AEROWORKS

50cc Sport Cub S2 ARF-QB

(Quick Build)

ASSEMBLY MANUAL

AEROWORKS
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TABLE OF CONTENTS

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Thank you for choosing the Aeroworks Sport Cub S2 ARF-QB. We put great effort into making this plane the best model you will ever build and fly. We have provided you with the highest quality kit and performance possible. We wish you great success in the assembly and flying of your new Aeroworks Sport Cub S2 ARF-QB.

!WARNING!

An R/C aircraft is not a toy! If misused, it can cause serious bodily harm and property damage. Fly only in open areas, and AMA (Academy of Model Aeronautics) approved flying sites. Follow all manufacturer instructions included with your plane, radio, servo's, batteries and engine.

Aeroworks manufacturing warranties 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.

We, as the kit manufacturer, have provided you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and fly ability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expresses or implied as to the performance or safety of your completed model.

INTRODUCTION

Your new Sport Cub S2 ARF-QB is a scale airplane. The aircraft builds easily, quickly, and precisely due to its state of the art CAD design, LASER cut technology, and high quality included hardware. We hope you enjoy building and flying your Sport Cub S2 ARF-QB.

Great care has been taken in both the design and manufacturing of the Sport Cub S2 ARF-QB 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 Sport Cub S2 ARF-QB has been individually hand built, covered and painted by trained and experienced craftsmen with over 25 years of manufacturing experience. Using CAD design, laser cut technology and jig-built assures accuracy in all stages of production.

The Sport Cub S2 ARF-QB is designed for gas engines in the 50cc gas category. DA 50cc engine is shown in the assembly instructions. The aircraft was tested with the DA 50 and has outstanding performance. The final choice of engine is left up to the builder. A computer radio is recommended to allow the pilot to take advantage of the full capabilities of this aircraft.

IMPORTANT Please read through this manual carefully, before starting the assembly of your new Sport Cub S2 ARF-QB . Inventory and inspect all parts and hardware for any imperfections or damage. Notify **Aeroworks immediately** if there are missing or damaged parts.

INTENDED USE

This plane should not be regarded as a toy. This is an intermediate to advanced skill level model and is recommended for pilots who are beyond the trainer-stage.

!READ! *WARRANTY* *!READ!*

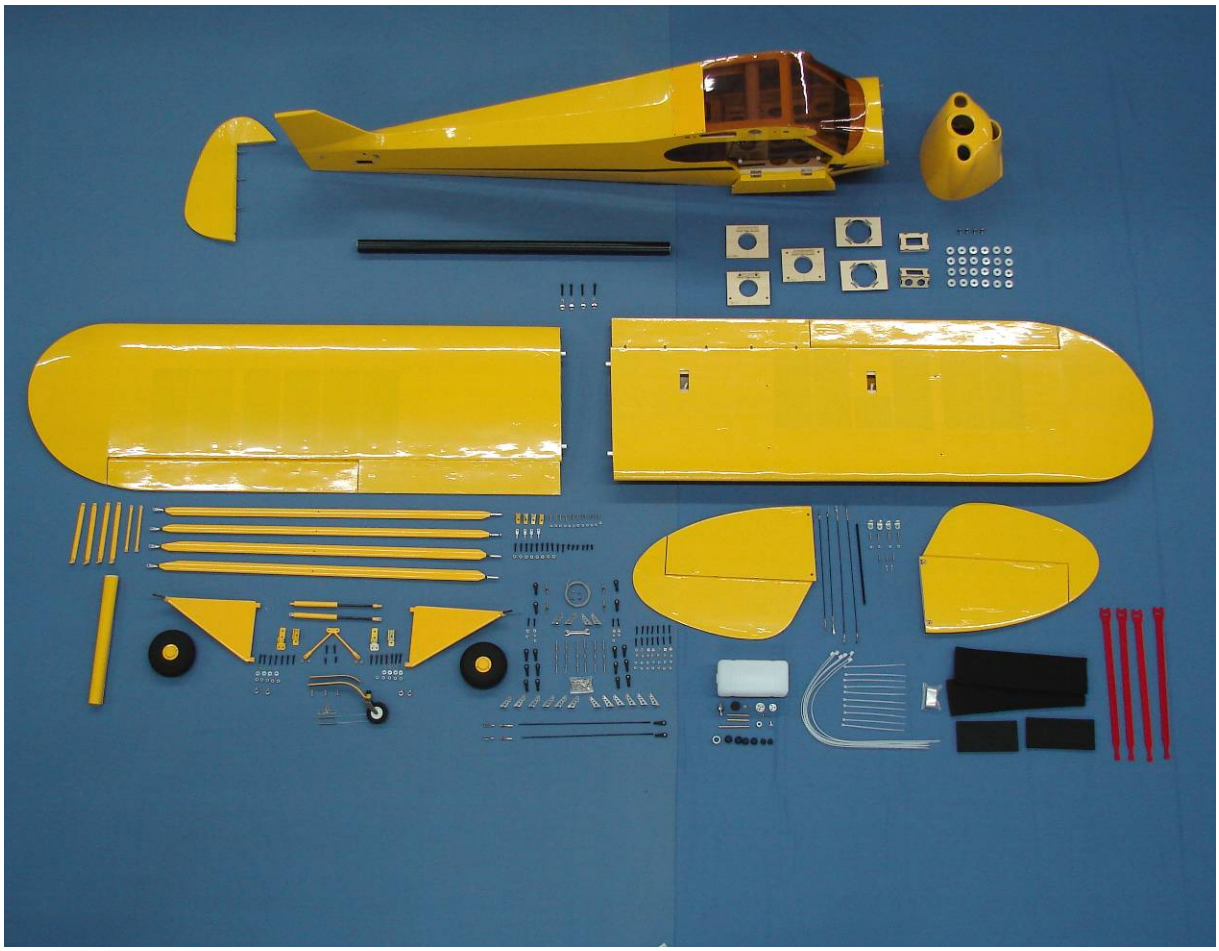
It is important to notify Aeroworks of any damage or problems with the model within 30 days of receiving your airplane to be covered under warranty. All returned parts must be shipped in their original shipping boxes and insured for full replacement value. If you wish to return this aircraft for any 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.

Aeroworks cannot insure the skill of the modeler and can not influence the builder during the construction or use of this aircraft, and therefore,

The purchaser/operator accepts all responsibility of any and all structural or mechanical failures.

KIT CONTENTS



50cc Sport Cub S2 ARF-QB Materials List

Basic Aircraft Parts

Fuselage with pre-installed vertical fin - Covered with Oracover, pre-drilled three holes for tail wheel assembly:

(12) 4-40 blind nuts pre-installed (4) for cowling mounting and (8) for tunnel hatch on the bottom of fuse
(12) 6-32 blind nuts pre-installed (8) for landing gear mounting and (4) for stab mounting
(2) Tunnel Hatches covered and pre-installed with
(8) 4-40x12mm button head bolts and (8) 3mm flat washers
(2) Fuse Rear Side Window, tinted color, preglued
(2) Fuse Front Side Window (functional), tinted color, pre-installed with the below items:
(4) Nylon Hinges (2 each side);
(8) M2x8mm bolts;
(8) M2 hex nuts
(4) Nylon latch
(1) Door at the right of fuse, covered, preinstalled
(1) Dash Panel – painted and pre-glued
(1) Front Windshield- vacuumed and painted, pre-installed with
(18) T2x6mm screws
(2) 3.5(o.d.)x100mm pull-pull exit tube Installed

Left Wing with Aileron, Flap – Covered, pre-drilled for the mounting of the control horns

(2) 8-32 blind nuts pre-installed for wing mounting
(2) 6-32 blind nuts pre-installed for wing struts mounting
(5) Large Pin Point Hinges glued for Flap
(6) Large Pin Point Hinges glued for Aileron
(1) Window Latch – pre installed
(2) Anti-rotation Pins installed
(1) Aileron servo string installed
(1) Flap servo string installed

Right Wing with Aileron, Flap – Covered, pre-drilled for the mounting of the control horns

(2) 8-32 blind nuts pre-installed for wing mounting
(2) 6-32 blind nuts pre-installed for wing struts mounting
(5) Large Pin Point Hinges glued for Flap
(6) Large Pin Point Hinges glued for Aileron
(1) Window Latch – pre installed
(2) Anti-rotation Pins installed
(1) Aileron servo string installed
(1) Flap servo string installed

Horizontal Stabilizer with elevators with (8) pin point hinges (glued)-covered Pre-drilled for the mounting of the control horns

Rudder with (4) pin point hinges (not glued) - Covered Pre-drilled for the mounting of the control horns

 # 1

(1) Cowl, fiberglass & factory painted and trimmed, pre-drilled and preinstalled grommets
(4) 4-40x16mm hex bolts with rubber O ring for cowling mounting

 # 2

(2) Main landing gear, 1 left, 1 right – painted
(2) Shock Absorber assemblies
(1) Landing gear supports
(4) Metal fittings for landing gear, 2 front, 2 rear
(8) 6-32x20mm hex head bolts for landing gear mounting
(8) 6-32x15mm hex head bolts for landing gear mounting
(2) 6-32x10mm hex head bolts for landing gear mounting
(10) 6-32 Lock Nuts for landing gear mounting
(8) 3.5mm flat washers
(2) Nylon Spacers
(4) Cooper Spacers
(2) 4.25" Rubber Cub S2 wheels with aluminum hub
(2) Hub caps - painted
(6) M2x5mm Phillip head bolts for caps mounting
(4) 5mm i.d.x5mm Wheel Collars with 6-32 set-screws
(2) 5mm i.d. x2mm plastic spacers

 # 3

(1) Tail Wheel Assembly, assembled
(1) 50mm dia. rubber tail wheel with aluminum hub
(1) Metal Rudder T-horn
(2) Coil Steering Springs
(3) T2.6x20mm PWA screws for tail wheel mounting
(2) T2.6x15mm PWA screws for T arm mounting

#4

(2) 4-40x3" left hand and right hand threaded pushrods with nuts for ailerons
(2) 4-40x3" left hand and right hand threaded pushrods with nuts for flaps
(2) 4-40x4-3/4" left hand and right hand threaded pushrods with nuts for elevators
(1) Wrench for the left hand and right hand threaded pushrod
(12) 4-40 Ball Links – 4 for ailerons,4 for flaps and 4 for elevators
(12) 4-40x16mm hex head bolts
(12) 3mm flat washers
(6) Brass Spacers
(12) 4-40 Lock Nuts
(12) Metal Control Horns – 6 left and 6 right
(36) T2.6x12mm Phillips head screws for control horns mounting

 # 5

(2) 1x1150mm Pull-Pull plastic coated steel Cable
(4) 3.5x5mm brass swage tubes
(4) 4-40 Ball Links
(4) 4-40x16mm hex head bolts
(4) 4-40 lock nuts
(4) 3mm flat washers
(2) Brass Spacers
(4) 4-40 coupler with nuts for steel cable
(4) AL Metal Control Horns – 2 left and 2 right
(6) T2.6x12mm Phillip head bolts
(6) M2 hex nuts

 # 6

(2) 4-40x300mm threaded pushrods
(2) 4-40 Solder threaded coupler with nuts
(4) 4-40 Ball Links
(4) 4-40x16mm hex head bolts
(4) 4-40 lock nuts
(4) Brass spacers
(4) 3mm flat washers
(2) Throttle Servo Tray

 # 7

(1) 750cc Gas Fuel Tank with Rubber Stopper
(2) Brass Barbs for fuel line
(2) Fuel Filler Dots – 1 male and 1 female

 # 8

(2) Pre Assembled Wing Struts
(4) 6-32x20mm hex head bolts
(4) 6-32x12mm hex head bolts
(8) 6-32 lock nuts
(4) Pins
(1) L hex wrench
(1) Wrench (Fits 6-32 / 8-32)
(2) Foam Pads for protecting wing

 # 9

(1) 32dia. x780mm aluminum wing joiner – black anodized
(4) 8-32x25mm hex head bolts for wing mounting
(4) #8 bonded washers

 # 10

(4) L steel connectors for stab mounting
(2) 6-32x10mm hex head bolts mounting connector with Rear of fuselage
(4) 6-32x15mm hex head bolts mounting connector with Front of fuselage and Front of stab
(2) 6-32x20mm hex head bolts mounting connector with Rear of stab
(4) 6-32 lock nuts mounting connector with stab
(4) 8x3.2mm flat washers
(1) 5x191mm carbon stab tube

 # 11

(4) Tail Flying Wires – pre-made
(3) M2x25mm Phillip head bolts
(3) M2 hex nuts
(2) T2.6x16mm PWA screws

 # 12

(1) 3/4" thick Hardwood Spacer Block for mounting engine DA50/DLE55
(1) Engine mounting template for DA 50/ DLE55
(1) Universal Engine Mounting Template
(1) 8x11" Card Stock Material for the template for cutting of cowling
(1) 6x160x70mm foam for fuel tank
(2) 8x80x300mm Sponge for receiver and battery
(4) 356x12.5mm Velcro
(6) 8x450mm Nylon Ties for fuel tank mounting
(10) 3x150mm Nylon Ties for the fuel line
(1) 12mm aluminum insert
(6) Rubber Grommets – 2 each - size 6,8,10 for fuel line and wire guide
(1) Small Paper Degree Meter for the rudder

 # 13

(1) Customer Throw Meter

 # 14

(1) C.G. Buddy

 # 15

(24) 6.35mm Aluminum Engine Stand offs

 # 16

(1) 300x300mm Cub Yellow (#884) Ultracote™ covering
OR
(1) 300x300mm White (#870) Ultracote™ covering
(1) 300x300mm True Red (#866) Ultracote™ covering

 # 17

(1) Manual CD

 # 18

(1) Decal Sheet

ITEMS NEEDED TO COMPLETE

Hardware:

- 50cc Gas engine and ignition
- J-Tec 50cc Wrap Around Slim Fit Muffler
- 2 x aileron servos (min 172 in./oz. Torque @ 6 volt, Digital, Metal Geared)
- 2 x flap servos (min 172 in./oz. Torque @ 6 volt, Digital, Metal Geared)
- 1 x rudder servo (min 172 in./oz. Torque @ 6 volt, Digital, Metal Geared)
- 2 x elevator servos (min 172 in./oz. Torque @ 6 volt, Digital, Metal Geared)
- 1 x throttle servo (Fast / Reliable)
- Servo extensions 2 x 6", 4 x 18," 2 x 24"
- 1 x 8 channel receiver (2.4Ghz recommended)
- 1 x receiver battery (7.4 volt/ 5200mah)
- 1 x ignition battery (7.4 volt/ 2600mah)
- 2 x voltage regulator
- 2 x switches with charge jacks

Tools:

- Allen wrenches US and Metric.
- Dremel cutting disc and sanding drum tool
- 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
- Waxed paper
- Wire Cutters

Adhesives:

- 15-30 Minute epoxy
- Blue Loctite
- Epoxy mixing cups, mixing sticks, brushes
- CA kicker (optional)
- Thick, Thin and Medium CA
- Rubbing alcohol
- Wipes

WARNING
Some rubbing alcohols may attack painted parts.

Removing Cockpit Hatch and Instrument Panel

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 it is recommended that the canopy, and instrument panel be removed. This will aid in assembling the model. These items will be reinstalled when the rest of the model is finished. Using a Phillips screw driver remove the canopy from the fuselage as shown below.

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2. Use a Phillips screw driver to remove the mounting screws holding the instrument panel in place.

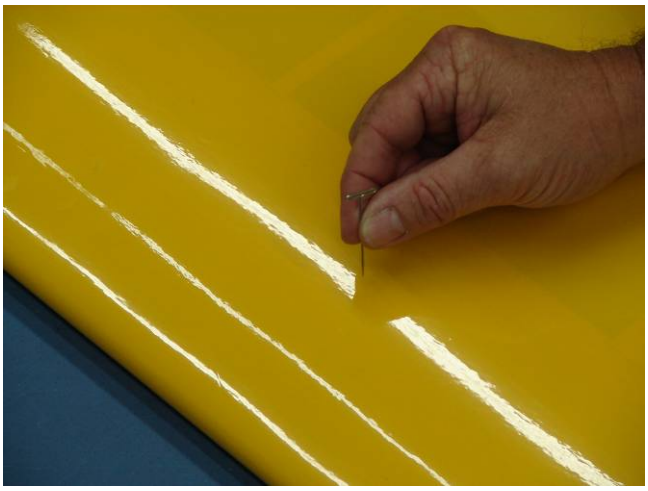
3. **DO NOT** use a heat gun near the side windows. Heat applied directly to these surfaces will cause the material to deform and bubble.

TIGHTENING AND RE-SHRINKING THE COVERING

1. 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 lose 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.

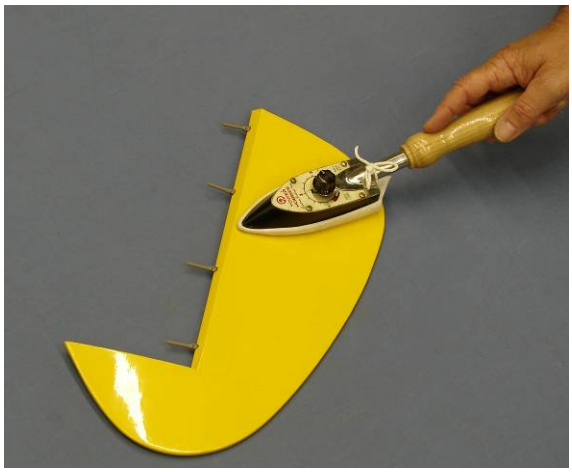


4. Use your covering iron to ensure all edges, seams, and color overlaps are securely sealed.

CHECKING SEAMS AND COLOR OVERLAPS FOR GOOD SEAL

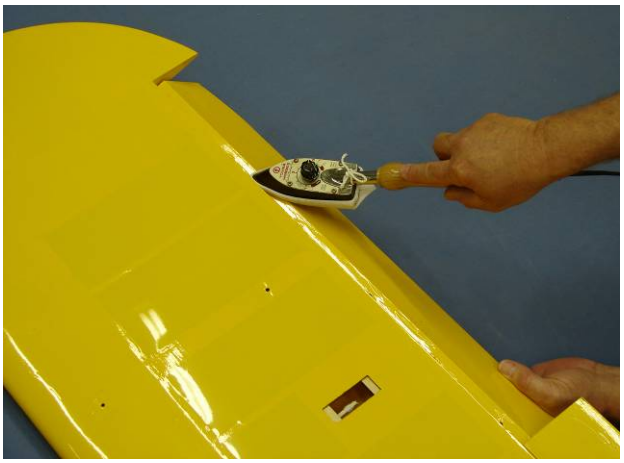
1. Go over all seams and color overlaps with your sealing iron.

Note: Even if your models covering has no wrinkles out of the box it is still very important to go over all seams and overlaps to make certain they are sealed securely. This is especially important at the leading edges of the wings and stabs. We recommend checking the covering after each flying session.



2. Use your covering iron to ensure all edges, seams, and color overlaps are securely sealed.

3. Go over all hinge gaps and seal all seams.



IMPORTANT:

It is the responsibility of the purchaser / operator to check the covering seams and overlaps for security and a good seal.

Aeroworks is not responsible for failure of covering seams or overlaps during flight.

Note: If covering continues to lift apply a small amount of thin CA underneath the covering. Then using a clean rag apply pressure to secure.

One of the most important tools in your flight box is a roll of clear tape. This can be used at the field for fast and easy repairs of the covering. Then once you have finished flying the covering can be permanently repaired.

Ultracote™ Colors

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

Red/White Scheme

True Red	**#866**
Black	**#874**
White	**#870**

2. **Yellow/Black Scheme**

Cub Yellow	**#884**
Black	**#874**

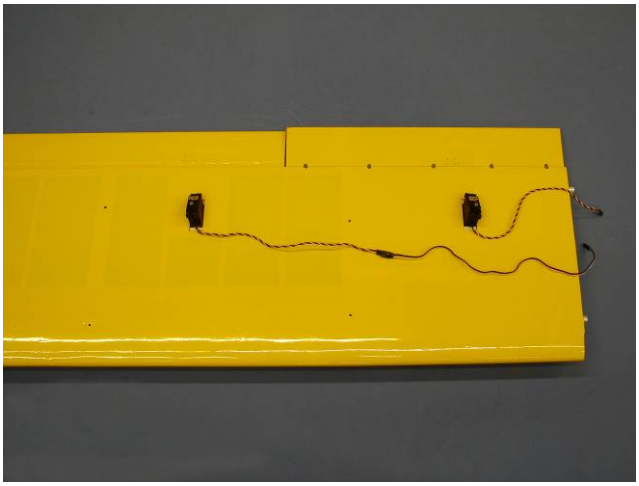
WING ASSEMBLY

Aileron/Flap Servo Installation

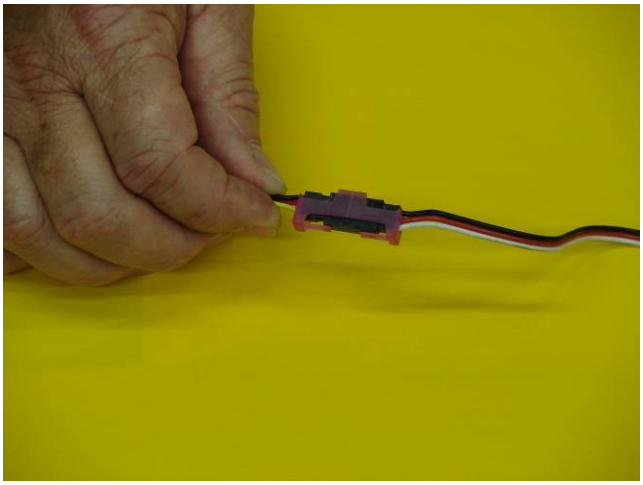
1. The ailerons/flaps have been pre-hinged and glued to the wing panels and are ready for flight. No other steps are necessary for hinging.

   Gather the following items:
   - ◊ 1 - Wing panel
   - ◊ 1 - Aileron servo
   - ◊ 1 - Flap Servo
   - ◊ 8 - Servo mounting screws
   - ◊ 2 - 1 1/4" servo arm
   - ◊ 1 - Safety clip
   - ◊ 1 - 18" Servo Extension

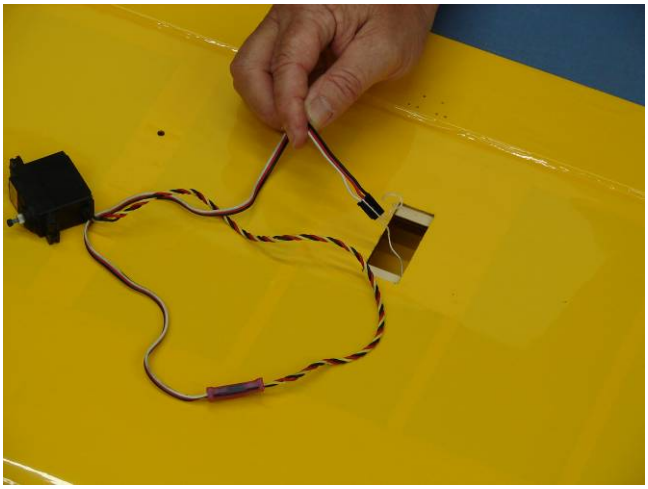
2. Layout the servos as shown below. Install the extensions at this time and double check extension length.



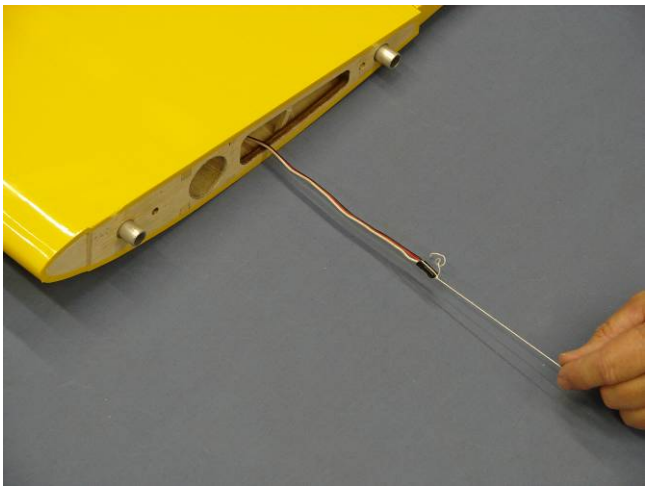
3. Attach the 18" extension to the servo lead and secure with Aeroworks Safety Clip. Ensure the connectors will not come apart from vibration or light tension. Safety clips available from Aeroworks.



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



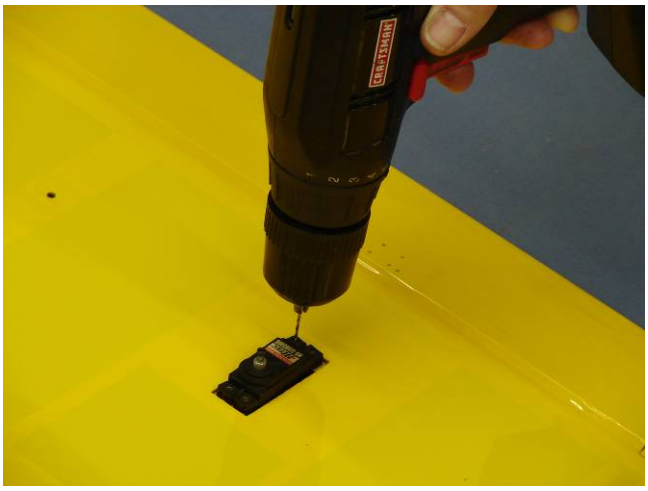
5. Pull aileron extension through root end of wing.



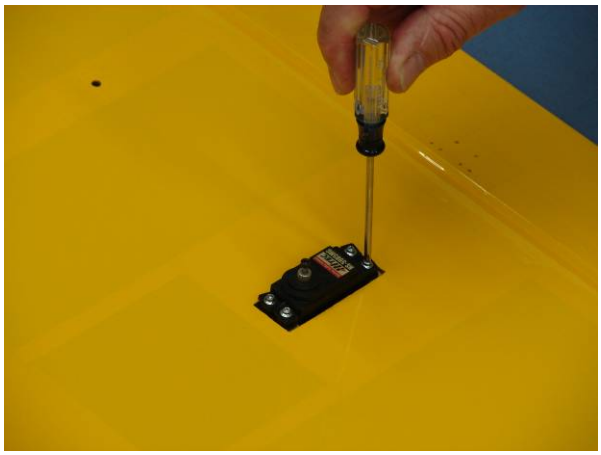
6. Pull flap extension through root end of wing.

Note: Taping servo lead to the inside of the wing panel will help to prevent lead from dropping back inside of wing panel during transportation.

