

# HANGAR 9®

*Fly First Class™*

## **Beast® 100**

### ASSEMBLY MANUAL

Specifications

- Wingspan.....89.0 in (2,260mm)
- Overall Length..... 87 in (2210mm) with spinner
- Wing Area.....2,490 sq in (161 sq dm)
- Flying Weight.....26–28 lb (12–13 kg)
- Engine Size ..... DA 100L



# Table of Contents

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Required Tools and Adhesives . . . . .	4
UltraCote® Covering Colors . . . . .	4
Before Starting Assembly . . . . .	4
Radio and Power Systems Requirements . . . . .	5
Recommended JR, JR SPORT and Spektrum™ Systems . . . . .	5
Recommended Engine Setup . . . . .	5
Beast 100 Introduction and Optional Sun Cover . . . . .	6
A Word From The Creator Of The Beast . . . . .	7
Rudder Installation . . . . .	8
Rudder Vertical Fin and Control Horn Installation . . . . .	9
Landing Gear and Wheel Pants Assembly . . . . .	14
Horizontal Stab Installation. . . . .	16
Elevator Hinging . . . . .	20
Cabane and Mid Wing Section Installation . . . . .	22
Stab Flying Wire Installation. . . . .	24
Tail Gear Steering Installation . . . . .	26
Rudder Servo and Pull-Pull Installation . . . . .	28
Cowl Installation . . . . .	30
DA 100L Engine and Throttle Installation. . . . .	32
Fuel Tank Installation . . . . .	37
Wing Servo and Control Horn Installation . . . . .	39
Elevator Servo and Control Horn Installation. . . . .	45
Battery Installation . . . . .	47
Regulators and Receiver Installation . . . . .	49
Ignition and Switch Installation. . . . .	53
Applying Decals . . . . .	55
Balancing the Model. . . . .	56
Plane Assembly . . . . .	56
Control Throws . . . . .	57
Rudder to Elevator and Aileron Mixes . . . . .	58
12X Crow Feature . . . . .	59
Extreme 3D Setup . . . . .	60
Final Pictures of Plane Assembly and Setup. . . . .	61

Warranty Period ..... 63  
Limited Warranty ..... 63  
Damage Limits ..... 63  
Safety Precautions ..... 64  
Questions, Assistance, and Repairs ..... 64  
Inspection or Repairs ..... 64  
Warranty Inspection and Repairs ..... 64  
Non-Warranty Repairs ..... 65  
Safety, Precautions, and Warnings ..... 66  
Instructions for Disposal of WEEE by Users in the European Union ..... 67  
2010 Official AMA National Model Aircraft Safety Code ..... 68

# Required Tools and Adhesives

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## Tools

- Rotary tool
- Pliers
- Pin wise
- Crescent wrench
- Black electrical tape
- Tape
- Phillips screwdriver
- Felt-tipped pen
- Hex wrench: 5/64-inch, 3/32-inch, 7/64-inch, 1/8-inch
- Angle Pro Incidence Meter (HAN192)
- Drill bit: 1/16-inch (1.5mm), 5/64-inch (2mm), 5/32-inch (4mm), 3/16-inch (4.5mm), 5/16-inch (8mm)
- Hobby scissors
- Clamp
- Crimping tool/vice grips
- String
- 1/4-inch (6mm) foam
- Hobby knife
- Drill
- Nut driver: 1/4-inch

## Adhesives

- Thin CA (PAAPT08)
- 30-Minute Epoxy (HAN8002)
- Pacer Z-42 Threadlock (PAAPT42)
- Medium CA (PAAPT02)
- CA Remover/Debonder (PAAPT16)
- CA accelerator (PAAPT15)

# UltraCote® Covering Colors

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- Black (HANU874)
- True Red (HANU866)
- Gold (HANU879)

# Before Starting Assembly

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Before beginning the assembly of the Beast 100, remove each part from its bag for inspection. Closely inspect the fuselage, wing panels, rudder, and stabilizer for damage. If you find any damaged or missing parts, contact the place of purchase. Go over the covering using a heat gun or sealing iron. It is best to use a heat gun to take away any wrinkles on curved surfaces such as part of the fuselage, but make sure to apply pressure with a covering glove to make the covering stick when it is still hot. Use caution while working around areas where the colors overlap to prevent separating the colors. Also make sure to go over the edges and seams with a sealing iron.



