

# AEROWORKS

WORLD CLASS AIRCRAFT

30cc *Extra* **260**  
*Freestyle*

## SPECIFICATIONS

**WING SPAN 79 INCHES**

**WING AREA 1175 SQ. IN.**

**FUSE LENGTH (RUDDER TO FRONT OF COWL) 66"**

**FUSE LENGTH (RUDDER TO SPINNER) 69"**

**COWL WIDTH 8.5"**

**SPINNER 3"**

**WEIGHT 10.5-11 LBS**

**ENGINE 30cc-35cc GAS**

**RADIO 4 CHANNELS MINIMUM**



AEROWORKS WORLD CLASS AIRCRAFT

**QB-L**  
QUICK BUILD LIGHT

# TABLE OF CONTENTS

	<u>Page</u>
Aeroworks Contact Information .....	2
Introduction .....	2
Warranty Information .....	2
Kit Contents .....	3
Items Needed To Complete .....	4
Tightening and Re-shrinking Covering .....	6
Checking Glue Joints .....	7
Aileron Servo Installation .....	7
Stabs/Elevator Assembly.....	11
Rudder installation .....	14
Rudder Servo/Pull-Pull Installation .....	15
Tail Wheel Installation .....	21
Main Landing Gear & Wheel Pant Installation ....	24
Engine Installation .....	25
Throttle Servo Installation .....	28
Choke Installation .....	30
Ignition Installation .....	31
Fuel Tank Installation .....	32
Cowl Installation .....	37
Radio and Battery Installation .....	41
Preflight Preparations .....	42
Inner/Outer SFG Installation .....	44
Decal Installation .....	46
Checking CG w/ "CG Buddy" .....	47
Control Throws .....	48
Flying the 30cc Freestyle Extra 260 .....	50
30cc Freestyle Extra 260 Materials List .....	52
Optional Accessories .....	54

# CONTACT INFORMATION



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## INTRODUCTION

Thank you for choosing the Aeroworks 30cc Extra 260 Freestyle QB-L. We put great effort into making this plane the best model you will ever build and fly. Aeroworks has provided you with the highest quality kit and performance possible. We wish you great success in the assembly and flying of your new Aeroworks 30cc Extra 260 Freestyle ARF-QB-L

Great care has been taken in both the design and manufacturing of the 30cc Extra 260 Freestyle ARF-QB-L to allow for the strongest and lightest construction possible. Only the highest quality materials from the covering, paint, wood and hardware have been used in the construction of this model.

The 30cc Extra 260 Freestyle ARF-QB-L has been individually hand built, covered and painted by trained and experienced craftsmen with over 25 years of manufacturing experience. CAD design, laser cutting technology and jig-built parts assures accuracy in all stages of production.

# WARRANTY

Aeroworks manufacturing guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no case shall Aeroworks liability exceed the original cost of the purchased kit. Further, Aeroworks reserves the right to change or modify this warranty without notice.

In that Aeroworks has no control over the final assembly or materials used for final assembly, No liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability. Aeroworks does not accept any responsibility for structural failure.

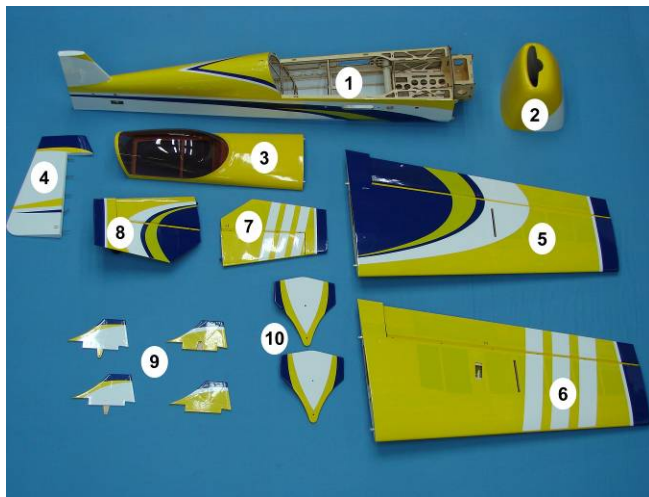
### Warranty Period

It is important to notify Aeroworks of any damage or problems with the model within 30 days of receiving your airplane to be covered under warranty. All returned parts must be shipped in their original shipping boxes and insured for full replacement value. If you wish to return this aircraft for any reason a 15% restock fee will be charged to the customer. In addition the customer is responsible for all return shipping cost and all prior shipping cost will not be refunded. Parts will be fixed or replaced once the original item is returned at the owner's expense. It is the decision of Aeroworks if the item is to be replaced or repaired.

Aeroworks cannot insure the skill of the modeler and can not influence the builder during the construction or use of this aircraft, and therefore, will not be accountable for any property damage, bodily injury or death caused by this aircraft.



## KIT CONTENTS MAIN ASSEMBLY

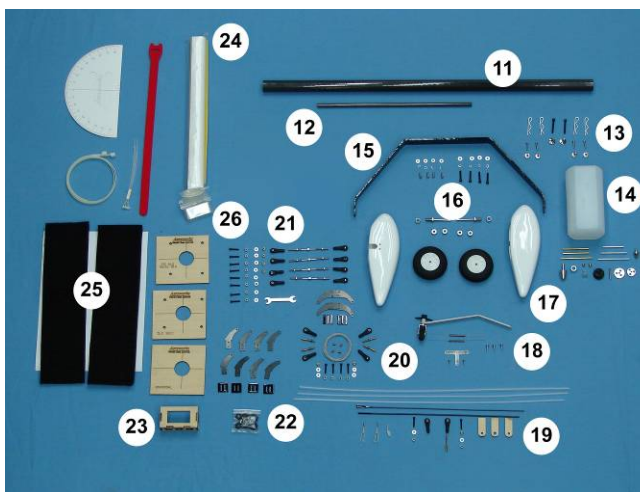


<u>Item Number</u>	<u>Item Description</u>	<u>Part Number</u>
1	Fuse	AFREX260YB30F
2	Cowl w Mounting Bolts	AFREX260YB30CO
3	Canopy/Hatch Assembly	AFREX260YB30CH
4	Rudder w/Hinges	AFREX260YB30RH
5	Left Wing w/Aileron	AFREX260YB30LW
6	Right Wing w/Aileron	AFREX260YB30RW
7	Right Stab w/Elevator	AFREX260YB30RE
8	Left Stab w/Elevator	AFREX260YB30LE
9	Inner SFG Set	AFREX260YB30IS
10	Outer SFG Set	AFREX260YB30OS

## SPARE PARTS

Spare parts can be ordered directly through Aeroworks. Please use the part numbers and item descriptions listed in the kit contents list above to order.

## KIT CONTENTS SUB ASSEMBLY



<u>Item Number</u>	<u>Item Description</u>	<u>Part Number</u>
11	Carbon Fiber Wing Tube	AFREX260YB30WT
12	Carbon Fiber Stab Tube	AFREX260YB30ST
13	Wing/Stab Mounting Hardware	AFREX260YB30WH
14	15oz Fuel Tank w/ hardware	AFREX260YB30FT
15	Carbon Landing Gear w/ hardware	AFREX260YB30CL
16	Main Wheel w/ Axles	AFREX260YB30MA
17	Wheel Pants	AFREX260YB30WP
18	Aluminum Tail Wheel	AFREX260YB30AT
19	Throttle Pushrod Set	AFREX260YB30TP
20	Pull Pull Assembly	AFREX260YB30PA
21	Pushrod Set w/ Ball Links	AFREX260YB30PB
22	Carbon Control Horn Set	AFREX260YB30CC
23	Throttle Servo Mount	AFREX260YB30SM
24	Replacement Covering	AFREX260YB30RC
25	Foam/Velcro Mounting Pack	AFREX260YB30FV
26	Laser Cut Engine Mounting Templates	AFREX260YB30LE

## ULTRACOTE™ COLORS

Your model is covered with Ultracote™ covering. In case of repairs, the colors are:

Yellow/Blue Scheme	
Bright Yellow	#872
Midnight Blue	#885
White	#870



# HARDWARE NEEDED TO COMPLETE

## Engine Option 1: DLE 30

- ◇ 1 - DLE 30 Rear Carb w/ 60mm Standoffs
- ◇ 1 - J'Tec Wrap Around Pitts Muffler
- ◇ 8 - Fender Washers
- ◇ 8 - Engine mounting bolts
- ◇ 1 - 18x8 Propeller



## Engine Option 2: DLE 35RA

- ◇ 1 - DLE 35RA w/ 60mm Standoffs
- ◇ 1 - Stock DLE 35RA Muffler
- ◇ 8 - Fender Washers
- ◇ 8 - Engine mounting bolts
- ◇ 1 - 19x8 Propeller



## Servo Option 1 : Sport Performance

Hitec 7985MG Servos may be used for sport flying. If flying more aggressive aerobatics please see Servo Option Two below.

**Note:** Servos available through Aeroworks

- ◇ 5 - Hitec 7985MG Servos for flight surfaces
- ◇ 1 - Hitec 635HB Servo for throttle



## Servo Option 2: Unlimited Performance

Hitec 7954SH Servos are recommended for unlimited flying. These servos will provide the best performance possible.

**Note:** Servos available through Aeroworks

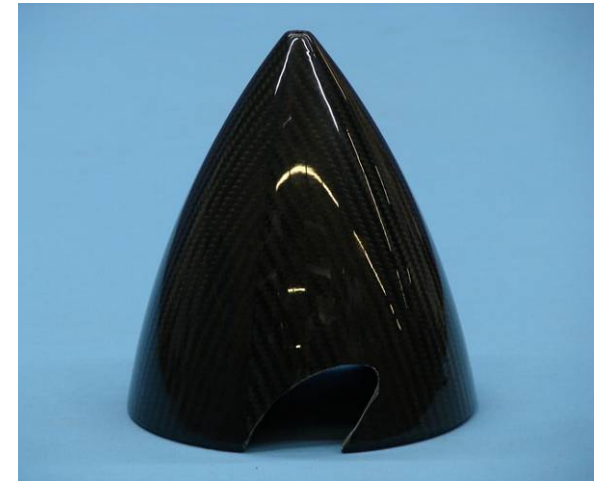
- ◇ 5 - Hitec 7954SH Servos for flight surfaces
- ◇ 1 - Hitec 635HB Servo for throttle



## Recommended Spinner:

- ◇ 1 - 3" Carbon Spinner

**Note:** Spinner available from Aeroworks



## Electronic Accessories : Receiver

A 6 or 8 channel receiver is recommended, using a receiver with 6-8 channels will allow the builder to mix both the aileron and elevator servo together in the radio. Mixing these functions will result in a great flying, well trimmed airplane.

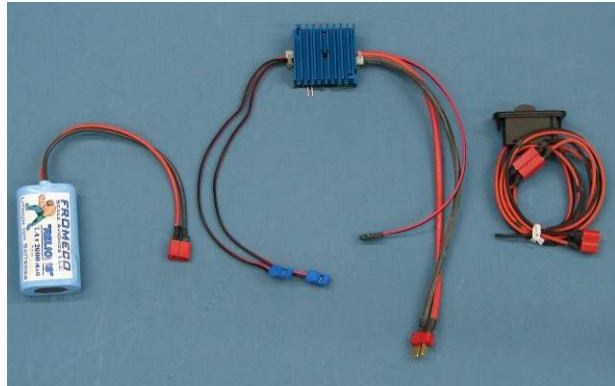
- ◇ 1 - 6-8 Channel 2.4 GHz or PCM Receiver



## Receiver Power System:

The Aeroworks 20cc-30cc Power Package is recommended. The package consists of the following items:

- ◇ 1 - Fromeco Sahara Regulator w/Deans in 2 JR out
- ◇ 1 - Fromeco 2600mah Li-Ion Battery w/ Deans
- ◇ 1 - Smart-Fly Super Switch HD w/ Deans



## Ignition Power System:

If using the DLE 30 or any other gas engine the Aeroworks Ignition Power System is recommended

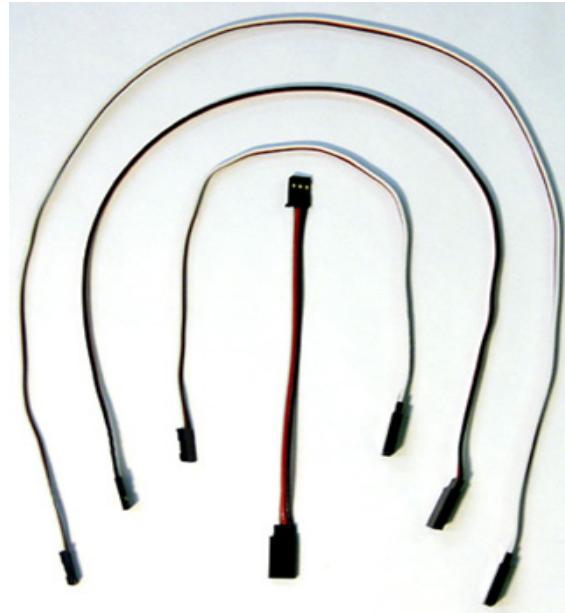
- ◇ 1 - Fromeco 2600mah Li-Ion Battery w/ Universal Connector
- ◇ 1 - Smart-Fly Ignition Regulator
- ◇ 1 - MPI charge switch



## Recommended Extensions:

22 AWG extensions are recommended throughout the 30cc Freestyle Extra 260 QB-L. The following sizes will be used:

- ◇ 2 - 3" Extensions For Receiver to Ailerons
- ◇ 2 - 6" Extensions For Ailerons
- ◇ 2 - 24" Extensions For Elevators



## **TOOLS & ADHESIVES NEEDED TO COMPLETE**

- Allen wrenches US and Metric.
- Electric drill and selection of bits
- Razor saw
- Flat head screwdriver
- Hobby heat gun
- Hobby iron and covering sock
- Masking tape
- Modeling knife
- Needle nose pliers or crimping tool
- Paper towels
- Pen, pencil or felt tipped marker
- Phillips screwdriver
- Rubbing alcohol
- Ruler and tape measure
- Scissors
- T pins
- Wire Cutters
- Blue Loctite
- CA kicker (optional)
- Thick, Thin and Medium CA
- Rubbing alcohol
- Wipes

**WARNING**  
Some rubbing alcohols  
may attack painted parts.





## TIGHTENING AND RESHRINKING THE COVERING

1. Open your kit slowly and take care not to damage any parts of the kit. Remove all parts from their plastic protective covers for inspection. Before doing any assembly or installation of any decals it is very important to re-shrink or re-tighten the already applied covering. Due to the shipping process, heat and humidity changes from different climates, the covering may become loose and wrinkle in the sun. If you take the time to re-tighten the covering, you will be rewarded with a long lasting beautifully covered model.



2. Using your covering iron with a soft sock, gently apply pressure and rub in the covering. If any bubbles occur, your iron may be to hot. Reduce heat and work slowly.



3. If bubbles persist, use a small pin to punch holes in the bubble to relieve trapped air and reheat.



4. Use your heat gun with extreme caution. Take care not to apply too much heat to one area for long periods of time. This may cause the trim colors to over shrink and pull away leaving unsightly gaps on the color lines. The trim stripes are especially vulnerable to over shrinking.



5. Go over all seams and color overlaps with your sealing iron.



- Go over all hinge gaps to ensure there are no wrinkles. Excessive wrinkles in the hinge line can cause binding and or damage to the covering.



## CHECKING GLUE JOINTS

- Go over all seams and glue joints with thin CA, this will ensure your model lasts for many seasons to come.

**Note:** Even if you can visibly see glue on all glue joints it is still recommended that the joints be reglued. Due to changes in humidity during the life of the aircraft glue joints can separate, it is always recommended that the glue joints be checked before each flying session.



- Use thin CA on the front canopy mounting tabs as shown. **DO NOT** install canopy on the fuse until glue has fully cured. Failure to do so may cause canopy to be permanently glued to the fuse.



## AILERON SERVO INSTALLATION

- The ailerons have been pre-hinged and **glued** to the wing panels and are ready for flight. No other steps are necessary for hinging.

### Required Parts

- ◇ 2 - Double Truss Carbon Control Horns- Single Output
- ◇ 1 - Control Horn Base Plate
- ◇ 1 - 3" 4-40 Adjustable Pushrod
- ◇ 2 - 4-40 Ball Links
- ◇ 2 - 4-40 Bolts
- ◇ 2 - 4-40 Lock Nuts
- ◇ 1 - Brass Spacer
- ◇ 1 - 3mm Flat Washer

### Required Parts-Not Included

- ◇ 1 - Aileron Servo
- ◇ 4 - Servo Mounting Screws (Micro Fastener Part number **STW0209** recommended)
- ◇ 1 - 1 1/4" Servo Arm
- ◇ 1 - 6" Servo Extension
- ◇ 1 - Aeroworks Safety Clip

### Required Tools and Adhesives

- ◇ 80 Grit Sandpaper
- ◇ 5 Minute Epoxy
- ◇ Hobby Knife
- ◇ Ball Point Pen





2. Use 80 Grit Sandpaper to scuff the carbon control horn and base plate where it will be glued to the aileron as shown below.



3. Assemble the pushrod and control horn assembly as shown. The ball link goes between the left and right sides of the control horn sides and is secured with a nylon lock nut. Brass spacer goes between servo arm and ball link and is not installed between the right and left control horns.



4. Place aileron control horns into the pre-cut slot with the base plate installed. Use a ball point pen to mark the location of the base plate as shown below.



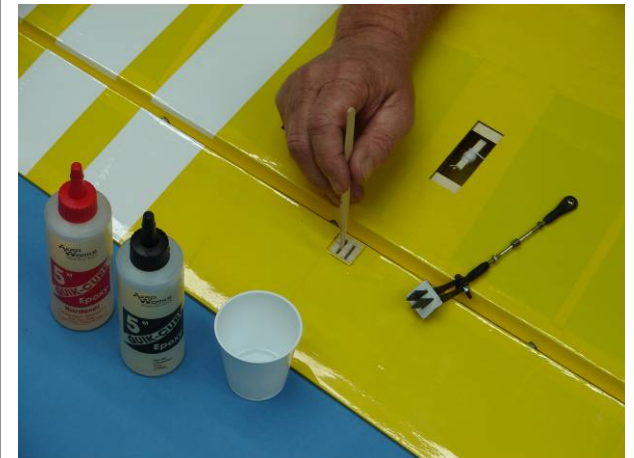
5. Use a hobby knife to carefully remove the covering. Take care not to cut too deep and damage the wood underneath the covering.



6. Final picture of removed covering shown below.



7. Apply 5 minute epoxy into the control horn mounting slots and the base plate mounting location as shown.

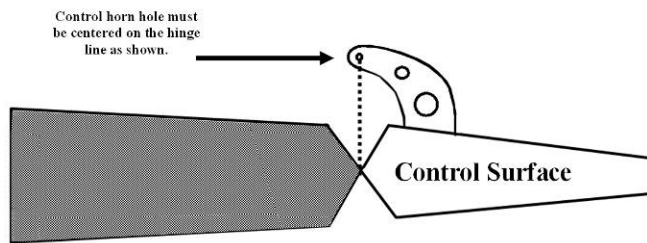




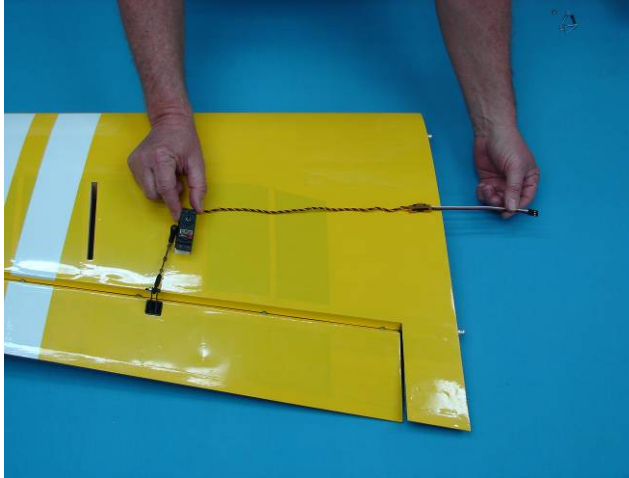
8. Place aileron control horn into the pre-cut slot. Wipe away any excess epoxy that may have come out at this time. Ensure that the base plate is making full contact with the aileron at this



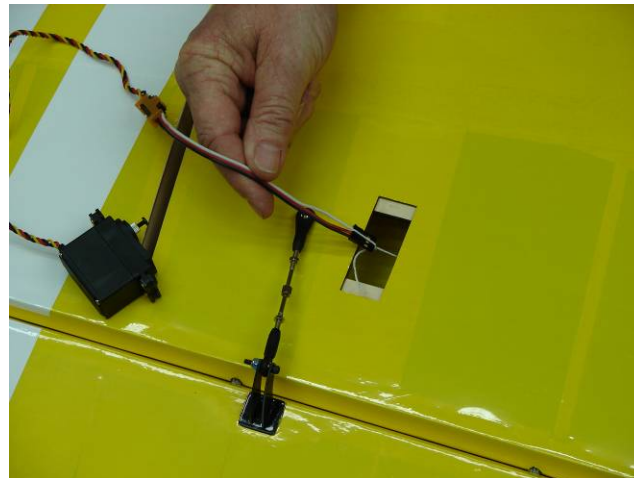
9. With aileron centered in natural position, ensure the mounting hole of the control horn is centered on the hinge line as shown. Double check this alignment while the epoxy cures, it is very important that the control horn is correctly aligned with the hinge line.



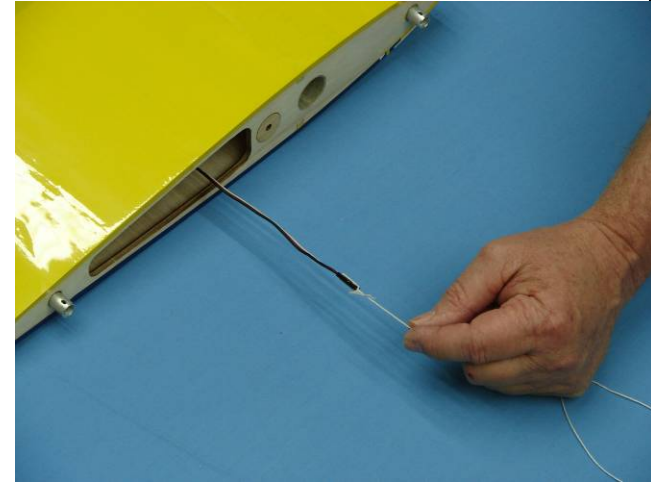
10. Layout the servo as shown below. Install the extension at this time and double check extension length.  
11. Attach the 6" servo extension to the servo wire and secure using an Aeroworks Safety Clip.