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



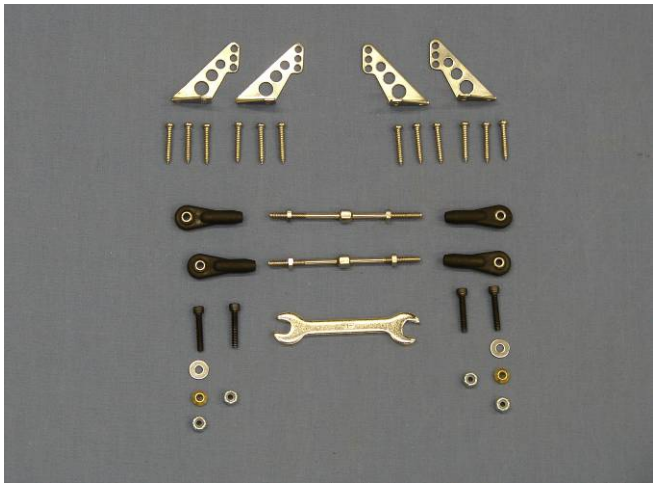
8. Install servo with servo mounting screws. Repeat servo installation process for all aileron and flap servos.



9. Finished panel shown with servos installed.

Aileron/Flap Control Linkage Installation

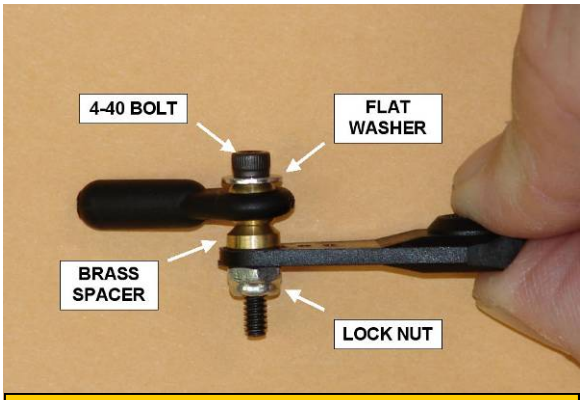
1. Gather the aileron and flap control linkage parts as shown below.
   - ◊ 1 - 3” pushrod - ***Aileron***
   - ◊ 1 - 3” Pushrod - ***Flap***
   - ◊ 4 - 4-40 ball link assemblies
   - ◊ 2 - Brass spacers
   - ◊ 4 - Flat washer
   - ◊ 2 - Left control horns
   - ◊ 2 - Right control horns
   - ◊ 12 - Wood screws for each wing panel



2. 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. Start with the center hole in the control horn. The ball link may be moved up or down for more or less control throw. Brass spacer goes between servo arm and ball link.

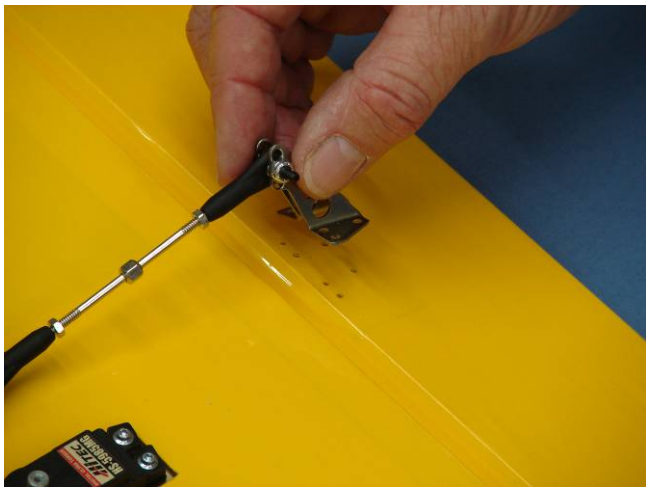
3. Correct installation of ball link to servo arm shown below.

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



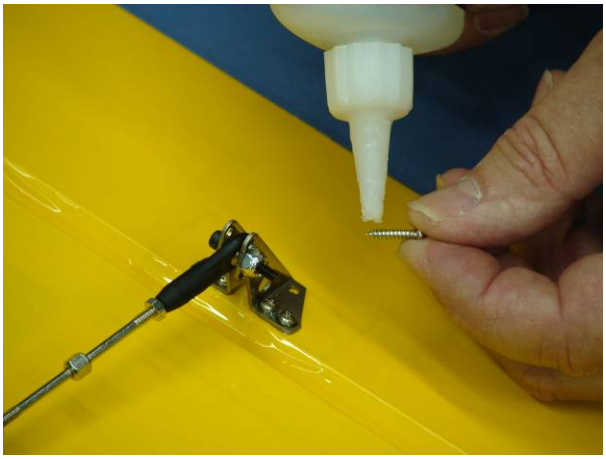
Note: Flat washer prevents ball link from coming off brass ball.

4. Align the control horns over the factory drilled holes.

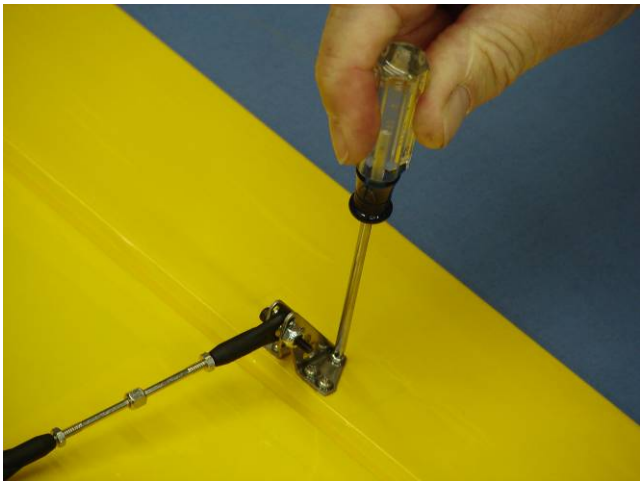


5. Use thick CA on each screw prior to installing to lock screws in place.

Note: CA glues have a fast drying time. Remember to work quickly.

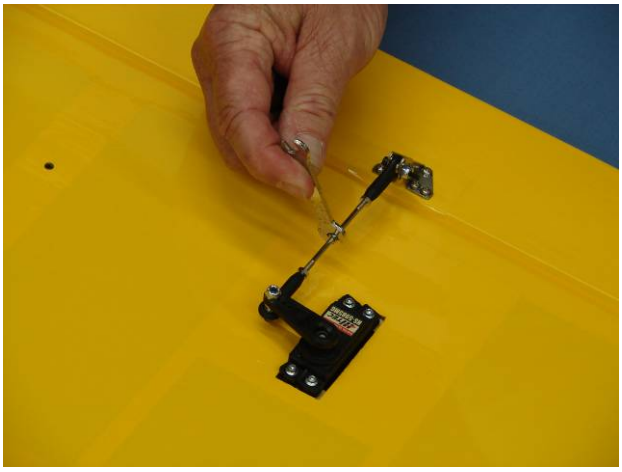


6. Align the left and right sides of the control horns to the mounting holes and mount using six wood screws as shown.



7. Use tape to hold aileron in the neutral position. Plug the servo into the receiver and turn radio on. Ensure the servo trim and sub trim is centered. Adjust the length of the pushrod so that the servo arm is parallel to the aileron hinge line when it is placed on the servo output shaft. Screw servo arm on the servo output shaft.

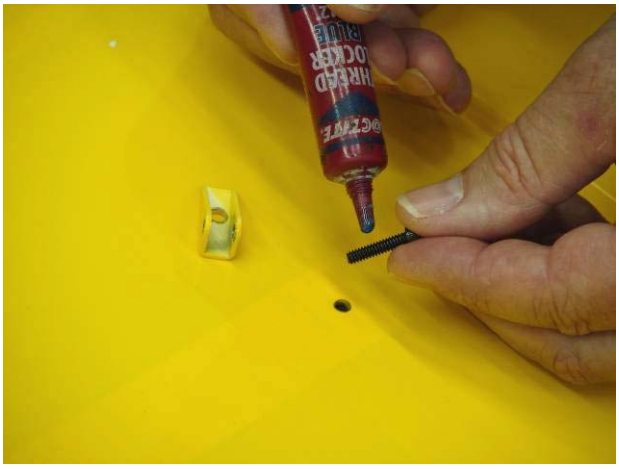
Note: On metal geared servos use Loctite for all Servo arm mounting screws.



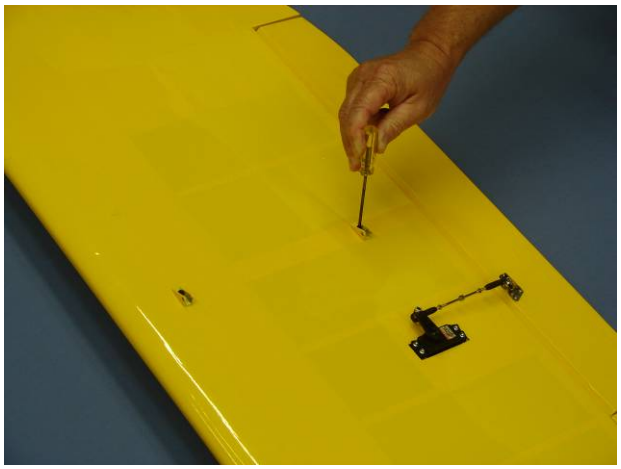
Strut assembly and Installation

1. Gather the following items for the strut installation as shown below.
   - ◊ 2 - strut mounts
   - ◊ 2 - 6-32 mounting bolts
   - ◊ 2 - strut eyelets

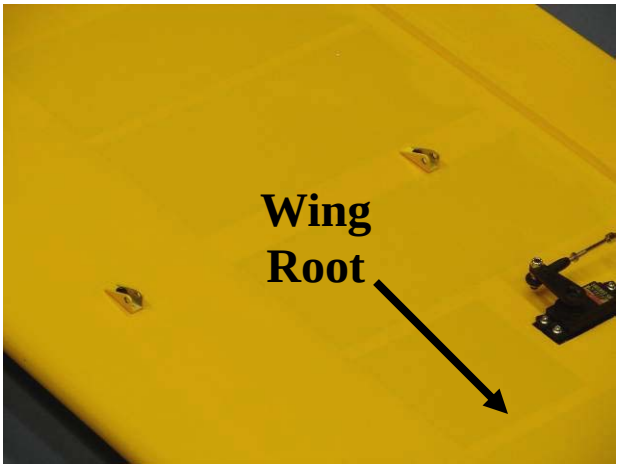
2. Use the 6-32 mounting bolt to install the strut mount as shown. Use blue loctite to prevent the mounting bolt from coming loose in flight.



3. Bolt the remaining strut mount in place as shown.



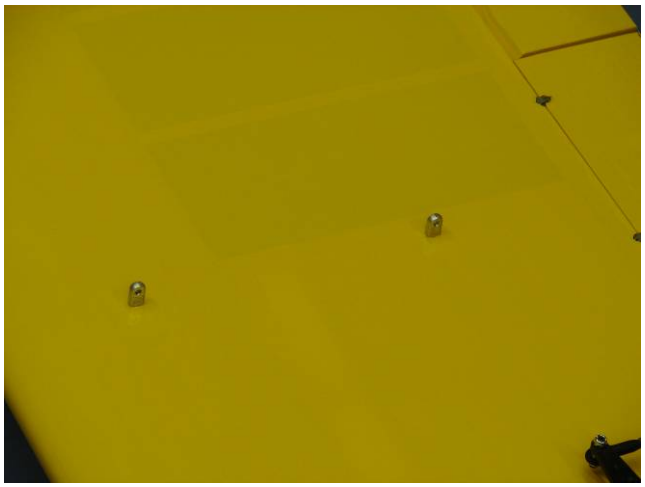
4. Finished strut mount installation shown below. Ensure that the mounts face the wing root as shown.



5. Apply a small drop of medium CA to the strut eyelet as shown. Screw the eyelet into the pre-drilled hole in the bottom of the wing.

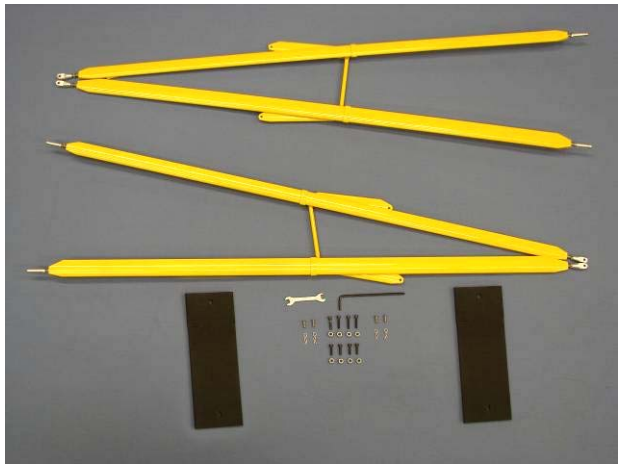
Note: CA glues have a fast drying time. Remember to work quickly.

6. Install the remaining eyelet in the wing as shown.

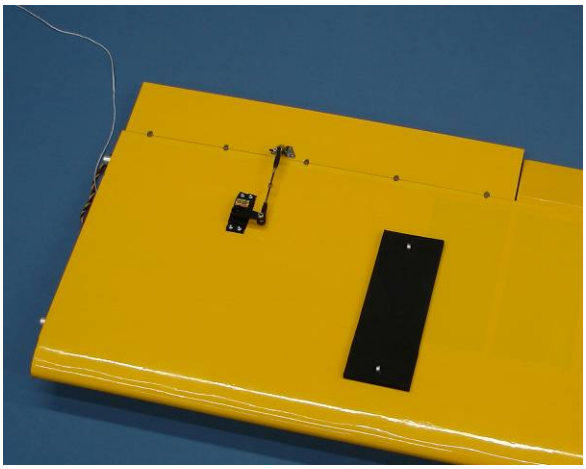


7. Finished strut mount and eyelet assembly shown below. Repeat the same steps for the remaining wing before continuing.

8. Gather the following items for mounting of the struts to the wings:
   - ◊ 2 - Struts
   - ◊ 8 - 6-32 mounting bolts
   - ◊ 8 - 6-32 lock nuts
   - ◊ 4 - Set pins
   - ◊ 4 - Cotter pins
   - ◊ 1 - Pushrod adjustment wrench
   - ◊ 1 - Custom allen wrench
   - ◊ 2 - Foam transportation pads



9. The foam transportation pad can slip over the two eyelets and kept in place using the set pins and cotter pins. This will prevent the struts from damaging the wing during transport.



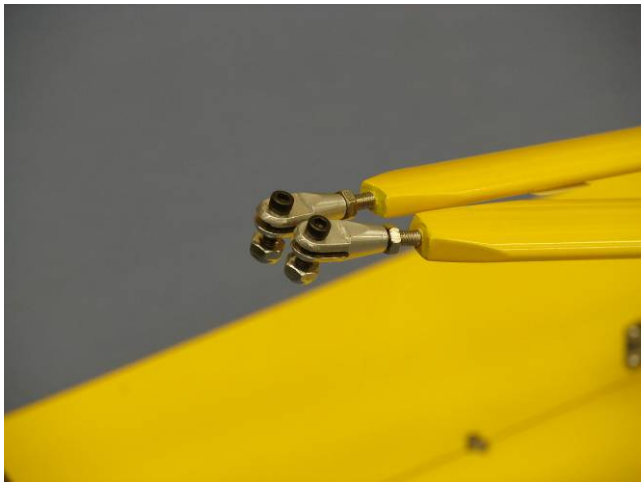
10. Use the 6-32 mounting bolts and lock nuts to secure the struts to the strut mounts as shown.

11. Be careful not to over tighten the bolts as this will keep the struts from pivoting into place.

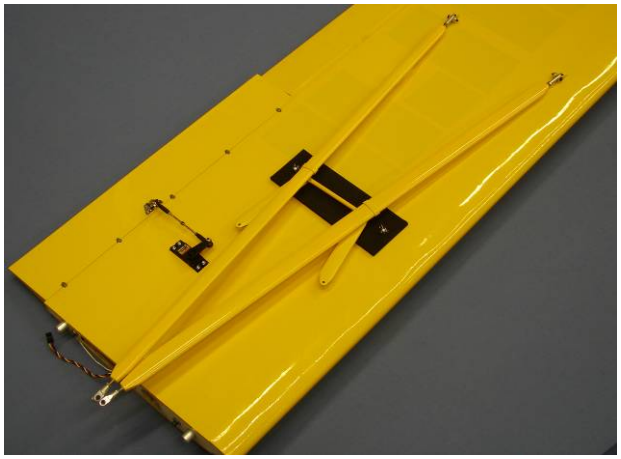
12. Secure the center strut support using the set pins and cotter pins.

13. Cotter pin installation shown below.

14. The remaining 6-32 bolts will be used to mount the struts to the fuse. It is recommended that these stay in the struts during transport to insure they will not be misplaced.



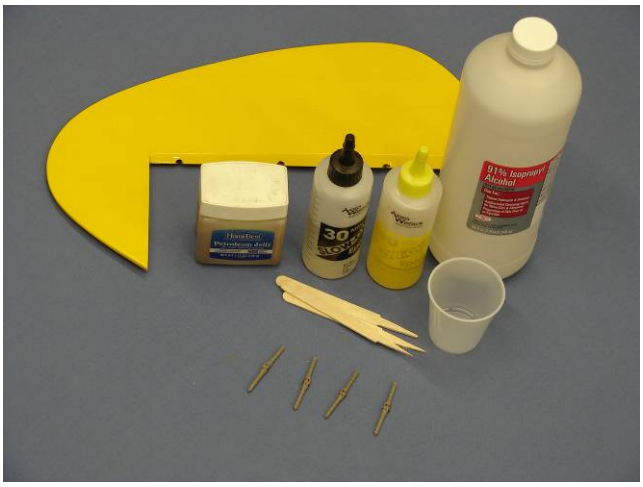
15. Finished strut assembly shown. Remove the bottom set pins to fully collapse the strut as shown below.



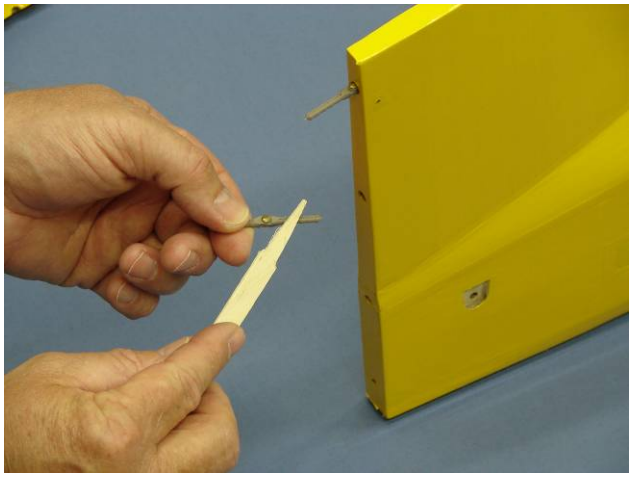
RUDDER AND PULL – PULL CABLE ASSEMBLY

Rudder Installation

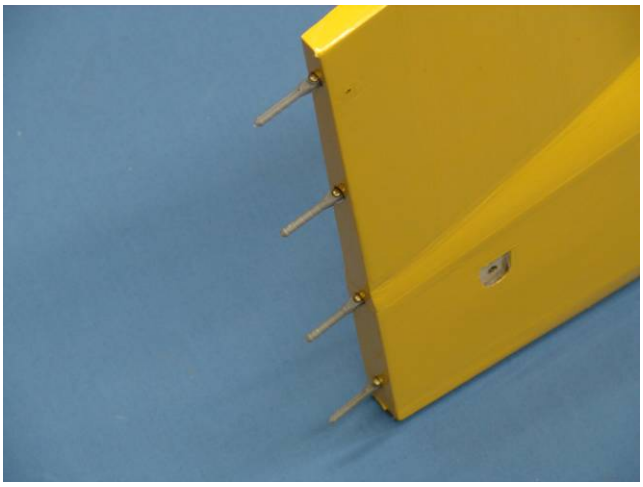
1. Gather the rudder, four hinges, rubbing alcohol, petroleum jelly and epoxy materials as shown. Use 15-30 minute epoxy to ensure adequate working and cleanup time.



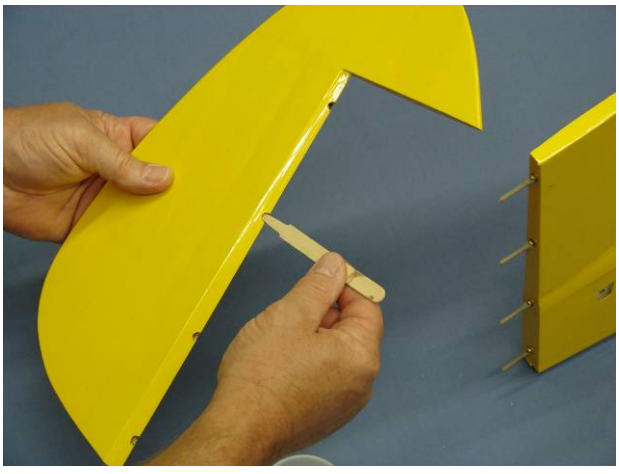
2. Mix epoxy in mixing cup and use a tapered stick to apply the epoxy inside the pre-drilled holes in the trailing edge of the fin. Apply epoxy to one side of each hinge and insert the hinge completely into the hole. Ensure the hinge axis is vertical and parallel to the trailing edge of the fin before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



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

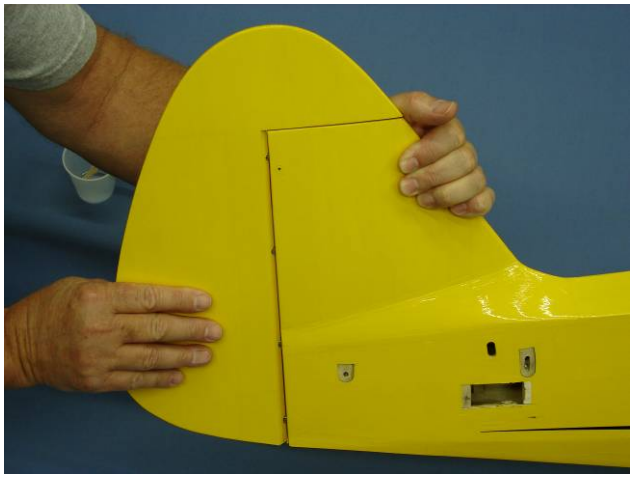


4. Mix epoxy in mixing cup and use a tapered stick to apply the epoxy inside the pre-drilled holes in the leading edge of the rudder. Apply epoxy to trailing edge of each hinge.



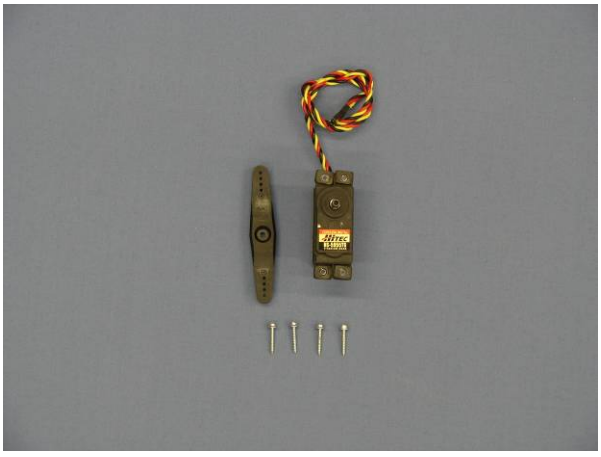
5. Carefully slide the rudder onto each hinge and against the trailing edge of the fin. Wipe away excess epoxy with alcohol wetted wipes.

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



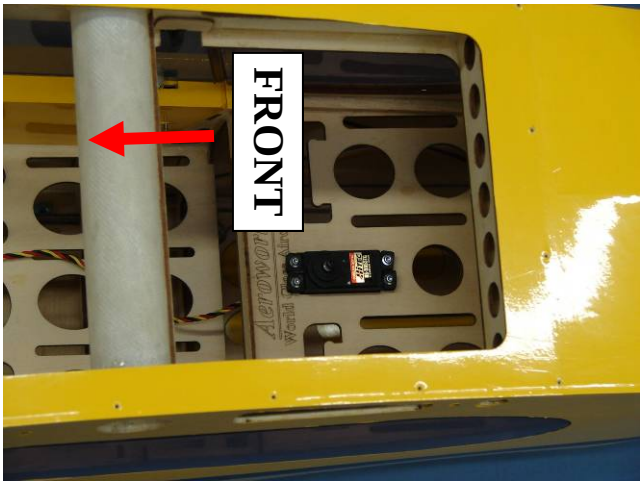
7. Gather the following items for the rudder servo installation.
   - ◊ 1 - rudder servo
   - ◊ 4 - mounting screws
   - ◊ 1 - 2 3/4" double output arm

Note: 180 in. oz. digital, metal geared servo is recommended. Servo selection can be the difference between a great flying model and a model that will crash. Always use brand name high quality servos.



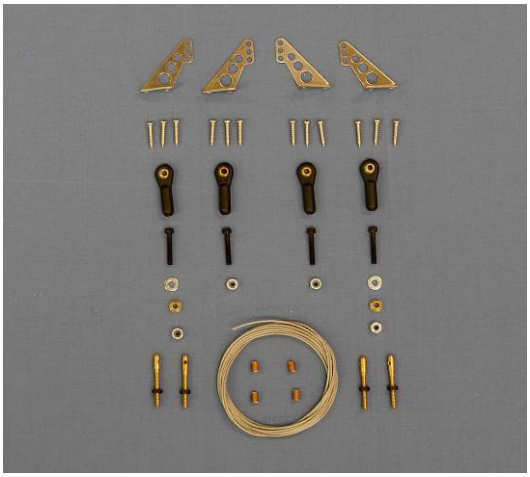
8. Install the rudder servo in the servo cutout with the output shaft to the front.

Note: Remove balsa stick holding the elevator pull strings at this time. Secure the pull strings with tape until the elevator extensions are installed.



Rudder Horn, Pull-Pull Cable and Servo Installation

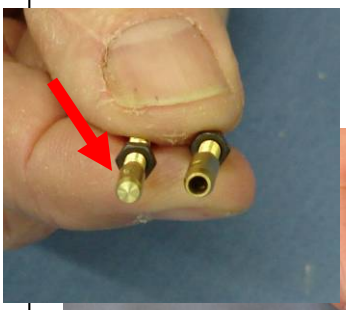
1. Gather the rudder control linkage parts shown below.
   - ◊ 2 - Rudder cables
   - ◊ 4 - Ball link assemblies
   - ◊ 2 - Flat washers
   - ◊ 2 - Brass Spacers
   - ◊ 4 - Threaded couplers with lock nut
   - ◊ 4 - Brass swaging tubes
   - ◊ 2 - Left side control horns
   - ◊ 2 - Right side control horns
   - ◊ 12 - Wood screws

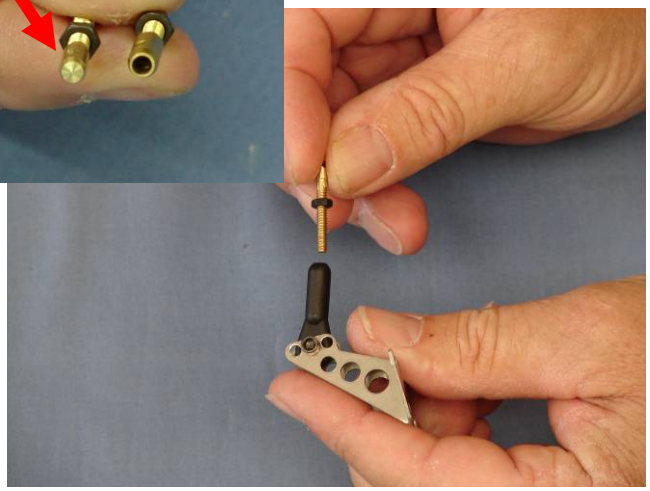


2. Gather the rudder control horn parts as shown below. Two ball link assemblies, two left and two right side control horns. Assemble the ball links between the control horns as shown. Secure with nylon lock nut. Start with the center hole in the control horn. The ball link may be moved up or down for more or less control throw.