**HAN101 – Sealing Iron**

**HAN141 – Sealing Iron  
Sock**



**HAN100 – Heat Gun**

**HAN150 – Covering  
Glove**

# Radio and Power Systems Requirements

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- 7-channel computer radio system (minimum) with receiver • Large Servo Arms (JRPA236) (6 pkgs)

- 3-Inch Double-Sided JR Arm (JRPA237) (1)

- 24-Inch Servo Lead Extension (JRPA102) (5) • JR Charge Jack Switch (JRPA004) (1)

- 36-inch Servo Lead Extension (JRPA103) (2) • Choke Ring (JRPA029) (For throttle servo lead)

- JR 8711 or 8911HV metal gear high-torque digital servos (7) or equivalent

**Caution:** Only metal-gear digital servos of 320 oz-in torque or greater should be used on the control surfaces except for the rudder that should use greater than 400 oz-in.

- (2) 2000mAh or larger Li-Po for receiver (A minimum of 4000mAh is required when using super high-torque servos)

- 1350mAh or larger for ignition (4.8 or 6.0V))

## The elevator installation requires:

Two servos and mixing through the radio **Or** Two servos and a JR<sup>®</sup> MatchBox<sup>™</sup> (JPA0900)

## The ailerons installation require:

Four servos and mixing through the radio **Or** Four servos and two JR<sup>®</sup> MatchBox<sup>™</sup>

# Recommended JR, JR SPORT and Spektrum Systems

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- JR 12X
- JR XP9303
- JR X9303 2.4
- Spektrum<sup>™</sup> DX7

# Recommended Engine Setup

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## DA-100L

- In cowl mufflers

or

- MTW TD75 canisters with flex 50mm drop headers
- 26x12, 27x10 propeller

The Spektrum trademark is used with permission of Bachmann Industries, Inc.

## Beast 100 Introduction and Optional Sun Cover

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What do you get when one of RC's greatest 3D pilots collaborates with one of full-scale aviation's greatest aircraft designers? The Beast, a giant-scale bi-plane with monoplane-like flight characteristics, that blurs the line between 3D and precision aerobatic performance, and more than lives up to its name.

The full-scale Beast is the brainchild of renowned aircraft restoration expert, Kevin Kimball, who actually collaborated with 3D champ and Hangar 9 product developer Quique Somenzini on its design. The brute power of its 410 hp engine combined with the finesse of its neck-snapping 370 degree/second roll rate make it one of the most formidable aerobatic planes ever created. Drawing on his experience with the design of the full-scale Beast, Quique created this licensed 100cc reproduction for Hangar 9. He did so with the full cooperation of Mr. Kimball as well as Bryan Jensen, the Beast's pilot and owner, and Mirco Pecorari who designed the full-scale plane's trim scheme. At the heart of the model's design is a rigid, lightweight airframe that features thinner wings for better top speed and agility.

Beast 100 is one of the few truly scale but high-performance giant-scale RC planes that today is available to modelers in the form of an ARF. The trim scheme of this plane is refreshing among other models and as scale as it can be. However, due to the combination of dark colors, it is best that the model does not stay under direct sun light for long periods of time to avoid wrinkles in the covering. Darker colors absorb heat more than lighter colors. We strongly recommend the use of a sun cover to protect the airplane at the field. Hangar 9 offers a white plane sun cover (HAN9170) that you can purchase as an optional accessory and easily put on the plane for complete protection of the covering.