12. Fasten the pull string from the servo hole to the male plug of the servo extension.



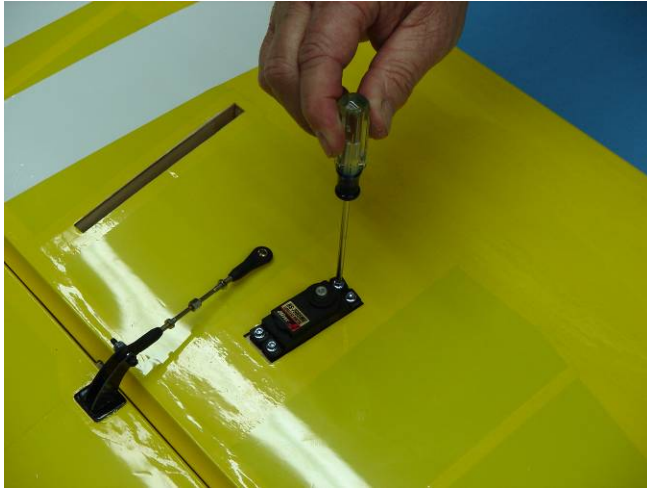
13. Pull aileron servo extension through root end of wing.



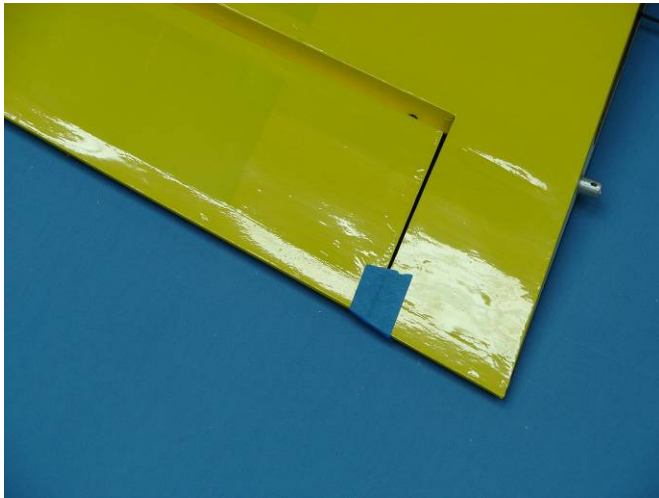
14. Install servo in servo well with the output arm toward the leading edge of the wing. Drill holes for servo mounting screws.



15. Install servo with servo mounting screws. Repeat servo installation process for remaining aileron servo.

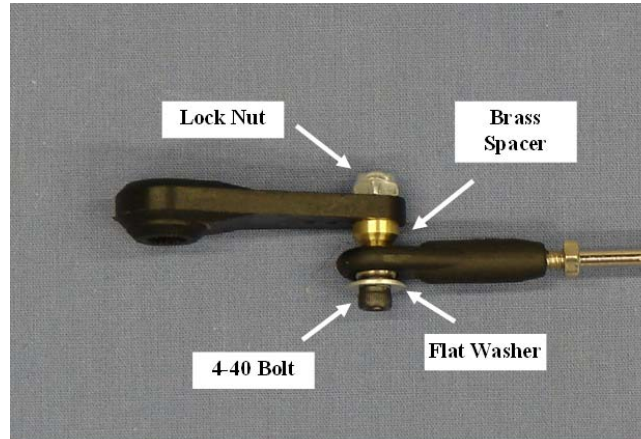


16. Tape the aileron in place as shown. This will help keep the aileron centered while making the initial linkage adjustments.



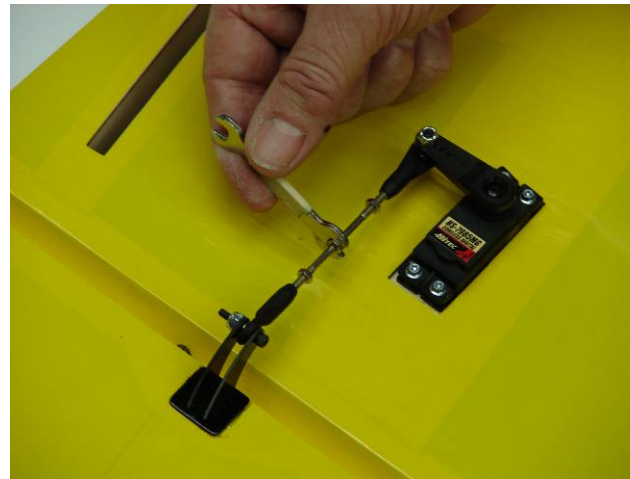
17. Install ball link to 1 1/4" servo arm, correct installation of ball link to servo arm shown below.

**Note:** Flat washer will prevent ball link from coming loose from brass ball.



**Note:** Flat washer prevents ball link from coming off brass ball

18. A pushrod adjustment wrench has been included, this will allow the pushrod length to be extended or shortened without removing the servo arm. Adjust the pushrod length so the control surface is neutral when the servo arm is 90 degrees to the servo case.



19. Final aileron servo installation shown below, repeat all previous steps for the remaining wing assembly.

**Note:** On metal geared servos use Loctite for all servo arm mounting screws.

**Builders Tip:**

If using Hitec Servos, replace Phillips head servo arm screw with a socket head screw. This will allow for easier removal at a later date. These screws can be purchased from Micro Fasteners part number: **SCM2508**





# STAB AND ELEVATOR ASSEMBLY

1. The elevators have been pre-hinged and **glued** to the stabs and are ready for flight. No other steps are necessary for hinging. Gather the items shown below for the elevator linkage installation

## Required Parts

- ◇ 2 - Double Truss Carbon Control Horn- Single output
- ◇ 1 - Control Horn Base Plate
- ◇ 1 - 2.5" 4-40 Adjustable Pushrod
- ◇ 2 - 4-40 Ball Links
- ◇ 2 - 4-40 Bolts
- ◇ 2 - 4-40 Lock Nuts
- ◇ 1 - Brass Spacer
- ◇ 1 - 3mm Flat Washer

## Required Parts-Not Included

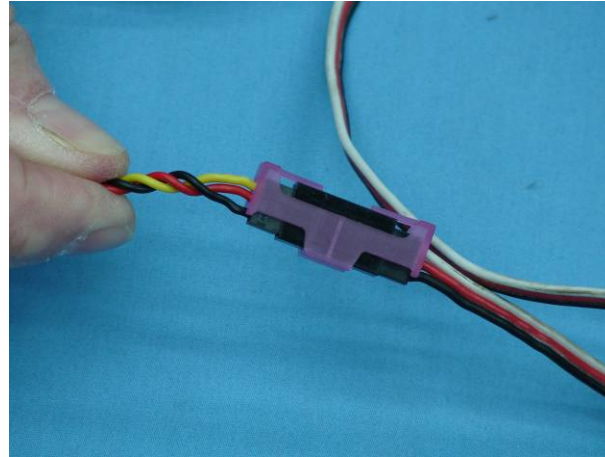
- ◇ 1 - Elevator Servo
- ◇ 4 - Servo Mounting Screws (Micro Fastener Part number **STW0209** recommended)
- ◇ 1 - 1 1/4" Servo Arm
- ◇ 1 - 24" Servo Extension
- ◇ 1 - Aeroworks Safety Clip

## Required Tools and Adhesives

- ◇ 80 Grit Sandpaper
- ◇ 5 Minute Epoxy
- ◇ Hobby Knife
- ◇ Ball Point Pen



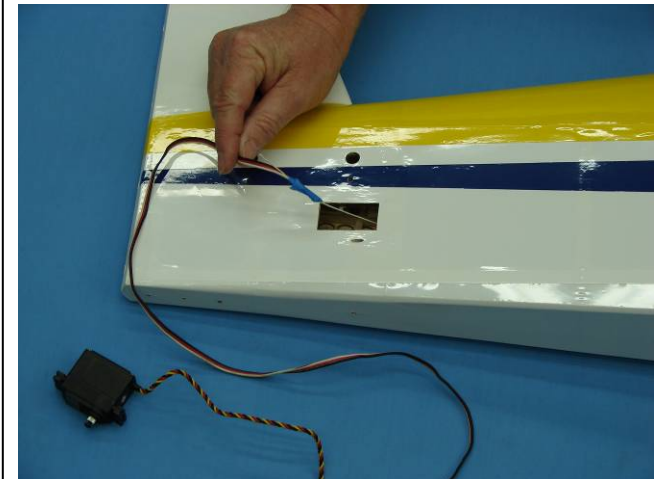
2. Attach the 24" servo extension to the servo wire and secure using an Aeroworks Safety Clip.



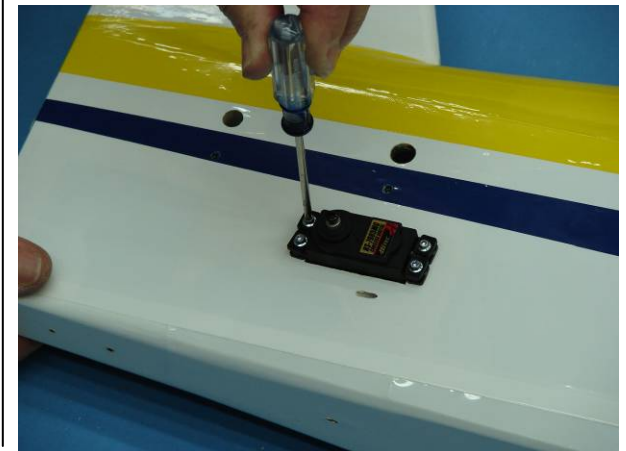
3. Lay out servo and extension to verify servo extension length before installing servo.



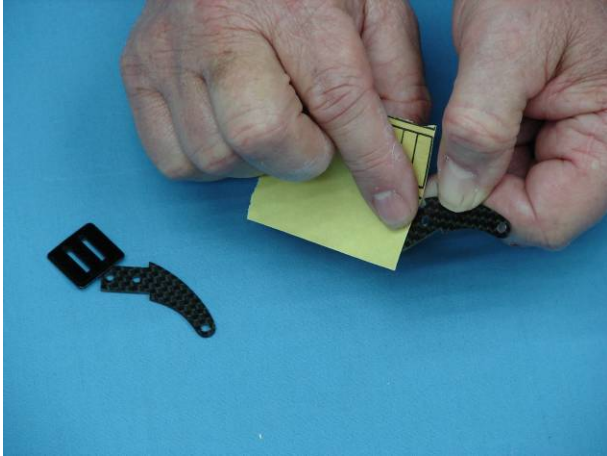
4. Attach elevator servo extension to pre-installed pull string as shown.
5. Pull servo extension through fuse and into radio compartment.



6. Install servo in servo well with the output shaft towards the rear of fuse as shown below.
7. Using a 1/16" drill bit, drill holes for servo screws.
8. Install servo with servo mounting screws



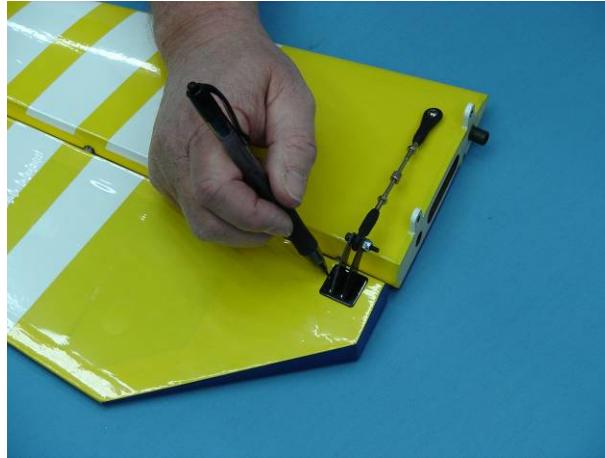
9. Use 80 grit sandpaper to scuff the carbon control horn and base plate where it will be glued to the elevator as shown below.



10. Assemble the pushrod and control horn assembly as shown. The ball link goes between the left and right sides of the control horn sides and is secured with a nylon lock nut. Brass spacer goes between servo arm and ball link and is not installed between the right and left control horns.



11. Place elevator control horns into the pre-cut slot with the base plate installed. Use a ballpoint pen to mark the location of the base plate as shown below.



12. Use a hobby knife to carefully remove the covering. Take care not to cut too deep and damage the wood underneath the covering.



13. Final picture of removed covering shown below

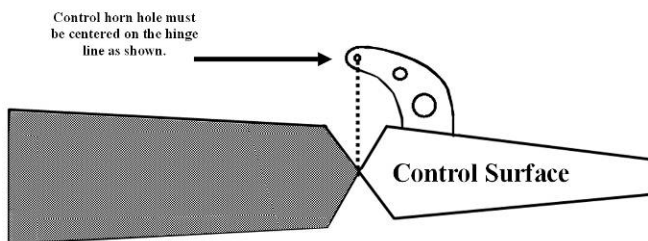


14. Apply 5 minute epoxy into the control horn mounting slots and the base plate mounting location as shown.





15. With elevator centered in natural position, ensure the mounting hole of the control horn is centered on the hinge line as shown. Double check this alignment while the epoxy cures, it is very important that the control horn is correctly aligned with the hinge line.

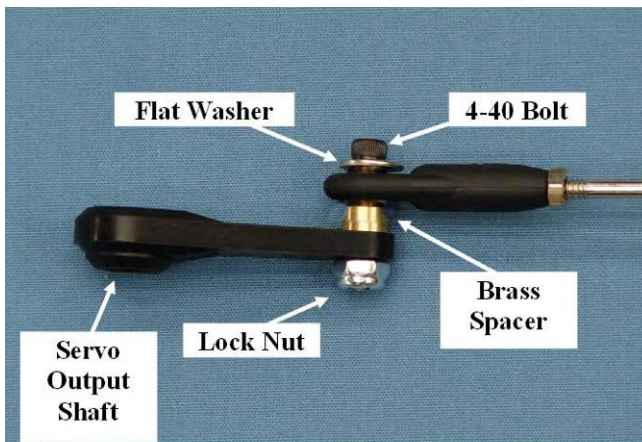


16. Tape the elevator in place as shown. This will help keep the elevator centered while making the initial linkage adjustments.



17. Install ball link to 1 1/4" servo arm, correct installation of ball link to servo arm shown below.

**Note:** Flat washer will prevent ball link from coming loose from brass ball.



**Note:** Flat washer prevents ball link from coming off brass ball.

18. A pushrod adjustment wrench has been included, this will allow the pushrod length to be extended or shortened without removing the servo arm. Adjust the pushrod length so the control surface is neutral when the servo arm is 90 degrees to the servo case.

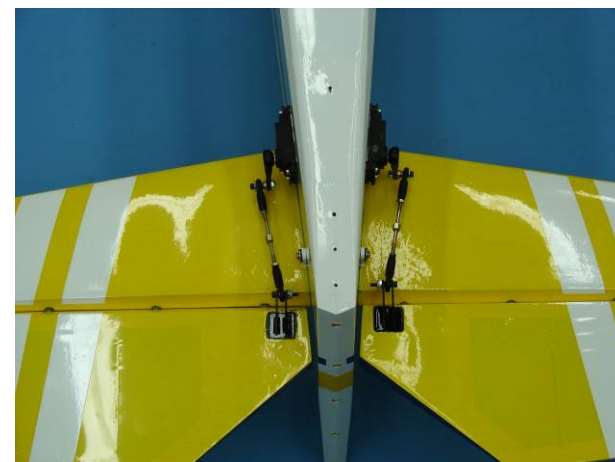


19. Final elevator servo installation shown below. Repeat all previous steps for the remaining elevator assembly.

**Note:** On metal geared servos use Loctite for all servo arm mounting screws.

**Builders Tip:**

If using Hitec Servos, replace phillips head servo arm screw with a socket head screw. This will allow for easier removal at a later date. These screws can be purchased from Micro Fasteners part number: **SCM2508**



# RUDDER INSTALLATION

1. Gather the items shown below for the installation of the Rudder.

## Required Parts

- ◇ 1 - Rudder
- ◇ 5 - Hinge Points

## Required Tools and Adhesives

- ◇ 30 Minute Epoxy
- ◇ Epoxy Mixing Cups/Sticks
- ◇ Petroleum Jelly
- ◇ Isopropyl Alcohol
- ◇ Paper Towels

### Builders Tip:

Wet paper towels with isopropyl alcohol before starting rudder installation. This will make cleaning any excess epoxy easier once the rudder is installed.



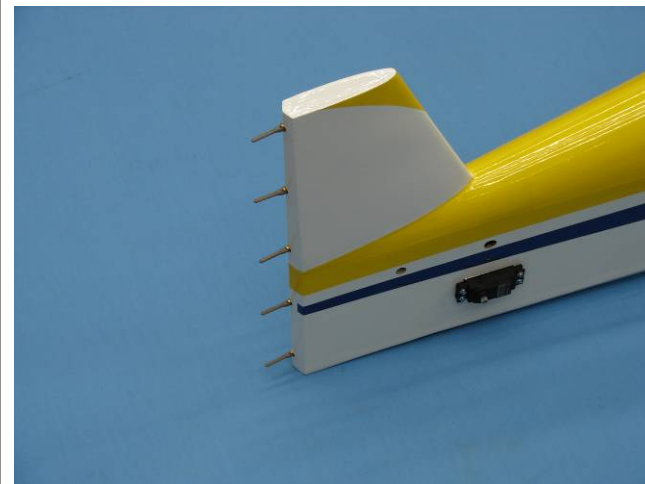
2. Prep all hinges for installation by applying petroleum jelly or light oil to the hinge joint. This ensures no epoxy gets into the hinge during assembly.



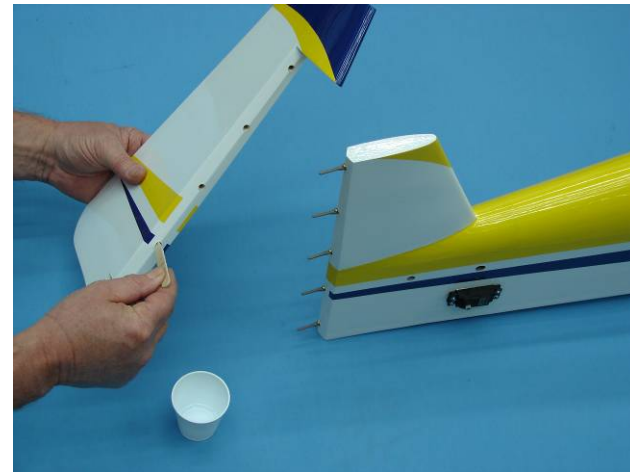
3. Mix epoxy in mixing cup and use a tapered stick to apply the epoxy inside the pre-drilled holes in the trailing edge of the fin. Apply epoxy to one side of each hinge and insert the hinge completely into the hole. Ensure the hinge axis is vertical and parallel to the trailing edge of the fin before epoxy cures. Wipe away excess epoxy with alcohol wetted wipes.



4. Epoxy the hinges into the fin first and allow epoxy to fully cure.



5. Mix epoxy in mixing cup and use a tapered stick to apply the epoxy inside the pre-drilled holes in the leading edge of the rudder. Apply epoxy to trailing edge of each hinge.
6. Carefully slide the rudder onto each hinge and against the trailing edge of the fin. Wipe away excess epoxy with alcohol wetted wipes.





7. Ensure there is no gap between fin and rudder. Allow epoxy to fully cure. Check that you have full rudder deflection before epoxy fully cures.



## RUDDER SERVO/PULL-PULL INSTALLATION

1. Gather the items shown below for the installation of the rudder servo and pull-pull cables.

### Required Parts

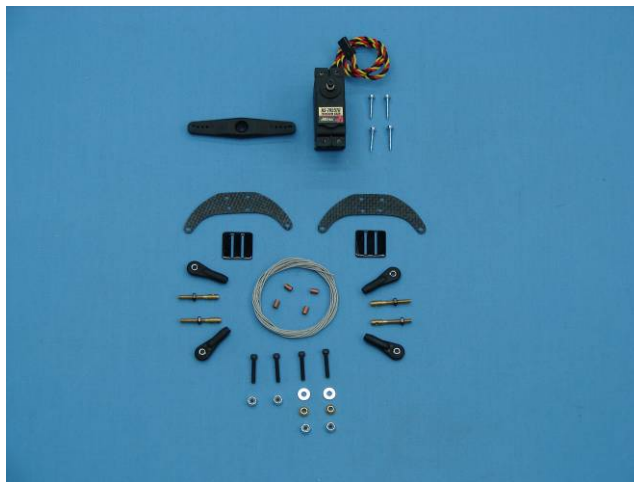
- ◇ 2 - Double Truss Carbon Control Horns- Dual output
- ◇ 2 - Control Horn Base Plates
- ◇ 2 - Pull-Pull Cables
- ◇ 4 - Brass Swag Tubes
- ◇ 4 - 4-40 Ball Link Couplers
- ◇ 4 - 4-40 Ball link Assemblies
- ◇ 4 - 4-40 x20mm Bolts
- ◇ 4 - 4-40 Flat Washers
- ◇ 4 - 4-40 Lock Nuts

### Required Parts-Not Included

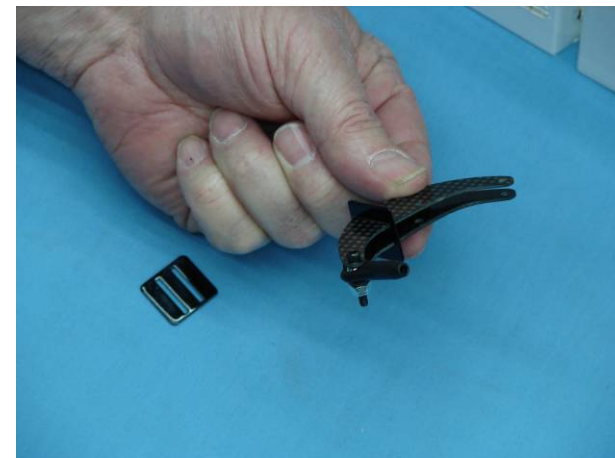
- ◇ 1 - Rudder Servo w/ mounting hardware
- ◇ 1 - 3" Double Output servo arm

### Required Tools and Adhesives

- ◇ 1/16" Ball Driver
- ◇ Small Phillips screw Driver
- ◇ Wire Cutters
- ◇ Pliers
- ◇ 1oz Bottle Thick CA Glue
- ◇ Masking Tape



2. Install control horn base plate and 4-40 ball link between upper and lower dual output control horns as shown. Remaining 4-40 ball link and base plate will be installed in a later step.



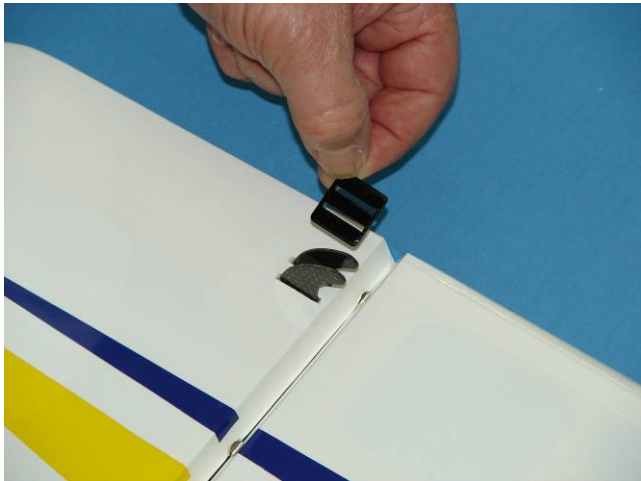
3. Slide upper and lower rudder horns through the pre-cut slot in the rudder as shown below.