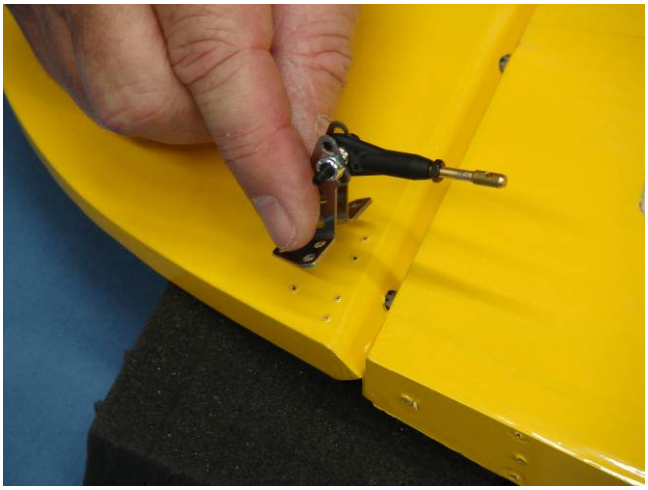
3. Thread brass coupler half way into ball link.

Note: There are two types of 4-40 couplers supplied, two are for the throttle and choke pushrods and four are for the pull pull system. The couplers with the solid base are to be used for the pull pull assembly.





4. Place the control horns over the predrilled mounting holes.

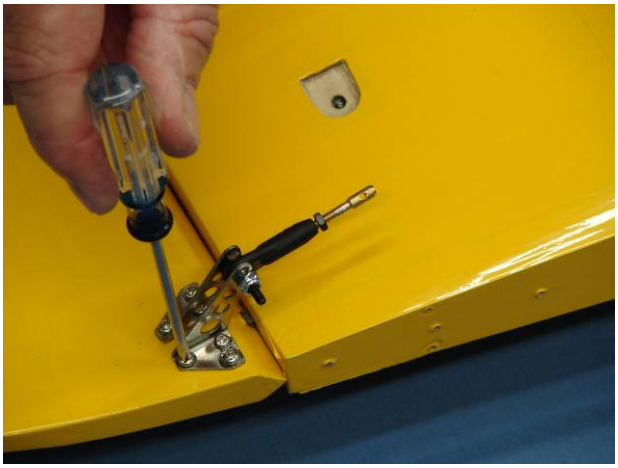


5. Use a drop of thick CA glue on each screw as shown.

Note: CA glues have a fast drying time. Remember to work quickly.

6. Mount rudder control horns using six wood screws.

7. Repeat the above steps for mounting the other side rudder control horn.



8. 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.

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

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

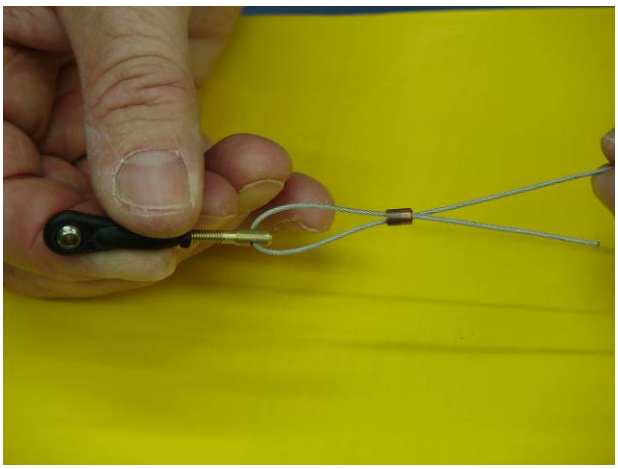
Note: Cables run parallel down fuse and do not cross each other.

10. Thread brass coupler half way into ball link.

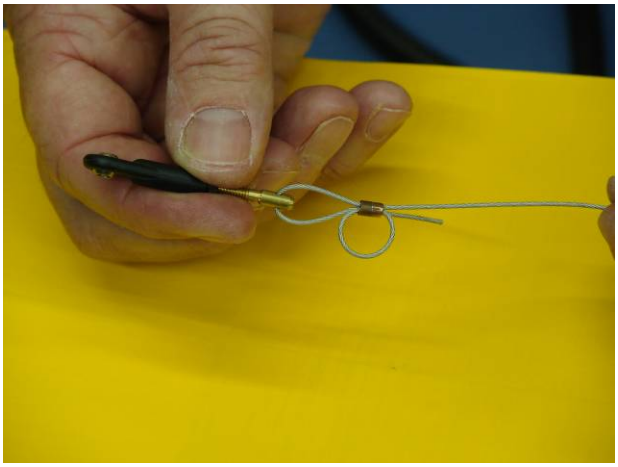
11. Using an X-ACTO knife clean away any burrs from brass swags. This will allow the rudder cable to pass through brass swage easily.

12. Thread cable through brass swage tube.

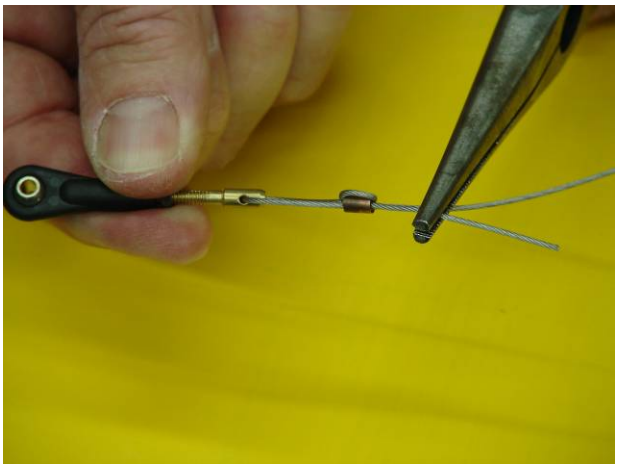
13. Thread cable through the threaded coupler hole, and back through the brass swage tube as shown.



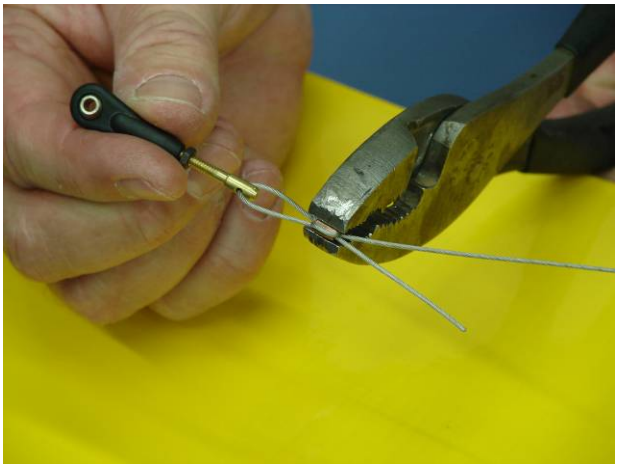
14. Loop the cable back through the brass swage tube.



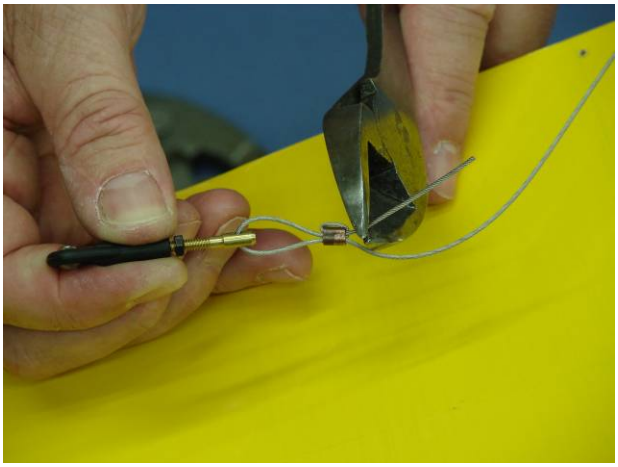
15. Pull cable tight with pliers.



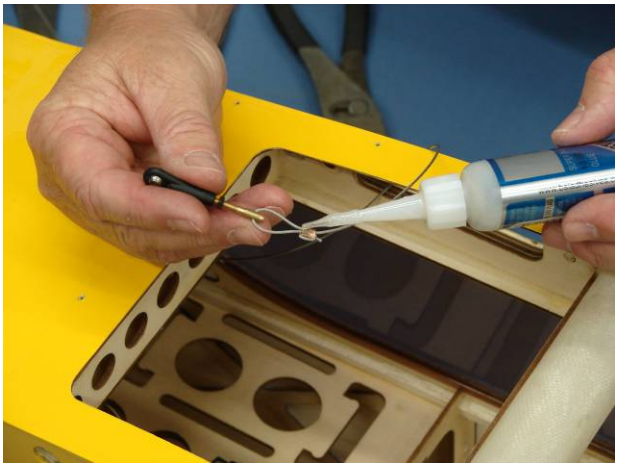
16. Crimp the brass swage tube with a crimping tool or pliers.



17. Cut off excess cable as shown



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



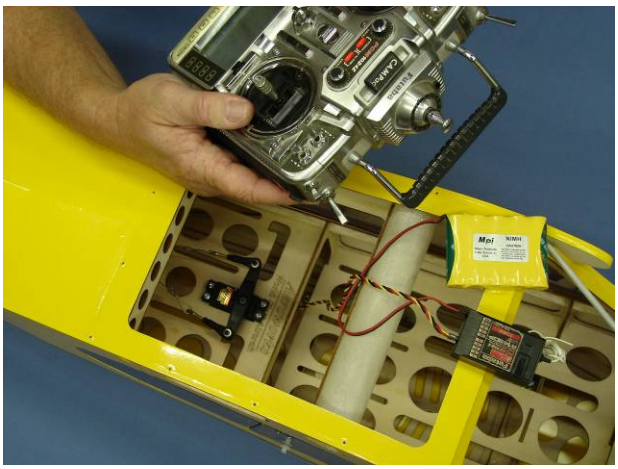
19. Attach ball links to the rudder servo arm and then attach the servo arm to the rudder servo as shown.

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

20. Attach servo arm to servo as shown below.

21. 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.

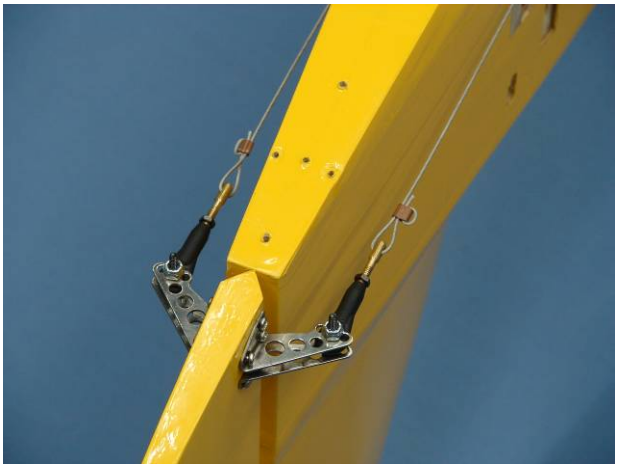
Note: On metal geared servos use blue Loctite for all Servo arm mounting screws.



22. 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.

23. 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.

24. Follow the same steps for the opposite side of the rudder as shown below. Rudder pull pull assembly is now complete.



STAB AND ELEVATOR ASSEMBLY

Elevator Servo Installation

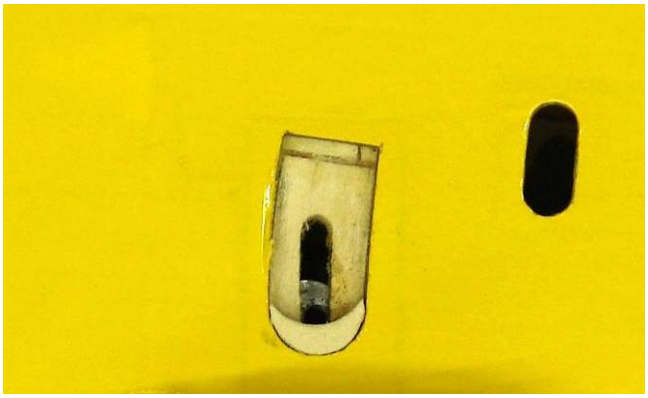
1. The elevators have been pre-hinged and **glued** to the stabs and are ready for flight. No other steps are necessary for hinging.

Gather the following items for the stab/elevator assembly,

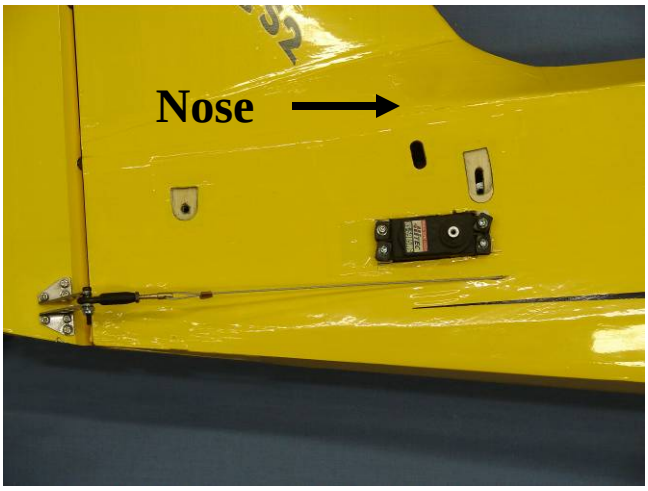
- ◊ 2 - Elevator servos
- ◊ 2 - 1 1/4" Servo arms
- ◊ 2 - 36" servo extensions
- ◊ 2 - Aeroworks safety clips
- ◊ 8 - Servo mounting screws

IMPORTANT

2. Stabs have been built to have adjustable incidence, The front L bracket mounting tab has been made to slide up to provide 1 degree of positive incidence. I plywood spacer has been installed in the bottom of the L bracket mount. Aligning the stab L bracket with this plywood spacer will set the stab to zero degrees, this is the recommended starting location and is recommended for the first flight.

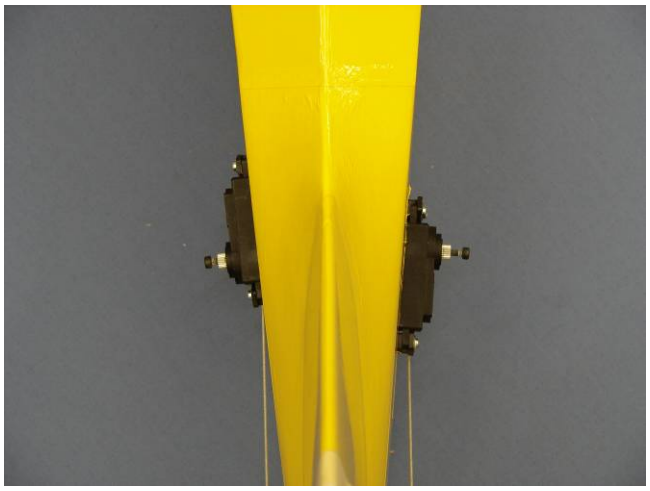


3. Install the right elevator servo as shown below. The output shaft will face forward on the right elevator assembly.



4. Install the left elevator servo as shown below. The output shaft will face rearward on the left elevator assembly.

5. Mounting the elevator servos in opposing directions will allow the servo spline to align perfectly which will result in equal throw and eliminate the need for a Y reverser or complex radio mix.



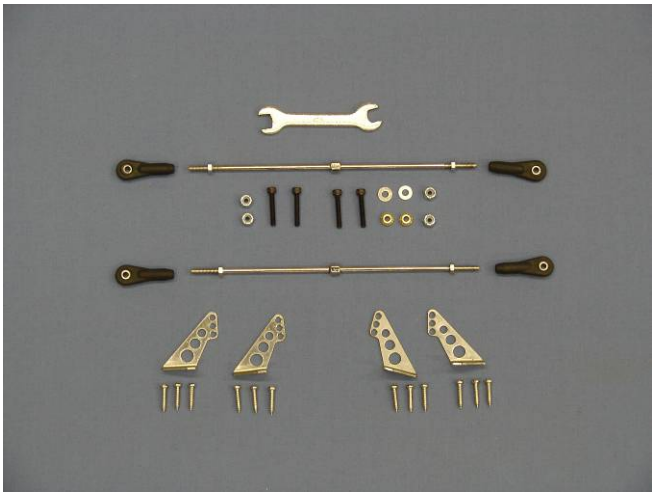
6. Layout the servo on the fuse to test fit the installation and ensure servo lead is the correct length.

Note: 180 in. oz. digital, metal geared servos are recommended. Servo selection can be the difference between a great flying model and a model that will crash. Always use brand name high quality servos.

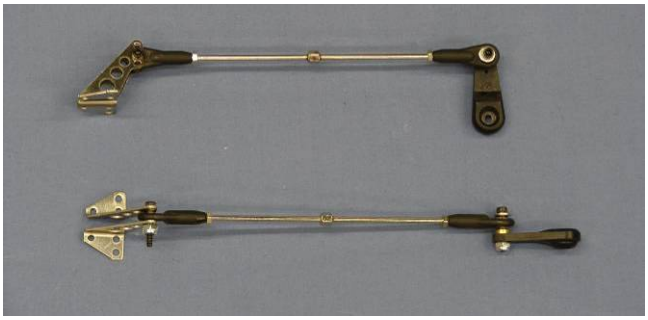
7. Install servo with servo mounting screws.

Elevator Control Linkage Installation

1. Gather the elevator control linkage parts as shown below.
   - ◊ 2 - 4 3/4” 4-40 pushrods
   - ◊ 4 - 4-40 ball link assemblies
   - ◊ 2 - Flat washers
   - ◊ 2 - Brass spacer
   - ◊ 2 - Left side control horns
   - ◊ 2 - Right side control horns
   - ◊ 1 - Adjustment wrench
   - ◊ 12 - Wood screws



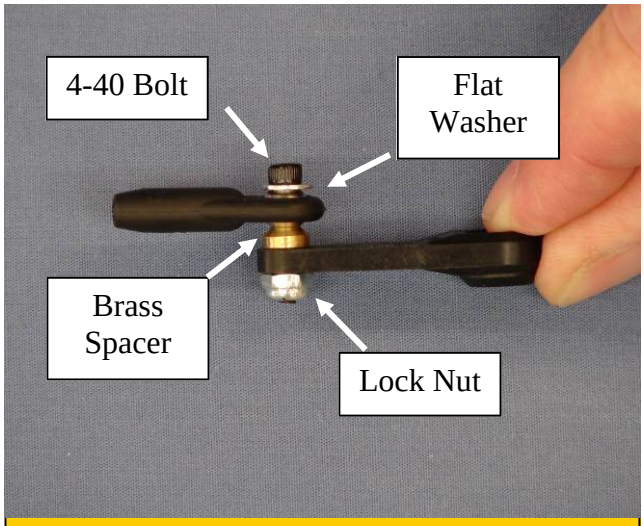
2. Assemble the pushrod and control horn assembly as shown. The ball link goes between the left and right sides of the control horn sides and is secured with a nylon lock nut. Start with the center hole in the control horn. The ball link may be moved up or down for more or less control throw. Brass spacer goes between servo arm and ball link



Pushrods have both left and right hand threads. This allows for easier fine adjustments during final setup. Be sure to thread ball link correctly onto pushrod. Ball links are self taping and can be used on either ends of the pushrod. Once ball link has been threaded only rethread it onto the same direction threads.

3. Correct installation of ball link to servo arm shown below.

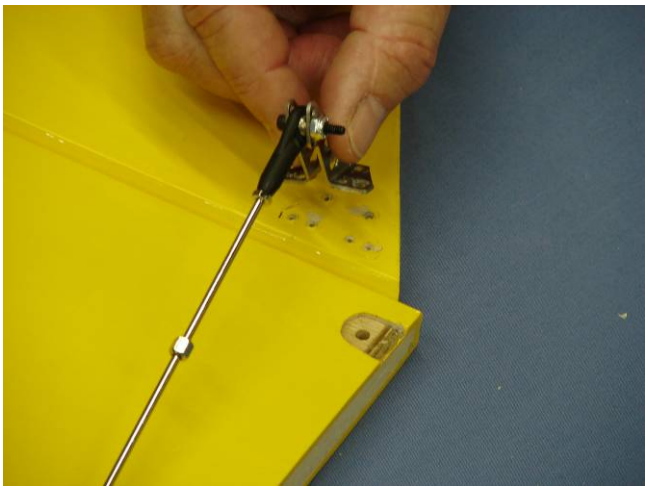
Note: Flat washer will prevent ball link from coming loose from brass ball.



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

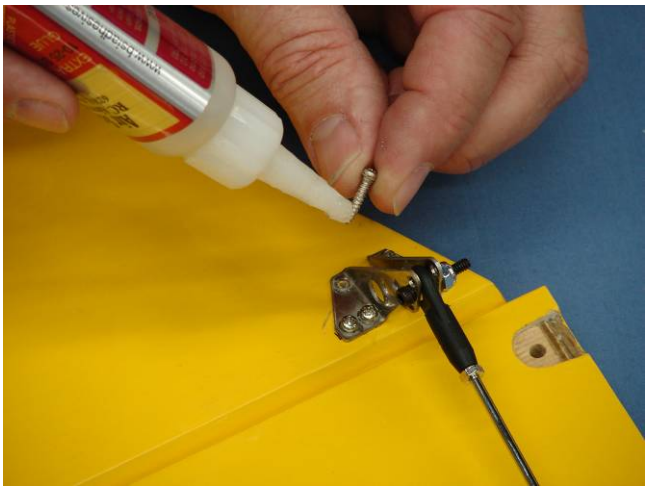
4. Place the control horns over the predrilled mounting holes.

Note: Control horns have been set at a slight offset to allow for maximum torque at full deflection.

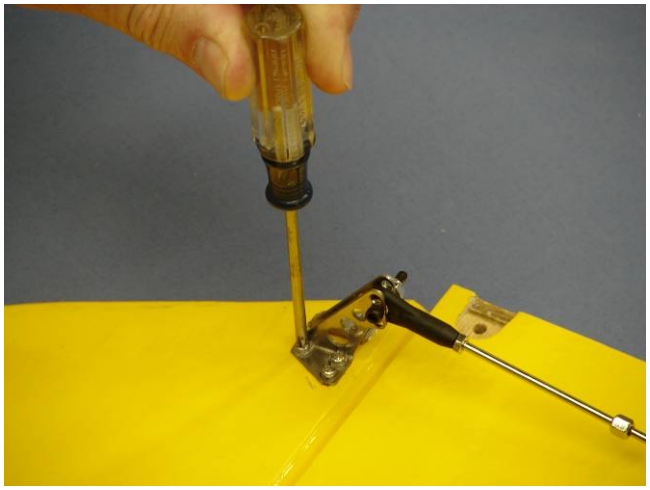


5. Use a drop of thick CA glue on each screw to prevent screws from loosening due to vibration as shown.

Note: CA glues have a fast drying time. Remember to work quickly.

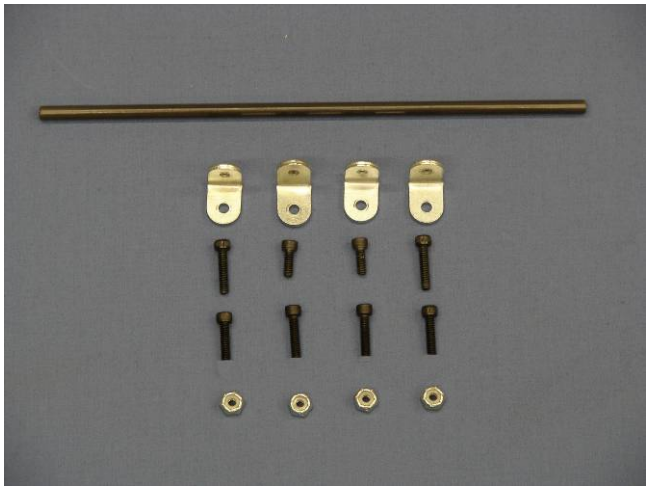


6. Mount the control horn using six wood screws.

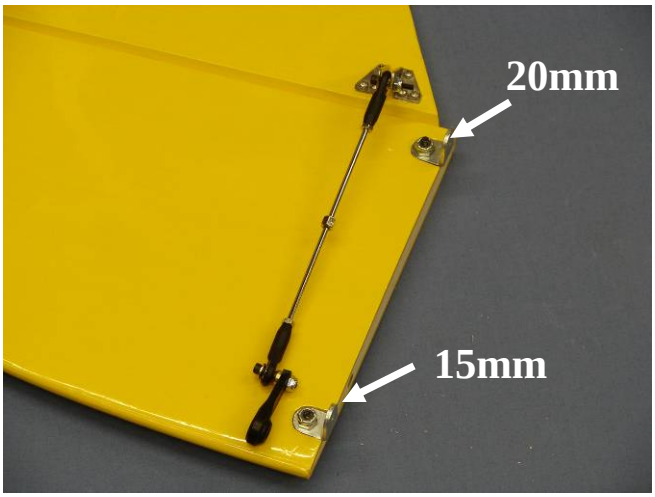


Stabilizer L Bracket Installation

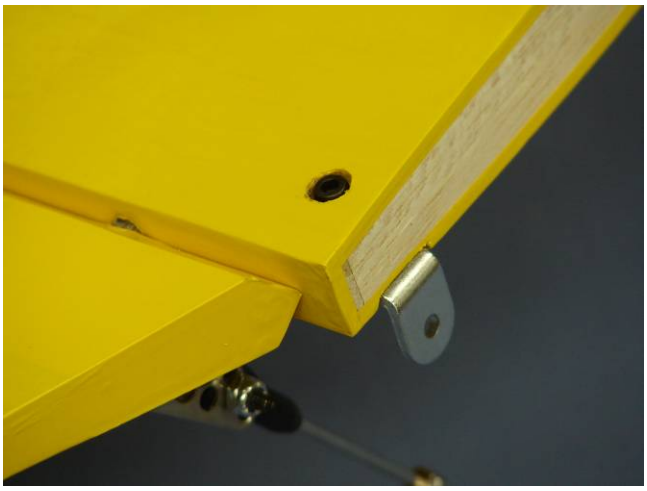
1. Gather the following items shown below:
   - ◊ 1 - Carbon support rod
   - ◊ 4 - L brackets
   - ◊ 2 - 6-32 x 10mm bolts
   - ◊ 4 - 6-32 x 15mm bolts
   - ◊ 2 - 6-32 x 20mm bolts
   - ◊ 4 - 6-32 lock nuts



2. Pass the 6-32 x 15mm bolts through the hole at the front of the stab and the 6-32 x 20mm bolts through the hole at the rear of the stab and into the L brackets as shown. (Use the 6-32 lock nut to secure the bolts.) Bolt (L) brackets to stab use 20mm bolts for rear bracket and 15mm bolts for front bracket.