# A Word From The Creator Of The Beast

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Most designers of cool machines like race cars, boats, motorcycles or airplanes constantly look for ways to increase performance out of their designs. In many cases, this results in improved designs as experience is gained. Evolution of design. The Beast is exactly this....the latest evolution of the Model 12. While most Model 12 aircraft are 2-place aircraft, the Beast has been modified to be a single seat aircraft. This reduced the weight of the basic aircraft and eliminated some of the drag associated with the 2-place canopy.

There were three main design improvement goals in creating the Beast. Lighter weight, increased power, and increased maneuverability. Several design changes to the Beast were developed based on changes Quique Somenzini had developed for giant-scale RC models. Weight was reduced 150 pounds (10%) through the use of titanium, carbon fiber, and some lightweight components. Power of the 10,000 cc, 9-cylinder engine was increased to 410 hp with modifications including high-compression pistons, fuel injection and advanced micro-polishing of internal parts. Increased maneuverability was found by wingspan and tip modifications, aileron design changes, improvements to the tail and CG. The Beast weighs 1420 pounds with 1850 pounds of thrust. This isn't as good as most 3D RC models but is far better than most full scale aerobatic airplanes. The Beast has a 2-second takeoff roll and climbs at over 4000 feet per minute. A top speed of 250 mph and a roll rate of 365 deg/sec.

The Beast, in both full size and RC versions, is the product of shared information between RC and Full Scale designers. The Hangar 9 Beast is a fantastic model airplane with outstanding performance, great looks, and solid construction. Enjoy your Beast and let it "Roar to Life" at a field near you!

Kevin Kimball

For more information on the full scale BEAST visit:

[www.jimkimballenterprises.com](http://www.jimkimballenterprises.com)

[www.pittsmodel12.com](http://www.pittsmodel12.com)

[www.beastairshows.com](http://www.beastairshows.com)



# Rudder Hinging

## Required Parts

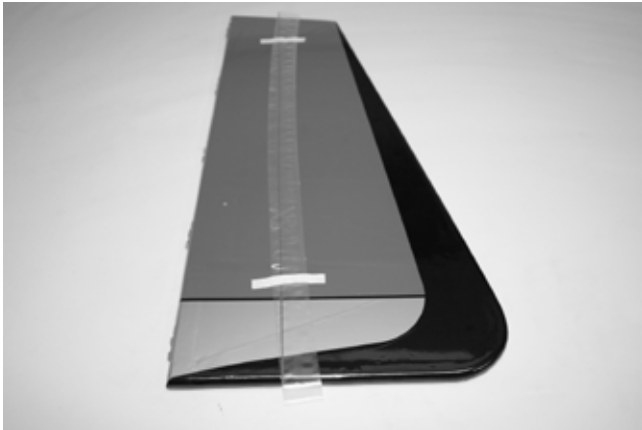
- Rudder
- Vertical fin
- Hinge rod

## Required Tools and Adhesives

- Drill
- Petroleum jelly

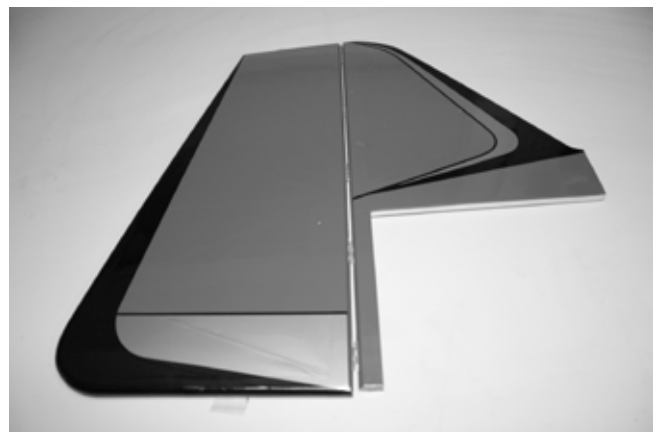
### □ Step 1

Pass the rod with some low viscosity lubricant through the rudder and vertical fin separately. This will lubricate the hinges on each side and help remove any dirt in the hinges. Note, the rod is 1mm in diameter as seen in the picture below.