4. Place base plate against rudder and mark its location with a ballpoint pen.



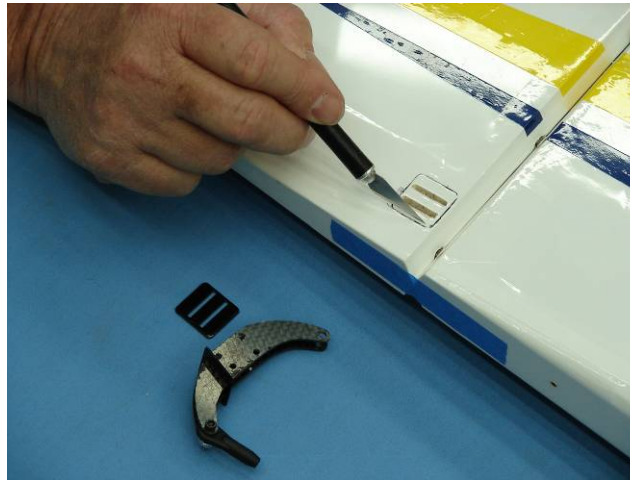
5. Slide the remaining base plate onto the opposite side of the rudder control horn as shown.



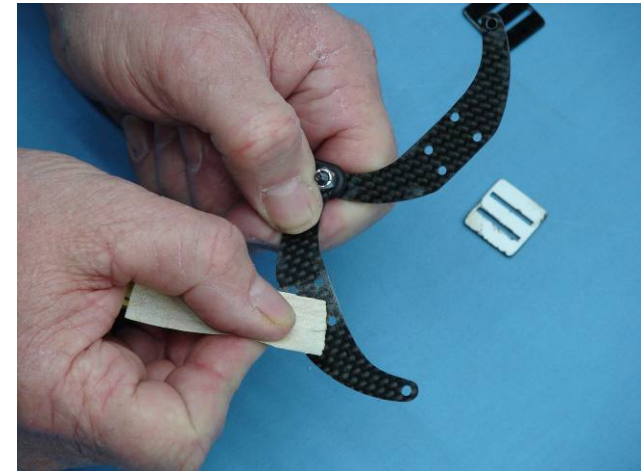
6. Mark location of the remaining base plate on the rudder.



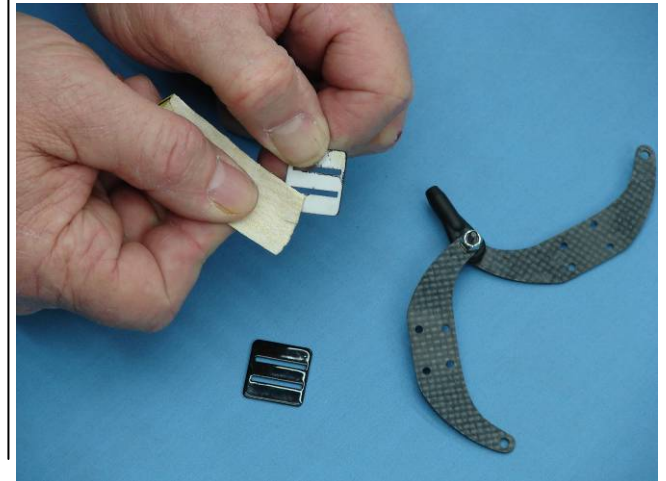
7. Use a hobby knife to carefully remove the covering. Take care not to cut too deep and damage the wood underneath the covering.



8. Use 80 grit sandpaper to scuff the carbon control horn where it will pass through the rudder.

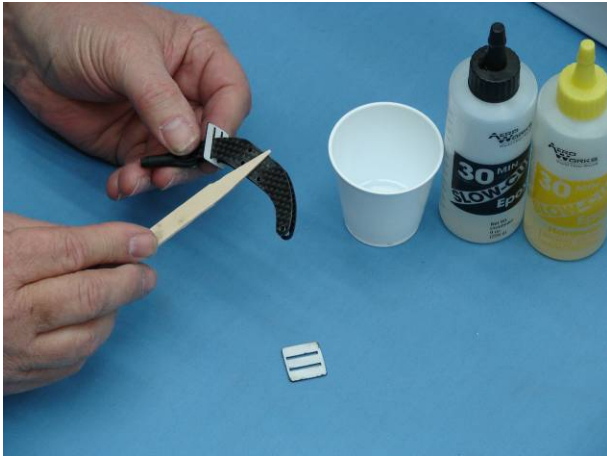


9. Use 80 grit sandpaper to lightly scuff the back of the control horn mounting base as shown.





10. Apply 30 minute epoxy only to the portion of the control horn that will be glued into the slots in the rudder. Apply epoxy to both sides of each control horn for a secure glue joint.



11. Apply 30 minute epoxy to the rudder as shown. This will only be done on the side of the rudder that has the corresponding base plate already installed on the control horn.



12. Slide the upper and lower rudder control horn into the pre-cut slots as shown. Ensure that the control horn is centered on both sides before the epoxy fully cures.



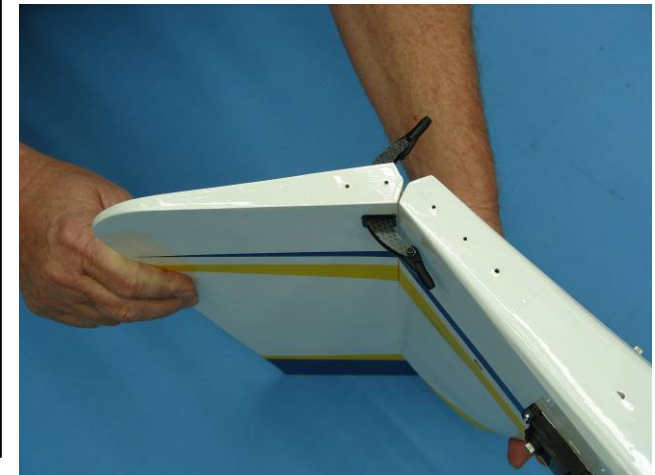
13. Apply 30 minute epoxy to the remaining base plate and install on the rudder control horn. Ensure both base plates are fully seated against the rudder before the glue fully cures.



14. Install the remaining 4-40 ball link as shown.



15. Before the epoxy has fully cured ensure that full rudder travel can be achieved. If the control horns come in contact with the fuse at full throw they may not be properly centered in the slots.



16. Finished rudder control horn installation shown below. Notice that the ball link mounting locations are in line with the hinge line.



17. Install the 4-40 couplers onto all 4 ball links at this time.

**Builders Tip:**

Only thread the coupler into the ball link half way, this will allow for final adjustment once the pull-pull cables are installed.



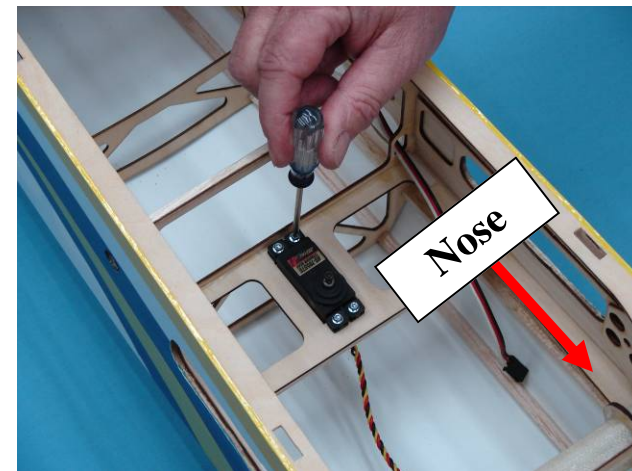
18. 4-40 coupler shown attached to the rudder control horn ball link.



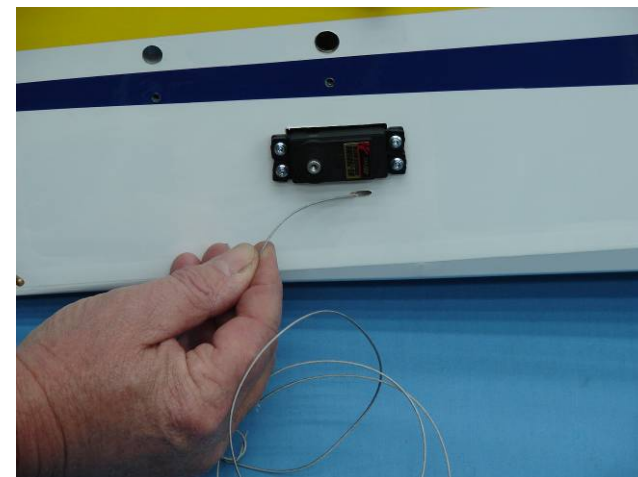
19. Finished 4-40 coupler installation, ensure that both sides are of equal length for easy adjustment and proper deflection.



20. Install the rudder servo in the servo cutout with the output shaft to the nose of the airplane.



21. Feed one rudder cable through the pre-installed cable exit tube in the rear of the fuse toward the front of the fuse. Repeat for other side.





22. Loop or tape cable to fuse to prevent cable from being pulled into fuse



23. Pull the rudder cables from rear of fuse to the rudder servo tray.

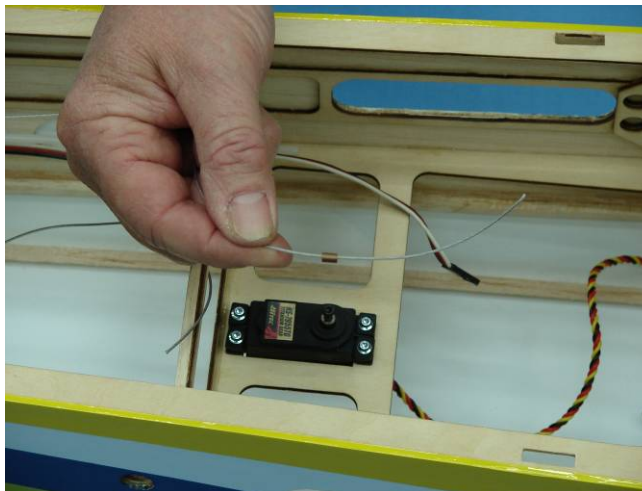
**Note:** Cables run parallel down fuse and do not cross each other.



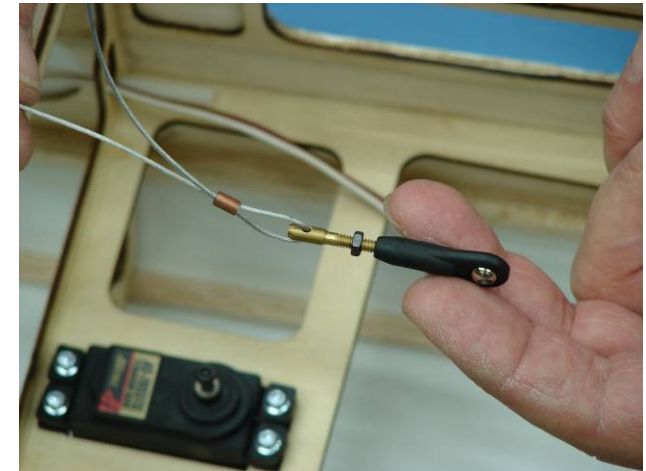
24. Using a hobby knife clean away any burrs from brass swags. This will allow the rudder cable to pass through brass swage easily.



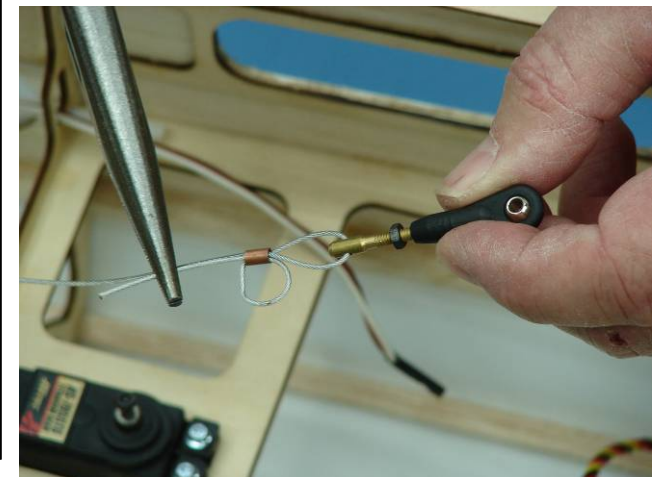
25. Thread cable through brass swage tube.



26. Thread cable through the threaded coupler hole, and back through the brass swage tube as shown.



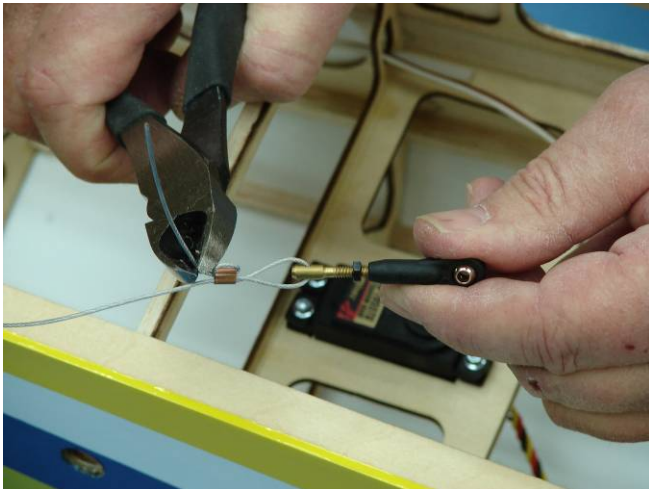
27. Loop the cable back through the brass swage tube and pull tight.



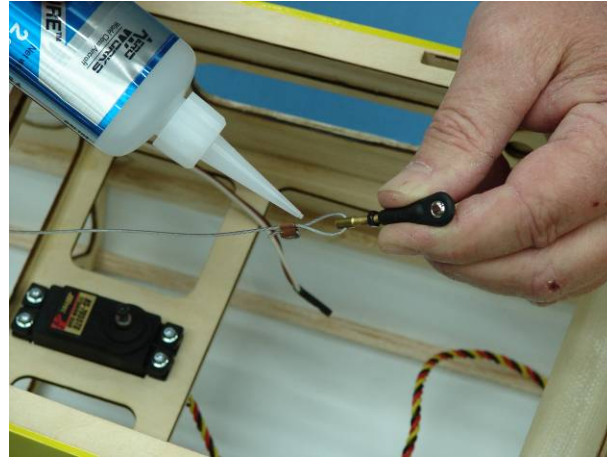
28. Crimp the brass swage tube with a crimping tool or pliers.



29. Cut off excess cable as shown.

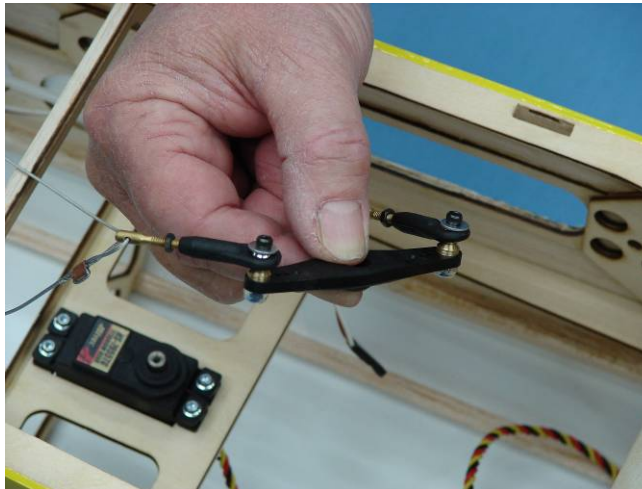


30. A drop of thin CA may be applied to the swage tube to help secure the cable.



31. Attach ball links to the rudder servo arm and then attach the servo arm to the rudder servo as shown.

**Note:** Use flat washers to prevent ball link from coming loose from the brass ball.

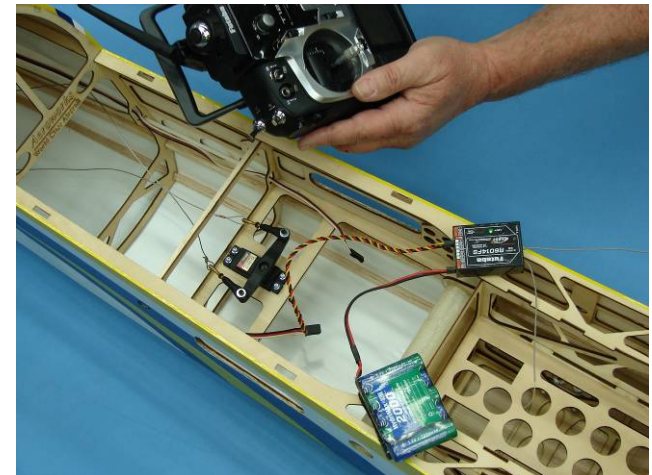


32. Tape the rudder balance tab to the top leading edge of the vertical fin in the neutral position as shown. This ensures the rudder is straight when the cables are attached.



33. Plug the rudder servo into the rudder channel of the receiver and power up. Turn on transmitter to center rudder servo. Ensure servo trim and sub-trims are centered.

**Note:** On metal geared servos use blue Loctite for all servo arm mounting screws.





34. Attach the ball link to the rudder control horn as shown below. Follow the same steps as shown in the previous pages to install the ball link to the pull pull cable.

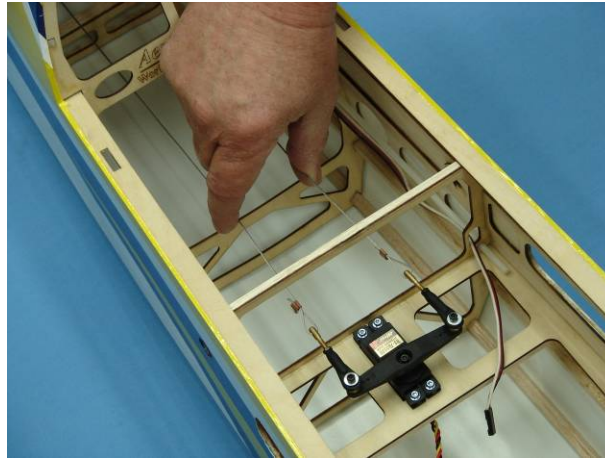


35. Finished ball link pull pull installation shown below.



36. Adjust the tension of the pull-pull cables until they are tight. Over tightening cables can bind or slow servo movement. Adjust cables to allow some slack as shown.

**Note:** Due to temperature change and normal wear, it may be necessary to tighten the cables over time.



## TAIL WHEEL INSTALLATION

Gather the tail wheel assembly items as shown below.

### Required Parts

- ◇ 1 - Tail Wheel Assembly
- ◇ 3 - Tail Wheel Mounting Screws
- ◇ 1 - Steering Tiller
- ◇ 2 - Tiller Mounting Screws
- ◇ 2 - Steering Springs

### Required Tools and Adhesives

- ◇ Phillips Screw Driver
- ◇ Pliers
- ◇ Wire Cutters
- ◇ 1oz Bottle Gap Filling CA Glue

### **Notice:**

Please note optional carbon fiber tail wheel shown, the 30cc Freestyle Extra 260 QB-L comes with an aluminum tail wheel. All mounting steps will be identical, carbon fiber tail wheel available from Aeroworks.



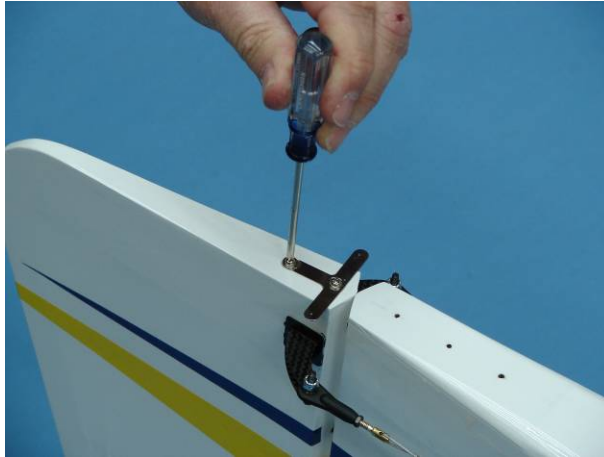
2. Align rudder tiller steering arm with pre drilled mounting holes at bottom of rudder.



3. Apply a drop of thick CA to the tiller arm mounting screws before inserting in the pre-drilled holes.



4. Mount the tail wheel steering tiller using two wood screws.



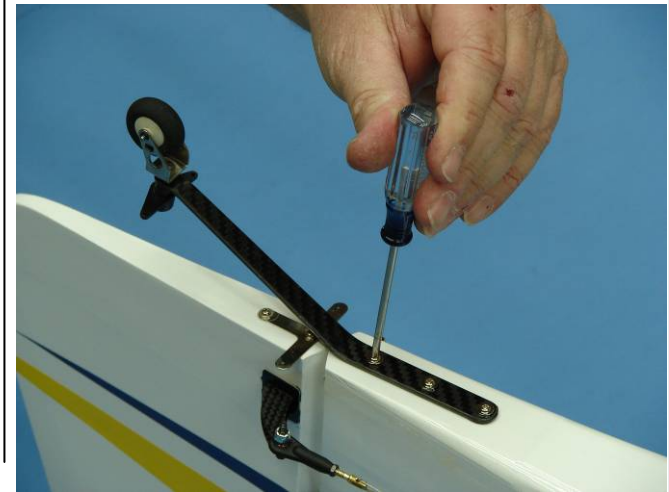
5. Align the tail wheel with pre drilled mounting holes on the bottom of the fuse.



6. Place a drop of thick CA on tail wheel strut mounting screws before inserting in the pre-drilled mounting holes on the bottom rear of the fuse.

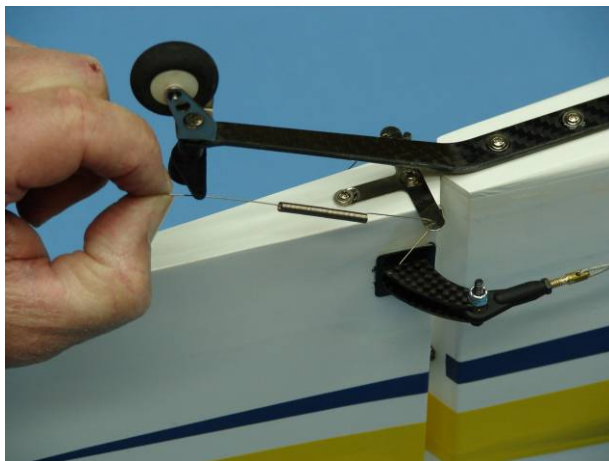


7. Mount the tail wheel struts using three wood screws.

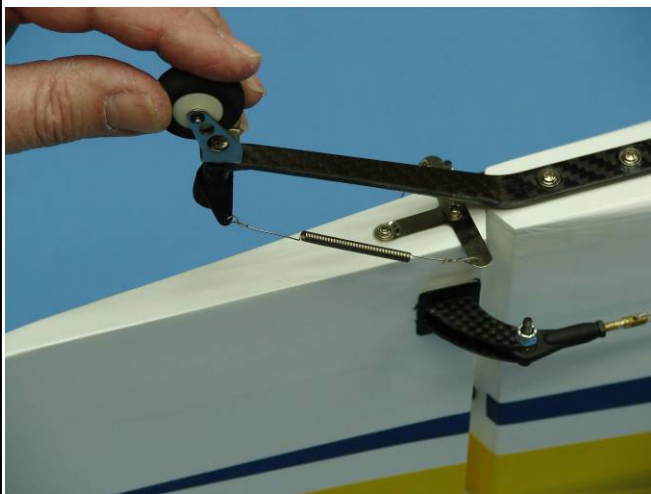




8. Attach the steering spring to the rudder tiller. Center the spring between both tail wheel and steering tillers.



9. Wrap spring around steering tiller and then back around itself as show below. This is best performed by hand but pliers can also be used.