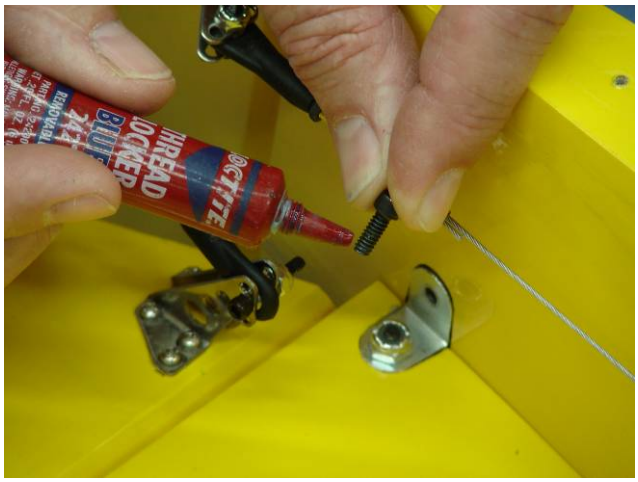


3. Mounting bolts have been counter sunk to aid in appearance.

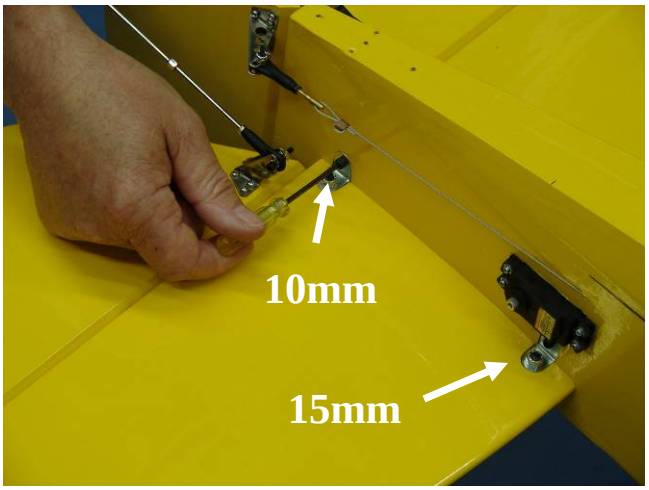


4. Slide the carbon support rod into the stab and then slide the support rod through the slot in the fuse as shown.

5. Apply blue loctite to the 6-32 mounting bolts as shown. Use 10mm bolt for the rear bracket and 15mm bolt for the front bracket.



6. Bolt the stab to the fuse as shown below. Be careful not to over tighten or strip the bolt.

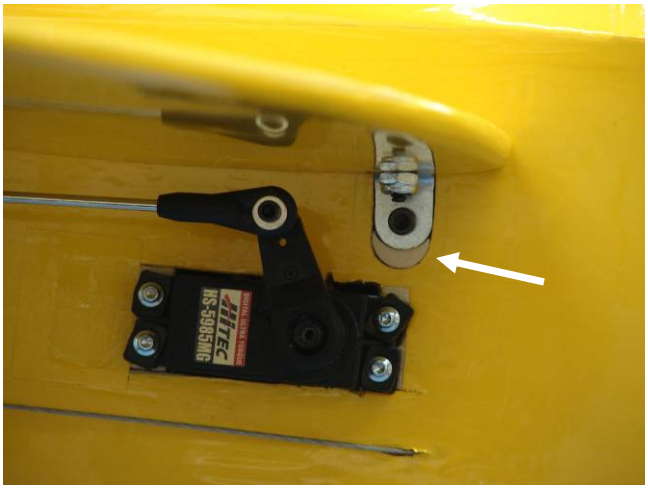


7. Attach the elevator pushrod to the elevator servo as shown below.

8. Repeat the previous steps for the remaining stab assembly.

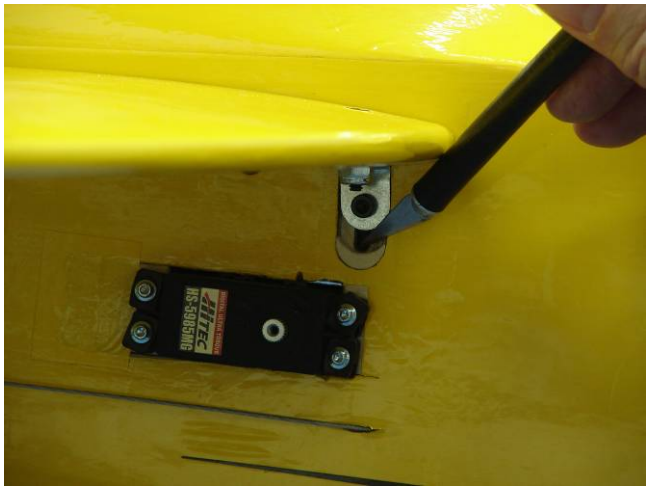
Stab Adjustment

1. Set the stab incidence to zero for general flying. This can be achieved by setting the front L bracket on the top of the pre-installed plywood spacer and tightening the mounting bolts as shown.



2. 1 degree of positive incidence can be achieved by pushing the stab to the very top of the mounting slot. This stab location is recommended for towing purposes. To help raise the tail due to the weight of towing.

3. 1 degree of negative incidence can be achieved by removing the plywood spacer at the bottom of the mounting slot. This stab position is not recommended but can be accomplished by the removal of this spacer. This will lower the tail of the plane in flight.



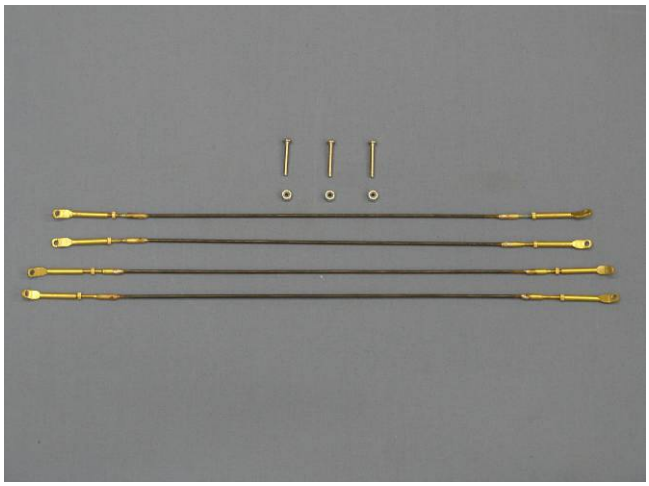
4. Once the desired position has been located, securely tighten the mounting bolts.

Stab Flying Wire Installation

1. Gather the following items shown below.

   ◊ 3 - 4-40 mounting bolts
   ◊ 3 - 4-40 nuts
   ◊ 4 - Premade flying wire assemblies

Note: Flying wire installation **is not optional**. Please be sure to follow these steps, failure to do so will result in a stab failure.

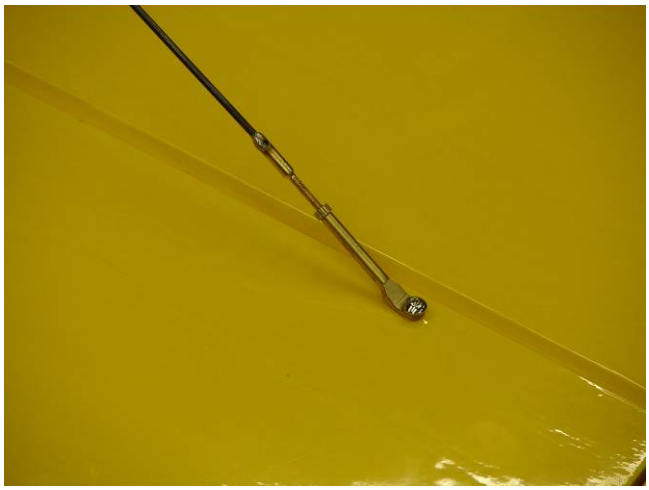


2. Test fit the top flying wires as shown, the upper flying wires will be longer than the bottom.

3. Use the 4-40 bolt and nut to mount the flying wires to the top of the rudder as shown. Mounting hole has been predrilled.

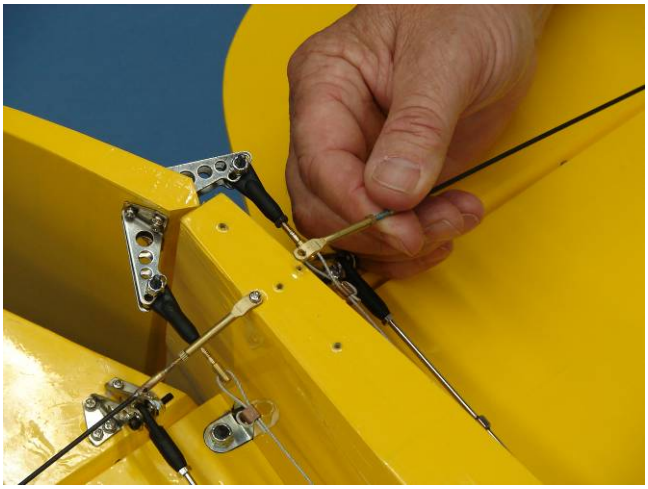
4. Loosen the lock nut and adjust the flying wire to the correct length as shown.

5. Once wires are the correct length pass the 4-40 mounting bolt through the top of the stab as shown.

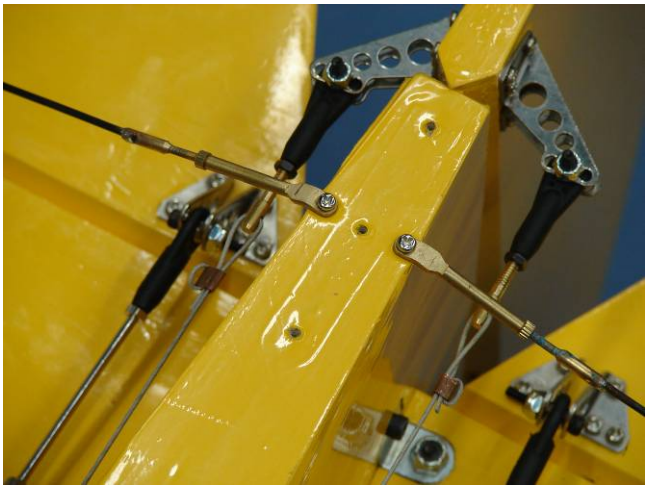


6. Pass the 4-40 mounting bolt through the bottom flying wire stab mount and install the 4-40 nut as shown.

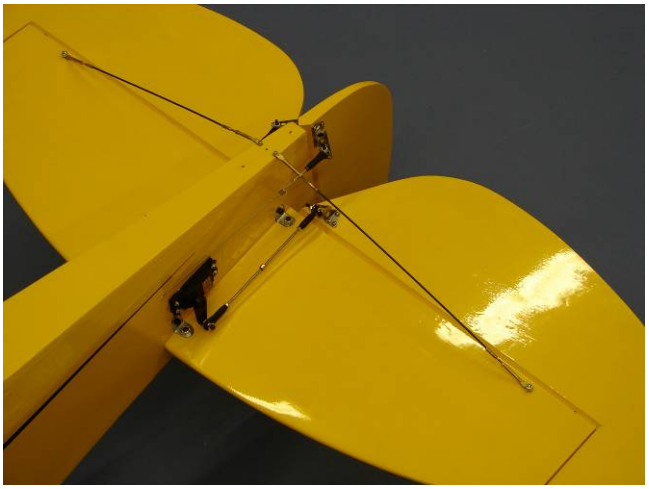
7. Adjust the flying wire length until the holes line up with the predrilled holes in the fuse.



8. Use wood screws to secure the bottom flying wires to the fuse as shown below.



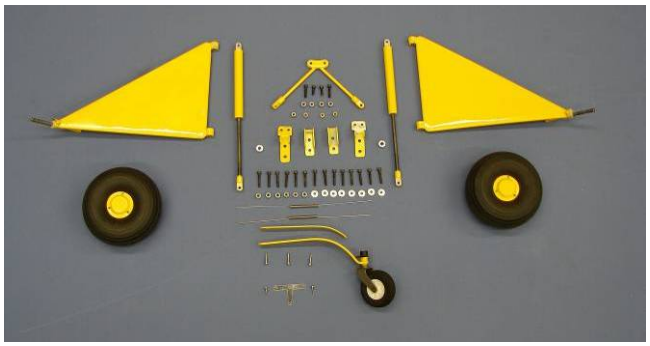
9. Adjust the flying wire lengths to ensure that the flying wires are not twisting the stabs. The flying wires should be adjusted so they are only able to move about 1/2” back and forth or until the stabs have no play in any direction.



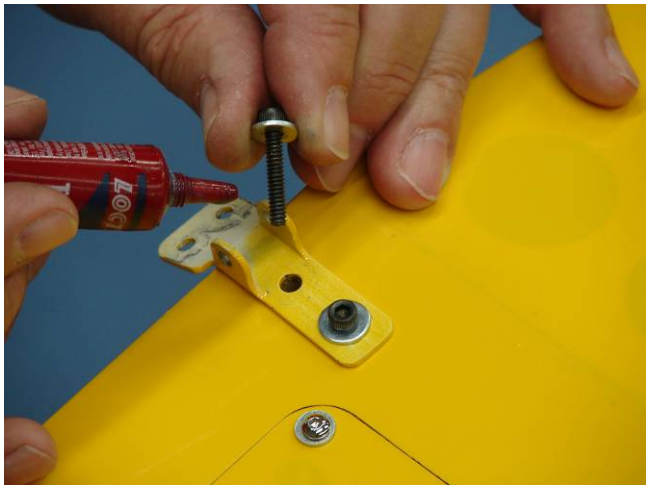
10. Stabilizer assembly is now complete.

MAIN LANDING GEAR ASSEMBLY

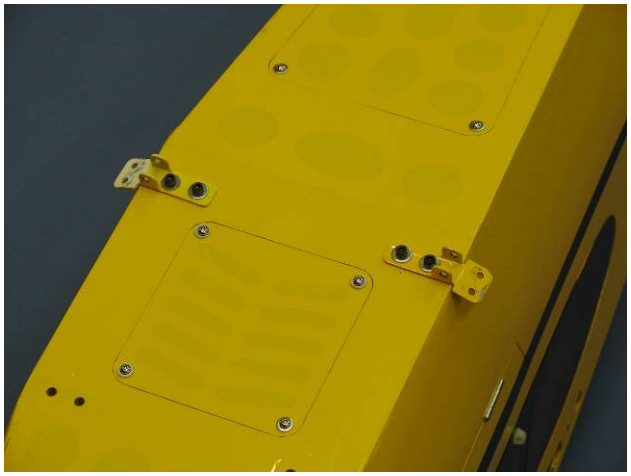
1. Gather the following items shown below for the main landing gear assembly.
   - ◊ 2 - Landing gear struts
   - ◊ 2 - Shock absorbers
   - ◊ 1 - Shock mount
   - ◊ 2 - Rubber tires
   - ◊ 2 - Rear landing gear/strut mounts
   - ◊ 2 - Front landing gear mounts
   - ◊ 2 - Wheel spacers
   - ◊ 18 - 6-32 mounting bolts
   - ◊ 8 - Flat washers
   - ◊ 10 - 6-32 lock nuts
   - ◊ 1 - Tail wheel assembly
   - ◊ 1 - Tail wheel leaf spring
   - ◊ 3 - Tail wheel mounting screws
   - ◊ 1 - Steering tiller
   - ◊ 2 - Tiller mounting screws
   - ◊ 2 - Steering springs



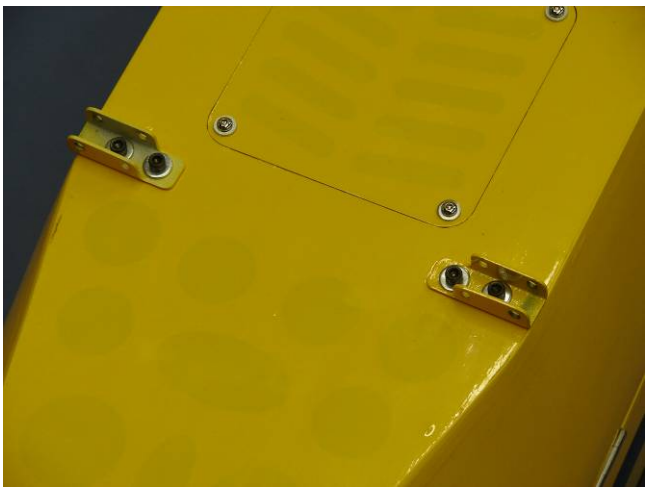
2. Use 6-32 bolts, flat washers, and blue loctite to mount the rear landing gear/strut mount.



3. Mount the other rear landing gear/strut mount as shown below.



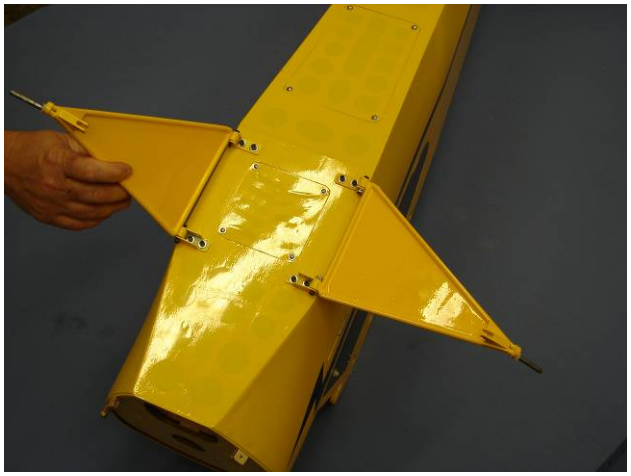
4. Use 6-32 bolts, flat washers, and blue loctite to mount the front landing gear mount.



5. Slide the landing gear strut in place as shown, the tapered edge of the strut goes towards the tail of the airplane.

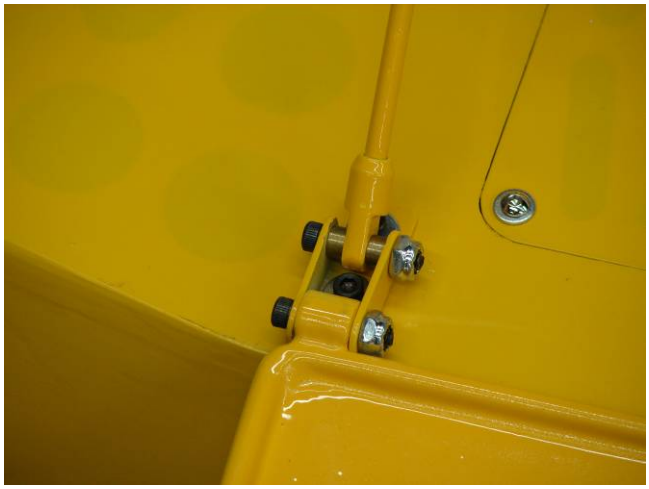
6. Use 6-32 mounting bolts and 6-32 lock nuts to secure the landing gear strut in place as shown.

7. Install the remaining landing gear strut following the previous mounting instructions.

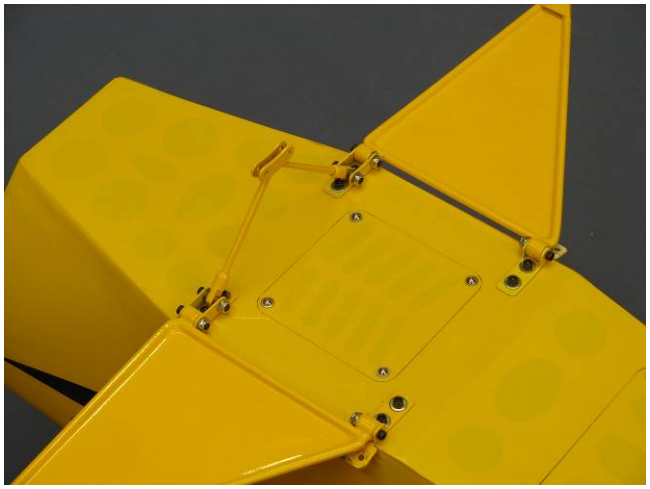


8. Slide the 6-32 mounting bolt through the front landing gear mount. Install the brass spacer as shown below.

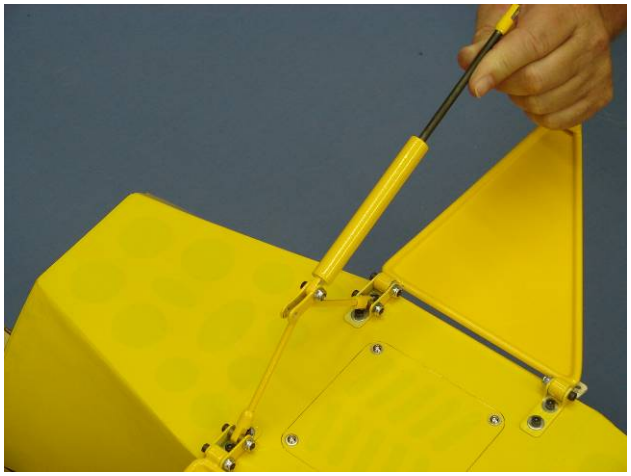
9. Slide shock mount onto the bolt followed by another brass spacer as shown. Secure the mounting bolt with a 6-32 lock nut.



10. Repeat the steps for the remaining side. Final installation of shock mount shown below.

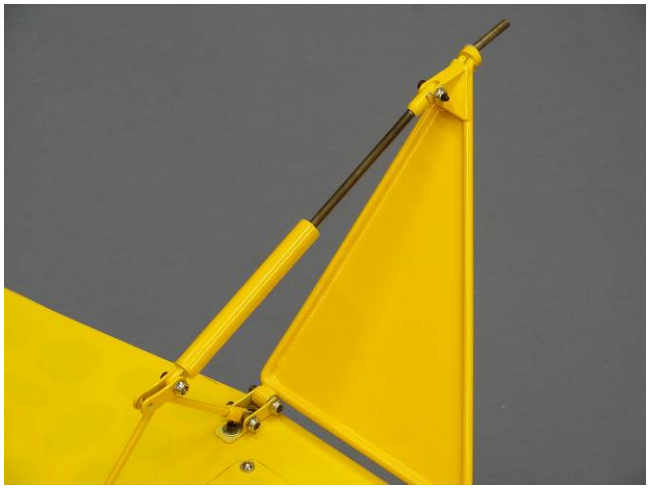


11. Attach shock to shock mount using a 6-32 bolt and lock nut as shown.



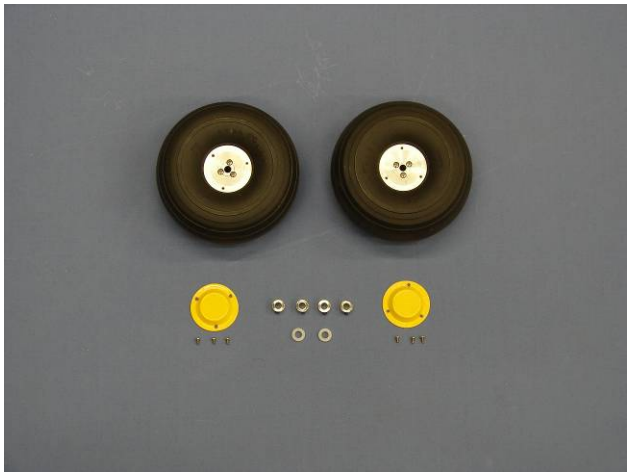
12. Secure the shock to the landing gear strut with a 6-32 bolt and lock nut as shown.

13. Final shock installation shown below.



14. Repeat the steps for the remaining side. Final installation of shocks shown below.

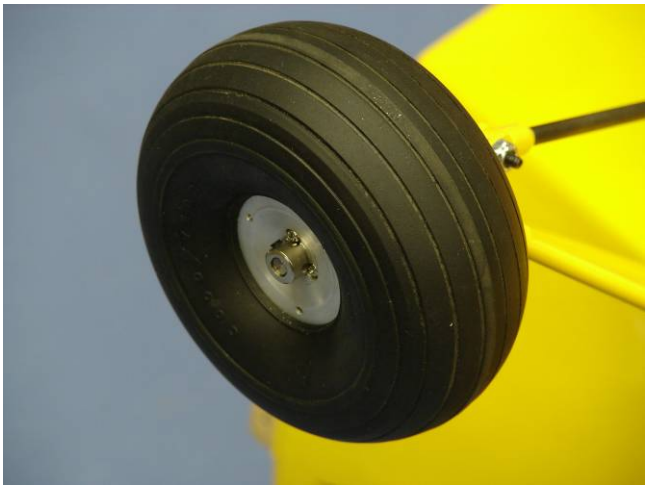
15. Gather the two stock wheels, two wheel spacers, four wheel collars, two hub caps, and six hub cap mounting screws as shown.



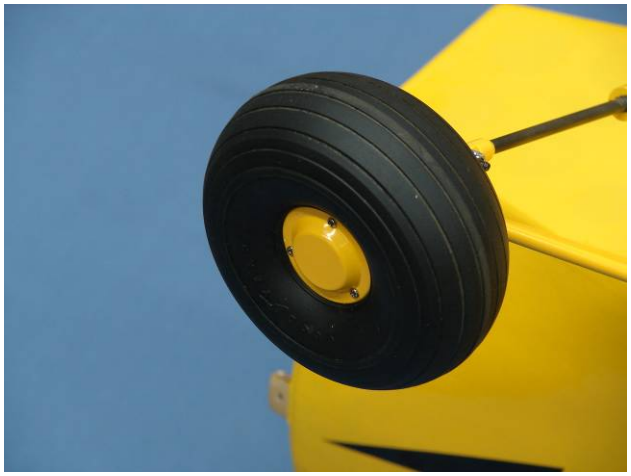
16. Slide one of the wheel spacers onto the axle as shown below.

17. Slide the wheel collar onto the axle as shown. Tighten the set screw at this time.

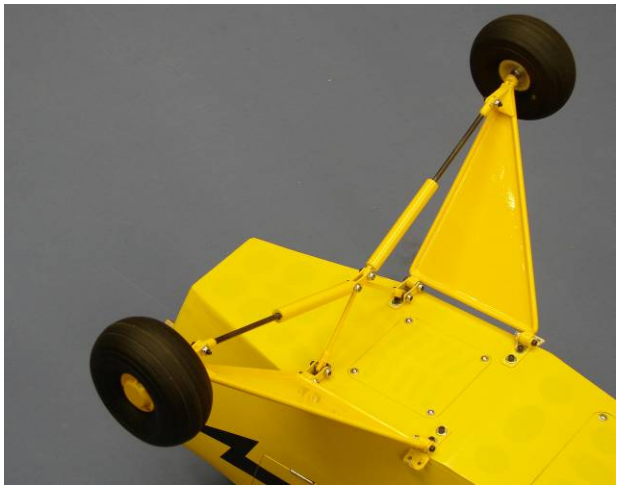
18. Slide the wheel followed by the remaining wheel collar onto the axle. Tighten the wheel collar set screw.