### □ Step 2

Iron the edges then line up the hinges on the rudder and vertical fin. Lubricate the rod with a low viscosity lubricant and push it through the hinges. A drill would make this easier. If binding, back out and slowly push the rod through. Putting too much pressure when binding would buckle the rod.





# Rudder Vertical Fin and Control Horn Installation

## Required Parts

- Rudder
- Vertical fin
- Hinge rod
- Rudder control horn hardware

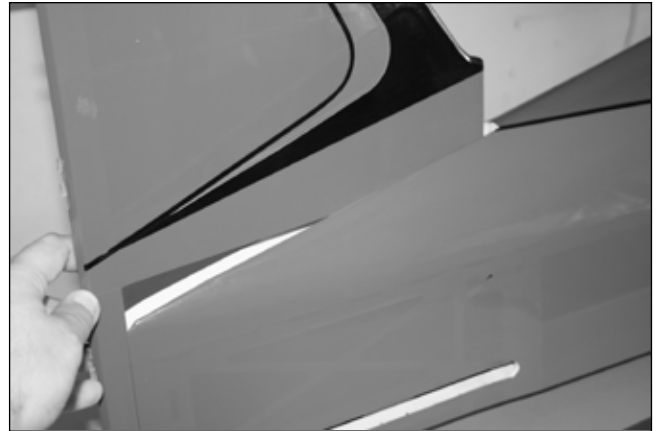
## Required Tools and Adhesives

- Hobby knife, #11 blade
- Ruler
- Thin CA
- Threadlock
- 30-minute epoxy
- Towel, alcohol swabs
- Crescent wrench or pliers

### □ Step 1

Insert the vertical fin in the fuselage. Mark the edges using a pen.

Note that the vertical fin fits tightly in the fuselage. If you have any problem dry fitting the covering on the vertical fin, DO NOT force it in as you may break the fuselage opening. Remove some covering on the conservative side until the vertical fin fits in the fuselage. You can use pictures in Step 2 as reference.

