

**JET HANGAR**  
**INTERNATIONAL, Inc.**

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# **ARF A-7D/E CORSAIR II**



## **EDF INSTALLATION ADDENDUM**

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## 1.0 INTRODUCTION

This addendum documents the procedures for installation of the Electric Turbax Fan System into the ARF A-7 Corsair II and is supplemental to the instruction manual JHI-A7-06-0001.

## 2.0 GENERAL BUILDING TIPS

The ARF A-7 Corsair should be assembled as described by the ducted fan installations in the instruction manual (ailerons, elevator, rudder, retracts, etc.) with the exception of the propulsion installation procedure. This procedure supplements the propulsion system installation making it specific to the Electric Ducted Fan.

## 3.0 EDF SYSTEM

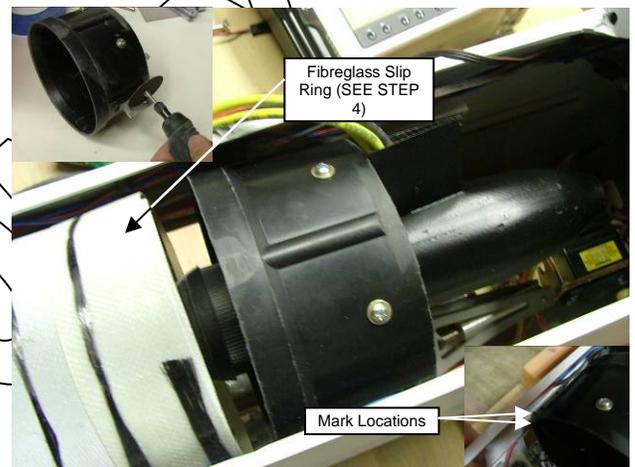
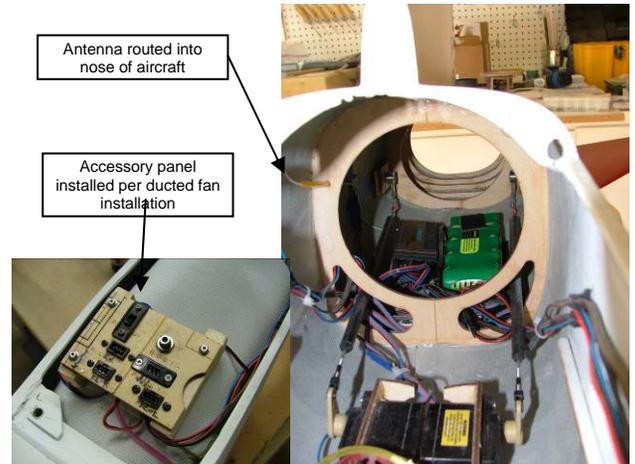
The ARF EDF A-7 Corsair II is designed for use with the Jet Hangar International Electric Turbax Fan System as listed below:

- 1 Electric Turbax Ducted Fan System
- 1 Neu 1521/1.5Y/ Electric Motor (5mm shaft)
- 1 Castle Creations 110HV Electronic Speed Controller
- 2 5s1p 5000 mah Lithium Polymer Batteries

