1. Remove the access hatch, tail pipe, and thrust vector nozzle and unplug thrust vectoring servos as described on **page 11** of this manual.
2. Unplug the 3-motor wires from the ESC.
3. Using #1 Phillips screwdriver remove the M3x6 phillips washer head sheet metal screws that secure the EDF fan unit to the EDF mounting rails.
4. Using #1 Phillips screwdriver remove the M3x6 phillips machine screw that secures the rotor cone to the rotor.
5. Using an adjustable wrench, remove the M8 nut off of the motor adapter. Slide the motor adapter off of the motor shaft.
6. Using a M3 hex driver remove the (4) M3x6 that secure the motor to the EDF housing.
7. To remove the ESC, disconnect the ESC from the receiver or the Aura 8, and remove any cable ties holding the ESC to the fuselage.



AIRCRAFT TROUBLESHOOTING GUIDE

Should you encounter any abnormal situations with your FlexJet TV, refer to the matrix below to determine probable cause and a recommended solution for the action.

If the required solution does not rectify the problem, please contact product support for further assistance.

! NOTICE

Unless specifically required, ALWAYS troubleshoot the airplane with the motor disengaged by unplugging all three motor leads from the ESC.

DISCREPANCY	PROBABLE CAUSE	RECOMMENDED SOLUTION
Motor nonresponsive (ESC initialization tones audible)	Throttle not at idle and/or throttle trim too high	Lower throttle stick and trim completely. If problem persists, ensure that the sub-trim and travel adjust are properly set in the radio's programming.
	Throttle channel is reversed	Reverse throttle channel in radio programming.
Motor nonresponsive (No ESC initialization tones audible)	Motor disconnected from ESC	Ensure plugs are fully seated. Check battery and/or plugs for damage and replace any damaged components found. DO NOT ATTEMPT TO REPAIR.
Motor turns in the wrong direction	The three motor wires are connected incorrectly to the ESC	Swap any TWO motor wires.
Reduced flight time or aircraft under powered	Flight battery not fully charged	Ensure battery is fully charged prior to installing in aircraft.
	Flight battery is weak or damaged	Remove battery from service and replace with a different battery.
	Ambient temperature is too cold	Ensure battery packs are adequately warm (70°F/21°C) before flight.
	Battery capacity too small for intended use	Replace battery with one of proper capacity and discharge capacity (C rating).
	ESC reaching preset LVC (low-voltage cutoff)	Recharge battery, or reduce flight time.
Excessive fan noise and/or vibration	Battery's discharge rating too low	Replace battery with one of a higher discharge rating.
	Damaged EDF Housing, rotor cone, fan rotor, prop adapter or motor	Replace damaged components. DO NOT ATTEMPT REPAIR.
	Fan rotor is not balanced	Balance or replace the fan.
	Fan adapter is not balanced	Balance or replace the adapter.
	Fan nut is loose	Tighten fan nut with properly sized wrench.
Control surface(s) non-responsive	Spinner is not fully in place or tightened	Loosen the spinner bolt, adjust as required and retighten bolt.
	Rotor cone or fan adapter threads not cut straight	Replace rotor cone or fan adapter. DO NOT ATTEMPT REPAIR.
	Airframe or control linkage system damaged	Replace damaged control system components. DO NOT ATTEMPT REPAIR.
	Transmitter model bound incorrectly, incorrect active model memory, incorrect Aura data input configuration, incorrect transmitter settings	Consult radio manual for proper binding and model selection instructions.
	Battery voltage too low	Use volt meter to check battery. Replace or recharge as necessary.
	Battery disconnected from ESC	Verify that battery is connected, and that the EC5 plugs are fully seated.
Failed control direction test	Battery Eliminator Circuit (BEC) damaged	Replace ESC. DO NOT ATTEMPT REPAIR.
	Damaged servo	Replace servo. DO NOT ATTEMPT REPAIR.
Control surface oscillation	Incorrect transmitter or Aura 8 setting. DO NOT FLY!	Reference transmitter and receiver sections of this manual. If no solution is found, contact customer support at support@flexinnovations.com .
	Exceeding maximum airspeed for configuration	Reduce airspeed.
	Fan rotor / rotor cone not balanced	Balance or replace fan rotor / rotor cone.
	Motor vibration	Inspect motor and motor mounting. Tighten screws as needed or replace motor.
	Loose Aura 8 Mounting	Realign and secure the Aura 8 to the aircraft.
	Excessive control linkage slop or play	Inspect control linkage system and replace components as necessary.
	Improper transmitter setup	Refer to the transmitter configuration guide in this manual to properly configure transmitter settings.
	Damaged rotor cone and/or fan	Replace rotor cone and rotor fan as needed. DO NOT ATTEMPT REPAIR.
Trim changes between flight modes	Improperly set master gain	Ensure master gain is set for proper gain value(s).
	Trims are not properly zeroed	Use Aura "Quick Trim" feature, or mechanically trim the model and reset transmitter trim to zero.
	Sub-trims are not properly zeroed	Use Aura "Quick Trim" feature, or mechanically trim the model and reset transmitter sub-trim to zero.
	Transmitter is out of calibration (aileron/elevator/rudder are not at neutral with sticks centered; reference transmitter monitor screen)	Calibrate transmitter (reference transmitter's instruction manual) or return transmitter to manufacturer for calibration.