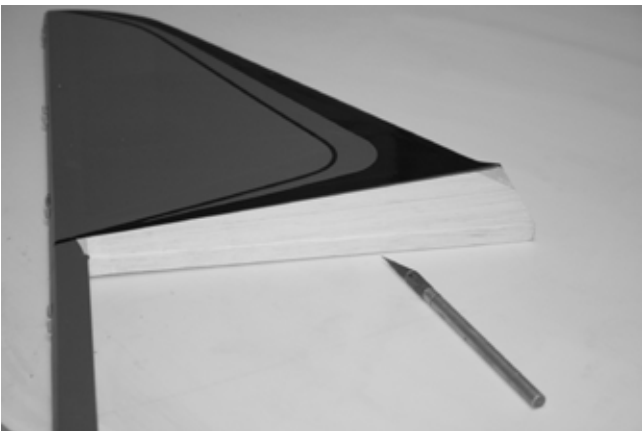
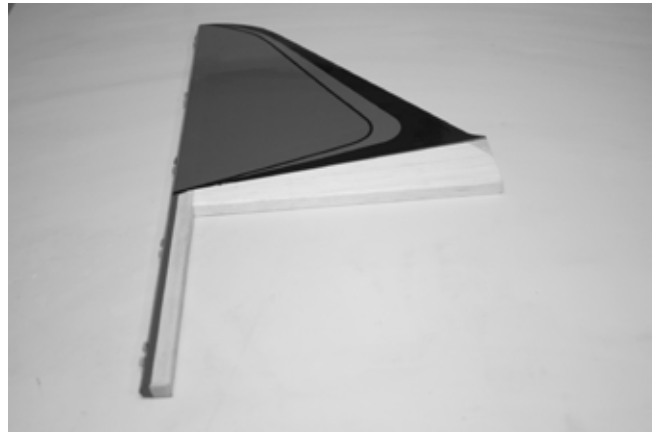
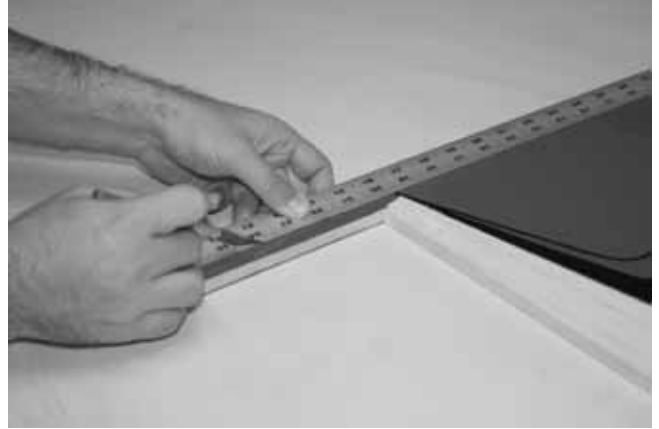
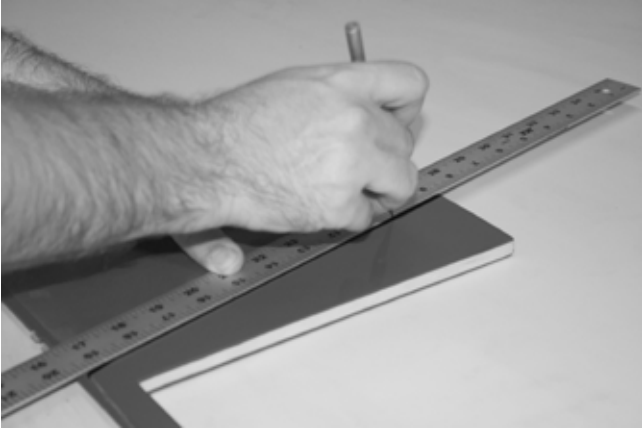


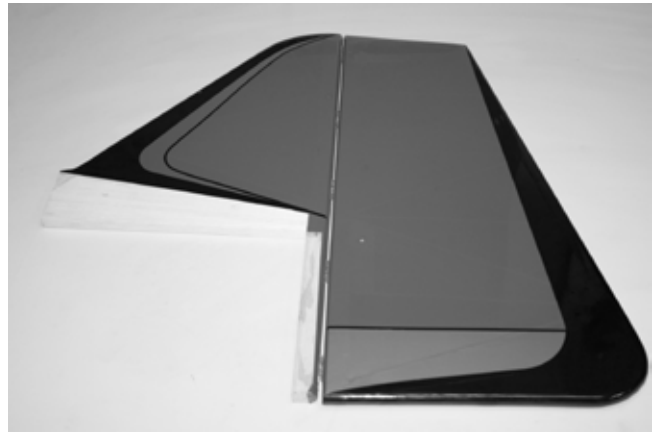
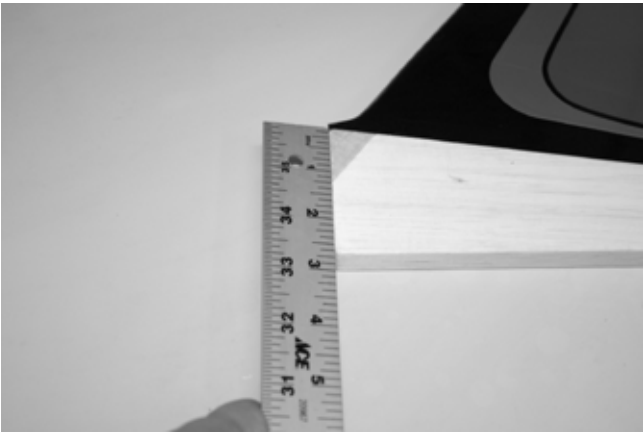
### □ Step 2

Remove the vertical fin and covering 1/8 inch inside the lines you marked. Make sure not to scar the vertical fin. Use a new blade and change as needed. Then go over the edges with a heating iron.