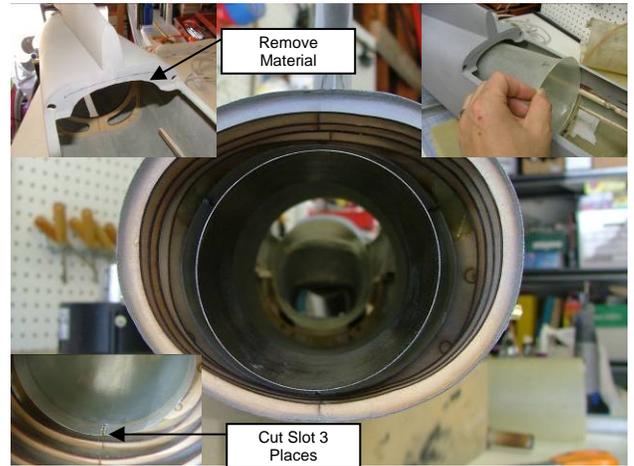


## 4.0 EDF INSTALLATION

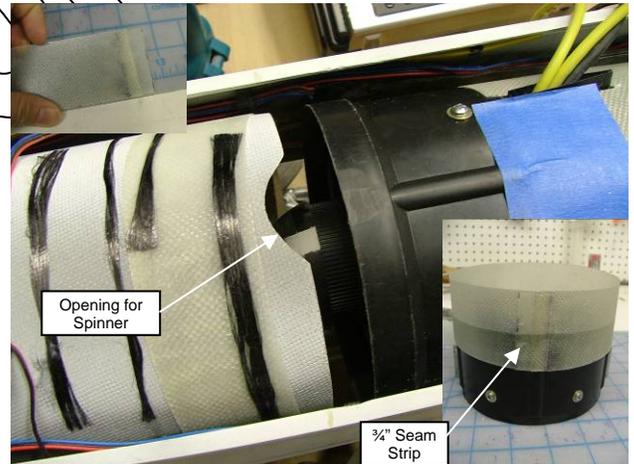
1.  Perform the aircraft hardware installations for the control surfaces and retracts per the ducted fan instruction manual.
  - Route all necessary servo/radio extension leads into the tail of the aircraft.
  - Install the receiver and receiver battery pack into the tail of the aircraft as shown using industrial strength Velcro. **Note:** The prototype model used a larger 5-cell battery pack for purposes of balancing the aircraft.
  - Route the receiver antenna forward into the nose of the aircraft avoiding wherever possible any sources of “noise.” These would be the ESC and battery extension leads.
2.  Assemble the ducted fan unit per the manufacturer’s instructions. **Note:** This aircraft is intended for use with the JHI Electric Turbax Fan System.
  - Trim the aluminum fan mounting rails back  $11/32$ ”; drill new mounting holes. This is for the fan to fit inside the fuselage. **Note:** Drill holes into mounting rails only after test fitting the fan inside the aircraft.
  - Test fit the ducted fan into the fuselage. Trim any interference material (including glue fillets on the wood mounting rails). Set in place. **Note:** The fan shroud is intended to fit inside of the inlet duct.
  - Mark and drill the fan mounting holes in the wood mounting rails installed in the aircraft. Temporarily mount the fan in place. **Note:** The fan should be located such that the fan shroud is clear of the main wheels in the retracted position; this may result in the fan being behind the inlet duct. This is remedied by **step 4**.
  - Before removing the fan for the next steps, mark the location of the trailing edge of the aluminum fan mounts and the trailing edge of the fan shroud.



3.  Locate the two fiberglass exhaust ducts.  
**Note:** It is a two piece duct system with the larger diameter mating to the rear of the fan and tapering down to the smaller diameter at the aircraft exhaust.
- Remove the scale exhaust cone by flexing the fiberglass and removing the three wire pins from their tubes.
- Test fit the rear exhaust liner into the aircraft pushing the liner as far back as possible to achieve a snug fit. **Note:** Remove interference material as required at the trailing edge of the wing saddle to allow duct to slip into place.
- Trim the exhaust side of the liner to fit in place as required. The liner should extend approximately 1- $\frac{1}{4}$ " beyond the rear bulkhead.
- Mark the three locations for the scale exhaust cone attachments. Using a Dremel cutoff wheel, cut slots at each location in the direction of the exhaust flow. **Note:** This is only required if installing the scale exhaust cone into the aircraft for static display or flight.



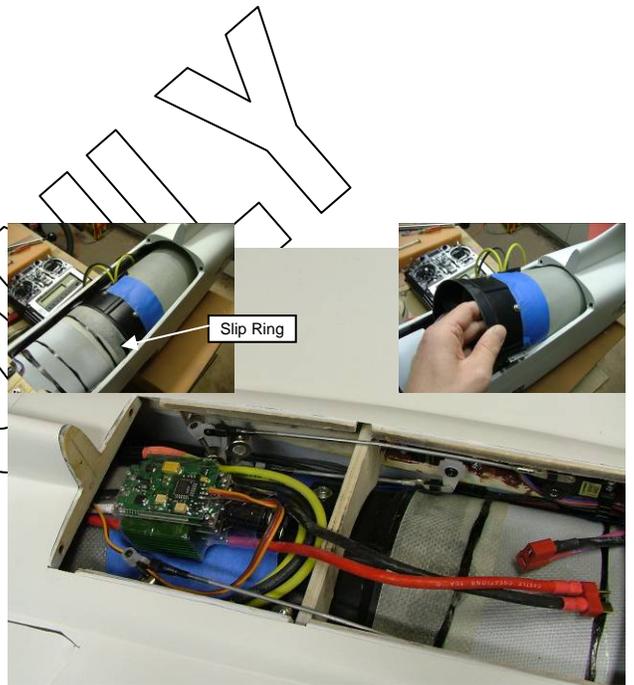
4.  Locate the supplied fiberglass sheet and trim to approximately 1  $\frac{3}{4}$ "-2" in width by 17  $\frac{1}{4}$ " long.
- Wrap the fiberglass sheet around the outside of the front of the fan shroud and mark the crossover location. Cut the fiberglass at the mark. The excess  $\frac{3}{4}$ " strip is used to seam the fiberglass ring in the next step.
- CA the  $\frac{3}{4}$ " strip to the rough side (one side only) of the 2" fiberglass sheet.
- Wrap the fiberglass sheet around the fan shroud and glue the  $\frac{3}{4}$ " strip to the other half side of the fiberglass sheet creating a fiberglass ring.
- Create a slight opening on the trailing edge of the inlet duct. **Note:** This is to allow for the fan spinner to pass through for ease of installation and removal of the fan.
- Install the fiberglass ring over the inlet duct sliding it back to allow the spinner to pass through the opening created.