LIMITED WARRANTY

Warranty Coverage

Flex Innovations, LLC. and its authorized resellers ("Flex") warrant to the original purchaser that the product purchased (the "Product") it will be free from defects in materials and workmanship at the date of purchase.

Outside of Coverage

This warranty is not transferable and does not cover:

- (a) Products with more than 45 days after purchased date.
- (b) Damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance
- (c) Modification of or to any part of the Product.
- (d) Product not compliant with applicable technical regulations.
- (e) Shipping damage
- (f) Cosmetic damage
- (g) Products that have been partially, or fully assembled
- (h) Crash Damage

OTHER THAN THE EXPRESS WARRANTY ABOVE, FLEX MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HERBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Solution

Flex's sole obligation and purchaser's sole and exclusive remedy shall be that Flex will, at its option, either (i) service, or (ii) replace, any Product determined by Flex to be defective. Flex reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Flex. Proof of purchase is required for all warranty claims. **SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.**

Limitation of Liability

FLEX SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF FLEX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Further, in no event shall the liability of Flex exceed the individual price of the Product on which liability is asserted. As Flex has no control over use, setup, assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law

these terms are governed by Florida law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. **FLEX RESERVES THE RIGHT TO MODIFY THIS WARRANTY AT ANY TIME WITHOUT PRIOR NOTICE.**

Questions & Assistance

Visit www.flexinnovations.com/articles.asp?ID=269 to find customer support in your region.

Inspection or Services

If this Product needs to be inspected or serviced and is compliant in the region you live and use the Product in, please contact your regional Flex authorized reseller. Pack the Product securely using a shipping carton. Please note that original boxes need to be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Flex is not responsible for merchandise until it arrives and is accepted at our facility.

Warranty Requirements

For Warranty consideration, you must include your original sales receipt verifying the proof of purchase date, original packaging materials, including the shipping carton. Provided warranty conditions have been met, your Product will be replaced free of charge. Shipping charges are as follows: shipping to Flex paid by customer, shipping to customer paid by Flex. Service or replacement decisions are at the sole discretion of Flex.

COMPLIANCE INFORMATION FOR THE EUROPEAN UNION



Declaration of Conformity (In accordance with ISO/IEC 17050-1)

Product(s): FlexJet Thrust Vector Super PNP Orange

Item Number(s): FPM3440A

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the EMC Directive 2004/108/EC.

EN 55022: 2010+AC:2011
EN 55024: 2010
EN 61000-3-2: 2006+A2:2009
EN 61000-3-3: 2013

EN 61000-6-3: 2007/A1:2011
EN 61000-6-1: 2007



Instructions for disposal of WEEE by users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where to drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased this product.