If you scar the balsa, go over it with thin CA before final assembly.

Note the measurements shown in the following pictures are approximate. Make sure to go by your markings.

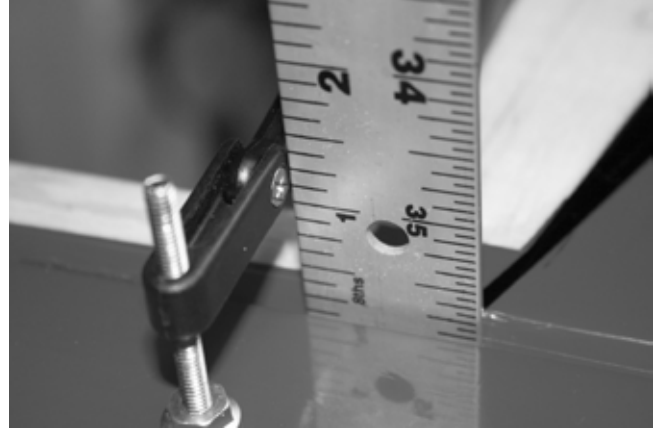




**Step 3**

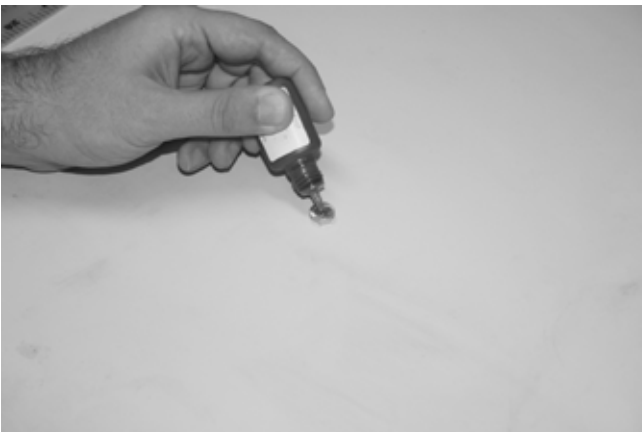
Install the rudder control horn by passing the bolt through the rudder. Use a drill on a slow speed for ease of installation. It would be best to have the bolt centered on the rudder.





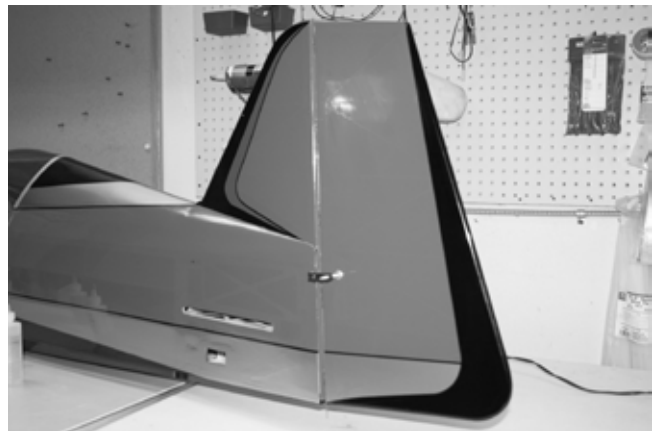
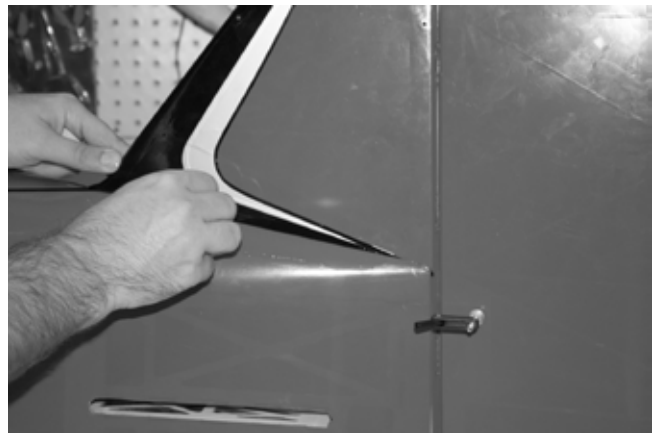
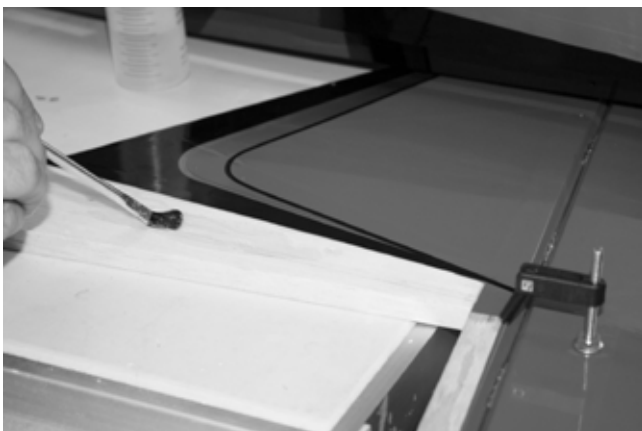
**Step 4**