19. Using the 3 mounting screws, mount the hub cap as shown below.



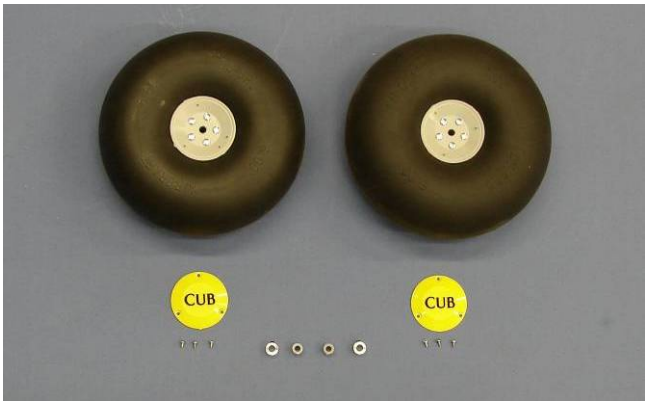
20. Repeat the wheel mounting steps for the following side. Stock wheel installation is now complete.



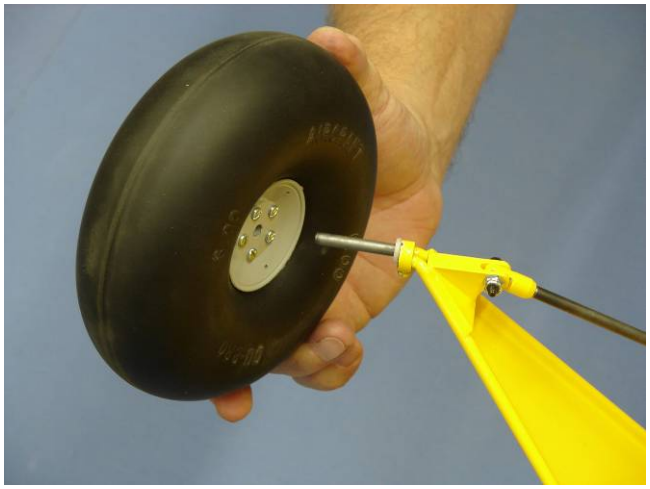
Optional "Tundra" Tire Installation

1. Gather the optional "Tundra" tires and mounting hardware as shown below.
   - ◊ 2 - "Tundra" Tires
   - ◊ 2 - Wheel collars
   - ◊ 2 - Spacers
   - ◊ 2 - Hub caps
   - ◊ 6 - Hub cap mounting screws

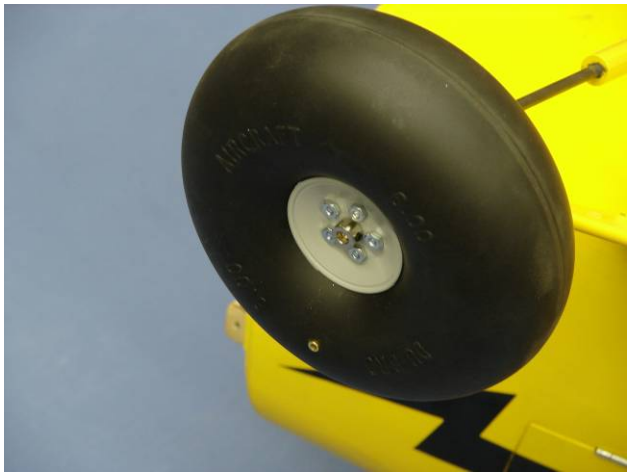
Note: "Tundra" tires are an optional accessories available through Aeroworks.



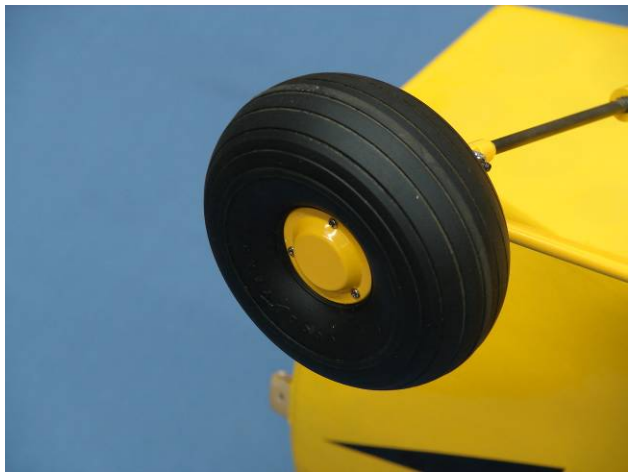
2. Slide the spacer followed by the wheel onto the axle. Do not use the inner wheel collar that is used in the stock wheel installation.



3. Slide the remaining wheel collar onto the axle. Tighten the wheel collar set screw.



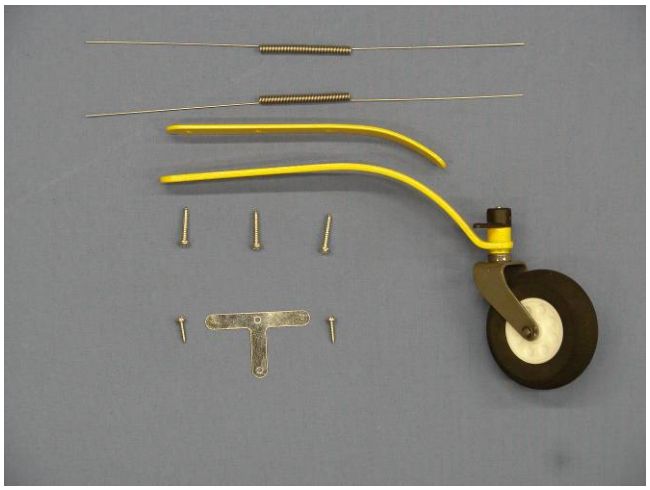
4. Using the 3 mounting screws, mount the hub cap as shown below.



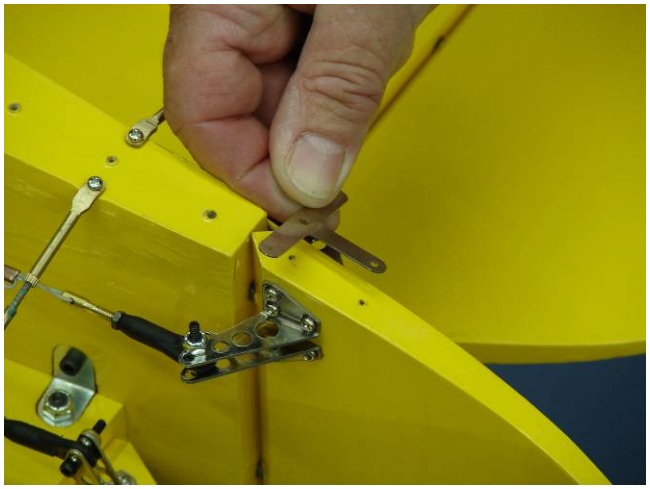
Tail Wheel Installation

1. Gather the tail wheel parts shown below.

   ◊ 1 - Tail wheel assembly
   ◊ 1 - Tail wheel leaf spring
   ◊ 3 - Tail wheel mounting screws
   ◊ 1 - Steering tiller
   ◊ 2 - Tiller mounting screws
   ◊ 2 - Steering springs



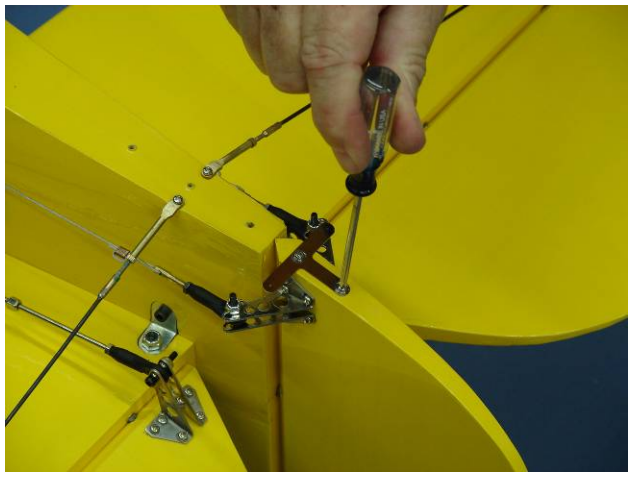
2. Align rudder tiller steering arm with pre drilled mounting holes at bottom of rudder.



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

Note: CA glues have a fast drying time. Remember to work quickly.

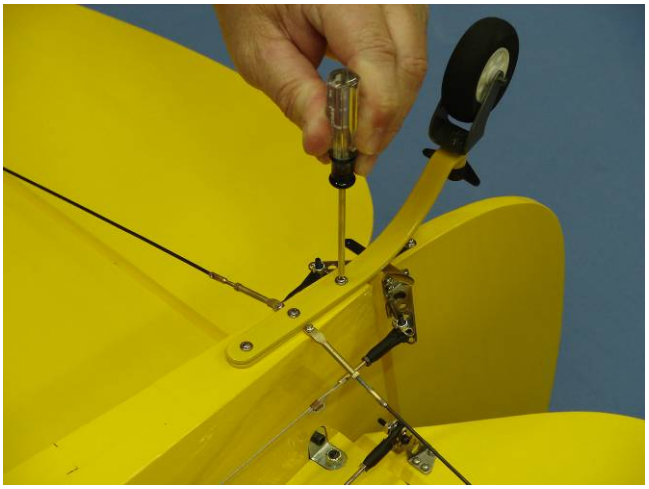
4. Mount the tail wheel steering tiller using two wood screws.



5. 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.

Note: CA glues have a fast drying time. Remember to work quickly.

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

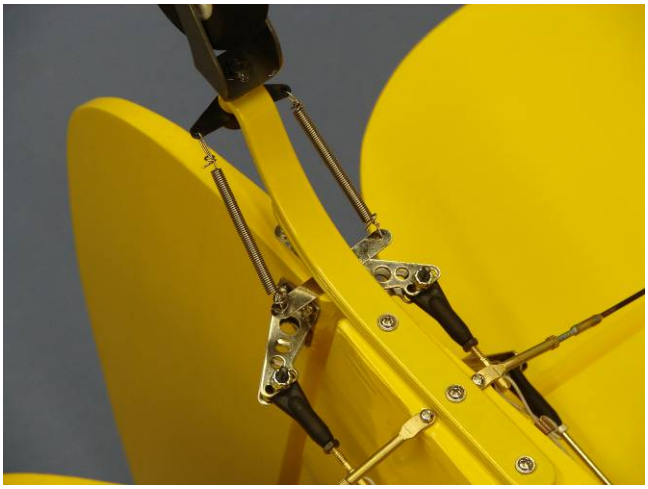


7. Tape the rudder boost tab in place to keep the rudder aligned while tightening the steering springs.

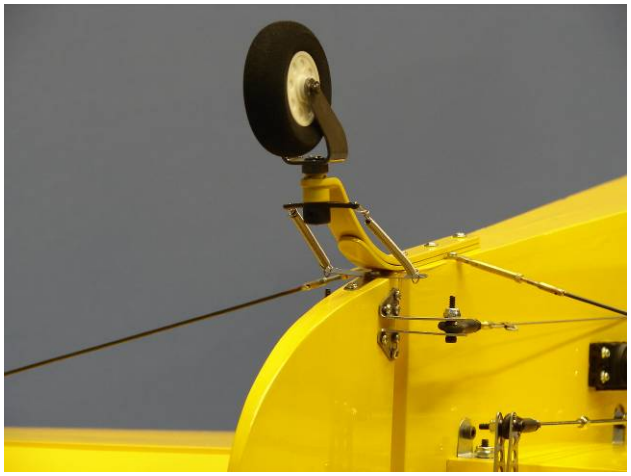
8. Attach the steering spring to the rudder tiller. Center the spring between both tail wheel and steering tillers.

9. Twist spring end tight with pliers.

10. Repeat spring installation for other side.



11. Bottom view of completed tail wheel installation.



ENGINE INSTALLATION

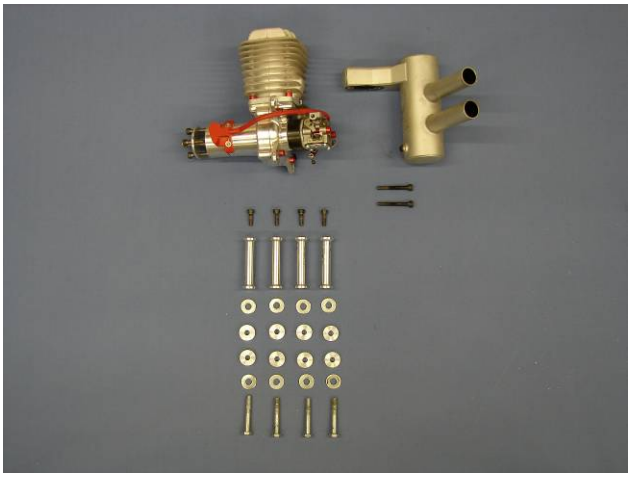
Engine Installation

1. The 50cc Sport Cub S2 will accept a wide range of engine types. The DA-50 rear carburetor engine with Pitts style muffler, was mounted and used for the test flights.

2. DA 50 with 2 1/2" Stand offs, slime fit pitts style muffler and mounting hardware shown below.

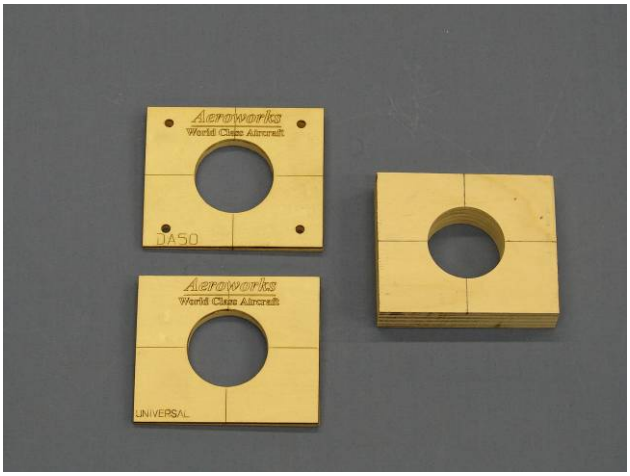
Note: Mounting hardware is **Not Supplied**. 2 1/2" stand offs available through Desert Aircraft.

Mounting distance from front of firewall to front of engine prop hub: 7 7/8"



3. Locate the laser cut engine mounting template/ mounting plates for either the DA-50 or DLE-55. If other engines are used the Universal template may be modified for any mounting pattern.

   Line up thrust lines of engine with thrust lines of template. Mark and drill engine mounting holes. Follow below installation instructions for Universal template.



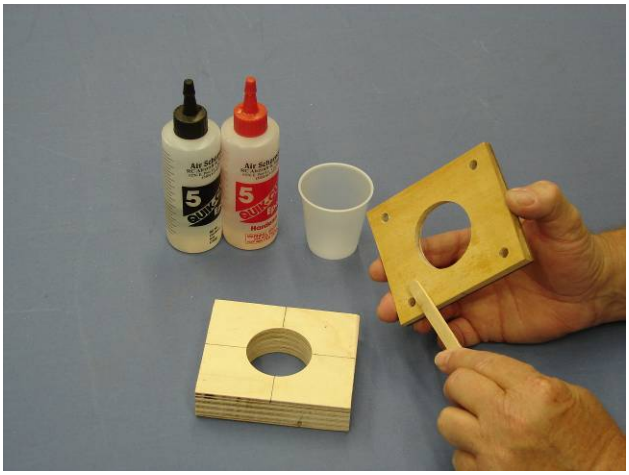
4. Align mounting template with firewall and tape in place.

5. Use a 1/4 bit to drill the engine mounting holes in firewall.

6. Gather the engine mounting template and stand-off block shown below.

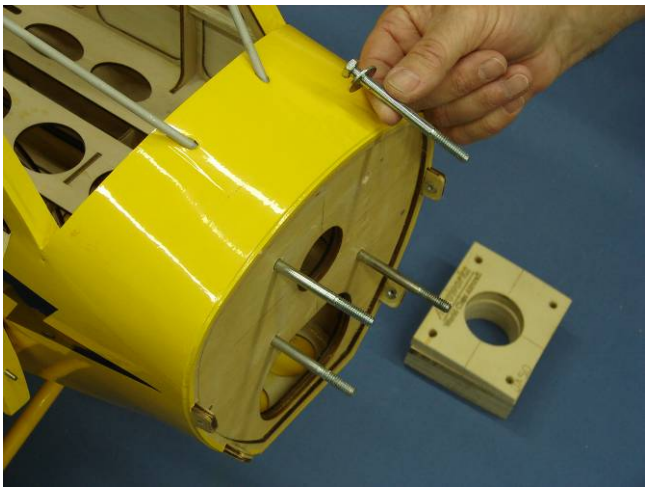
.

7. Use 5 minute epoxy to glue the mounting template and stand off block together as shown. Allow epoxy to fully cure before moving on to the next step.

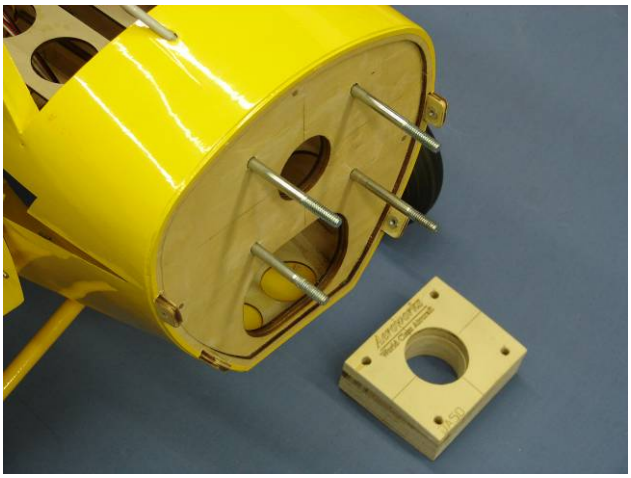


8. Drill through the engine mounting template and into the stand off block as shown. Use a drill press for best results.

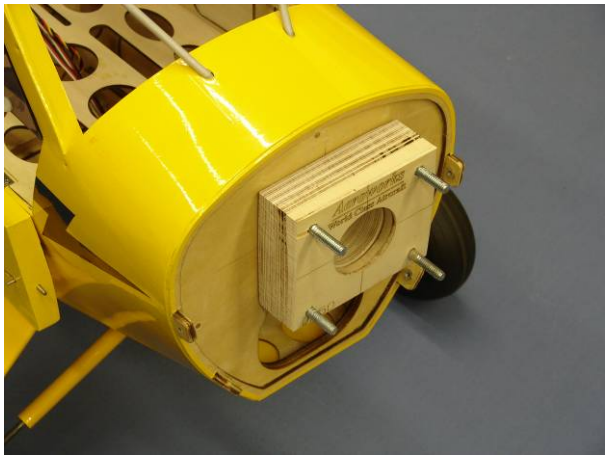
9. Pass the engine mounting bolts through F1 as shown below. Make sure a large fender washer is installed to prevent the mounting bolts from crushing F1.



10. Install all four mounting bolts as shown.

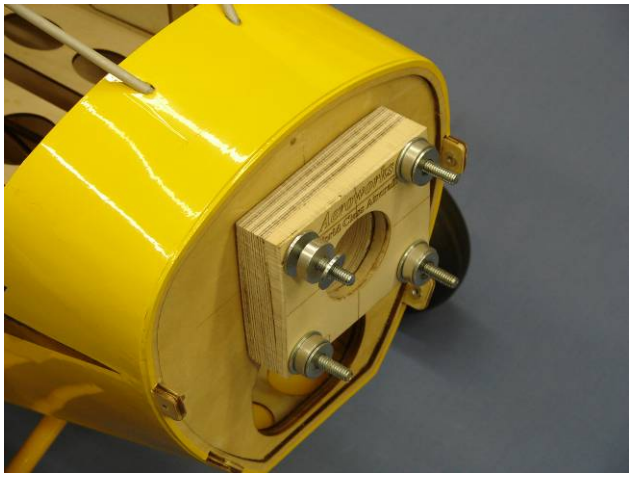


11. Slide the mounting block on the bolts as shown below. Make sure the mount is positioned to give the correct right thrust.

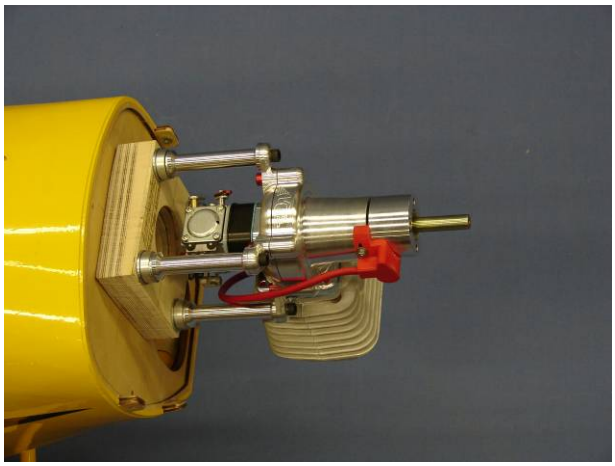


12. Slide a fender washer, 1/4” standoff, and another fender washers onto the bolts as shown.

Note: Fender washers are not included with the kit.

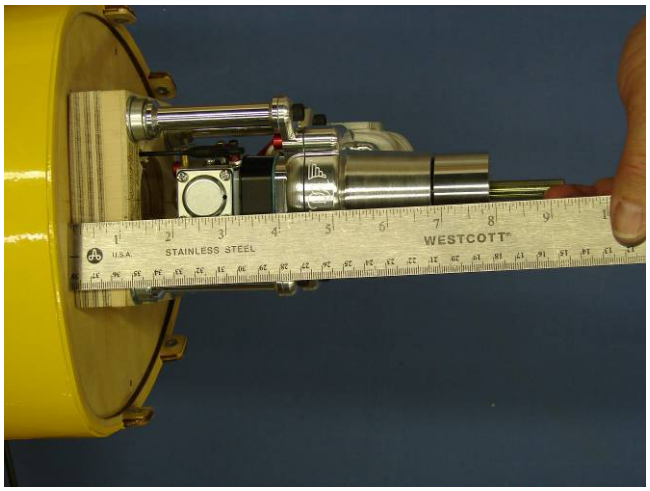


13. Install the DA 50 engine using the 2.5” standoffs included with the engine.



14. Distance from front of firewall to front of engine prop hub is **7 7/8”**.

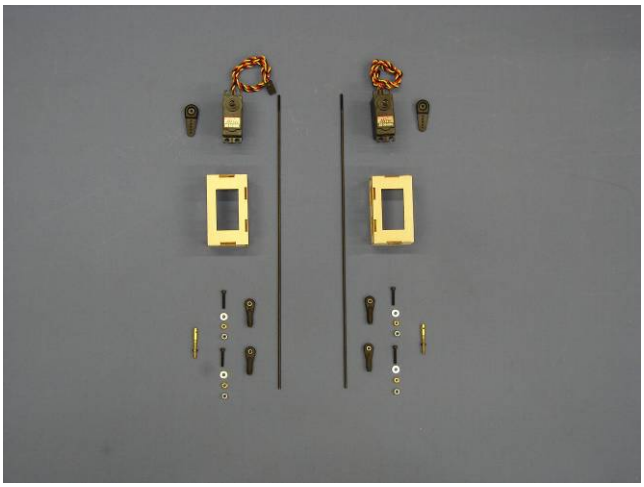
Note: Use aluminum spacers (supplied) and washers (not supplied) to achieve correct distance.



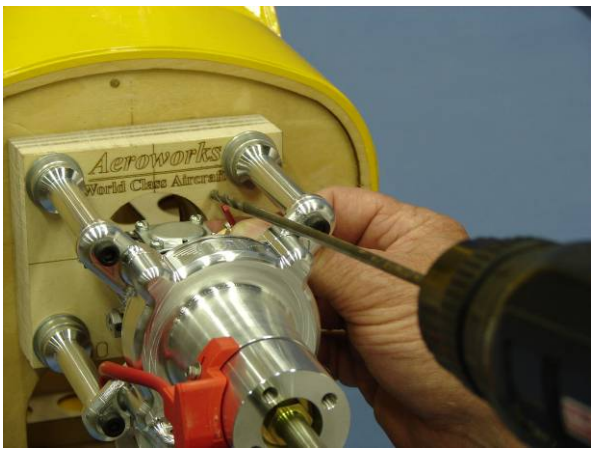
Throttle Servo and Choke Installation

1. Gather the left and right plywood throttle and choke servo mounting trays, the throttle and choke servos, servo arms and pushrod parts as shown below.

   ◊ 2 - 4-40 metal rods threaded at one end
   ◊ 4 - 4-40 ball links and hardware
   ◊ 4 - Brass spacers
   ◊ 2 - 4-40 threaded solder couplers

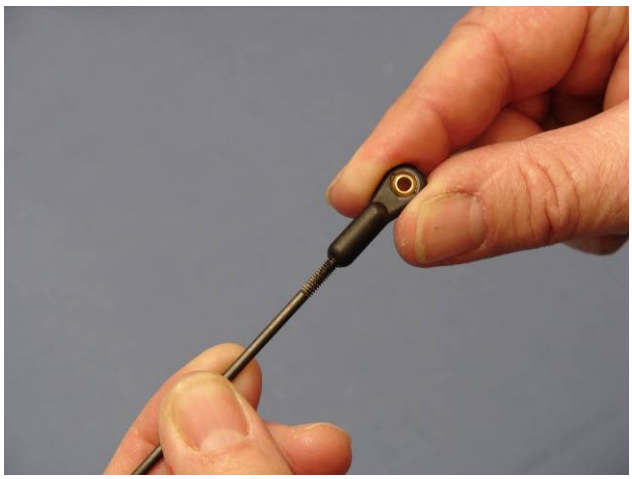


2. Use a 1/4” bit to drill a pushrod exit hole in the firewall in line with the engine carburetor throttle arm.

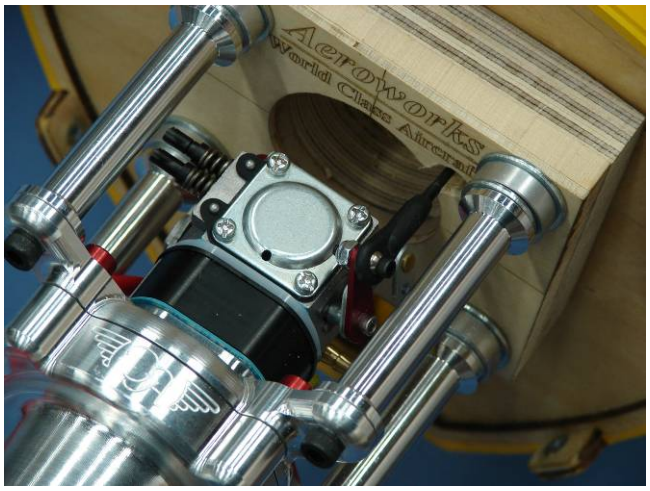


3. Assemble ball link to threaded end of pushrod.

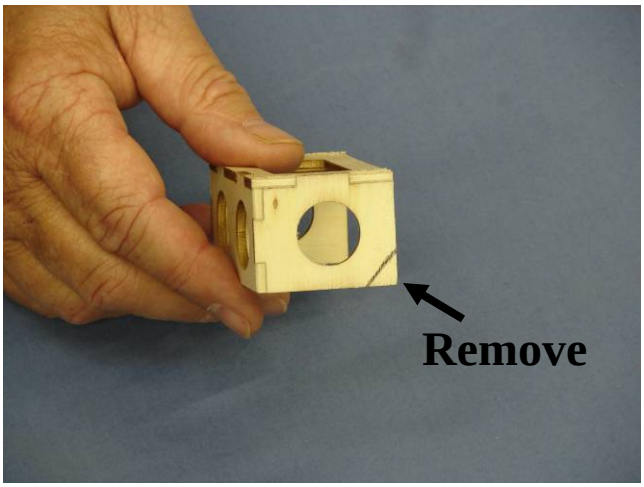
Note: Thread ball link half way onto pushrod to allow for proper adjustment during final installation.