10. Repeat spring installation steps for the remaining tail wheel spring. Ensure that the springs allow for full rudder deflection and that they do not bind.



## MAIN LANDING GEAR AND WHEEL PANT INSTALLATION

1. Gather the following items shown below for the main landing gear assembly.

### Required Parts

- ◇ 1 - Carbon Landing Gear
- ◇ 2 - 3" Foam Tires
- ◇ 2 - Axles with Lock Nuts
- ◇ 4 - Wheel Collars
- ◇ 4 - 6-32 Mounting Bolts
- ◇ 4 - 6-32 Lock Washers
- ◇ 4 - 6-32 Flat Washers
- ◇ 2 - Wheel Pants
- ◇ 4 - 4-40 Bolts
- ◇ 4 - 4-40 Lock Washers
- ◇ 4 - 4-40 Flat Washers

### Required Tools and Adhesives

- ◇ 1 - 9/64" Ball Driver
- ◇ 1 - 12mm Open End Box Wrench
- ◇ 1 - .34oz Bottle Blue IC-Loc Thread Locker

2. The tapered edge of the landing gear goes to the back of the airplane.



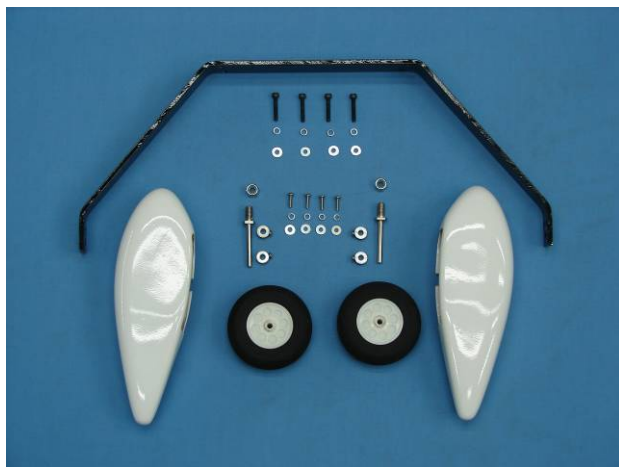
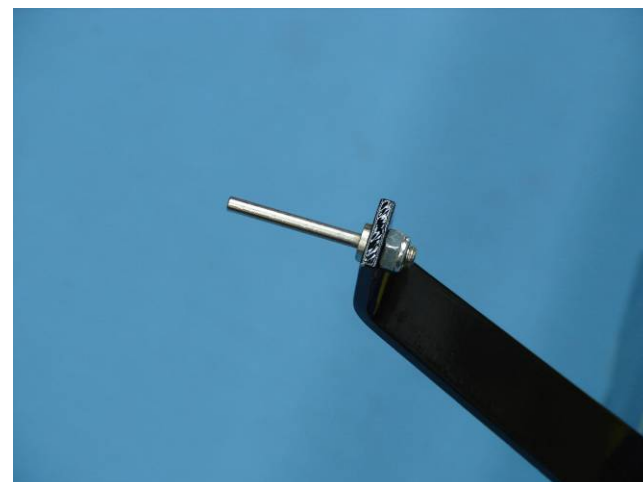
4. Bolt landing gear to fuse with (4) 6-32 bolts and washers.



3. Attach the landing gear with 6-32 bolt, lock washer and flat washer. Use a drop of blue Loc-tite on landing gear bolts before attaching the landing gear.

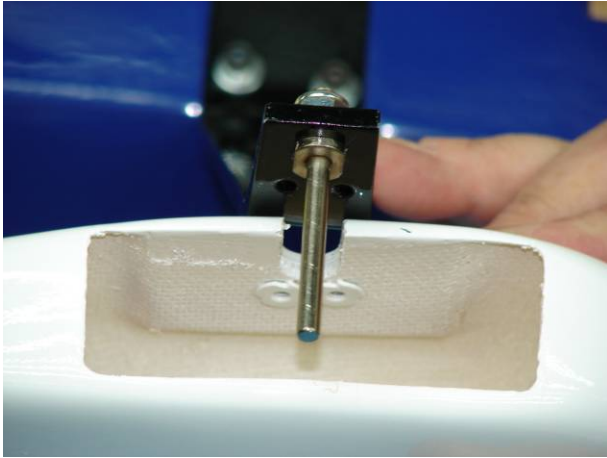


5. Install the axle into the gear strut with lock nut. Lightly tighten axle lock nut at this time.

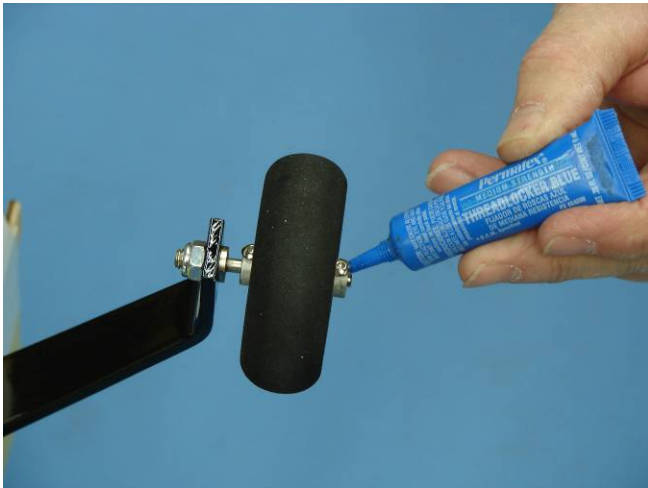




6. Check alignment of axle with cutout in wheel pant. Check alignment of wheel pant mounting holes with mounting holes in gear. Securely tighten axle to gear strut.



7. Install inner wheel collar. Use blue Loctite on the wheel collar set screw before final tightening.
8. Install 3" wheel and outer wheel collar. Use blue Loctite on the wheel collar set screw before final tightening.



9. Install the wheel pant using two 4-40 mounting bolt, lock washers and flat washers. Use blue Loctite on mounting bolt to ensure it does not come loose from vibration.

**Note:** Blind nuts have been preinstalled in wheel pant.



10. Repeat above steps for other wheel and wheel pant.



## ENGINE INSTALLATION

1. The 30cc Freestyle Extra 260 will accept a wide range of engine types. The DLE 30 engine with J-Tec Pitts Muffler was used for the test flights. Gather the following items needed for engine installation:

### Required Parts

- ◇ 1 - Universal Mounting Template

### Required Parts -Not Included

- ◇ 1 - 30cc Engine: DLE 30 Shown
- ◇ 4 - DLE 30 Standoffs w/ Mounting Bolts
- ◇ 8 - 1/2" Diameter Fender Washers
- ◇ 4 - 60mm Standoffs

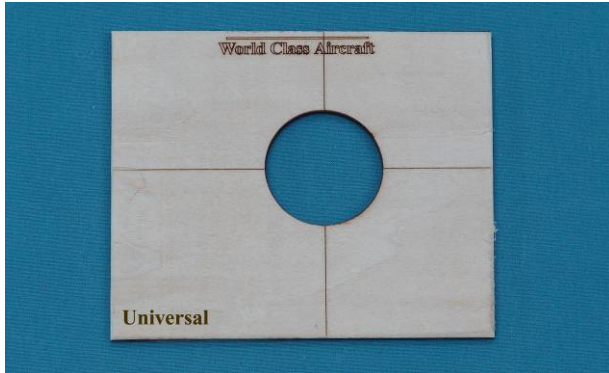
### Required Tools and Adhesives

- ◇ 1 - Pencil
- ◇ 1 - Masking Tape
- ◇ 1 - Electric Drill
- ◇ 1 - 3/16" Drill Bit

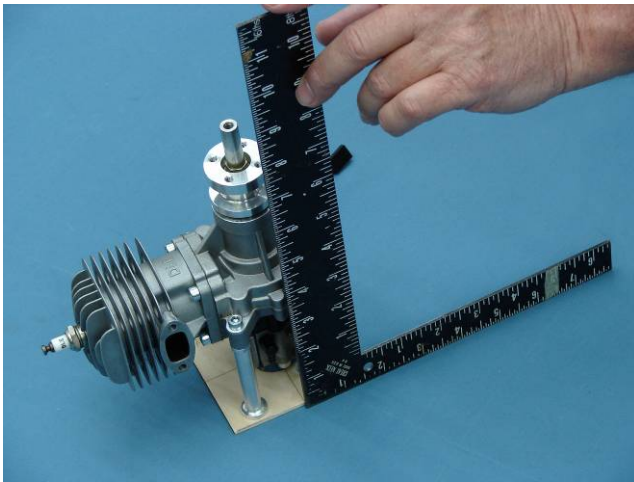


## Universal Template:

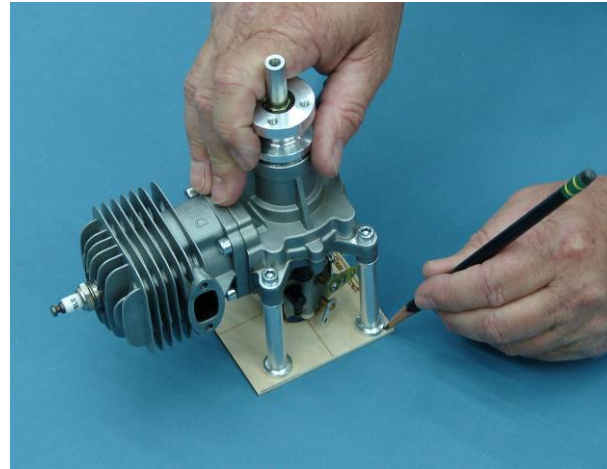
2. If using an engine that is not a DLE 30 or DLE 35RA please follow these directions for using the universal template. **If a DLE 30 or DLE 35RA is to be used, please skip to step #1 On page #27**



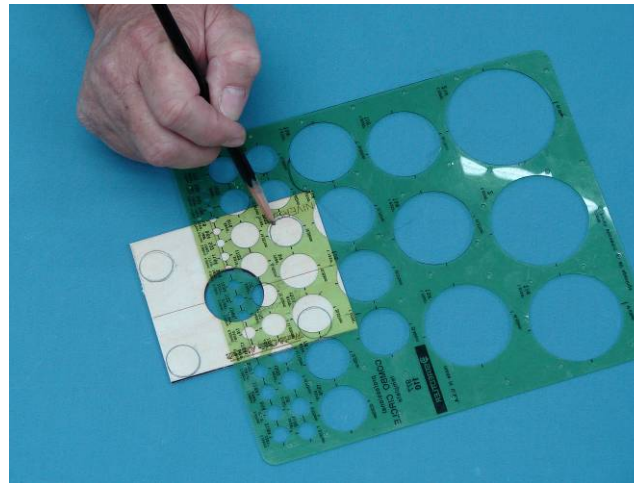
3. Place engine on universal mounting template as shown. Use a square to align the propeller output shaft with the pre-marked thrust lines on the template.



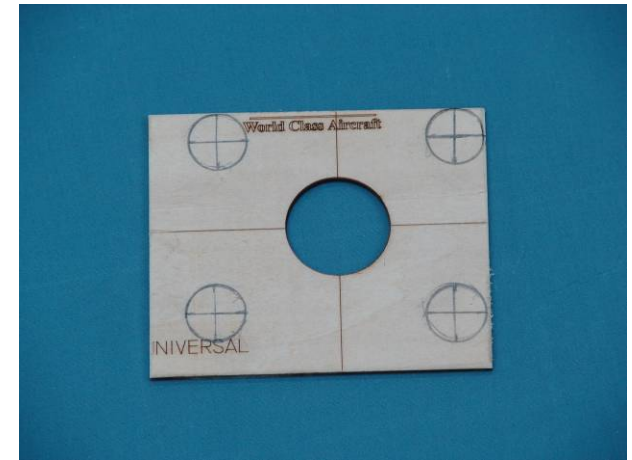
4. Mark the location of the standoffs on the template as shown. Ensure that the engine does not move during this step.



5. Use a stencil to fill in any missed parts where the standoffs were marked in step 4.



6. Mark the center of each standoff location as shown.



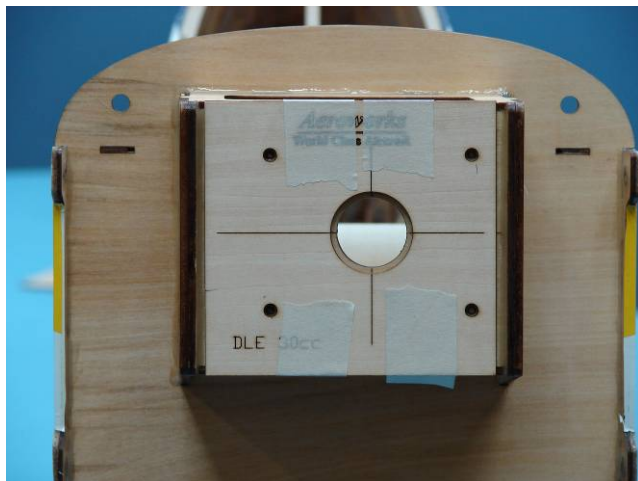
7. Use a 3/16" drill bit to drill the four mounting hole locations as shown below.
8. Follow the remaining engine mounting steps for mounting instructions.



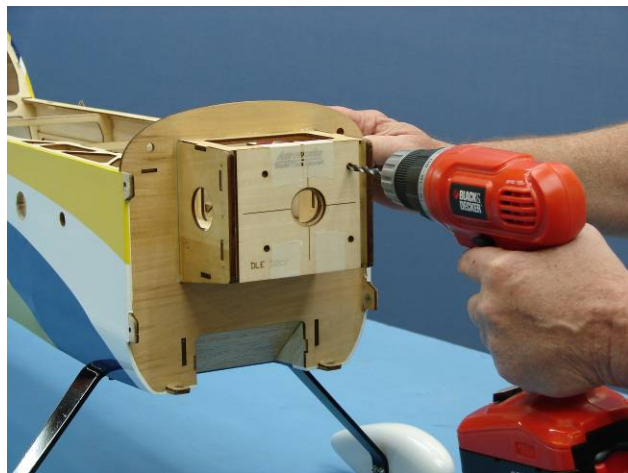


## DLE 30/ DLE 35RA INSTALLATION

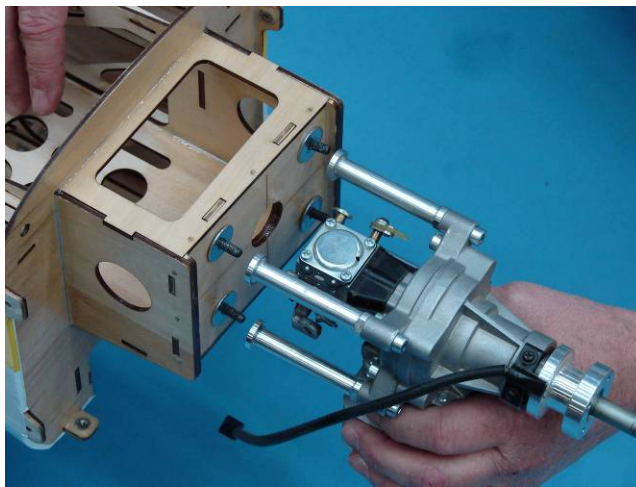
1. Align mounting template with firewall and tape in place.



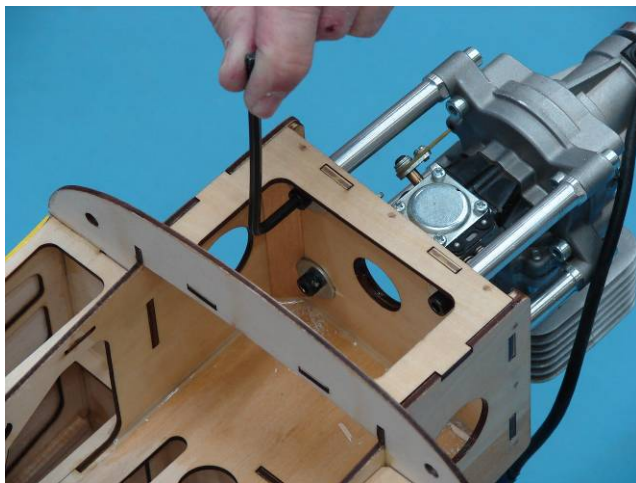
2. Use a 3/16" drill bit to drill the engine mounting holes in firewall.



3. Use mounting bolts and flat fender washers to mount engine to firewall.
4. Use blue Loctite to secure the engine mounting bolts in place. This will insure that the mounting bolts stay in place over time.



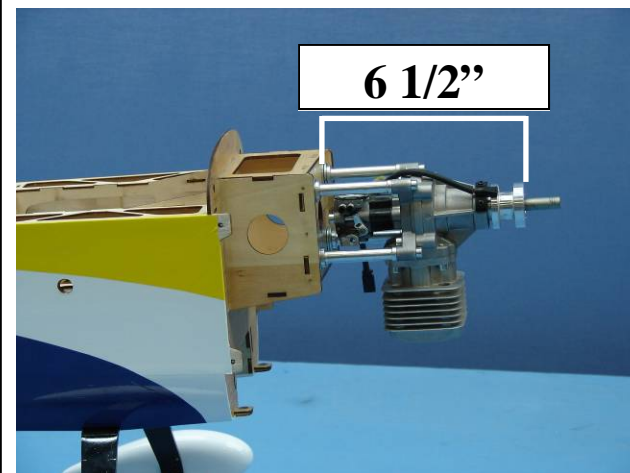
5. Tighten the bolts evenly to prevent crushing of the firewall.



6. Distance from front of firewall to front of engine prop hub is **6 1/2"**.

**Note:** Use aluminum standoffs (supplied with engine) and washers (not supplied) to achieve correct distance.

**Mounting Distance is: 6 1/2"**



## THROTTLE SERVO INSTALLATION

1. Gather the throttle items as shown below:

### Required Parts

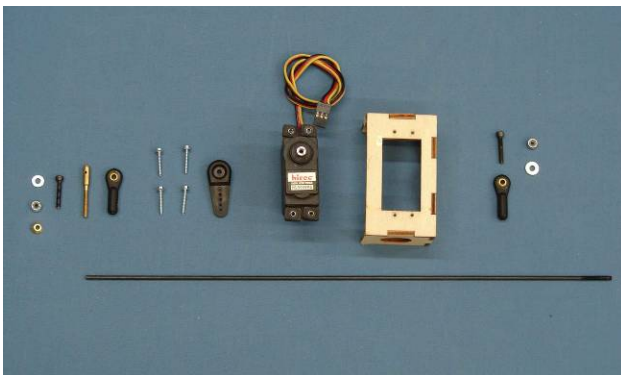
- ◇ 1 - Prebuilt Plywood Servo Mount
- ◇ 1 - 4-40x300mm Threaded Pushrod
- ◇ 1 - 4-40 Threaded Solder Coupler
- ◇ 2 - 4-40 Ball Links
- ◇ 2 - 4-40x16mm Hex Head Bolts
- ◇ 2 - 4-40 Lock Nuts
- ◇ 1 - Brass Spacer
- ◇ 2 - 3mm Flat Washer

### Required Parts -Not Included

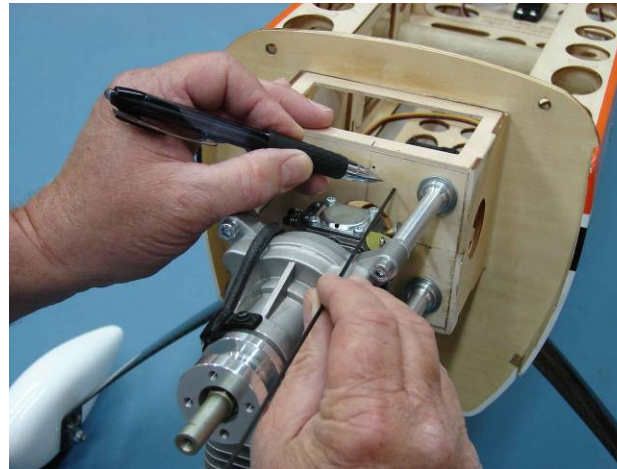
- ◇ 1 - Throttle Servo
- ◇ 4 - Servo Mounting Screws (Micro Fastener Part number **STW0209** recommended)
- ◇ 1 - 3/4" Servo Arm

### Required Tools and Adhesives

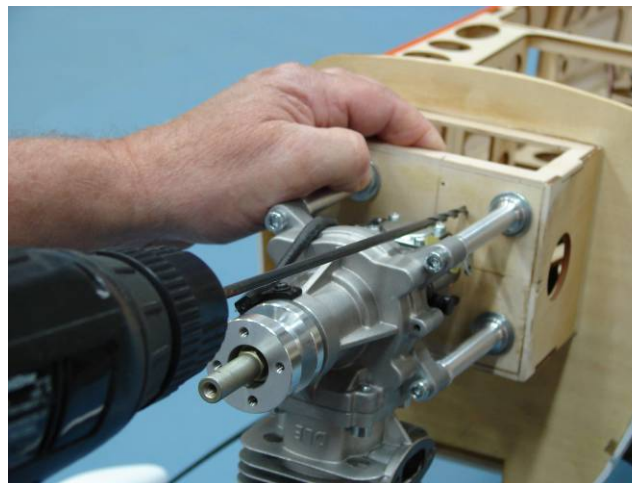
- ◇ 1 - Pencil/Felt Tip Pen
- ◇ 1 - Phillips Screw Driver
- ◇ 1 - 5/64" Ball Driver
- ◇ 1 - Electric Drill
- ◇ 1 - 1/16" Drill Bit
- ◇ 1 - 7/64" Drill Bit
- ◇ 1 - Rotary Cutting Tool with Cutting Disk
- ◇ 1 - Wire Cutter
- ◇ 1 - Soldering Iron
- ◇ 1 - Silver Solder "*Sta-Brite Recommended*"
- ◇ 1 - 80 Grit Sandpaper
- ◇ 1 - .34oz Bottle Blue IC-Loc Thread Locker



2. Mark the location of the throttle pushrod on the firewall as shown.

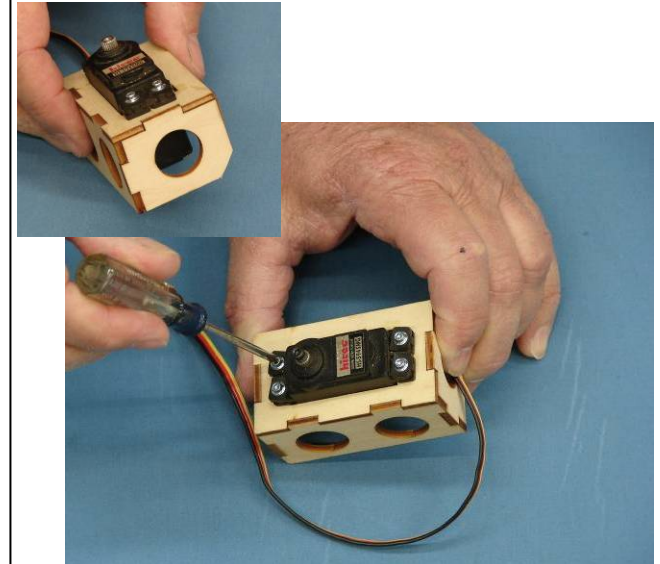


3. Use a drill bit to drill the holes for the throttle pushrod.

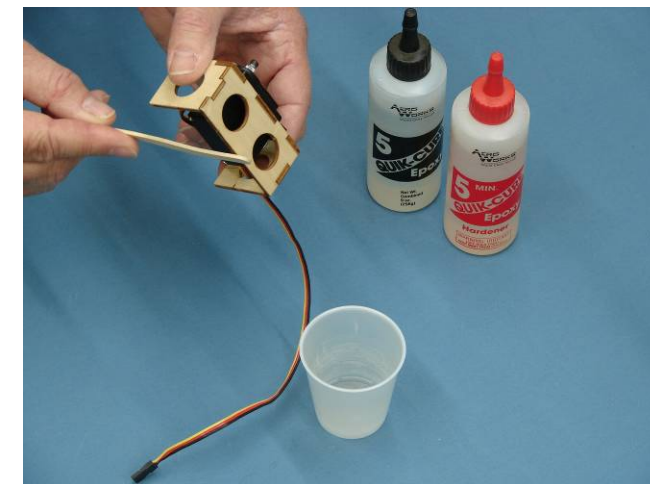


4. Install the throttle servo in the preassembled laser cut mounting tray as shown below.

**Note:** It may be necessary to remove the bottom corner of the servo mounting tray as shown. This will allow the mounting tray to fit over the reinforcement tri-stock.