Put the nut on with threadlock and tighten them on both sides. Install the control horn so the distance between the hinge line and pivot point of the horn measures 1 1/4 inch. Test this by installing the arm, if one control horn is off, you won't have a straight shot at 1 1/4 inch hole of the arm.



### □ Step 5

Go over the covering on the fuselage opening with a heating iron. Glue the vertical fin to the fuselage using either 30-minute epoxy or wood glue. Wipe out the excess with alcohol swabs. In case of using wood glue make sure to allow 24 hours for wood glue to cure. The advantage of using wood glue is that you can easily clean the excess glue with water.



### □ Step 6

Bend the rudder hinge rod 90 degrees toward the aft of the rudder and put clear tape on it.

# Landing Gear and Wheel Pants Assembly

## Required Parts

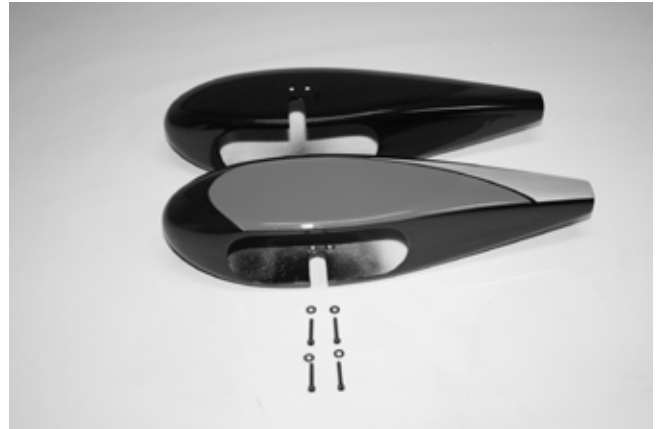
- Fuselage assembly
- Main landing gear
- #8 washer (4)
- 8-32 locknut (4)
- Axle w/nut (2)
- #4 washer (4)
- 4-40 blind nut (4)
- 4 1/2-inch (114mm) wheel (2)
- 4-40 x 1/2-inch socket head screw (4)
- 5/32-inch wheel collar with setscrews (4)
- #12 wrench and crescent wrench