4. Attach throttle pushrod to the carburetor throttle arm with the 4/40 ball link.

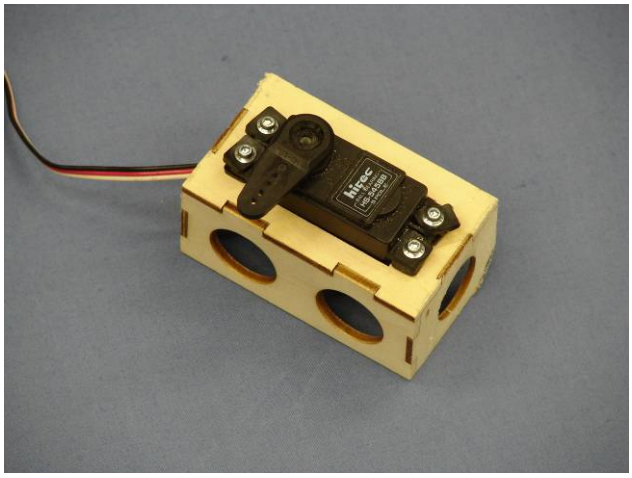


5. Gather the supplied throttle servo mount as shown. It may be necessary to remove the bottom corner of the mount.

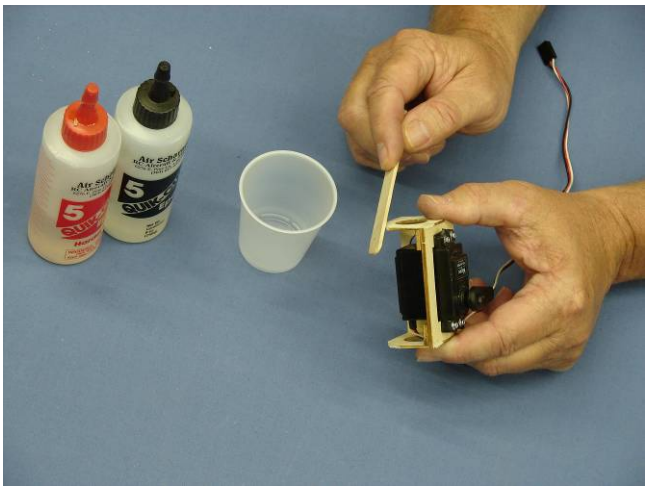


6. Test fit throttle servo mounting box in the fuse as shown.

7. Install throttle servo into servo mounting tray.



8. Apply 5 minute epoxy to the servo mounting box as shown.

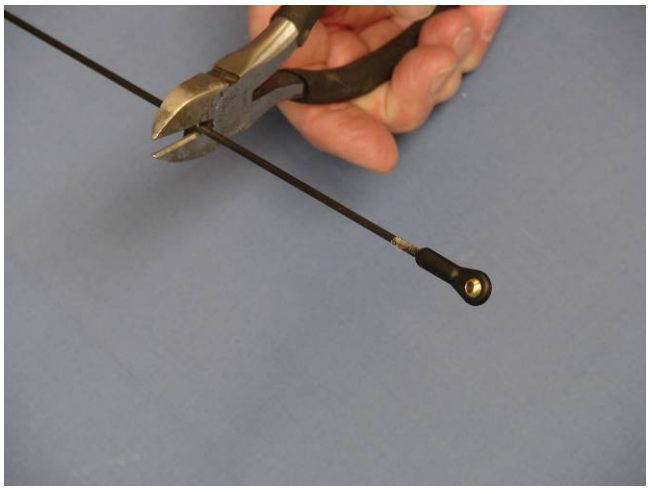


9. Place servo mounting box in fuse use tape or clamps to ensure the servo mount does not move until the epoxy sets.

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

11. 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.

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



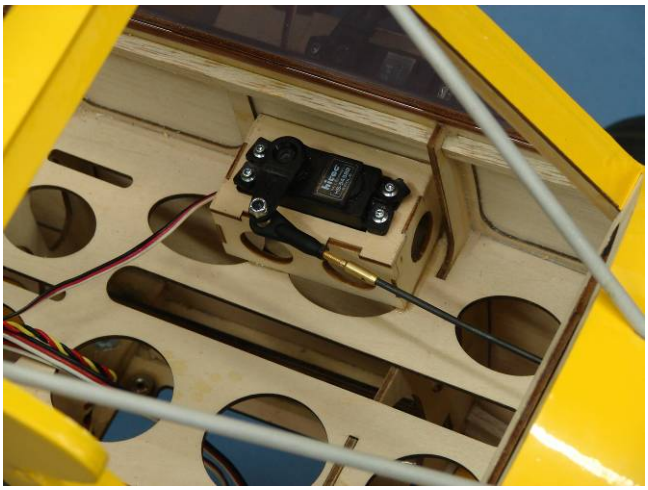
13. Gather the soldering tools as shown below.

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

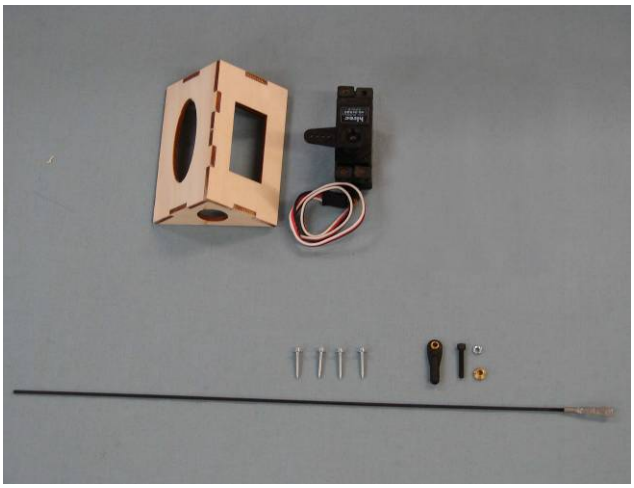
14. Lightly sand end of pushrod for best bond.

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

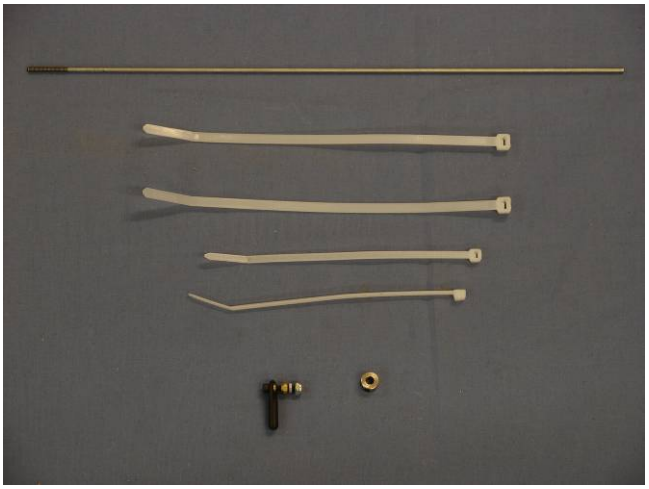
16. Attach the throttle pushrod with the 4/40 ball links and secure. Power up the receiver and throttle servo and adjust pushrod for proper operation. Ensure the servo or rod does not bind or jam at closed or full open positions.



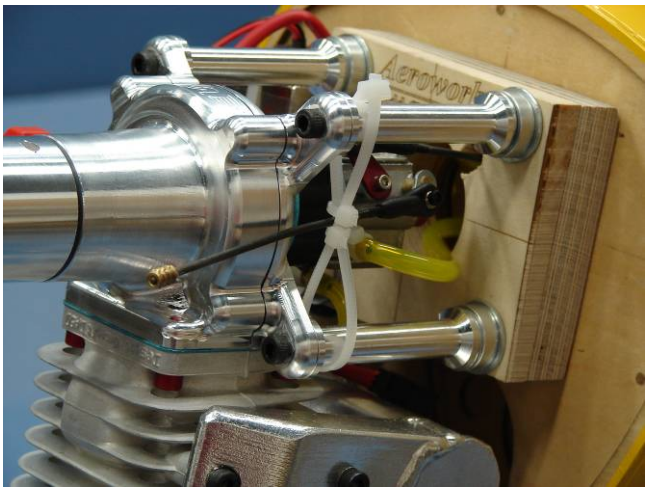
17. If installing a choke servo use the provided mounting tray and hardware shown below. Following same installation steps used for installing throttle servo install choke servo.



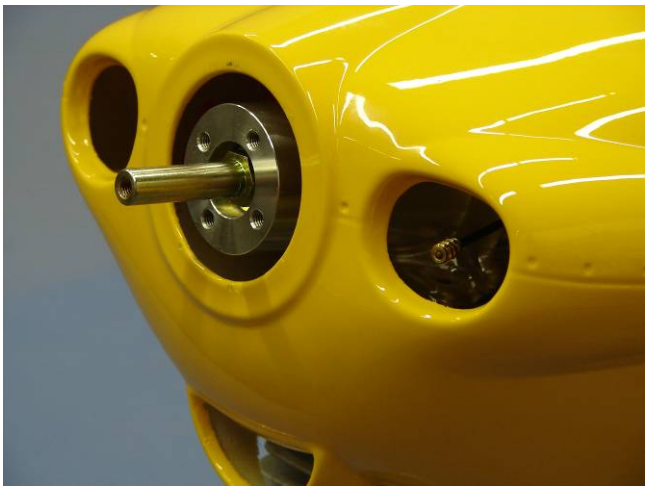
18. If a manual choke will be installed gather the choke pushrod, ball link, wheel collar and nylon ties as shown. Wheel collar and ties are ***Not Supplied.***



19. 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. Place a wheel collar on the end of the pushrod to provide a finger grip.

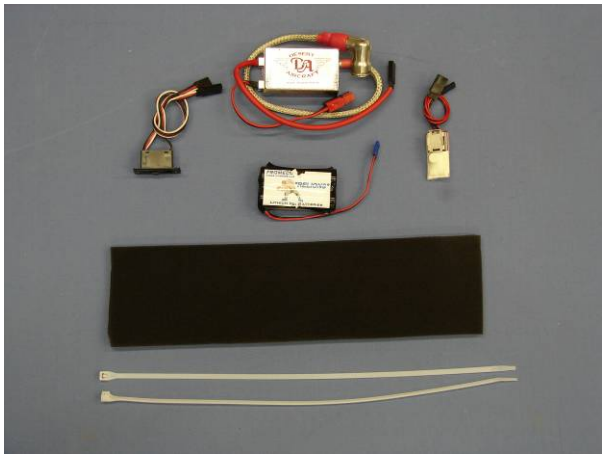


20. Location of manual choke pushrod shown below.

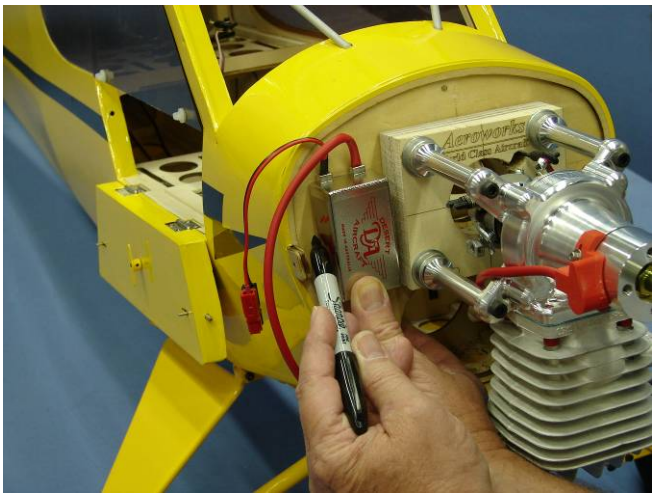


IGNITION INSTALLATION

1. Gather the ignition module, battery, switch, regulator and installation parts as shown below.

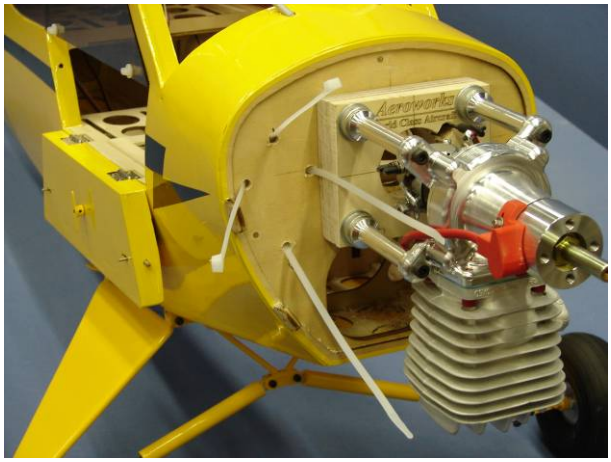


2. Position the ignition module on the side of the engine mounting box and mark the location of the nylon tie holes as shown.

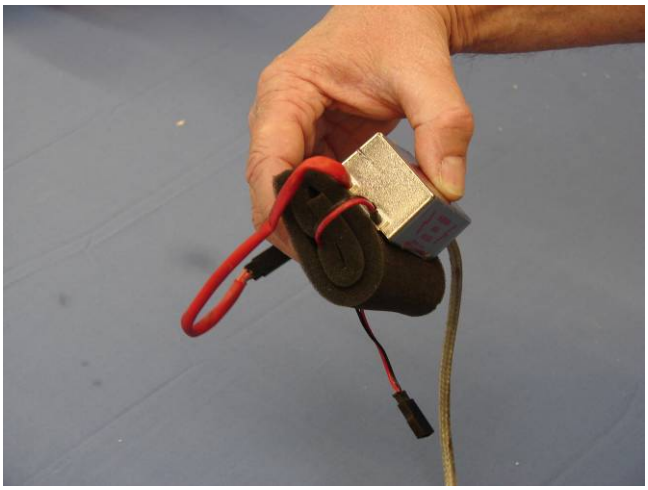


3. Use a 1/4” bit to drill the ignition module mounting holes.

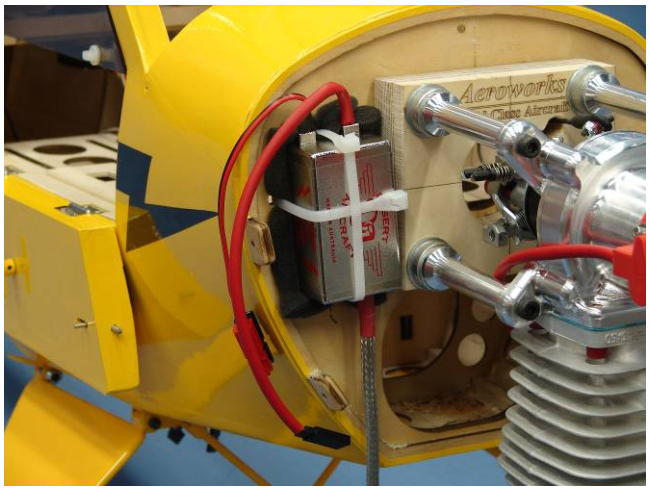
4. Thread nylon tie through mounting holes.



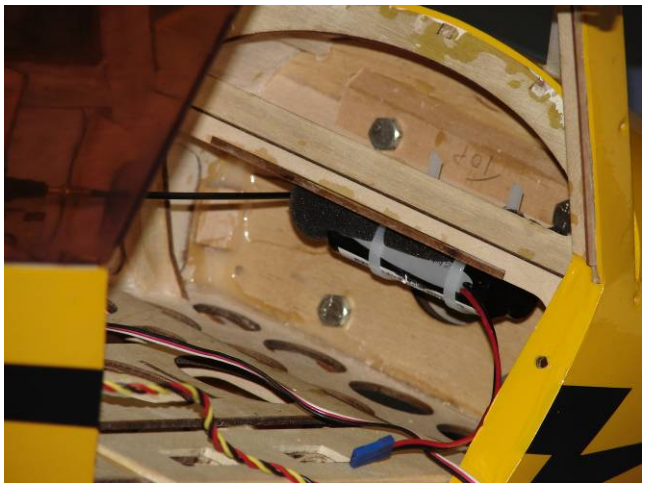
5. Roll the supplied foam rubber to make a 4 layer pad as shown. Make the pad slightly larger than the ignition module.



6. Secure ignition module with nylon ties as necessary.



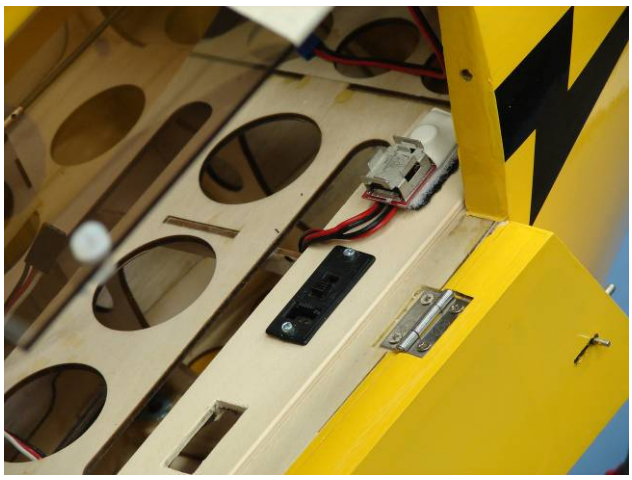
7. Mount ignition battery behind firewall with nylon tie and foam padding.



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

9. Switch holes are precut, inside of fuse as shown below.

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



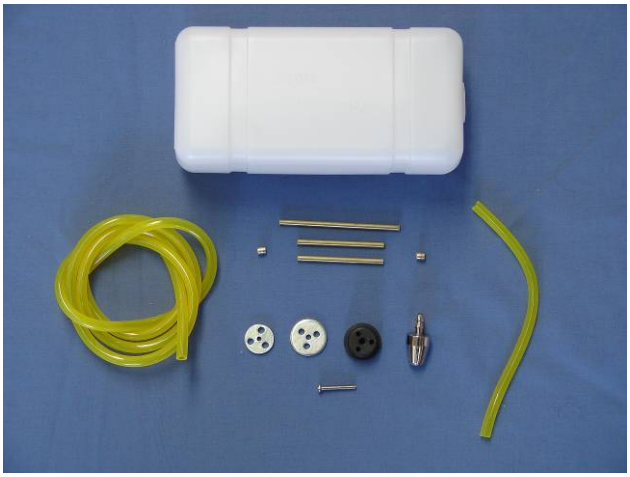
11. Finished switch and regulator installation shown below.

FUEL TANK ASSEMBLY AND INSTALLATION

Fuel Tank Assembly

1. Gather the fuel tank parts as shown below.

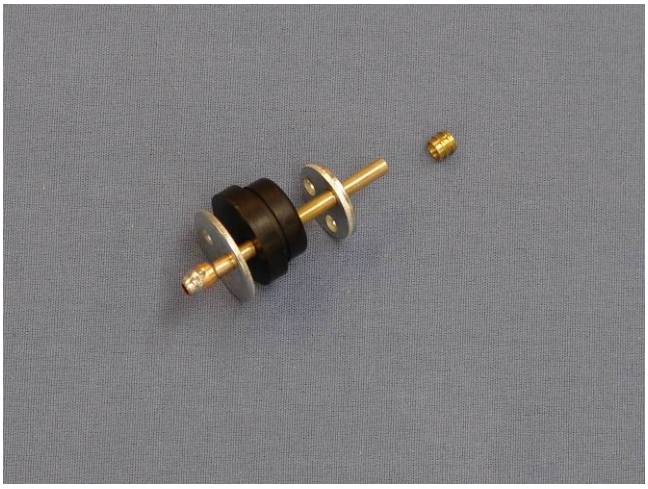
   ◊ 1 - Fuel tank
   ◊ 1 - Hardware
   ◊ 1 - Brass barbs
   ◊ Fuel Tubing (***not supplied)***



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.

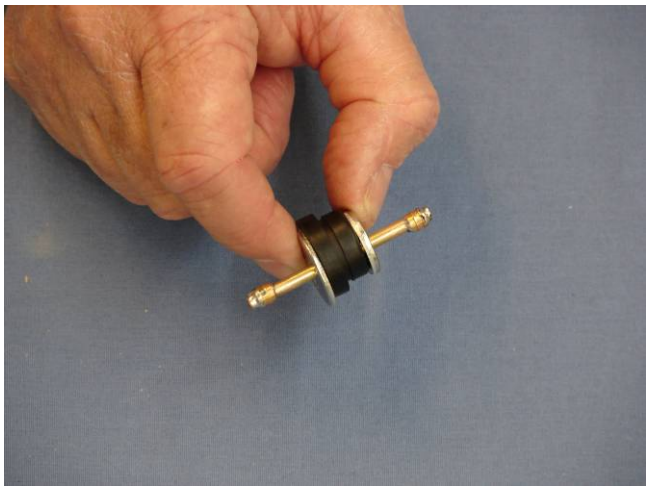
Note: No brass barbs are required for the air vent lines.

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



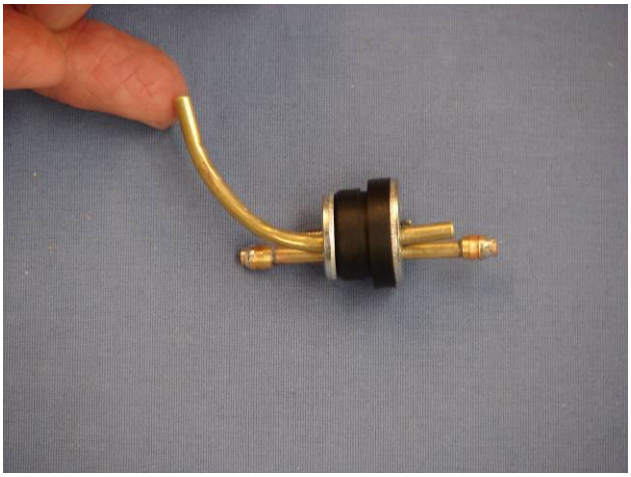
4. Solder a brass fuel barb to the other end of the fuel pick up line.

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



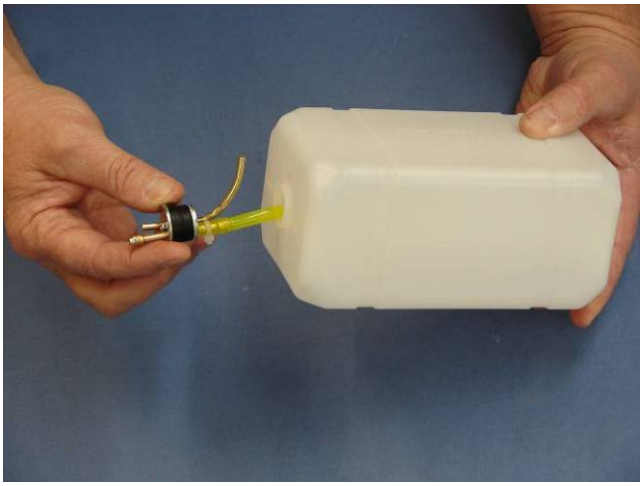
6. Install air vent tube into rubber stopper and bend upward.

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

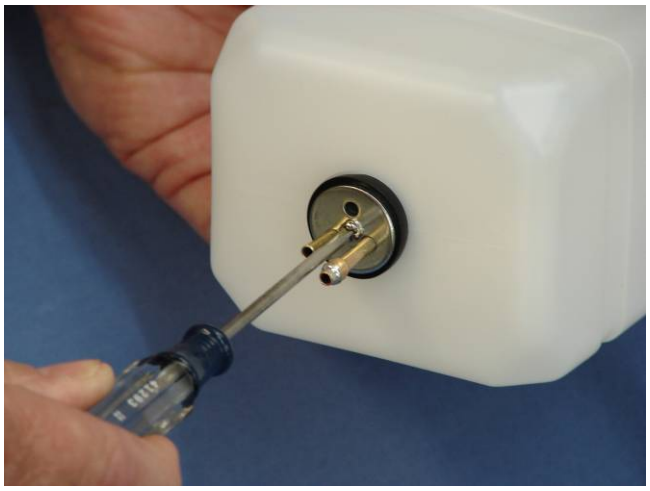


7. Install the fuel tubing and clunk. Secure the fuel tubing with nylon ties to the pick-up tube and clunk.

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



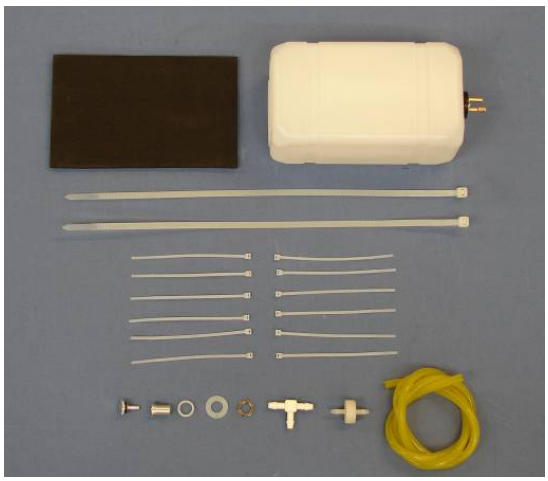
9. Secure the rubber stopper with set screw. Take care not to strip threads by over tightening set screw.



Fuel Tank Installation

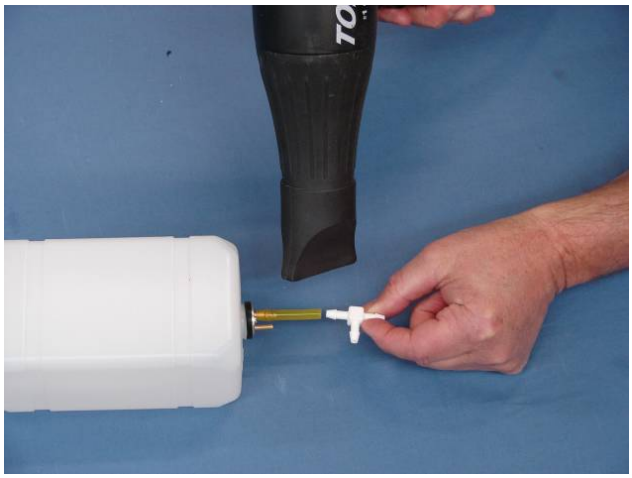
1. Gather the fuel tank parts as shown below. Fuel tank, fuel tubing, foam rubber, fuel "T", fuel filler dot, fuel filter and nylon ties.