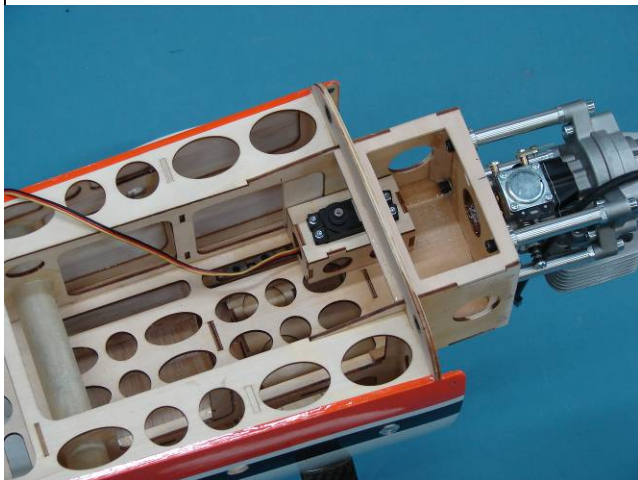


5. Apply 5 minute epoxy to the side of the servo mount that will be in contact with the engine box side.



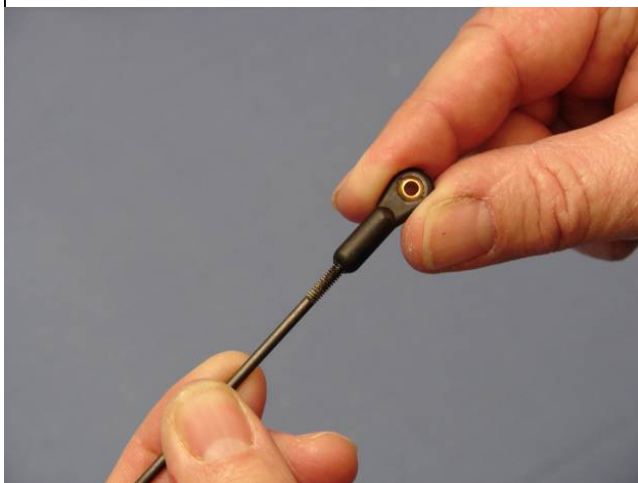


6. Install the servo mount to the inside of the engine box as shown. Use tape or clamps to ensure the servo mount does not move until the epoxy sets.



7. Assemble ball link to threaded end of pushrod.

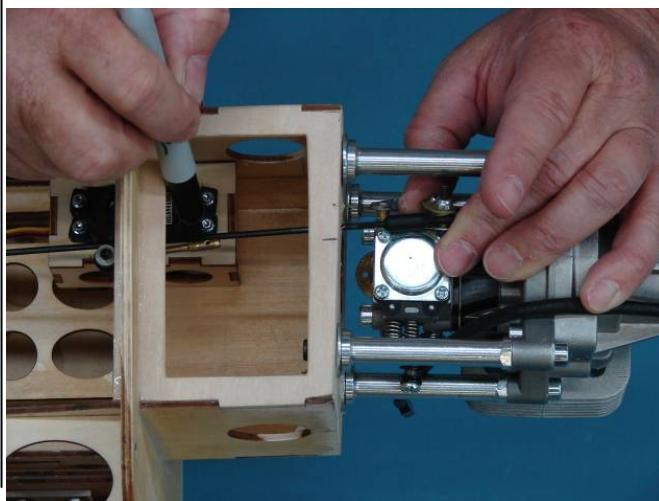
**Note:** Thread ball link half way onto pushrod to allow for proper adjustment during final installation.



8. Assemble brass threaded coupler to 4-40 ball link. Assemble ball link and brass spacer to the servo arm as shown below.



9. With servo arm still 90 degrees to servo and throttle arm of carburetor in the center or half throttle position. Mark the cut location for the throttle push rod.



10. Remove pushrod from throttle arm on carburetor and cut throttle pushrod to length.



11. Gather the soldering tools as shown below.

**Note:** For best results we recommend a high quality silver solder like “Sta-Brite” Silver Solder.



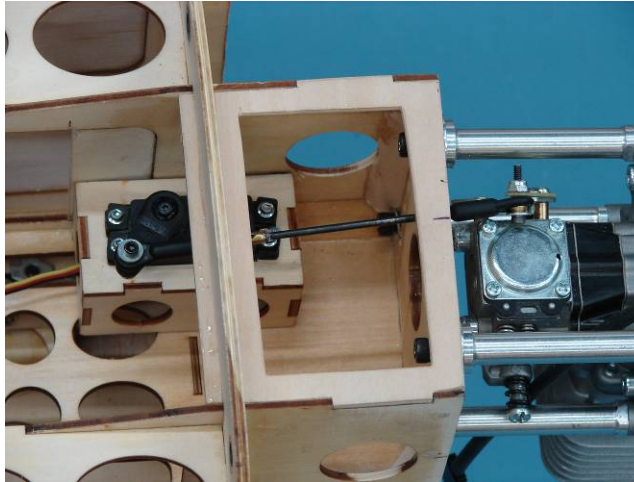
12. Lightly sand end of pushrod for best bond.



13. Solder the threaded brass coupler to the end of the throttle pushrod.



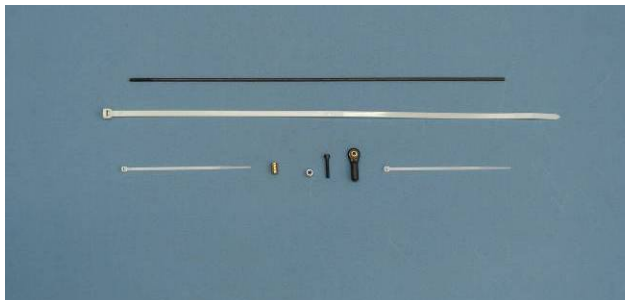
14. Attach the throttle pushrod with the 4/40 ball links and secure. Power up the receiver and throttle servo and adjust pushrod for proper operation. Ensure the servo or rod does not bind or jam at closed or full open positions.



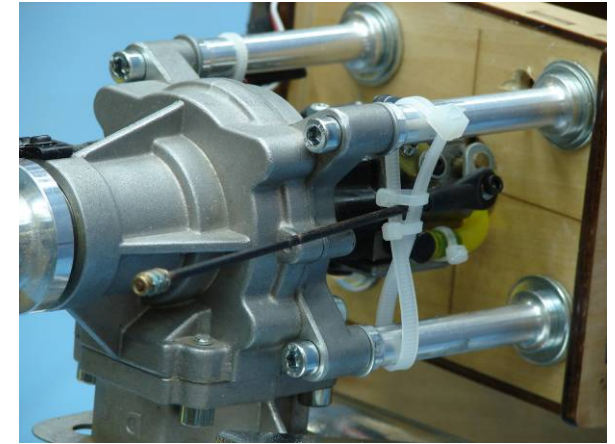
### Choke Installation

1. Gather provided choke installation items shown below;

- ◇ 1 - 4-40 Metal Rod Threaded at One End
- ◇ 1 - 4-40 Ball Link Assembly with Hardware
- ◇ 1 - 4-40 Threaded Insert
- ◇ 1 - Large Nylon Tie
- ◇ 2 - Small Nylon Ties



2. We recommend installing the carburetor choke pushrod as shown. Use nylon ties to provide support and holding friction for the choke pushrod. Place silicon fuel tubing over the wire pushrod to prevent damage from vibration and provide holding friction. Solder a threaded insert on the end of the pushrod to provide a finger grip.



3. Location of manual choke pushrod shown below.





# IGNITION INSTALLATION

1. Gather the items shown below for ignition installation.

## Required Parts

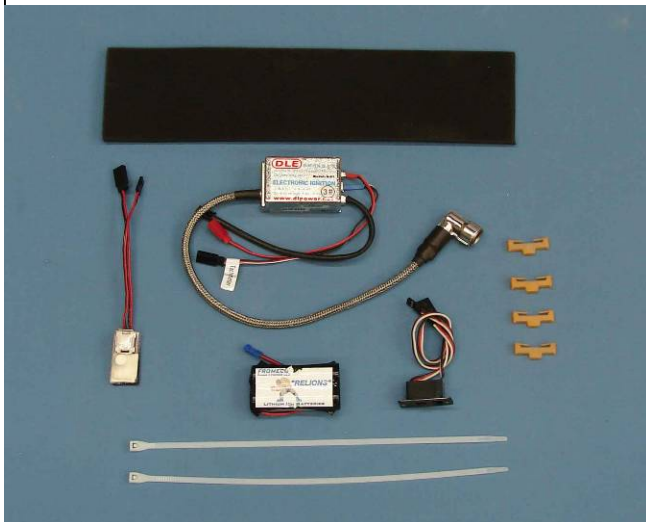
- ◇ 2 - 8x80x300mm Foam Pad
- ◇ 2 - 8x450mm Nylon Ties

## Required Parts -Not Included

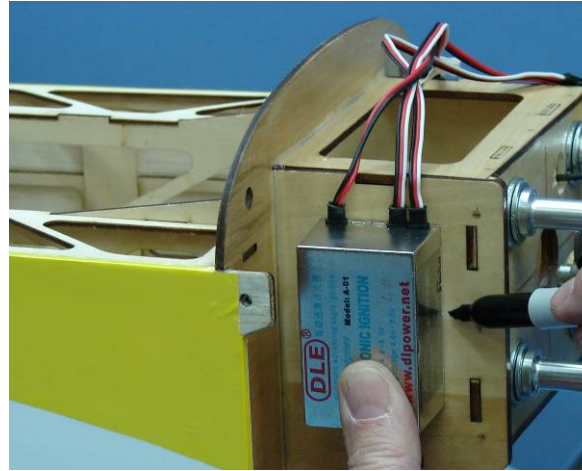
- ◇ 1 - Ignition Module
- ◇ 1 - Battery (2600mah Li-Ion Shown)
- ◇ 1 - Ignition Regulator (Smart-Fly Shown)
- ◇ 1 - Ignition Switch (MPI Shown)
- ◇ 4 - Aeroworks Safety Clips

## Required Tools and Adhesives

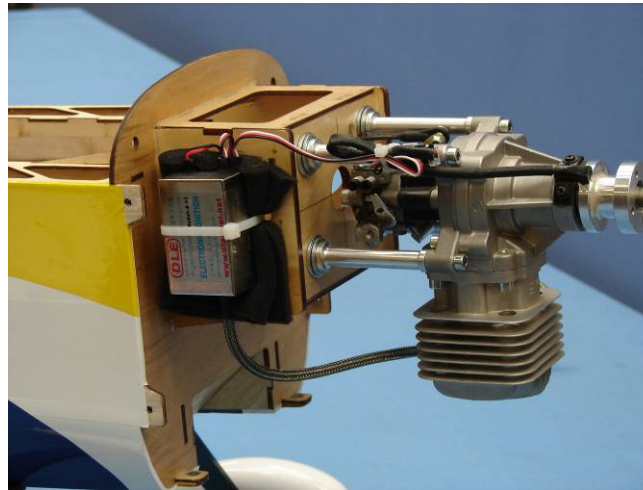
- ◇ 1 - Pencil/felt tip pen
- ◇ 1 - Electric Drill
- ◇ 1 - 1/16" Drill Bit
- ◇ 1 - Wire Cutter



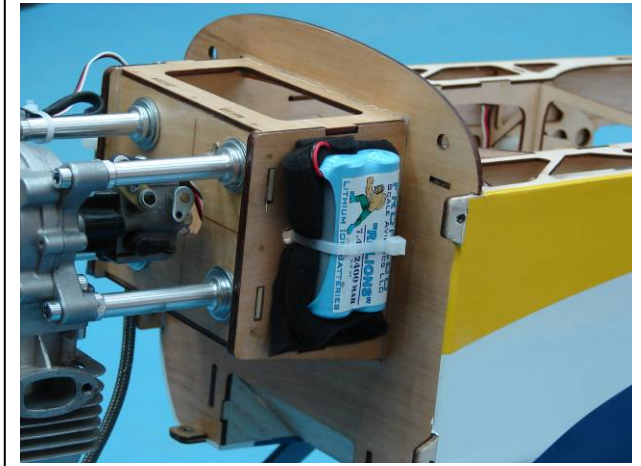
2. Position the ignition module on the side of the engine mounting box and mark the location of the nylon tie holes as shown.



3. Use a 1/4" bit to drill the ignition module mounting holes.
4. Mount the engine ignition module using nylon tie and foam rubber as shown.



5. Mount ignition battery on opposite engine box side with nylon tie and foam padding.



6. The ignition switch mounting location is at builders discretion. Mark the location for the ignition switch using the switch mounting plate for a template. Use a modeling knife to cut out the switch hole.

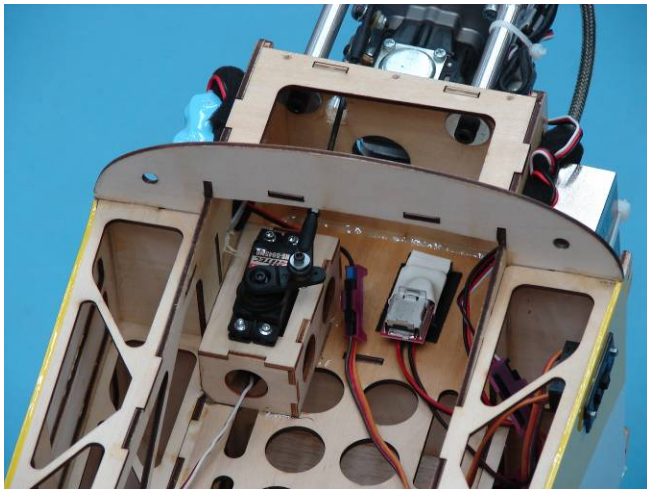
**Note:** Ensure ignition switch location does not interfere with the mounting of the wing.



7. Mount switch in accordance with the switch manufacturers instructions and hardware.



8. Mount ignition regulator as desired. Secure all connectors with tape, safety clip or similar.



## FUEL TANK ASSEMBLY

1. Gather the fuel tank parts as shown below.

### Required Parts

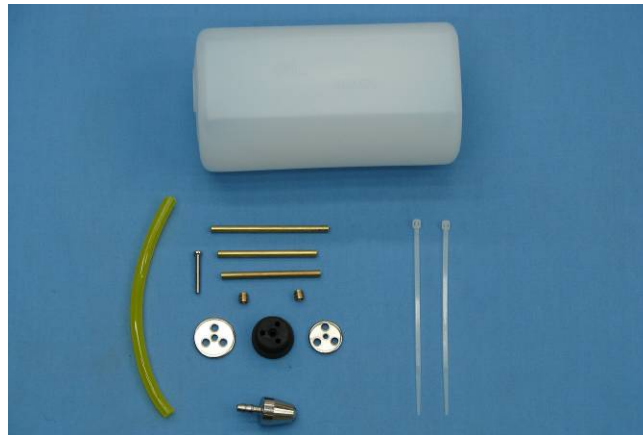
- ◇ 1 - 450cc (15oz) Gas Tank
- ◇ 1 - Rubber Stopper (*Universal*)
- ◇ 3 - Brass Tubes
- ◇ 1 - Aluminum Stopper Front Plates
- ◇ 1 - Aluminum Stopper Back Plates
- ◇ 1 - Phillips Head Bolts
- ◇ 2 - Brass Barbs for Fuel Line
- ◇ 2 - Small Nylon Ties

### Required Parts -Not Included

- ◇ 1 - Aeroworks Fuel Line Installation Kit

### Required Tools and Adhesives

- ◇ Pencil/Felt Tip Pen
- ◇ Phillips Screw Driver
- ◇ Wire Cutter
- ◇ Soldering Iron
- ◇ Silver Solder "*Sta-Brite Recommended*"
- ◇ 80 Grit Sandpaper

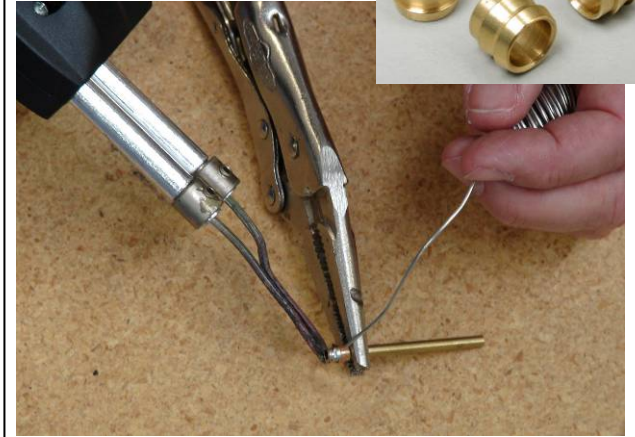


Fuel Line Installation Kit available separately from Aeroworks



2. Locate the (2) supplied brass fuel barbs. Solder a brass fuel barb to the fuel line pick up tube. This will keep the weight of the fuel clunk from pulling the fuel line off the brass tube.

**Note:** No brass barbs are required for the air vent lines.



3. Assemble the fuel pick up line, rubber stopper and metal end caps. As shown below.

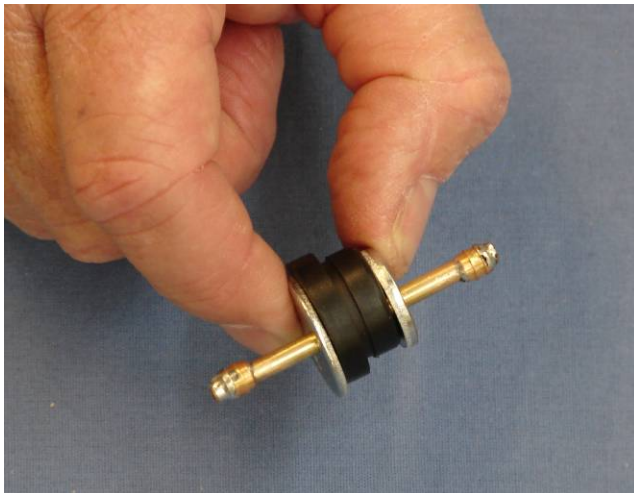




4. Solder a brass fuel barb to the other end of the fuel pick up line.

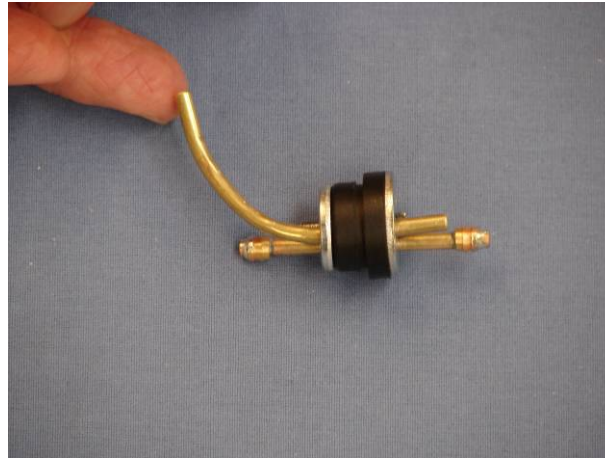


5. Final assembly of rubber fuel stopper with fuel pick up tube shown below.



6. Install air vent tube into rubber stopper and bend upward.

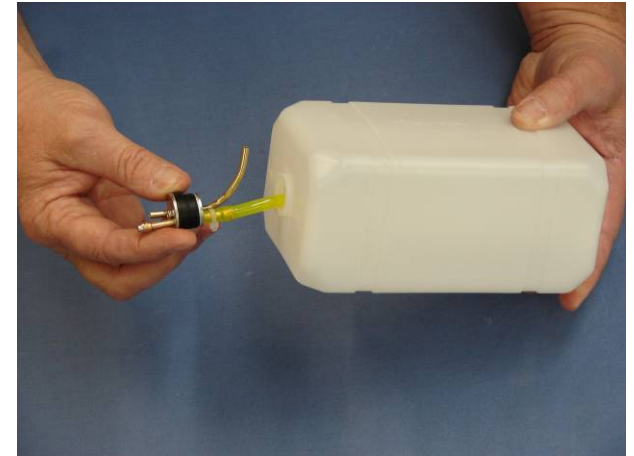
**Note:** No brass barbs are required for the air vent tube.