Academy of Model Aeronautics National Model Aircraft Safety Code

Effective January 1, 2015

- A. GENERAL:** A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.
- Model aircraft will not be flown:
 - In a careless or reckless manner.
 - At a location where model aircraft activities are prohibited.
 - Model aircraft pilots will:
 - Yield the right of way to all human-carrying aircraft.
 - See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)
 - Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.
 - Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.
 - Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)
 - Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside of affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)
 - Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
 - Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the model.
 - Not operate model aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates hazard to persons or property.

Exceptions:

- Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
 - Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
 - Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718.)
- Not operate a turbine-powered aircraft, unless in compliance with
 - the AMA turbine regulations. (AMA Document #510-A.)
 - Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:
 - The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
 - An inexperienced pilot is assisted by an experienced pilot.
 - When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL (RC)

- All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.
- A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.
At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706.)
 - Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.
 - At air shows or demonstrations, a straight safety line must be established.
 - An area away from the safety line must be maintained for spectators.
 - Intentional flying behind the safety line is prohibited.

- RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
- RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923)
- With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flightline.
- Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.
- RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.
- The pilot of an RC model aircraft shall:
 - Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
 - Fly using the assistance of a camera or First-Person-View (FPV) only in accordance with the procedures outlined in AMA Document #550.
 - Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560

C. FREE FLIGHT

- Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.
- Launch area must be clear of all individuals except mechanics, officials, and other fliers.
- An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.

D. CONTROL LINE

- The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.
- The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.
- Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.
- The flying area must be clear of all utility wires or poles and a model aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.
- The flying area must be clear of all nonessential participants and spectators before the engine is started.

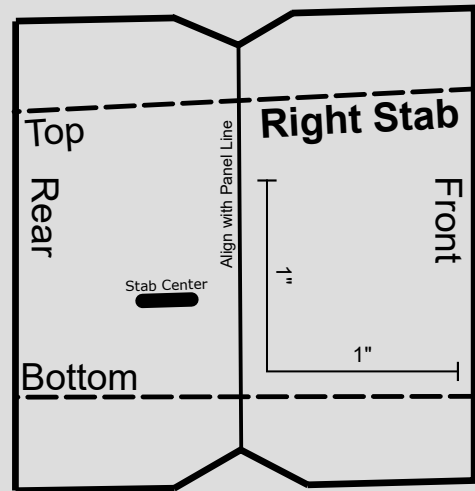
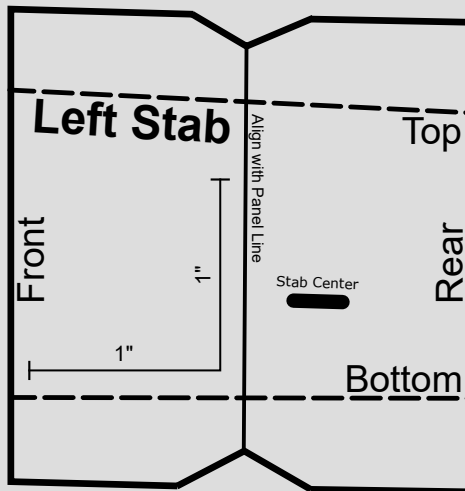
If you are not an AMA member, please consider joining. Founded in 1936 and open to anyone interested in model aviation, the AMA is the governing body for model aviation in the United States and sanctions over 2,000 competitions annually. Membership in the AMA provides liability insurance coverage, protects modelers' rights and interests, and is required to fly at most of the 2,700+ R/C sites nationwide.

Academy of Model Aeronautics
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Fax (765) 741-0057

www.modelaircraft.org



Elevator Trim Gauges



1. Cut-out the elevator trim gauges by cutting around the thick solid line. Do **not** cut through the center line.
2. Fold the elevator trim gauges at the dashed lines.
3. Verify the elevator trim gauges are printed at proper size by measuring the 1 inch vertical and horizontal scale.
4. Please reference page 10, step 3 for use with FlexJet