Note: The fuel "T", and fuel filter are not supplied, but are available through Aeroworks.



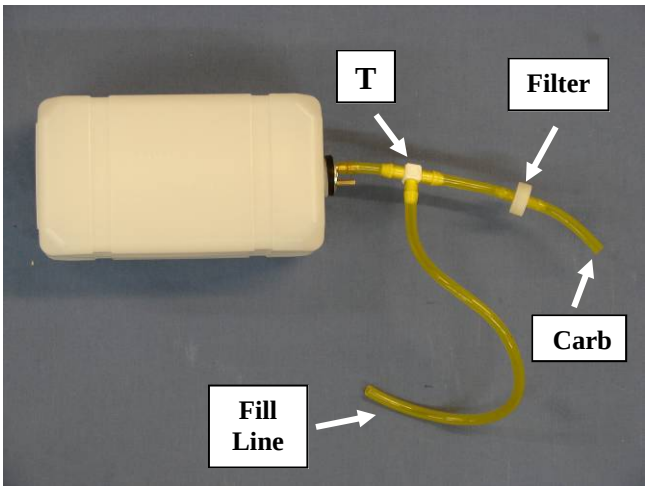
2. Install a short piece of fuel line and the fuel "T" to the fuel pick up tube.

Note: Using a heat gun to soften the fuel line will help with the installation of the fuel "T".



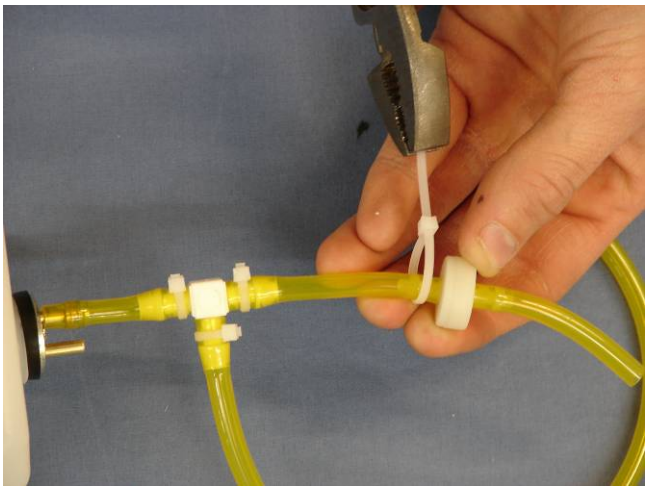
3. Install the fuel filter, fuel pick up and fuel filler lines to the fuel tank.

Note: It is recommended you always use a fuel filter in the fuel line to the carburetor.



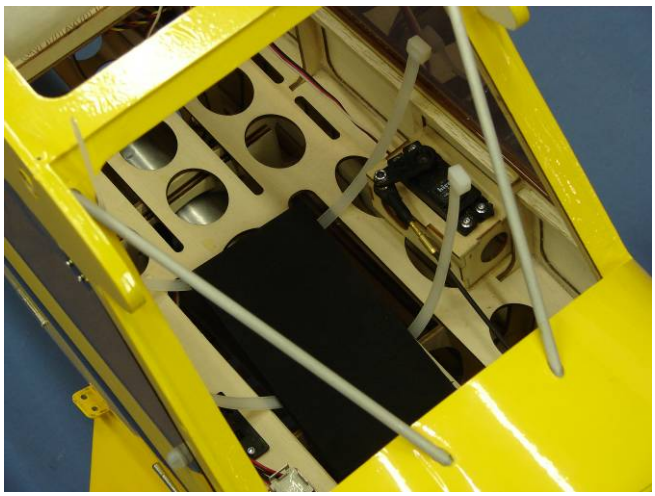
4. Use small nylon ties to secure fuel line.

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.

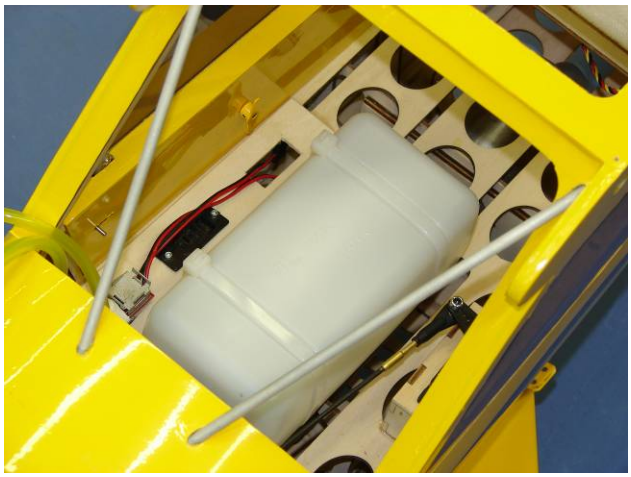


5. Thread nylon ties under tank mounting plate and center in position.

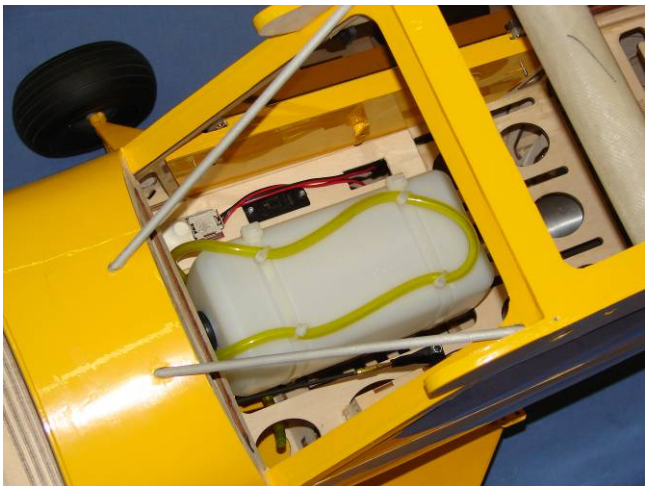
6. Install foam rubber pad for fuel tank to rest on. Foam rubber will help prevent fuel from foaming or getting air bubbles from engine vibration



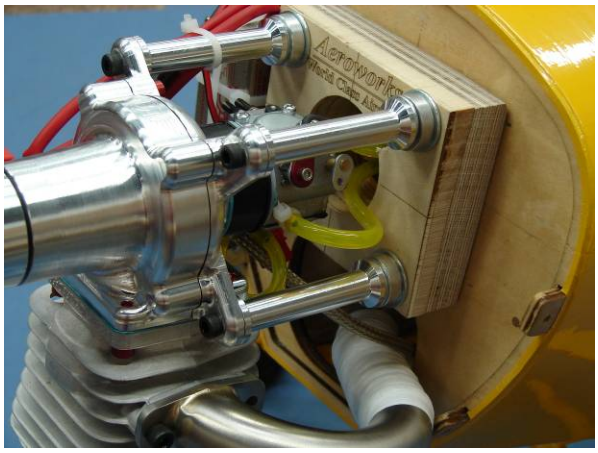
7. Install the tank. Run the fuel pick up line to the engine. Secure the tank with the two long nylon ties trim away any excess nylon tie as shown.



8. 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.



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



10. Gather the fuel filler dot and drill bits as shown below.

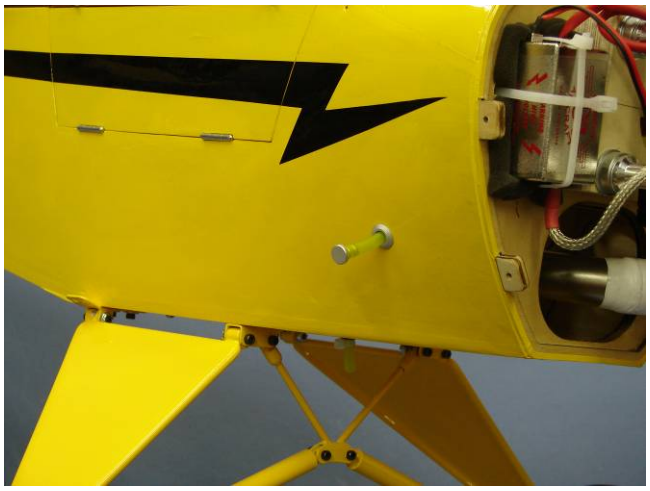
Note: We recommend you start with a smaller size drill bit then increase the bit size to the correct size to fit your filler dot. This will help prevent the fuse side from splitting or cracking.

11. Mark location of fuel filler dot.

12. Drill hole to accommodate fuel filler dot.

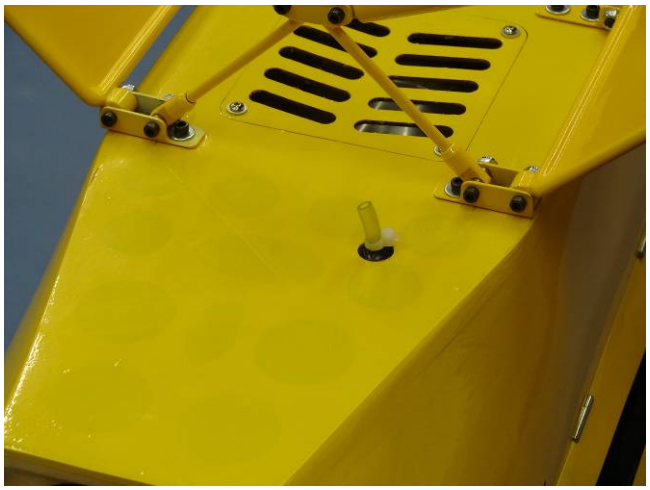
13. Use thick CA to secure fuel dot in fuse.

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



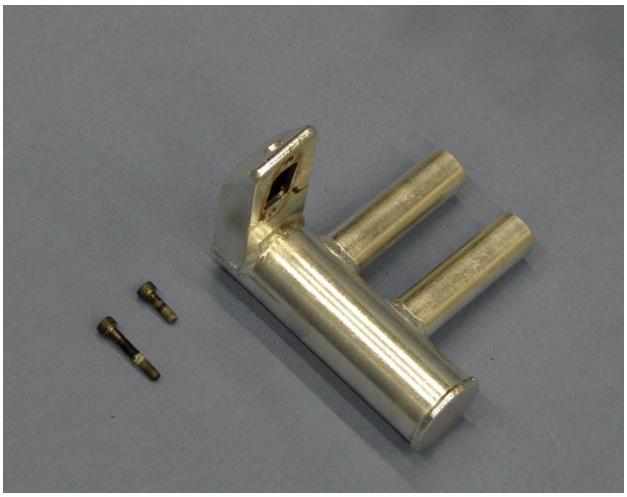
15. Feed vent line tubing through bottom of fuse. Cut off excess fuel line.

Note: Place a zip tie around the vent line as shown. Be careful not to tighten the zip tie to the point of closing the vent line. This will prevent the vent line from falling back inside the fuse and flooding the airplane with gas during fueling.



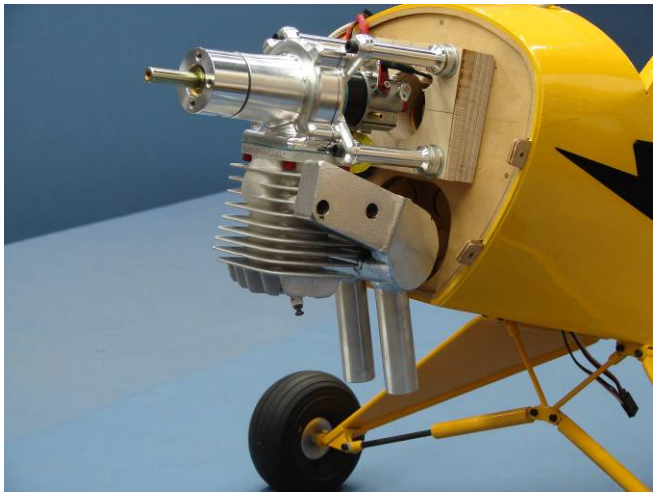
Pitts Muffler Installation

1. Gather the custom 50cc slim fit muffler available through Aeroworks. This muffler will fit fully enclosed in the cowl.



2. Install pitts muffler using mounting bolts supplied with muffler.

Note: Use blue loctite on muffler bolts to ensure bolts will not loosen in flight.



CANISTER INSTALLATION

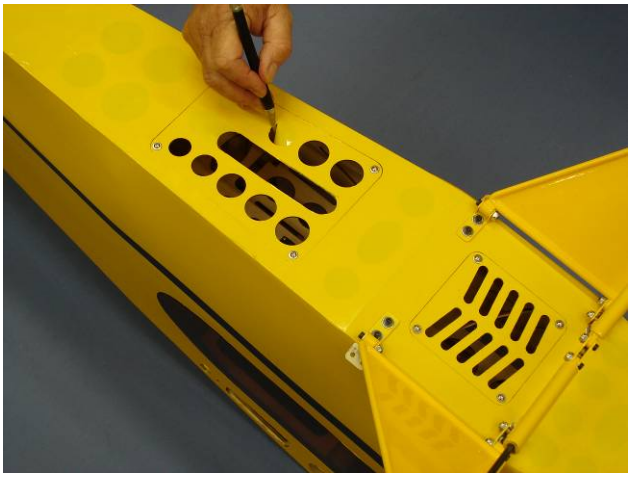
Canister Installation

Gather the canister muffler parts as shown:

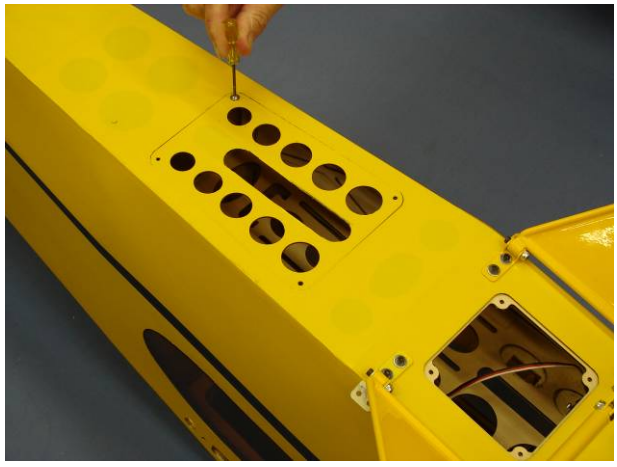
- ◊ 1 - KS 86 Canister (Rear Exit)
- ◊ 1 - 25mm Drop Double Bend flex header
- ◊ 1 - Teflon Coupler
- ◊ 2 - Mounting Clamps
- ◊ 1 - Canister Mounting Bracket-Supplied

1. Using a covering iron seal the covering around the air exit holes at fuse bottom as shown below.

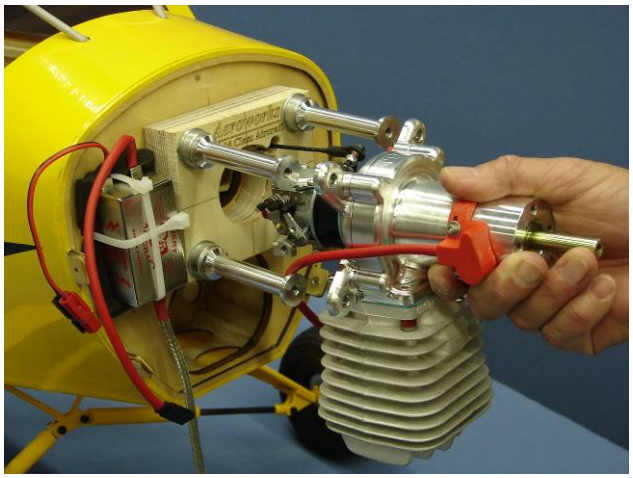
2. Use a hobby knife to remove the covering around the hot air exit holes.



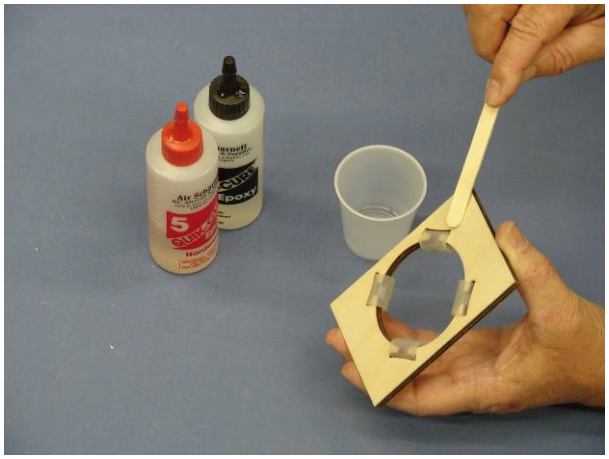
3. Remove the (4) Phillips head screws holding the canister hatch in place.



4. Remove engine from mounts as shown. This will make canister installation easier.

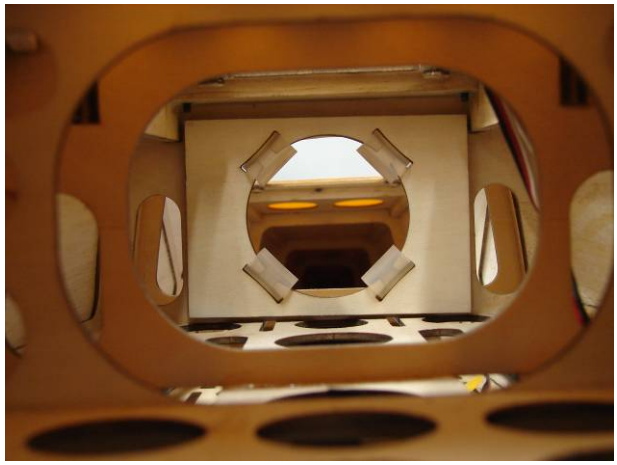


5. Use 30 Minute epoxy to secure the canister mount as shown.



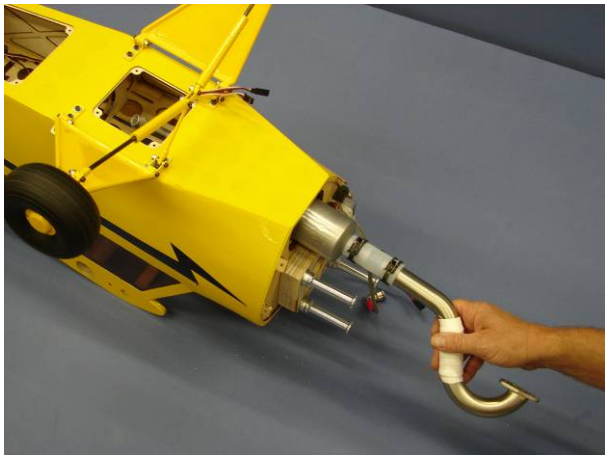
6. Install the canister mount in the fuse. Allow epoxy to fully cure before moving on to the next step.

7. Canister mount viewed from front as shown below.



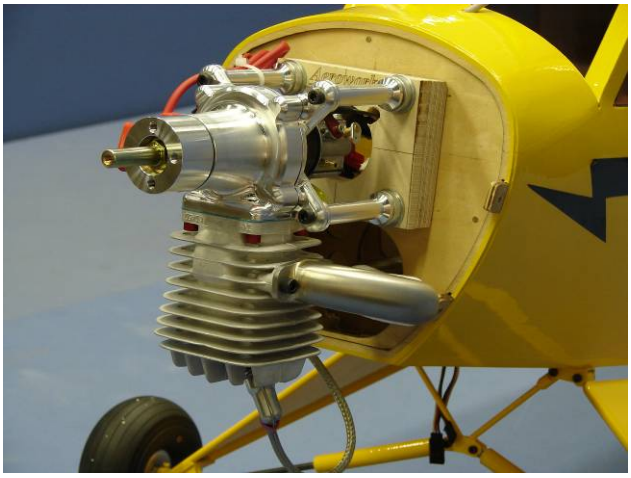
8. Assemble the canister to the header with the Teflon coupler and clamps in accordance with manufactures instructions.

9. Slide the canister into the canister tunnel as shown below.

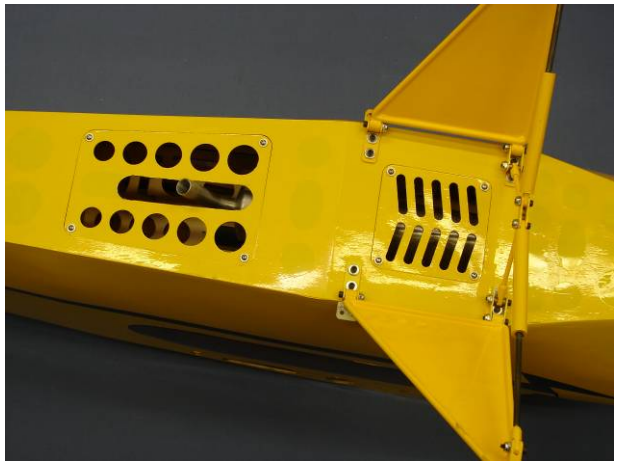


10. Reinstall motor to mounts.

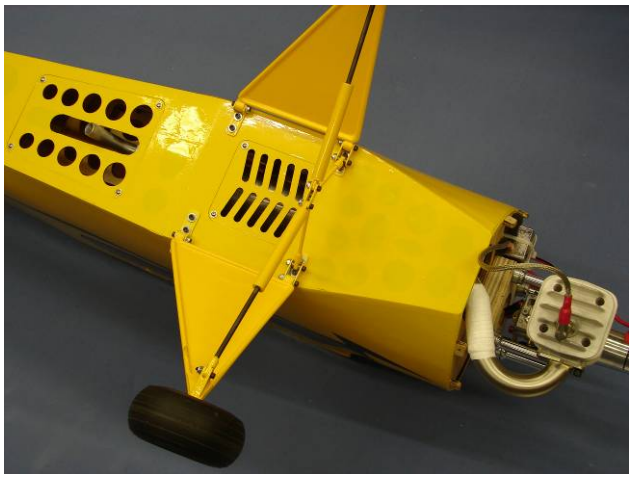
11. Secure the header in place using the mounting bolts and gasket provided with your engine. Use blue Loctite to secure the bolts.



12. Reinstall canister hatch as shown.

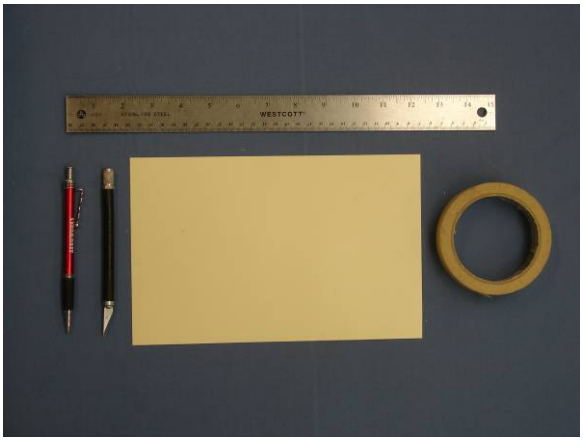


13. Canister installation is now complete.

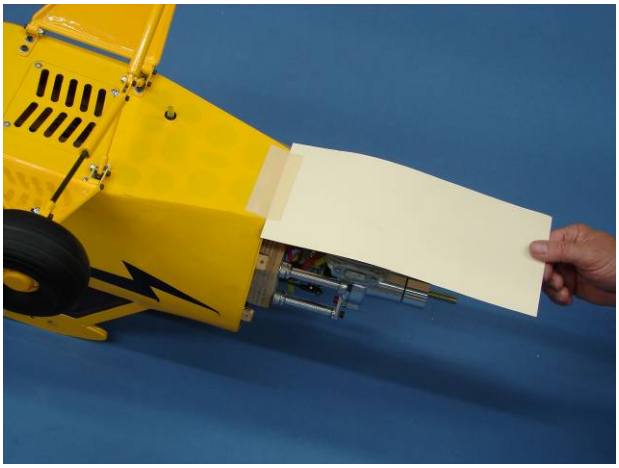


COWL INSTALLATION

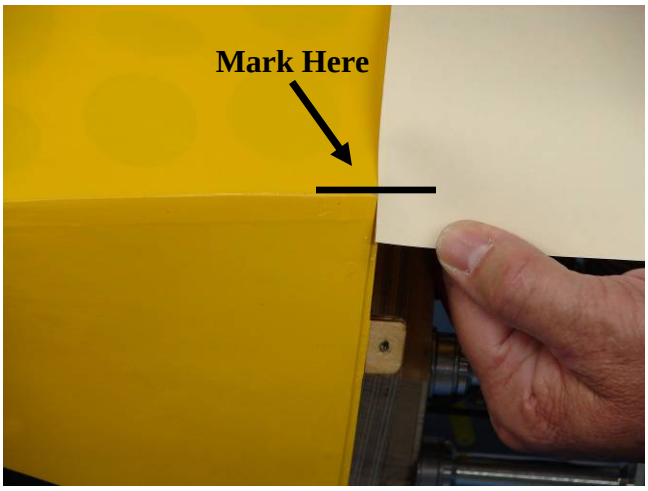
1. Gather the materials as shown below. Template material, hobby knife, ruler, tape, marker and pencil.



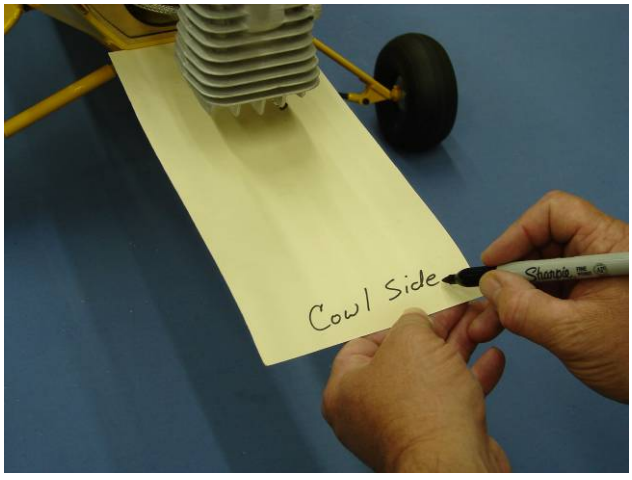
2. Tape the provided template material to the bottom of the fuse as shown below.



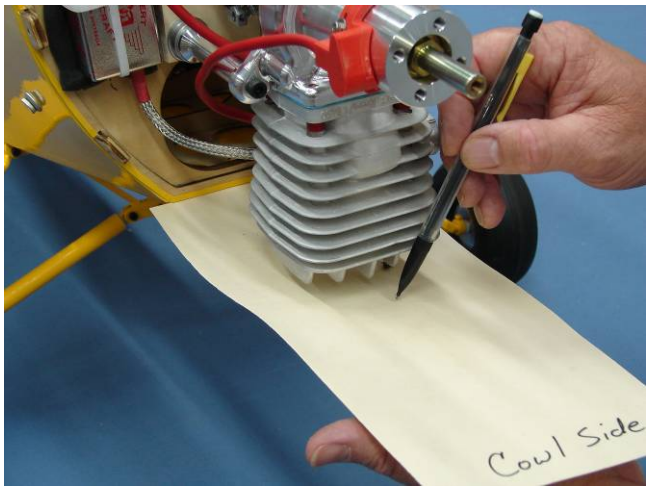
3. Align the template to the bottom of the fuse as shown. Mark the location of the template on the fuse.