7. Install the fuel tubing and clunk. Secure the fuel tubing with nylon ties to the pick-up tube and clunk.



8. Insert the rubber stopper assembly into the tank with the vent tube at the top of the tank.



9. Secure the rubber stopper with set screw. Take care not to strip threads by over tightening set screw.



# FUEL TANK INSTALLATION

1. Gather the fuel tank parts as shown below.

## Required Parts

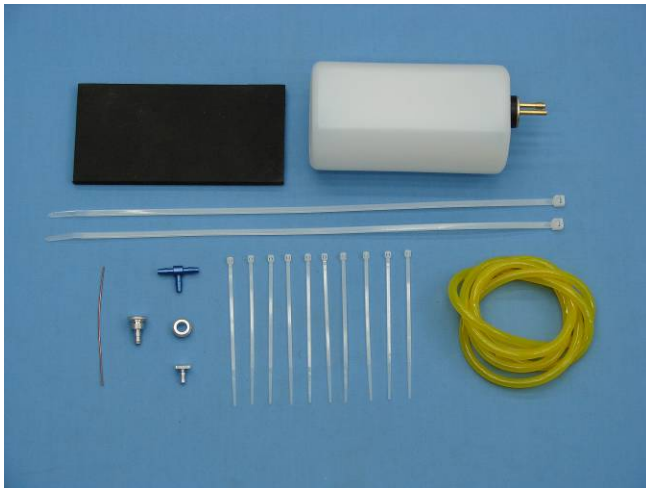
- ◇ 1 - 450cc (15oz) Gas Tank *Assembled*
- ◇ 1 - 6 x 130 x 70mm Foam Sheet
- ◇ 2 - 8 x 450mm Nylon Ties
- ◇ 7 - 3 x 150mm Nylon Ties

## Required Parts -Not Included

- ◇ 1 - Aeroworks Fuel Line Installation Kit

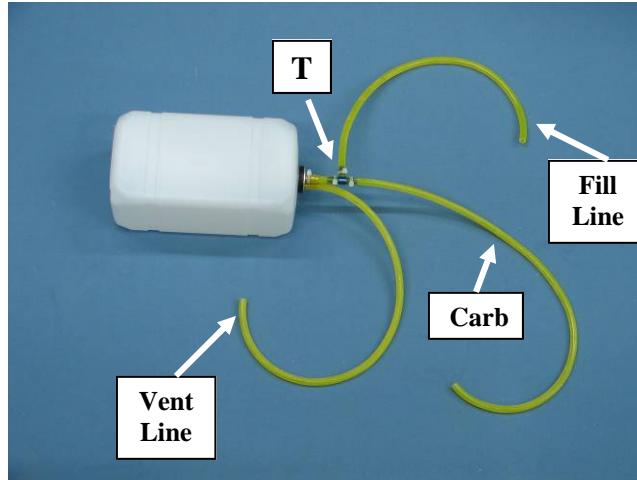
## Required Tools and Adhesives

- ◇ Pliers
- ◇ Wire Cutter
- ◇ Electric Drill
- ◇ Various Drill Bits for Fuel Dot Installation
- ◇ 1oz Bottle Gap Filling CA Glue



2. Install the fuel pick up and fuel filler lines to the fuel tank.

**Note:** It is recommended you always use a fuel filter on your gas can, filters should not be installed inside the airplane. Inline fuel filter can clog and cause your engine to quit.



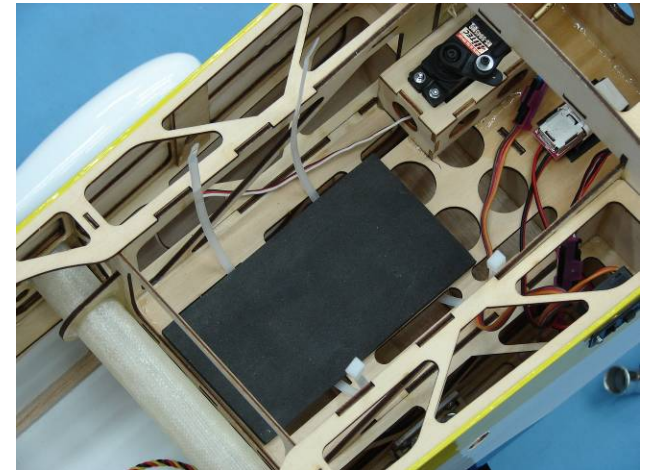
3. Use small nylon ties to secure fuel line.

**Note:** Gasoline will cause the fuel line to expand over time. Always secure fuel lines with nylon ties to prevent them from pulling off during flight.



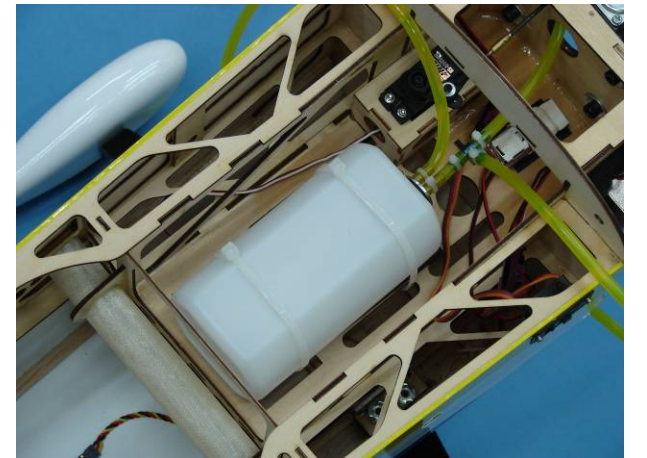
4. Thread nylon ties under tank mounting plate and center in position.

5. Install foam rubber pad for fuel tank to rest on. Foam rubber will help prevent fuel from foaming or getting air bubbles from engine vibration.



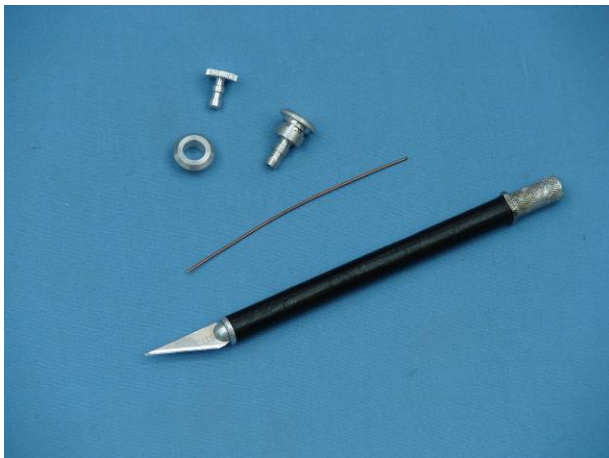
6. Tighten nylon ties to secure tank in place.

7. Use wire cutter to remove excess nylon tie after tightening.





8. Gather the fuel filler dot, vent exit dot and hobby knife as shown below.



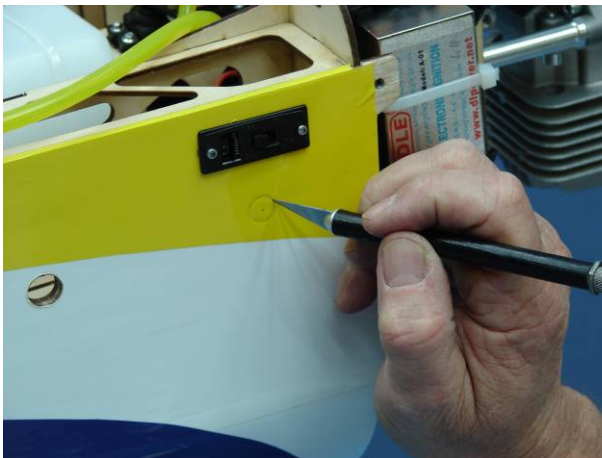
9. Mark location of fuel filler dot.

**Builders Tip:**

In order to prevent the fuel from siphoning out of the tank place fuel dot higher than the clunk line of the fuel tank.



10. Use a hobby knife to remove covering followed by the underlying balsa as shown below. The use of a new blade is recommended for a clean, easy cut.



11. Use thick CA to secure fuel dot in fuse.



12. Feed filler line through dot and plug line into filler plug as shown.



13. Apply a small amount of petroleum jelly to the end of the fuel line. This will allow it to plug into the fuel dot easily.





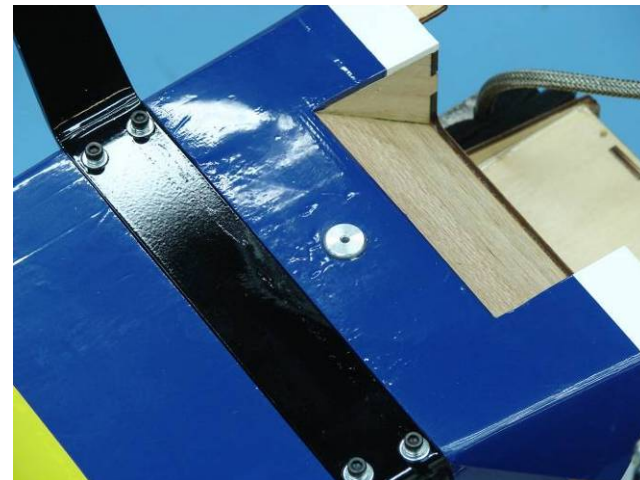
14. Route the vent line on top of the fuel tank and secure with small nylon ties as shown. This will stop excess fuel from draining out the vent line during an extended down line or when lifting the tail.



16. Route the vent line through the hole made in the previous step and attach to the fuel vent exit dot. Use safety wire (Supplied) to secure fuel tubing to fuel vent exit dot



18. Finished fuel vent exit dot installation shown below.



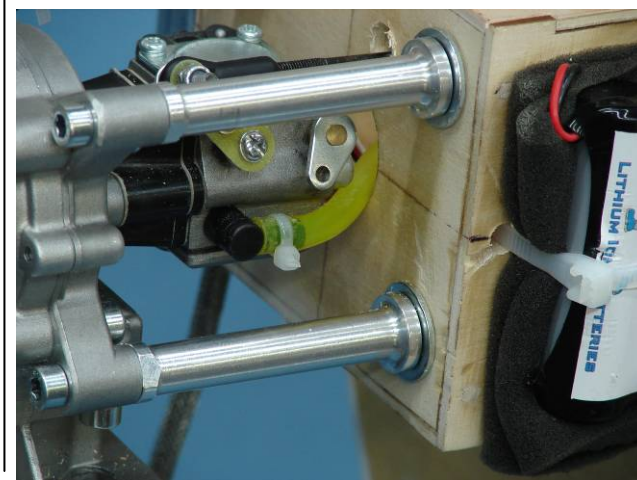
15. Use a hobby knife to cut a hole in the bottom of the fuse forward of the landing gear plate to allow the fuel vent exit dot to pass through.



17. Use thick CA to secure fuel vent exit dot in fuse.



19. Secure fuel pick up line to engine carburetor with small nylon tie.





# COWL INSTALLATION

1. Gather the following items for the cowling installation.

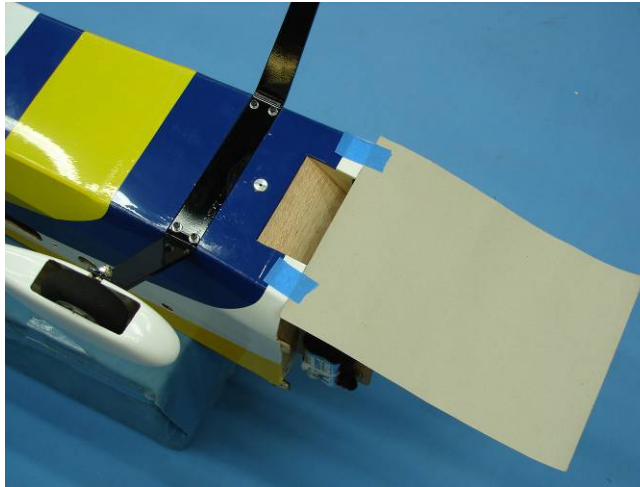
## Required Parts

- ◇ 1 - 30CC Freestyle Extra 260 Cowling
- ◇ 1 - 8 x 11" Card Stock for Muffler Template
- ◇ 1 - Front Air Inlet Template (*Not Shown*)

## Required Tools and Adhesives

- ◇ 1 - Felt tip pen
- ◇ 1 - Masking Tape
- ◇ 1 - Rotary Cutting tool with Cutting Disk

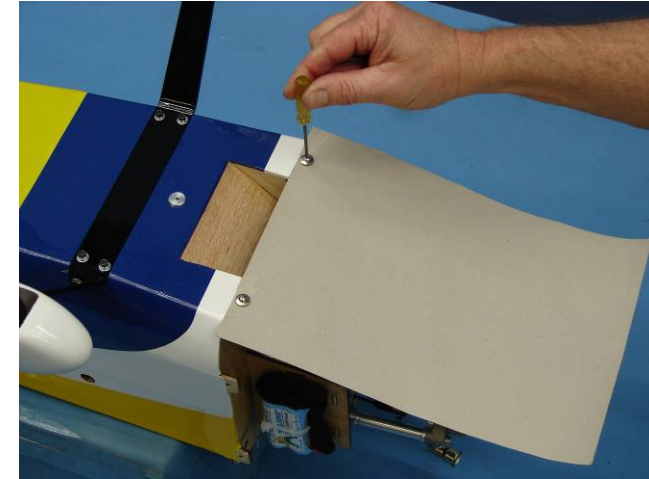
2. Tape template material to bottom of fuse with masking tape as shown.



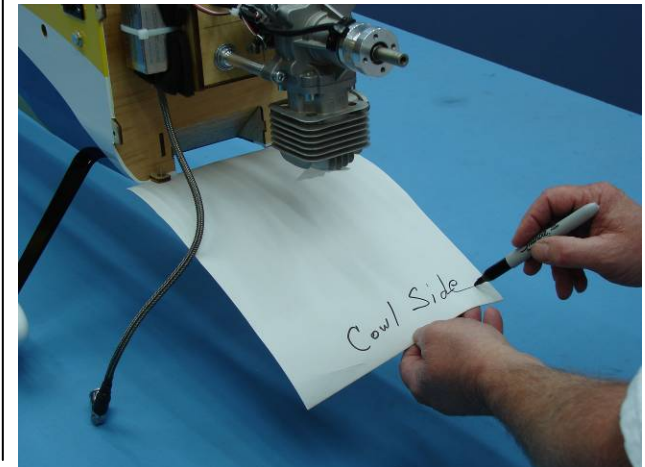
3. Use a "T" pin to mark the location of the bottom cowling mounting tabs as shown



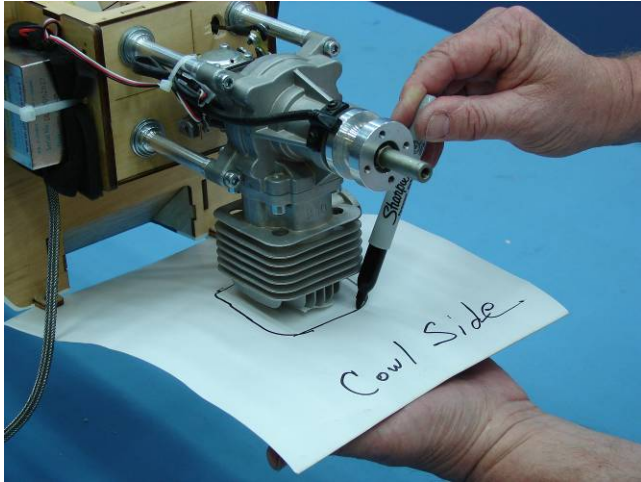
4. Install 4-40 cowling mounting screws through template material and into the bottom cowling mounting blocks.



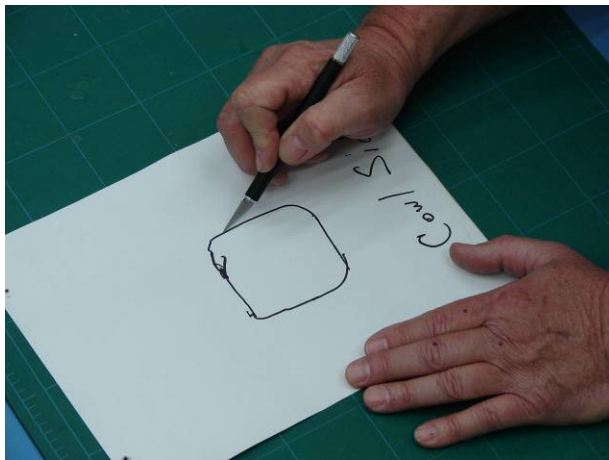
5. Mark the side of the template that will come in contact with the cowling. This will help when transferring the cut out locations onto the cowling.



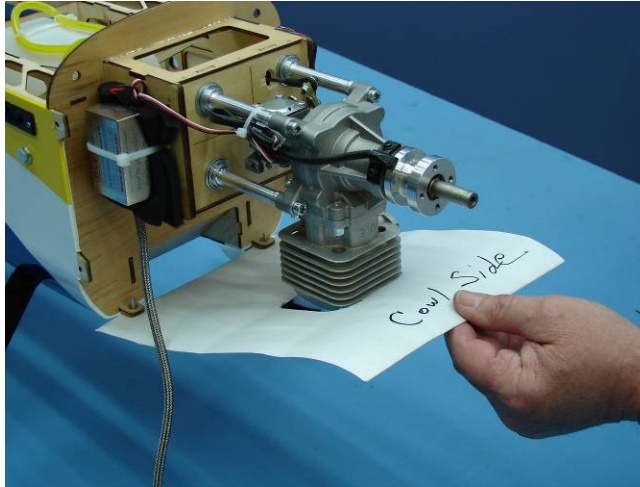
6. Trace around the head of the engine being careful to keep the template in the same location.



7. Use a hobby knife to cut out the engine cylinder exit opening as shown.



8. Check the fit of the template at this time. It may be necessary to make small adjustments to the cut out to get it to fit properly.



9. Align template with mounting bolt holes in cowl. Use a felt tip marker to transfer the template cut-out pattern to the cowl and mark cut location.

**Note:** Pay close attention to the marker you choose. Some permanent markers may not be easily removed. Also, When using rubbing alcohols or other paint removers, always test on painted parts before using!



10. Remove the template and use a rotary cutting tool and sanding drum to cut out the openings in the cowl.

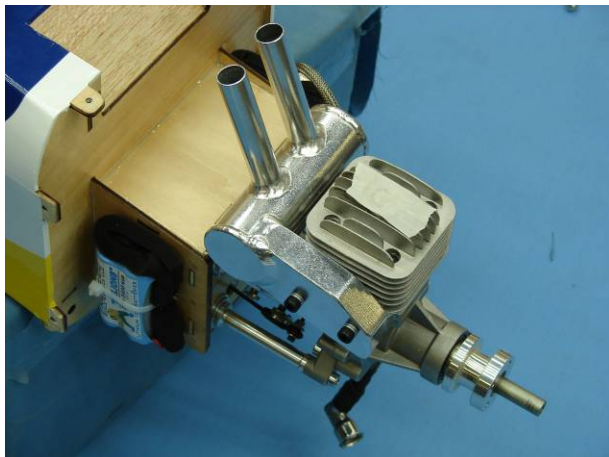


11. Temporarily mount cowl to fuse, ensure that the cowl does not come in contact with the engine and that there is at least 1/4" of clearance between the cowl and the motor. Make any adjustment to the cylinder head cut out at this time.

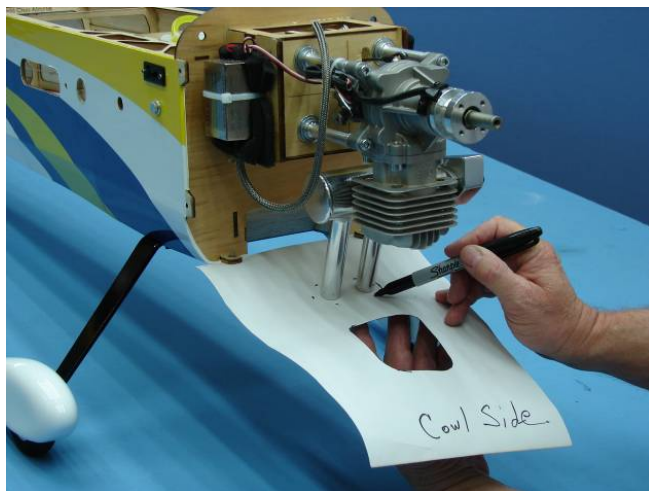




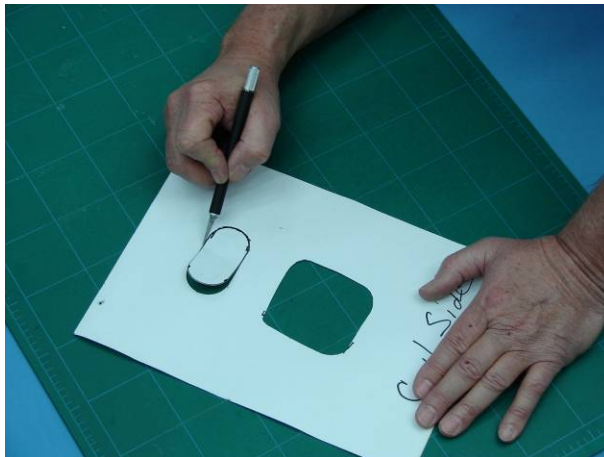
12. Mount the muffler to the engine using the muffler mounting bolts supplied by the muffler manufacturer.



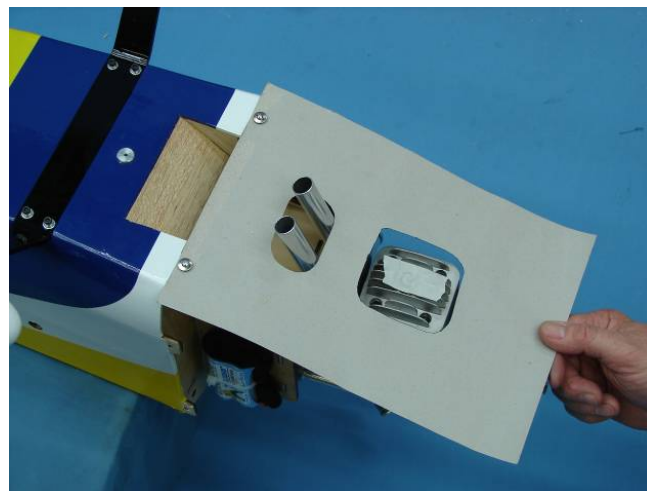
13. Reinstall the cowl template and mark the location of the muffler exit stingers at this time.



14. Use a hobby knife to cut out the stinger exit as shown.

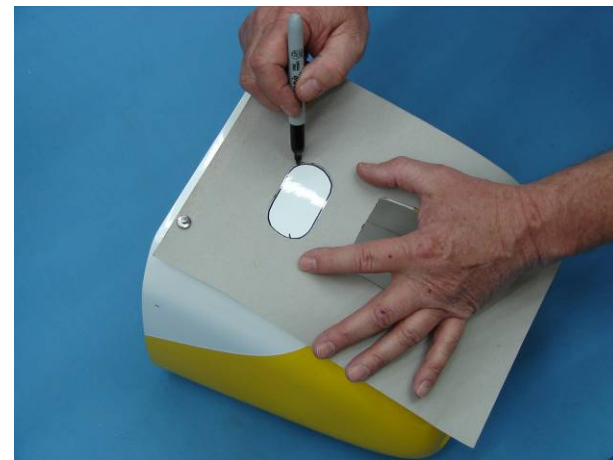


15. Check the fit of the template at this time. It may be necessary to make small adjustments to the cutout to get it to fit properly.

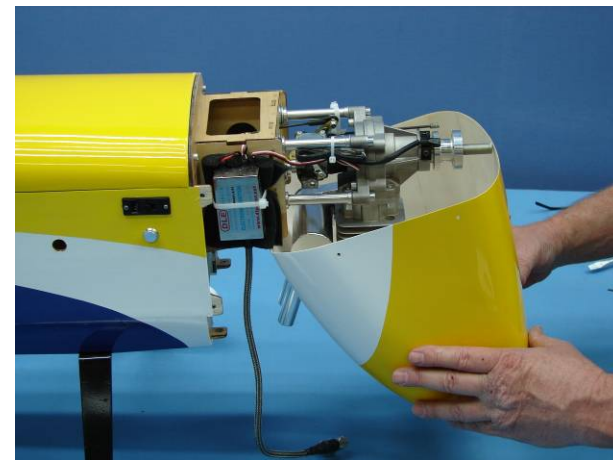


16. Align template with mounting bolt holes in cowl. Use a felt tip marker to transfer the template cutout pattern to the cowl and mark cut location.