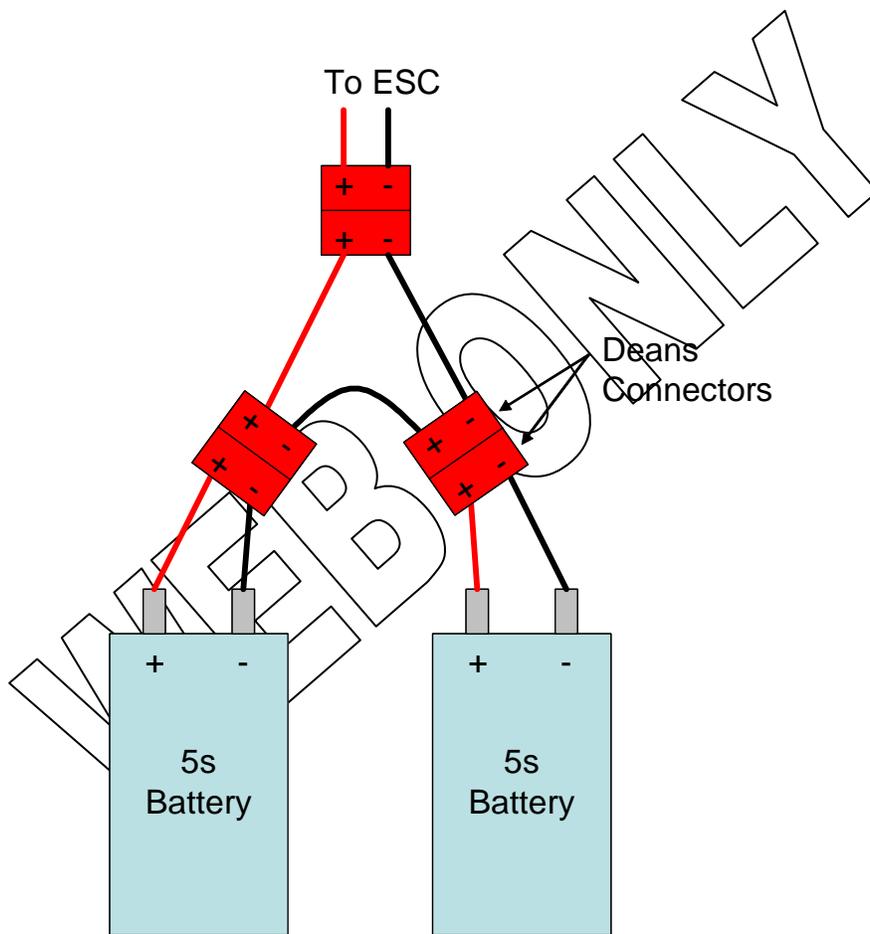
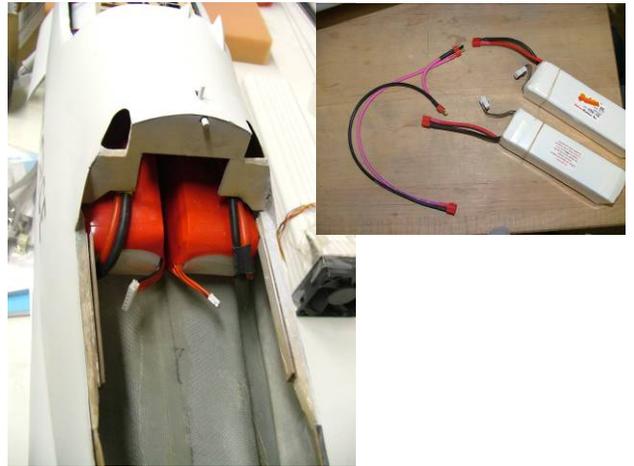
5.
  - With the rear exhaust liner in place, test fit the front exhaust liner in the aircraft. **Note:** The rear of the front exhaust liner has a beveled edge. The top of the liner should orient the bevel angle with the longest side at top, shortest at bottom of aircraft.
  - While in the aircraft, note the location of the fan mounting rails and trim the exhaust liner to fit. **Note:** It is best to split the difference from the front and rear of the exhaust liner. For example, the prototype model required that about 1" be trimmed, 1/2" was trimmed from either end.
  - Carefully cut a tapered slot into the fan interfacing exhaust duct to allow for the hollow stator extension on the fan tailcone. **Note:** The motor wires are routed through the stator extension on the tailcone.
  - Slip the front exhaust liner onto the rear of the fan shroud and tape in place on the top and bottom of the fan.