4. Mark **"Cowl Side"** on the top side of the template. It is very important that the template does not change position when attached to the cowl.

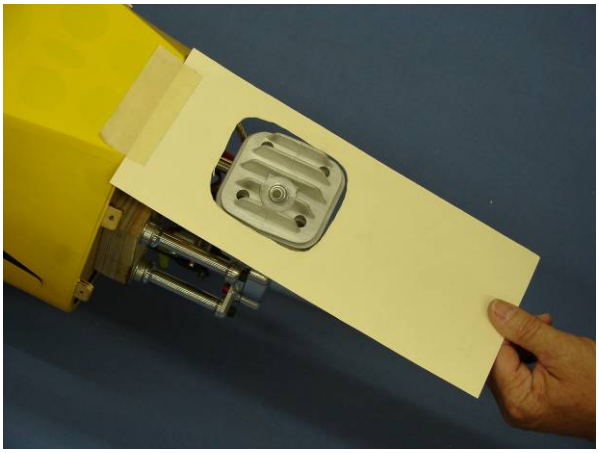


5. Trace around the head of the engine being careful to keep the template in the same location.

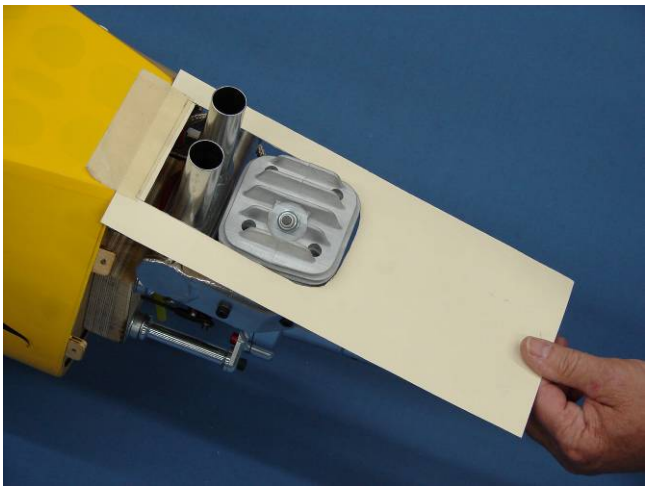


6. Use a hobby knife to cut out the engine cylinder exit opening as shown.

7. 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.



8. Install muffler and enlarge template to accommodate muffler opening as shown below.



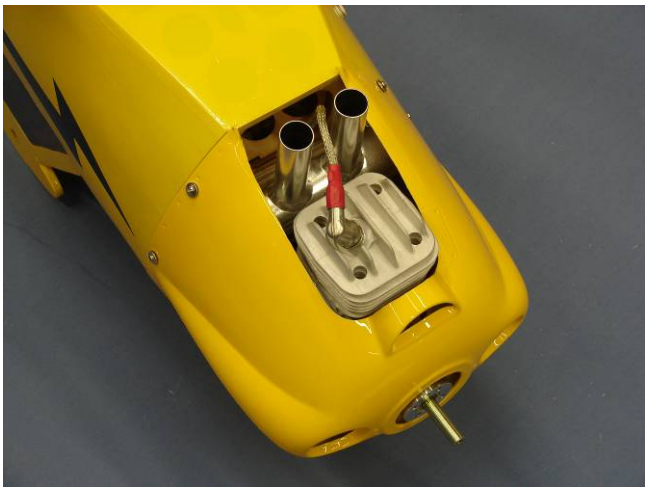
9. Align template with bottom of cowl. Use a felt tip marker to transfer the template cutout pattern to the cowl and mark cut location.

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.

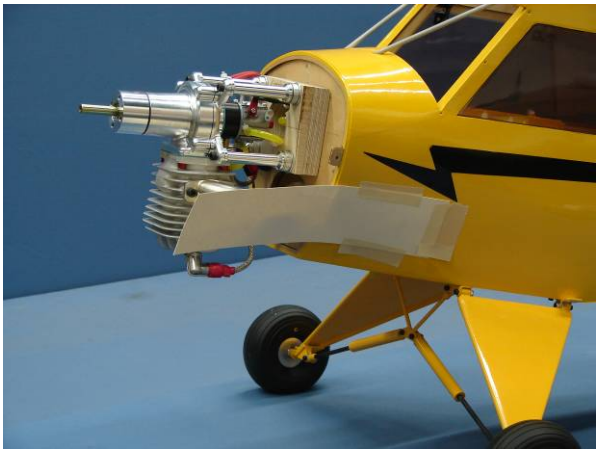
Note: Take care not to cut or scratch the cowl.

11. Finished cowl/slim fit muffler installation shown below. Secure cowl to fuse using the four 4-40 mounting bolts and four #6 bonded washers.

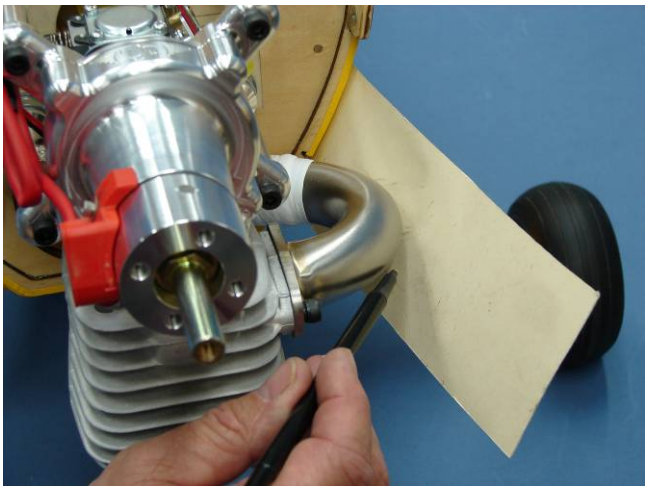


Cowl Installation for Canister Muffler

1. Cut a strip of the template long enough to reach header pipe. Tape this strip to the side of the fuse.

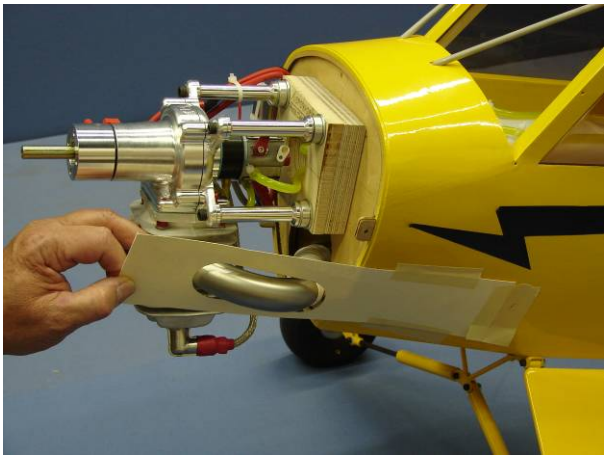


2. Mark the location of the header pipe. As shown below.

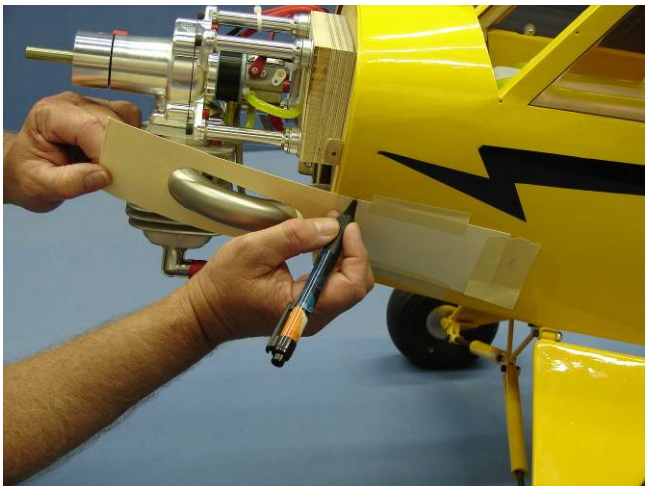


3. Use a hobby knife to cut out the header pipe opening as shown.

4. 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.



5. Use a pen to mark the location of the template on the fuse. Be careful not to dent the wood sheeting with the pen.



6. Remove template from fuse as shown below.

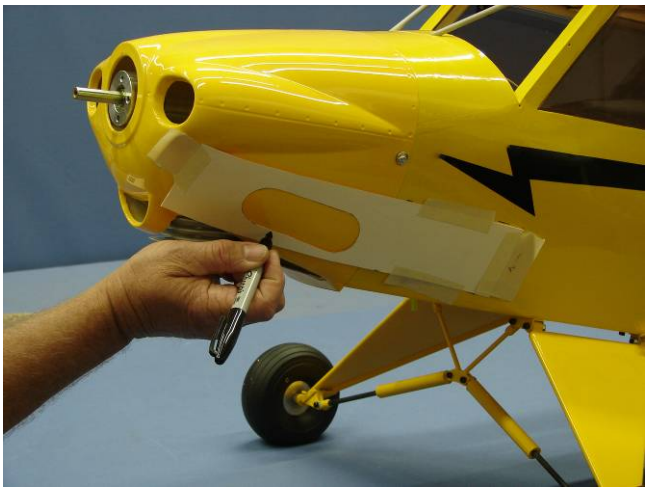
7. Bolt cowling in place and reinstall template as shown below.

8. Align template with bottom of cowl. Use a felt tip marker to transfer the template cutout 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!

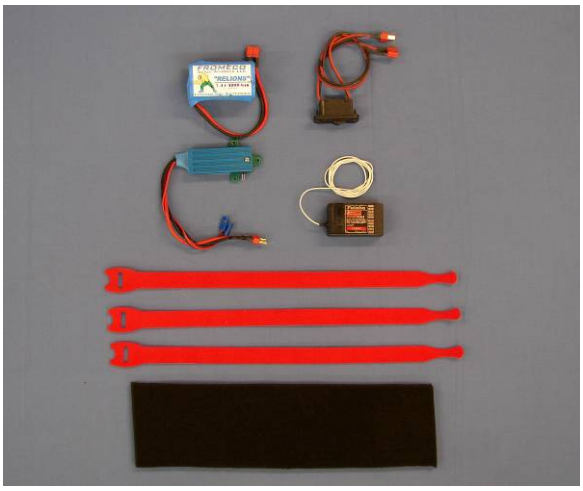
9. Remove the template and use a rotary cutting tool and sanding drum to cut out the opening in the cowl.

Note: Take care not to cut or scratch the cowl.

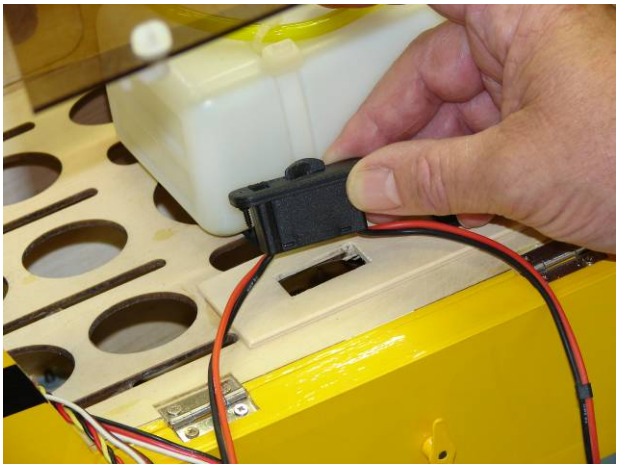


RADIO INSTALLATION

1. Gather the radio components as shown below. Battery, Switch, Regulator if used, receiver, foam rubber and Velcro one wrap straps.



2. Final switch positioning is left to the builder. Aeroworks recommends the switches be installed inside the radio bay near the door for easy access as well as improved scale appearance. Switch locations have been precut inside the fuse as shown below. It may be necessary to enlarge or modify hole to accommodate your switch.



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

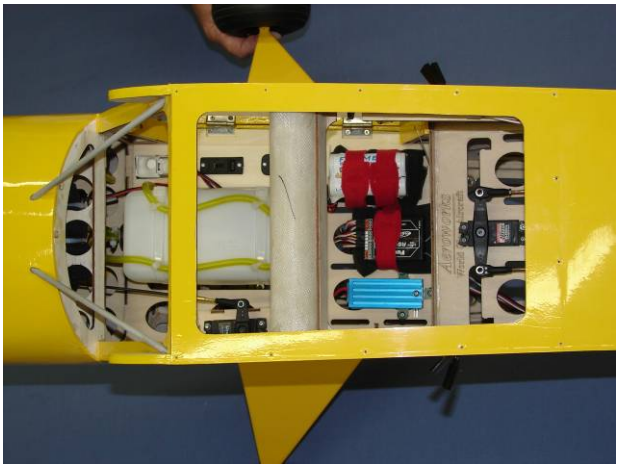
4. Install regulator in accordance with manufacturers recommended installations.

5. Install battery using foam padding and Velcro one wrap straps.

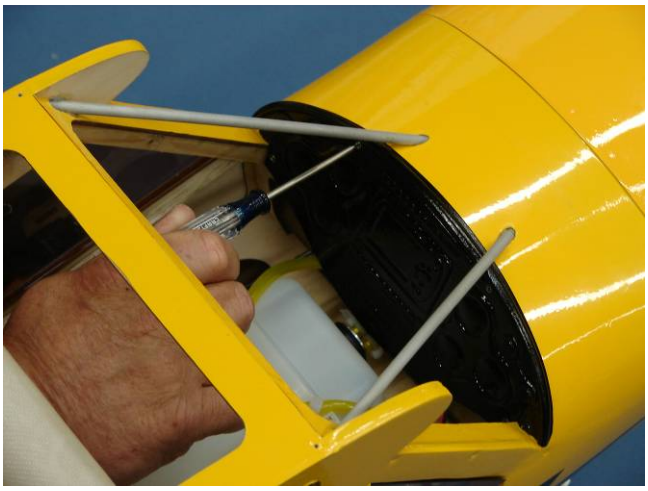
6. Run aileron and flap extensions from the receiver, behind the rear window and out the top of the fuse as shown. This will help maintain the scale appearance of airplane.

7. Typical radio installation shown below.

Note: If models CG is tail heavy move batteries forward. If models CG is nose heavy move batteries to the rear.



8. Reinstall dash panel with the (4) Phillips head screws as shown.



9. Using a Phillips screw driver reinstall the canopy to the fuselage as shown below.

DECAL INSTALLATION

Decal installation

1. Decals supplied with the kit may vary from the photos below. Decal installation instructions are for reference purposes only.

   Gather supplied decals, transfer tape, ruler, scissors, hobby knife, plastic squeegee or credit card, Windex or Application fluid like ***Rapid Tac***. Also, a solution of 1 drop of dish detergent to a cup of water sprayed on the model will assist in proper positioning.

Note: Clean surface and tighten all covering before any decals are applied.

2. Placement of optional decal package shown, included decals will differ.

3. Placement of optional decal package shown, included decals will differ.

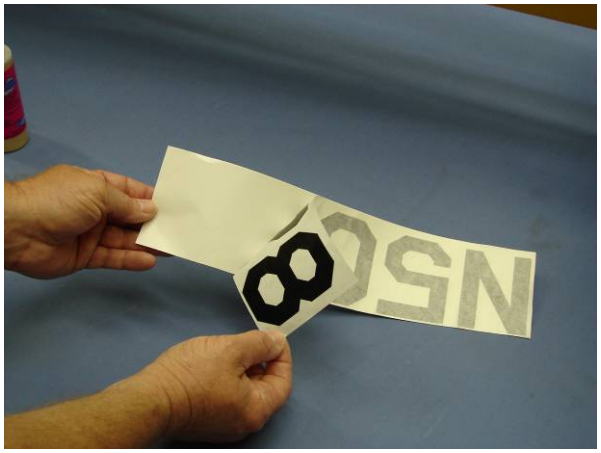
4. Placement of optional decal package shown, included decals will differ.

5. Position fuselage decal as shown below. Mark location where N numbers cross the black strip on the fuse.

6. Remove portion of fuse strip that will be behind the decal as shown below.

7. Use a covering iron to reseal the covering as shown.

8. Remove backing from decal sheet.



9. Spray back side of decal with application fluid, Windex or soapy water solution.

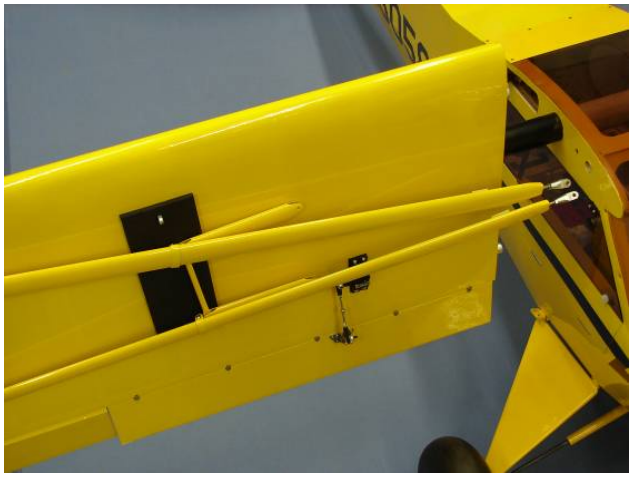
10. Spray model surface with application fluid, Windex or soapy water solution.

11. Using a plastic squeegee or credit card. Spread decal smooth and remove all excess application fluid. Let decal set until dry enough to be able to remove transfer tape with out removing decal. Do not leave until completely dry or transfer tape will be difficult to remove.

12. Pull transfer tape from top of decal. Take care not to pull away or damage decal.

PRE-FLIGHT PREPARATION

1. Slide the wing tube in the fuse wing tube sleeve. Slide the wings on the wing tube



2. Remove the foam pad and attach the middle strut supports using the set pins and cotter pins as shown.

3. Secure the aileron and flap connectors with Aeroworks Safety Clip. Ensure the connectors will not come apart from vibration or light tension.

4. Bolt the struts to the fuse using (2) 6-32 bolts and lock nuts as shown below,

5. Gather four 8-32 wing mounting bolts and four #8 rubber backed washers for preparation of mounting the wings.

6. 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.

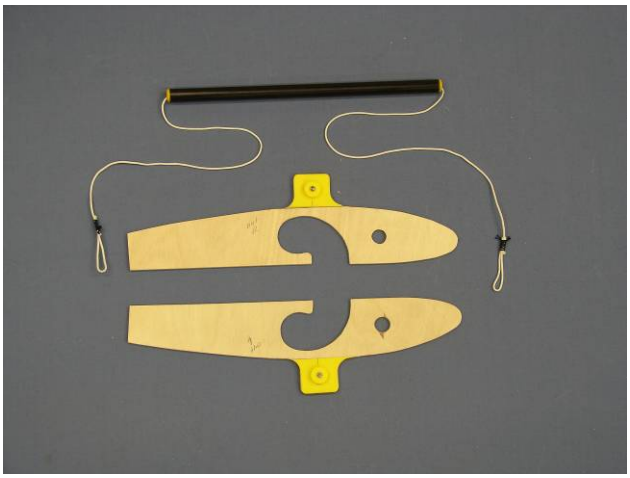
Center Of Gravity– CG Buddy

5” Back From The Wing Leading Edge

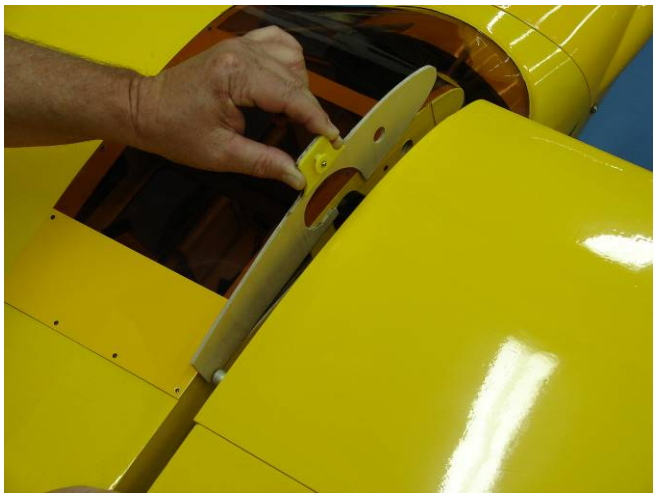
Measured From the Root End of the Wing

1. Aeroworks has included the new CG Buddy with the Sport Cub S2. This handy tool will allow the builder to balance the airplane without the need for an assistant.

2. Gather the CG buddy as shown below:



3. 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.

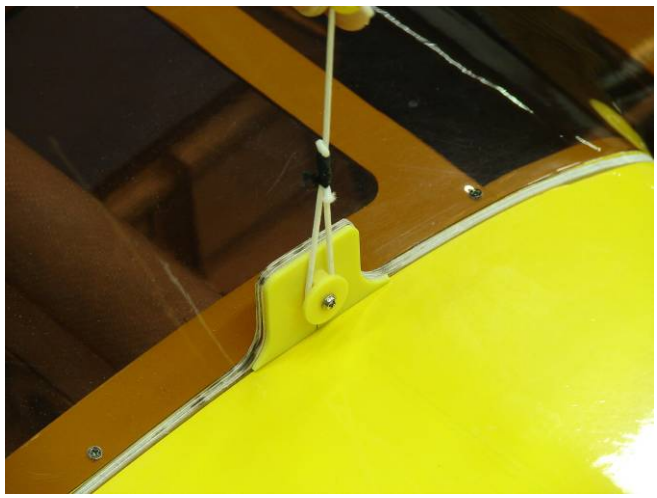


4. Slide wing back against the fuse as shown below.

5. Install CG Buddy on the opposite wing using the same methods described above.

6. Attach loop to cable attachment as shown below.

7. Insure both wings are pushed firmly against fuse.



8. Lift airplane from center handle as shown, plane should sit level when lifted. Balance the Sport Cub S2 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.

IMPORTANT

The CG Buddy **is not** adjustable and is set to balance the airplane at the recommended CG of 5" back from the leading edge at the wing root. This is the suggested CG location and is recommended for the maiden flight. The CG may be moved forward or aft once the pilot is familiar with the airplane.

Control Throws

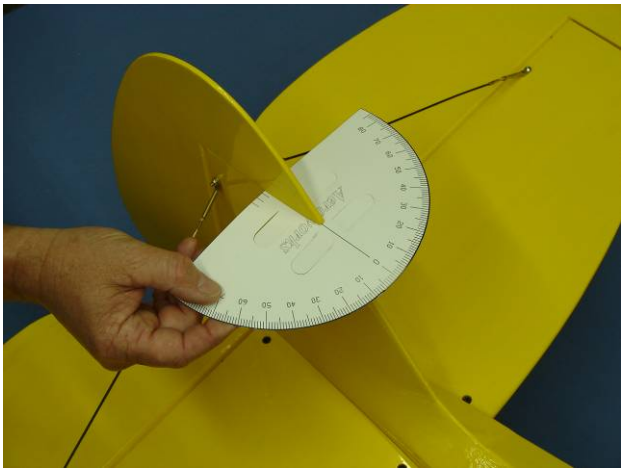
1. The amount of control throw should be adjusted using mechanical means as much as possible and then electronically with the radio. The control throws are shown in degrees and inches of deflection measured at the widest point of the control surface for both low and high rates.

2. Use the supplied flight control deflection meter to measure the throws in degrees. Prop up the tail of the aircraft until the fuselage is parallel to the table top.
3. Use the widest part of the aileron/flap to measure the aileron/flap throw in degrees.

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

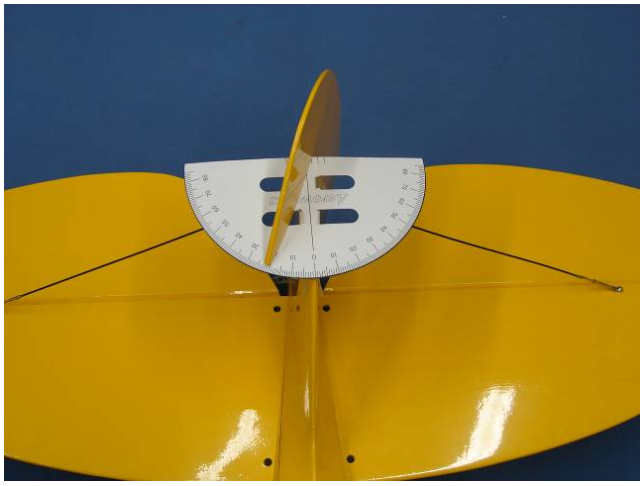
5. Gather the Rudder Deflection Meter (***Supplied***) and scotch tape.

6. Slide the deflection meter under the rudder boost tab.



7. Secure the tabs to the fin using scotch tape.

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



Control Throw Deflection Table

	Low Rate	Medium Rate
Aileron	7/8" or 20˚ up 7/8" or 20˚ down	1 1/4" or 30˚ up 1 1/4" or 30˚ down
Rudder	N/A" or 25˚ left N/A" or 25˚ right	N/A" or 35˚ left N/A" or 35˚ right
Elevator	1 1/8" or 17˚ up 1 1/8" or 17˚ down	1 3/4" or 27˚ up 1 3/4" or 27˚ down
Flap	7/8" or 20˚ down	1 1/4" or 30˚ down

	High Rate
Aileron	1 3/4" or 40˚ up 1 3/4" or 40˚ down
Rudder	N/A" or 45˚ left N/A" or 45˚ right
Elevator	2 1/2" or 40˚ up 2 1/2" or 40˚ down
Flap	1 3/4" or 40˚ down

Recommended Exponential

15% Exponential on low rates
30% Exponential on medium rates
60% Exponential on high rates

Use the given rates as a starting point. You can adjust from there to suit your own flying style.

Preflight Checks

Center of Gravity: Check CG is set properly.

Engine: The engine should run smoothly at all throttle settings with smooth transition from idle to full throttle without stalling or hesitation. Do not fly an unreliable engine. Read engine instructions including break in and tuning completely.

Prop balancing: Ensure prop is properly balanced prior to mounting on engine.

Flight Controls: Ensure all flight controls are free from binding and are centered. Check that all hinges are tight and will not pull out. Control linkages must be rigid and tight and have no slop. Confirm proper direction of ailerons, rudder, and elevator. Experienced flyers have lost airplanes due to reversed ailerons. Right roll is right up, left down. Left roll is left up, right down.

Batteries: Transmitter, ignition and receiver batteries are fully charged.

Fasteners: Check all engine bolts, wing bolts, hatch bolts, servo screws, control horn bolts, wheel collars, and clevis keepers are tight and secure.

Covering: Check all covering and seams are sealed and secure.

Radio: Check trims set to neutral and controls centered. Check rate and condition switches set properly. Check the receiver antenna is fully extended and not reversed on it self.

Range check: Do a range check with and without the engine running in accordance with the radio manufacturer instructions. If there is insufficient range or a large reduction with the engine running, do not fly until it is resolved!

Fuel: Fill the fuel tank before each flight.

50cc Sport Cub S2 ARF-QB NOTES