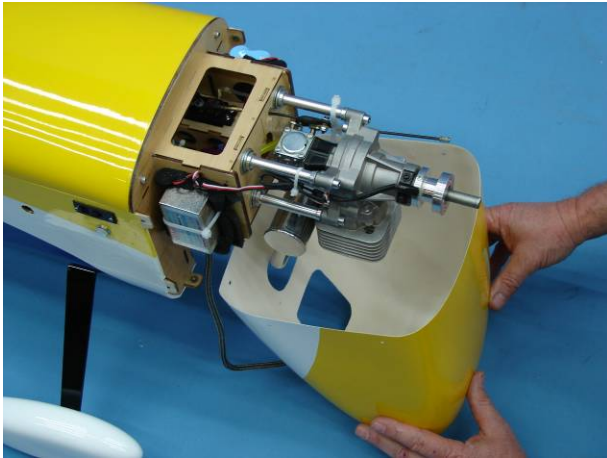
17. Remove the template and use a rotary cutting tool and sanding drum to cut out the openings in the cowl.



18. Install the cowling by first allowing the muffler stinger to pass through the hole cut in the previous step.



19. Tilt the cowling down to allow the stingers to pass through the cowling. Push cowling up and over the propeller drive shaft until it is in place.



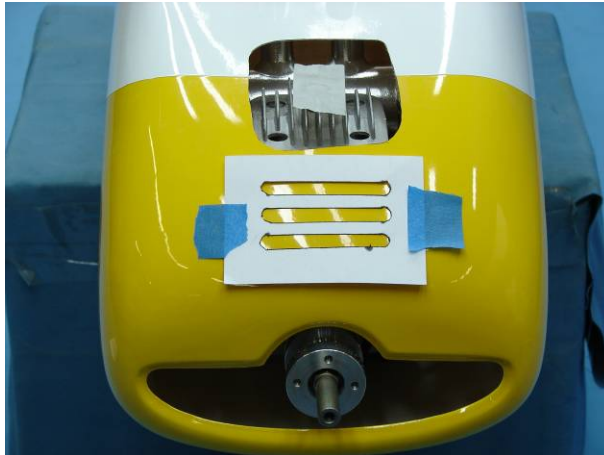
20. Bolt cowling in place and check the stinger exit location at this time. If the cowling comes into contact with the exhaust at any point, remove cowling and enlarge the stinger cutout for a proper fit.



21. Locate the supplied front air inlet template and tape to cowl using masking tape.



22. The front air inlets should be centered both vertically and horizontally on the engine head. This will allow cool air to pass through the cowl and into the fins of the engine.



23. Use a rotary cutting tool to cut out front air inlets as shown below.  
24. Finished cowl installation shown below.

**Note:** Aeroworks has found this method to provide sufficient cooling for the DLE 30 gas engine. It is still important to check motor temperatures to ensure it is not running too hot. If your engine does run hotter than the manufacturer suggests, additional cooling holes may need to be made in the cowling.





# RADIO INSTALLATION

1. Gather the radio installation items as shown below.

## Required Parts

- ◇ 2 - 8x80x300mm Foam Pad
- ◇ 2 - 356x12.5mm Velcro Straps

## Required Parts -Not Included

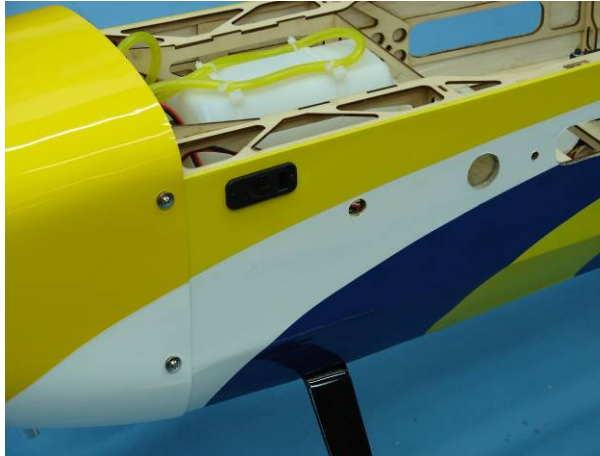
- ◇ 1 - Receiver 6-8 Channel Recommended
- ◇ 1 - Batteries (*2600mah Li-Ion Shown*)
- ◇ 1 - Regulators (*Fromeco Sahara Shown*)
- ◇ 1 - Receiver Switch (*Smart-Fly Shown*)
- ◇ 1 - Adhesive backed Velcro

## Required Tools and Adhesives

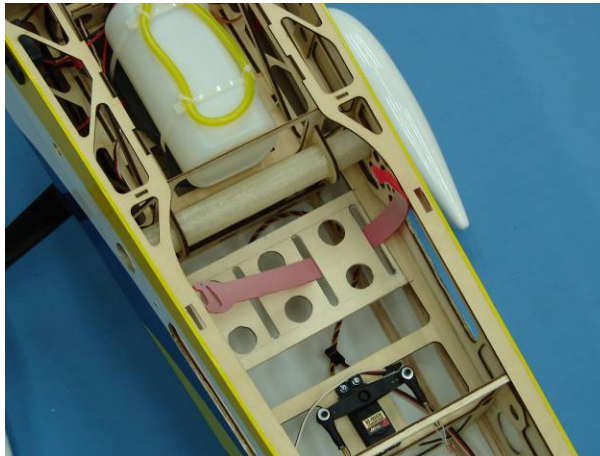
- ◇ Pencil/Felt Tip Pen
- ◇ Electric Drill
- ◇ 1/16" Drill Bit
- ◇ Wire Cutter
- ◇ Masking Tape

2. Mount radio switch in accordance with the switch manufacturers instructions and hardware.

**Note:** Ensure switch does not interfere with wing or cowl installation.



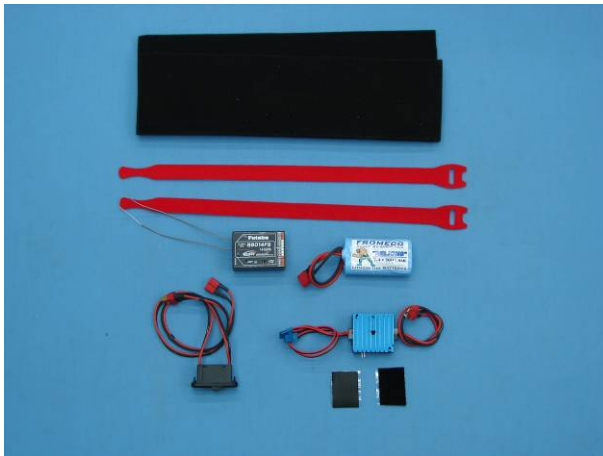
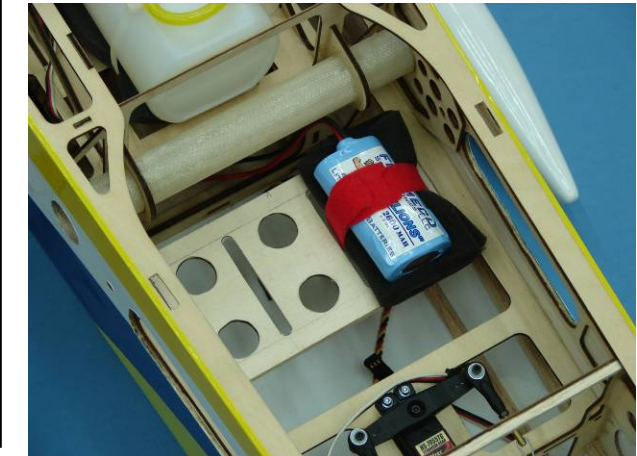
3. Slide (1) One Wrap Strap under radio tray as shown.



4. Wrap one piece of foam padding to fit under the battery as shown below.



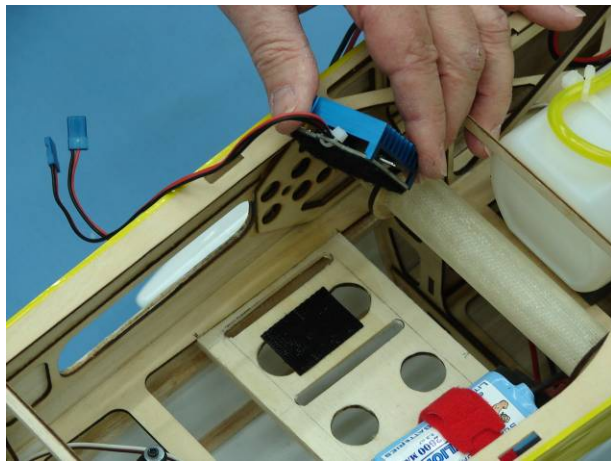
5. Install battery using foam padding and securely tighten one wrap strap as shown.



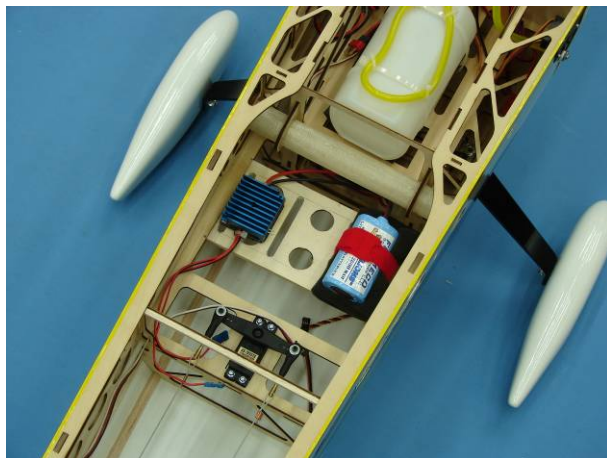
6. Attach hook and loop material to the backside of the regulator as shown.

**Builders Tip:**

Placing thick CA on adhesive side of hook and loop material will allow it to adhere firmly to the plywood radio floor.



7. Finished regulator installation shown below. Ensure that regulator is securely held to radio tray, a one wrap strap can be placed around the regulator and through the fuse floor to secure it in place if necessary.



8. Install receiver using foam padding and one wrap strap as shown below. Follow radio manufacturer's instructions for antenna orientation.
9. Finished radio installation shown below.

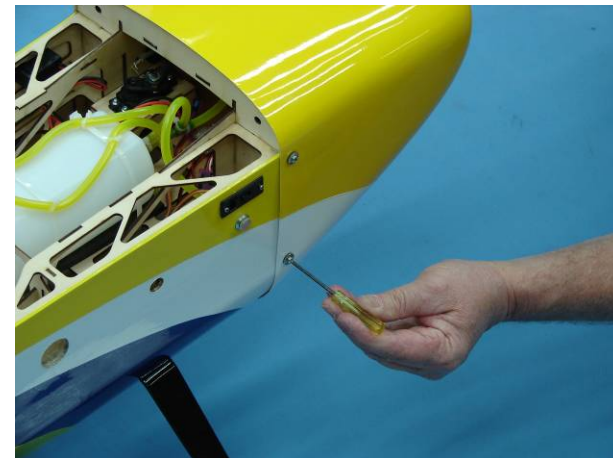


## PREFLIGHT PREPERATIONS

1. Gather (6) 4-40 cowl mounting bolts and (6) #6 small rubber backed washers for cowl mounting.



2. Mount the cowl using the cowl mounting bolts and rubber backed washers. The rubber backed washers are to prevent the fiberglass cowl from cracking and to prevent mounting bolts from loosening from normal engine vibration.

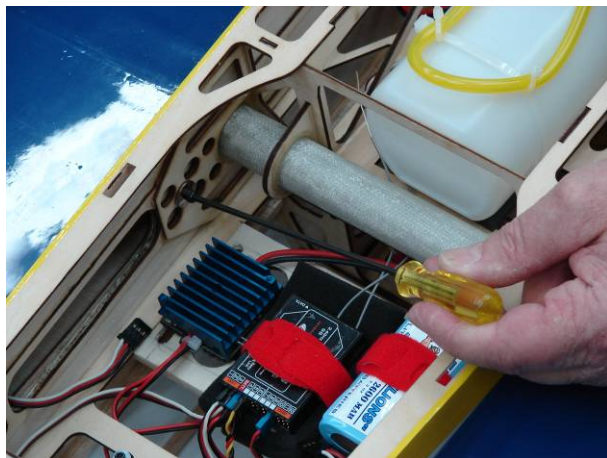




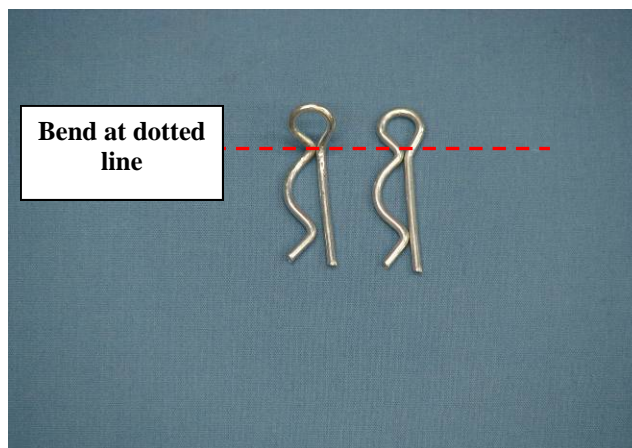
3. Gather (2) 6-32 wing mounting bolts, (2) #6 rubber backed washers and (4) hairpins for preparation of mounting the wings.



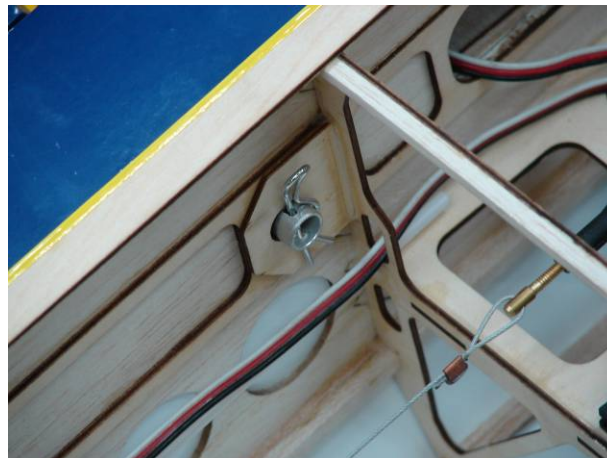
4. Slide the wing tube in the fuse wing tube sleeve. Slide the wings on the wing tube and plug in the aileron servo connectors. Slide the rubber backed washers on the wing mounting bolts and insert bolts through the fuse side and into the wing root blind nuts. Tighten snugly but do not over tighten and crack the fuse or wing root wood.



5. Bending the top of the hairpin out at a 45 degree angle will allow the pins to be installed and removed easily.



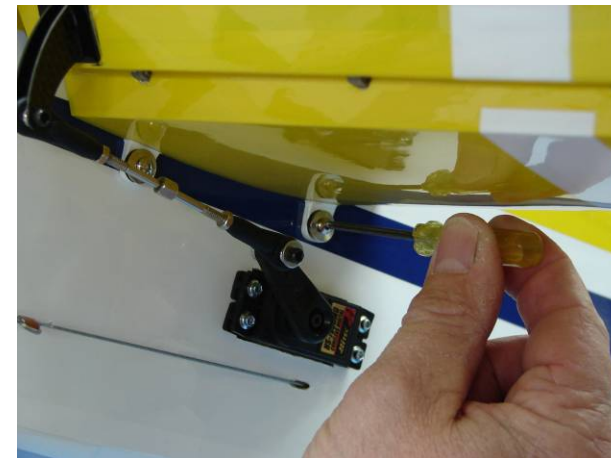
6. Install hairpins into both front and rear aluminum anti-rotation wing dowels to provide additional security.



7. Gather (4) 4-40 stab mounting bolts and (4) #6 small rubber backed washers, these will be used to secure the stabs to the fuse.



8. Slide the stab tube in the fuse stab tube sleeve. Slide the stabs on the stab tube and connect pushrod to servo arm. Slide the rubber backed washers on the stab mounting bolts and insert bolts through the stab mounting tabs and into the fuse blind nuts. Tighten snugly but do not over tighten and crack the stab mounting tabs or the fuse sides.



9. It is highly recommended you apply thin CA glue to the front hold down dowels. This is a High vibration area and can loosen the front dowels.

**Always check the front dowels are secure before each flying session**



10. The canopy is secured by a spring loaded latch as the rear of the canopy hatch assembly. This latch must be pulled all the way back when installing and removing the canopy.



11. Ensure that the front hold down dowels, center hooks and canopy latch are all engaged. If the hold down dowels or center hook is not fully seated the canopy latch will not lock into the canopy.

**Always keep the canopy covered while at the flying field. Allowing the canopy to sit in direct sunlight for any period of time may result in the canopy deck warping, this may make removal of the canopy difficult.**



## INNER AND OUTER SFG INSTALLATION

1. Gather the items shown below for the installation of both the inner and outer Side Force Generators or SFG's.

### Required Parts

- ◇ 2 - Outer SFG's
- ◇ 2 - Inner Top SFG's
- ◇ 2 - Inner Bottom SFG's
- ◇ 6 - 4-40 SFG Mounting Bolts
- ◇ 6 - #6 Bonded Washers

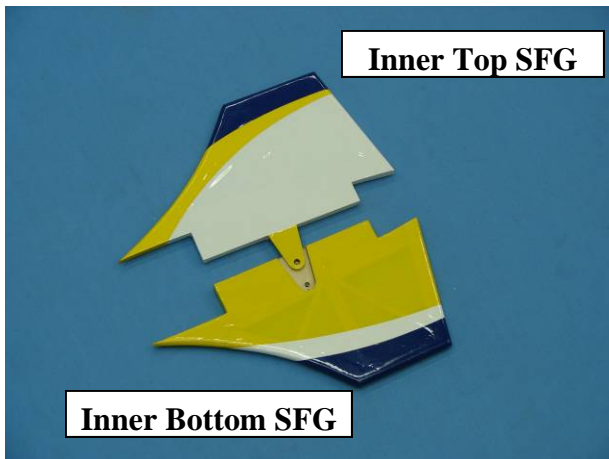
### Required Tools and Adhesives

- ◇ 5/64" Ball Driver
- ◇ .34oz Bottle Blue IC-Loc Thread Locker

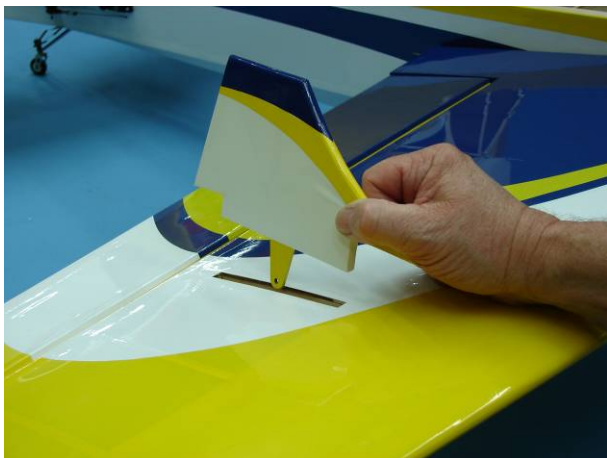




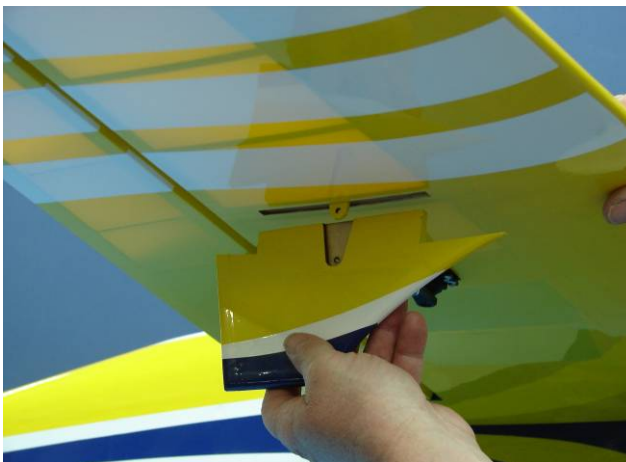
- The inner SFG's are held in place using one 4-40 mounting bolt. The top inner SFG mounting tab will pass through the wing and will secure to the bottom inner SFG.



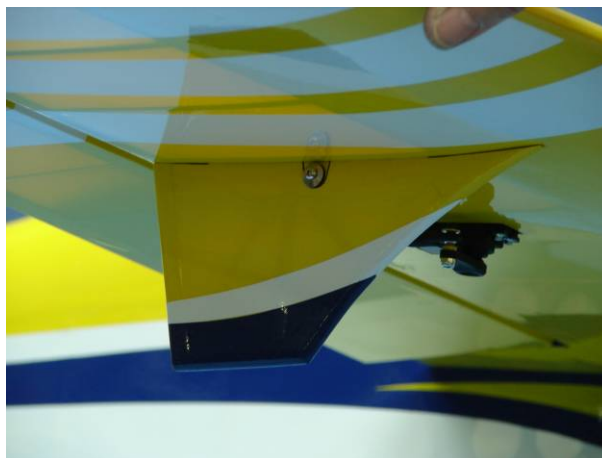
- Place the top inner SFG into the precut slot in the wing as shown below.



- Slide the bottom inner SFG in place, ensuring that the top SFG's mounting tab keys into the matched slot in the lower SFG.



- Secure the inner SFG's with a 4-40 bolt and bonded washer as shown below.
- Repeat inner SFG mounting steps for the remaining wing.



- Finished inner SFG mounting shown below.



- Mount the outer SFG using the supplied 4-40 mounting bolts and #6 bonded washers.