6.
  - Test fit the fan/liner assembly into the aircraft and slide the slip ring in place over the fan shroud.
  - Note the location of the main wheels in the retracted position on the inlet and slip ring.
  - Cut openings in the inlet liner and slip ring to allow for the main wheels to fully retract. **Note:** Openings should be just enough to allow for the wheels to retract into place. Minimize as much as possible any "over cutting."
  - Install the fan/liner assembly into the aircraft.
  - Slide the fiberglass slip ring forward over the fan shroud so that there is approximately 1/2" of fiberglass overlapping the fan shroud. **Note:** For final installation of the fan unit, tack gluing the slip ring to the inlet duct is recommended to add rigidity and hold it in place. Tack glue only as the ring must be able to be popped free to remove the fan.
  - Install the speed controller into the airplane as shown.



7.  Test fit the two 5s batteries into the nose of the aircraft. **Note:** The batteries are intended to fit on top of the inlet into the turtle deck between the cockpit and leading edge of the wing saddle.
- Check the cg of the aircraft per the instruction manual JHI-A7-06-0001. If necessary, relocate components to achieve cg.
- Create a series connector as shown in figure 1. The 2 5s batteries are to be wired in series to create a single 10s1p battery pack.
- Install the series connector into the aircraft.



**Figure 1: Battery Connection Schematic**

## 5.0 AIRCRAFT SETUP AND CG

Once all aspects of the assembly have been finished, ensure the aircraft is setup and balanced as noted in instruction manual JHI-A7-06-0001. Note these are recommended start values for the first flights. These can be tailored to suit personal preferences as desired once the initial flights have been completed.

## 6.0 FLYING THE EDF A-7 CORSAIR II

The EDF ARF A-7 Corsair II is a high performance R/C electric jet aircraft. It has been designed for scale accuracy and flight performance. The aircraft flies like a high performance trainer as it is extremely stable in all axes of flight. Capable of high speeds upwards of 140-160 mph with the E-turbax fan, the aircraft also retains excellent slow speed handling. The high lift provided by the A-7's fixed droop leading edge, coupled with trailing edge flaps, allows for very positive control at incredibly slow flight speeds. The aircraft possesses a long glide, making it very docile to land while the high lift wing requires only moderate take-off speeds to become airborne. Target weight with EDF is 12.5-13 lbs.

### 6.1 Range Check

Perform the range check with the antenna down and with the propulsion system off and also running. If unable to achieve a good range check or if any glitching is noted, rerouting of the receiver antenna and relocation of some of the electronics may be required.

### 6.2 Power System

Check the power levels of the propulsion system installed in the aircraft. The recommended Electric Turbax setup will run approximately 87 amps and 3100 watts using a 20c 5000 mah 10s1p lithium battery. This setup is good for approximately a 4-1/2 minute flight depending on throttle usage. Note that if one were to fly full throttle for the duration of the batteries and able to achieve a continuous 87 amp current draw (current draw does decrease over time), this equates to 3.4 minutes of run time on the system. Additionally, for best results and longevity of the batteries, it is best to use up to 90% of the battery charge in a flight as fully discharging the batteries can result in cell imbalances and damage the battery packs.

### 6.3 First Flight

When accelerating the aircraft down the runway for takeoff, carry a very slight amount of up elevator during the ground roll. The reason is two fold: first, it will desensitize the nose wheel steering and, secondly, it will maintain positive attitude on the ground roll. Note that the EDF A-7 will accelerate very rapidly on the takeoff at full throttle and is able to get airborne from pavement in about 100

feet. Once in the air, get a feel for the control of the aircraft prior to exercising any maneuvers. Additionally, spend a good portion of the flight at partial throttle to maximize the flight time. Perform some slow flight and check how the aircraft responds to the different flap settings before attempting to land with flaps. With the correct amount of flap/elevator mixing, the aircraft should not change trim with flap deflections. **Lastly, it is recommended the first flight be limited to 3-3.5 minutes using full throttle for takeoff and a select few passes only.** Recharging the batteries will show the amount of capacity used during the flight which can be used to gauge the time for the next flight. The average current draw for the flight can be determined by dividing the amount of capacity used (in amp hours) by the flight time (in hours). In general, full throttle should be used for high speed passes and maneuvers while throttling back on the downwind.

This is a very easy flying aircraft which we hope you will enjoy! If we can help in any way, please do not hesitate to contact us.

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