# DECAL INSTALLATION

1. Gather the items listed below for the installation of the supplied decal package

## Required Parts

- ◇ 1 - Custom Decal Package

## Required Tools and Adhesives

- ◇ Straight Edge
- ◇ Hobby Knife
- ◇ Scissors

2. Cut each decal away from the decal sheet and remove backing. Place decal on airplane in desired location.

3. Factory decal placement shown below.



4. Factory decal placement shown below.



5. Factory decal placement shown below.



6. Factory decal placement shown below.

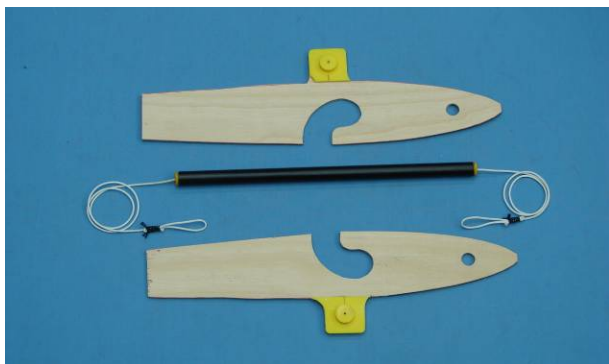




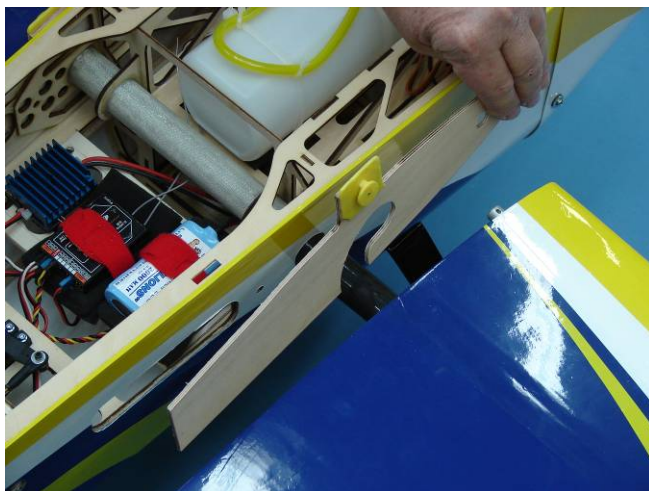
## CHECKING CG WITH “CG BUDDY”

1. Gather the CG Buddy as shown below.

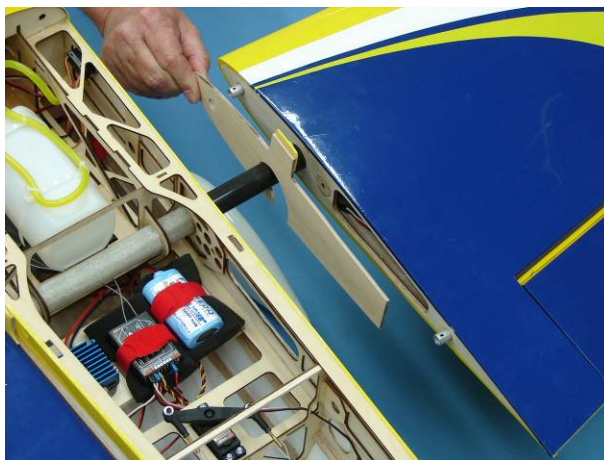
CG Can also be measured at the wing tip. CG is located 3 3/4” from the leading edge at the wing tip



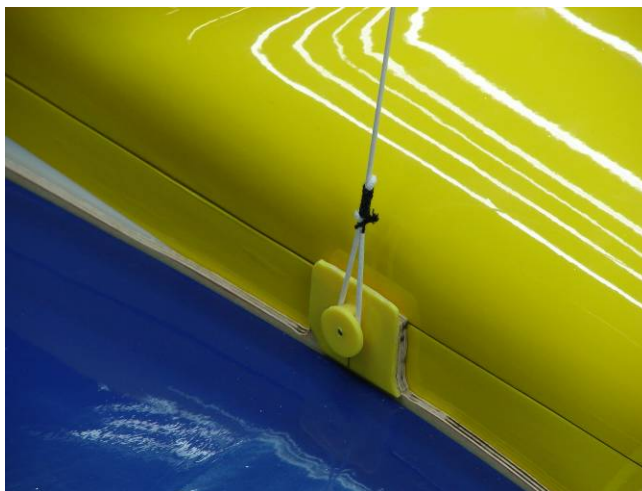
2. Slide wings away from fuse and install the “CG Buddy” on the wing tube and front rotation dowel as shown. The cable attachment should be on the top side of the wing. Make sure the “CG Buddy” is securely latched to the wing tube and dowel before moving further.



3. Slide wing back against the fuse as shown below.
4. Install “CG Buddy” on the opposite wing using the same methods described above.



5. Attach loop to cable attachment as shown below.
6. Slide wing back against fuse insuring both wings are pushed firmly against fuse.



7. Lift airplane from center handle as shown, plane should sit level when lifted. Balance the Freestyle Extra 260 QB-L without fuel in the tank with the batteries installed and **READY TO FLY**. Try to balance the model by moving the batteries and receiver before adding any ballast.



## CONTROL THROW DEFLECTION TABLE

	<u>Low Rate</u>	<u>Medium Rate</u>
<b>Aileron</b>	1 1/2" or 15° up 1 1/2" or 15° down	2 1/4" or 25° up 2 1/4" or 25° down
<b>Rudder</b>	15° left 15° right	30° left 30° right
<b>Elevator</b>	7/8" or 12° up 7/8" or 12° down	1 1/2" or 20° up 1 1/2" or 20° down

### For 3D flying use the following throws:

#### High Rate

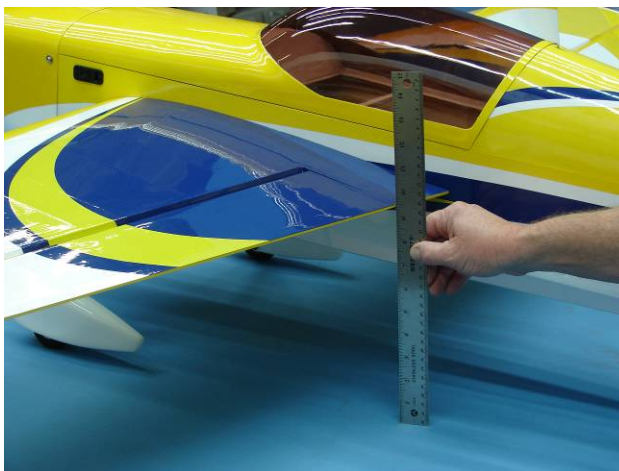
<b>Aileron</b>	3 1/2" or 40° up 3 1/2" or 40° down
<b>Rudder</b>	45° left 45° right <i>Full rudder deflection is typically recommended for all out 3D</i>
<b>Elevator</b>	3 3/4" or 50° up 3 3/4" or 50° down

#### Recommend Expediential:

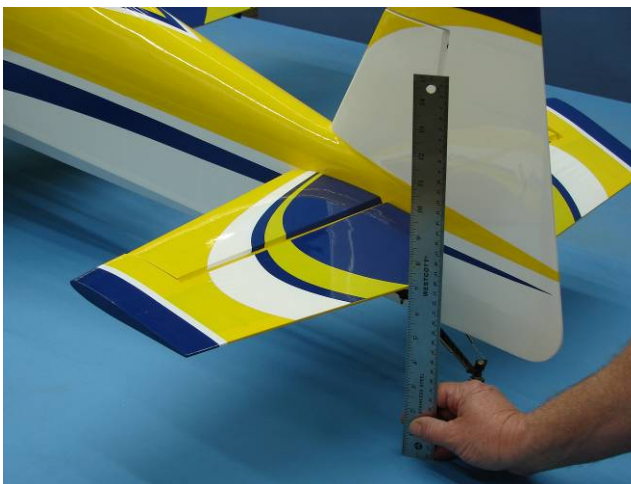
25% expediential on low rates  
45% expediential on medium rates  
60% expediential on high rates

Use the given rates as a starting point. Then adjust rates to suit your own flying style.

1. Use the widest part of the aileron as shown to measure the aileron throw in inches.



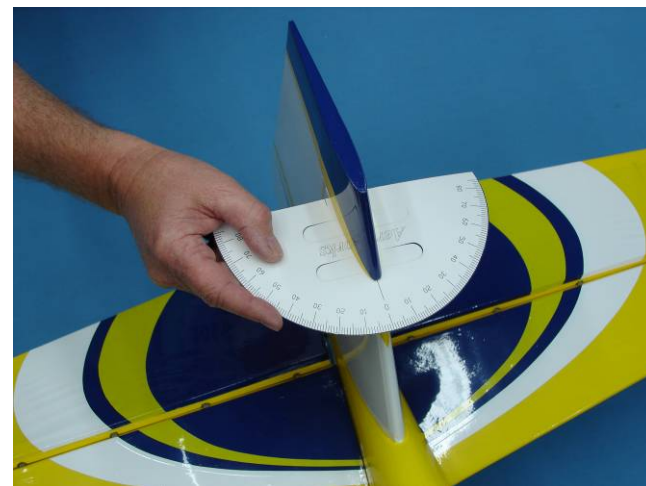
2. Use the widest part of the elevator as shown to measure the elevator throw in inches.



3. Gather the Aeroworks Rudder Throw Meter (*Supplied*) and clear tape.



4. Slide the throw meter under the rudder boost tab.





5. Secure the tabs to the fin using clear tape.



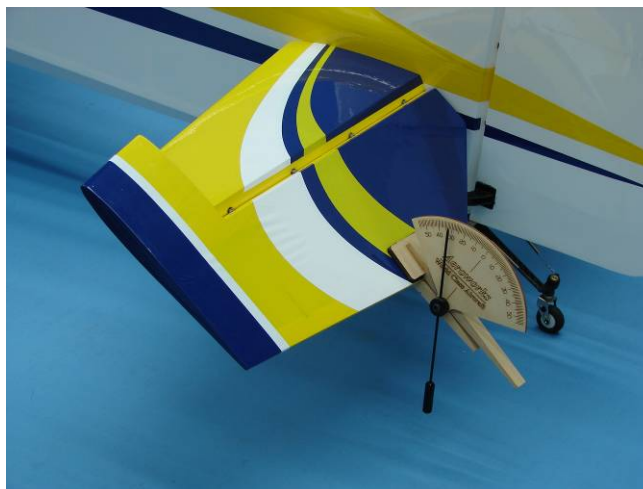
6. Degrees are measured at the tip of the boost tab as shown below.



7. Use the flight control deflection meter (*not supplied*) to measure the throws in degrees. Prop up the tail of the aircraft until the fuselage is parallel to the table top.



8. Use the widest part of the aileron to measure the aileron throw in degrees.



9. Use the widest part of the elevator to measure the elevator throw in degrees.

## FLYING THE 30cc FREESTYLE EXTRA 260

The **30cc Freestyle Extra 260** has been designed for unlimited 3D and precision aerobatic performance. It is capable of any maneuver that you can imagine and will do them with incredible ease. However, the **30cc Freestyle Extra 260** docile flight characteristics provide for a great sport airplane, by using the recommended low rates, the airplane can do all of the standard aerobatic maneuvers you are used to. With a flip of the rate switch the airplane can be transformed into a 3D MONSTER, performing waterfalls, rolling loops, rolling harriers, knife edge spins, washers, and many other high energy 3D maneuvers.

### First Flights:

The first few flights should be performed on low rates until you are comfortable with the airplane. Takeoff is as easy as slowly applying power until the airplane reaches take off speed, once at this speed lightly apply up elevator to get your 30cc Freestyle Extra 260 into the air.

Once airborne, fly the 30cc Freestyle Extra 260 around the pattern a few times, getting used to its low and high speed handling characteristics. You will see that the 30cc Freestyle Extra 260 has a very soft stall that can only be induced at low speeds, attaching the included SFG's will reduce this stall speed even further.

After you have become comfortable with the plane, switch to medium and high rates and really explore the 30cc Freestyle Extra 260's full 3D potential. Leaving the SFG's attached to the wing is highly recommended and will add stability in high alpha maneuvers as well as improve knife edge flight. You will find that the 30cc Freestyle Extra 260 is extremely stable in both upright and inverted harriers, use the throttle to control the attitude of the nose throughout harrier flight and you will be surprised at how easy the airplane is to control.

Landing the 30cc Freestyle Extra 260 is very easy due to its exceptional low speed handling characteristics. Carry a slight amount of power until the airplane is about 6 inches off the ground, reduce the throttle and let the 30cc Freestyle Extra 260 settle in for a perfect 3 point landing.

## MAINTAINING THE 30cc FREESTYLE EXTRA 260

It is always a good idea to check your airplane before each flying session. Listed below are a couple of key areas that should be checked before each flying session, checking these items will result in an airframe that lasts for many years.

- Covering Seams and Overlaps
- Glue Joints
- Engine Mounting Bolts
- Prop Mounting Bolts
- Servo Mounting Screws
- Servo Gears
- Hinges
- Control Horns

By checking each of the above listed items before each flying session your airplane will last for many season. These guidelines are a great way to check any airplane in your hangar to prevent unnecessary accidents with your airplanes.

## SAFE CHARGING PROCEDURES FOR Li-Po/Li-ion BATTERIES

Lithium Polymer batteries are significantly more volatile than Ni-Cd/ Ni-MH batteries used in RC applications. Follow all manufactures instructions while using these batteries. Mishandling of Li-Po batteries can result in fire. Always follow the manufacturer's instructions when disposing of Lithium Polymer batteries.

## 2012 ACADEMY OF MODEL AERONAUTICS SAFETY CODE

1. A model aircraft shall be defined as a non-human carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.
2. The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.
3. I will abide by this Safety Code and all rules established for the flying site I use. I will not willfully fly my model aircraft in a reckless and/or dangerous manner.
4. I will not fly my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.
5. I will not fly my model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. I will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.
6. I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.



7. I will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will I operate model aircraft with fuels containing tetranitromethane or hydrazine.

8. I will not operate model aircraft carrying pyrotechnic devices which explode burn, or propel a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they 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 Air Show Advisory Committee Document.

9. I will not operate my model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.

10. I will not operate my model aircraft while using any drug which could adversely affect my ability to safely control my model aircraft.

11. Children under six (6) years old are only allowed on a flight line or in a flight area as a pilot or while under flight instruction.

12. 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.

#### **RADIO CONTROL**

1. All model flying shall be conducted in a manner to avoid over flight of unprotected people.

2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.

3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.

4. At all flying sites a line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the line. In the case of air shows demonstrations straight line must be established. An area away from the line must be maintained for spectators. Intentional flying behind the line is prohibited.

5. I will operate my model aircraft using only 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.

6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency management agreement may be an allocation of frequencies for each site, a day use agreement between sites, or testing which determines that no interference exists. A frequency management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.

7. With the exception of events flown under official

AMA rules, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and located at the flight line.

8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.

9. Radio-controlled night flying is limited to low performance model aircraft (less than 100 mph). The model aircraft must be equipped with a Lighting system which clearly defines the aircraft's attitude and direction at all times.

10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.

**Enjoy your new  
Aeroworks 30cc  
Freestyle  
Extra 260 ARF  
QB-L!**

# 30cc FREESTYLE EXTRA 260

## MATERIALS LIST

### Fuselage with Fin – covered, nose of fuse fuel-proofed:

- (4) 6-32 blind nuts pre-installed for main landing gear mounting
- (10) 4-40 blind nuts pre-installed for cowl mounting(6) and Stab mounting(4)
- (1) Canopy – Painted and pre-installed
- (1) 3.5(o.d.) antenna exit tube installed
- (2) 3.5(o.d.) x 60mm pull-pull exit tube installed

### Left Wing with Aileron – covered: pre-drilled for the mounting of the control horns

- (6) small pin point hinges in place – glued
- (2) 10mm dia. anti-rotation pins installed
- (1) 6-32 blind nut pre-installed for wing mounting
- (2) 4-40 blind nuts pre-installed for outside SFG mounting
- (1) aileron servo string pre-installed

### Right Wing with Aileron – covered: pre-drilled for the mounting of the control horns

- (6) small pin point hinges in place – glued
- (2) 10mm dia. anti-rotation pins installed
- (1) 6-32 blind nut pre-installed for wing mounting
- (2) 4-40 blind nuts pre-installed for outside SFG mounting
- (1) aileron servo string pre-installed

### Inner Side Force Generators (Left and Right) -

- (2) 4-40 blind nuts pre-installed (left top/bottom; right top/bottom)– covered

### Outside Side Force Generators (Left and Right) – covered pre-drilled the holes of mounting

### Horizontal Stabilizer with elevator assembly with

- (4) small pin point hinges --glued--covered

Stabilizer with 8mm front dowel pin-carbon fiber Elevators pre-drilled for the mounting of the control horns

### Rudder with (5) pin point hinges (not glued) – covered

### SUB ASSEMBLIES:

#### #1:

- (1) Carbon Main Landing Gear
- (4) 6-32x20mm hex head bolts – main landing gear mounting
- (4) 3.5mm flat washers for main landing gear mounting
- (4) 3.5mm split ring lock washers for main landing gear mounting
- (2) 4x33mm AL axle bolts
- (2) M6 lock nuts
- (4) 4mm i.d. wheel collars with set-screws
- (4) 4-40x10mm button head bolts for wheel pants mounting
- (4) 3mm flat washer for mounting wheel pants
- (4) 3mm split ring lock washer for mounting wheel pants

#### #2:

- (2) 75mm dia. main wheels

#### #3:

- (2) Wheel Pants—1 left and 1 right---painted
- (4) 4-40 blind nuts installed on the wheel pants, 2 per side.

#### #4:

Tail Wheel Assembly – Small

#### #5:

- (8) Carbon plate horns single output – laser cut – aileron (4); elevator (4)
- (2) Carbon plate horns double output – laser cut – Rudder
- (6) carbon horns back plate
- (2) 4-40x3” left hand and right hand threaded pushrods with nuts for ailerons
- (2) 4-40x2.5” left hand and right hand threaded pushrods with nuts for elevators
- (1) Wrench for the left hand and right hand threaded pushrod
- (8) 4-40 ball links
- (4) brass spacers – 2 for ailerons; 2 for elevators;

- (8) 4-40 ball link – 4 for ailerons; 4 for elevators;
- (8) 4-40x16mm hex bolts
- (8) 4-40 lock nuts
- (4) 3mm flat washers

#### #6:

- (2) 1x1000mm plastic coated pull-pull steel cable
- (4) 4-40 metal R/C links with nuts
- (4) 3.5x5mm brass pull-pull swaging tubes
- (4) 4-40 ball links for rudder servo
- (4) 4-40x16mm hex head bolts
- (4) 4-40 lock nuts
- (2) brass spacers
- (4) 3 flat washers

#### #7:

- (1) 23x650mm carbon/fiber compound wing tube
- (1) 8x300mm carbon/fiber compound stab tube
- (2) 6-32x25mm hex head wing mounting bolts
- (2) #6 bonded washers for wing mounting
- (2) 3.5mm split ring lock washers for wing mounting
- (4) 4-40x14mm button head bolts for stab mounting
- (4) #6 bonded washer for stab mounting
- (4) 3mm split ring lock washers for stab mounting
- (4) 4-40x20mm button head bolts for outside SFG mounting
- (2) 4-40x10mm button head bolts for inner SFG mounting
- (6) #6 bonded washers for SFG mounting
- (2) 1.8mm hair pins

#### #8:

- (1) 15oz (450cc) gas fuel tank
- (1) fuel dot
- (1) vent exit dot

#### #9:

- (1) fiberglass cowl – painted and pre-drilled mounting holes
- (6) 4-40x14mm button head bolts for cowl mounting
- (6) #6 bonded washers
- (6) 3mm split ring lock washers



**#10:**

- (1) 4-40x300mm rod threaded at one end
- (2) 4-40 ball links
- (2) 4-40x16mm hex head bolt
- (2) 4-40 lock nuts
- (2) 3mm flat washers
- (1) brass spacer
- (1) 4-40 threaded coupler
- (1) servo tray

**#11:**

- (1) 4-40x300mm rod threaded at one end
- (1) 4-40 ball links
- (1) 4-40x16mm hex head bolt
- (1) 4-40 lock nuts
- (1) brass spacer
- (1) large nylon tie
- (2) small nylon ties

**#12:**

- (2) engine mounting template (DLE 30/OS GT33, DLE 35RA and universal)
- (2) 8x80x300mm sponge for the receiver and battery
- (3) 356x12.5mm one wrap strap
- (3) large nylon ties
- (8) small nylon ties
- (1) card stock (8"x11") for making the template for cutting of cowling
- (1) pre-cut paper template for front of cowling
- (1) 4.25" Aeroworks paper degree meter for the rudder
- (1) 12mm aluminum Insert
- (6) Rubber Grommets – each for 6mm, 8mm, 10mm – fuel line and wire guide

**#13:**

- (1) "C.G. Buddy"

**#14:**

- (1) 300x300mm 21033 Bright Yellow Covering
- (1) 300x300mm 21052 Midnight Blue Covering
- (1) 300x300mm 21010 White Covering

**#15:**

- (1) decal sheet

**#16:**

- (1) CD Instruction Manual

## Accessories Available From Aeroworks

For more information or to order accessories visit our website: [WWW.AERO-WORKS.NET](http://WWW.AERO-WORKS.NET)

### Custom Throw Meter

Use the Aeroworks Throw Meter to precisely set your control throws on the elevator and ailerons.



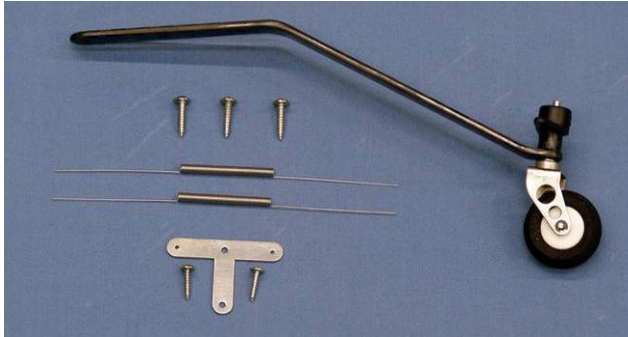
### Custom Wing/Stab Bags

Designed especially for the 30cc Freestyle Extra 260 QB-L. The wing and stab bags are lightweight, yet heavy enough to protect your wings and stabs from hanger rash or small nicks and dents from transporting too and from the flying field.



### 5-15 LB Carbon Tail Wheel

This carbon tail wheel is designed to fit perfectly on the 30cc Freestyle Extra 260. The carbon leaf spring adds tremendous strength compared to the stock aluminum tail wheel at a reduced weight.



### Fuel Line Installation Kit

The fuel line installation kit includes everything needed to plumb your gasoline powered aircraft.

- 3 feet of 1/8" ID DU-BRO tygon tubing is provided.
- Simple ¼ turn fuel dot provides a nice, finished look to any model.
- Aluminum fuel "T" with 1/8" ID will provide superior fuel flow.



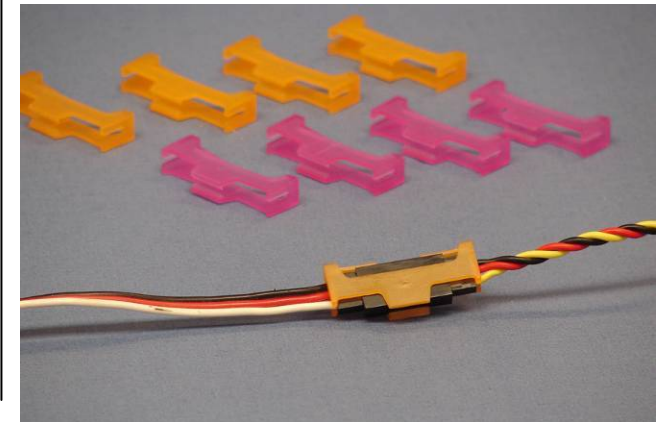
### 2.5 Gallon Hand Crank Gas Fuel System

The 2.5 gallon hand crank gas fuel system is perfect for pilots venturing into gas powered airplanes for the first time. This gas can come out of the box assembled and ready for use.



### Aeroworks Safety Clips

Made from flexible plastic the Aeroworks Safety Clips provide a easy and safe way to secure your servo connections.





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