## Required Tools and Adhesives

- Threadlock
- Hex wrench: .050-inch, 3/32-inch

### Step 1

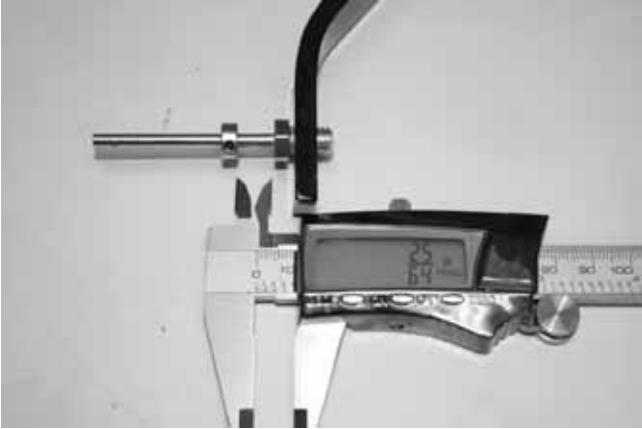
Install the shaft on the gear.



### Step 2

The landing gear should be installed such that it is swept forward. Install the wheel collar. Use threadlock on the setscrew. It is best to file the axle where the setscrew sits. Follow the measurement shown for the wheel to be centered in the pant.





**Step 3**

Install the other wheel collar, as in previous step. Leave a small gap between the wheel and collar to avoid braking. The wheel should turn freely. Tighten the nut on the axle using a #12 and a crescent wrench.



**Step 4**

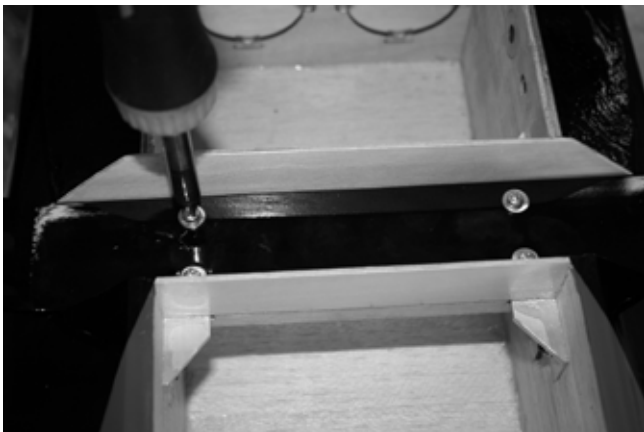
Install the wheel pants and secure them using the screws provided. Use threadlock on the screws.





### Step 5

The landing gear is fully assembled and ready to install in the fuselage. Use threadlock on bolts and complete the installation.



## Horizontal Stab Installation

### Required Parts

- Stab assembly

### Required Tools and Adhesives

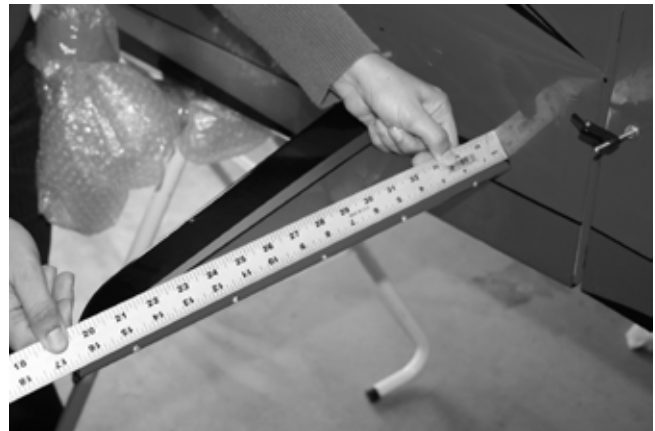
- Thin and medium CA
- Acetone
- Hobby knife
- 32 - 36-inch Ruler
- Marker

**Note:** Make sure the horizontal stab is completely centered and square. If you feel the need to make measurements 5 times or more, please do so. Once the stab is glued, modifications would be extremely difficult.

### Step 1

Three accurate measurements are required to ensure the stab is placed correctly.

1. The distance from the tip of the stab to the fuselage should be equal on both sides.
2. The distance from the tip of the stab to behind the turtle deck should be equal.
3. Insert the bottom wing and check stab alignment by looking from the aft of the aircraft forward.





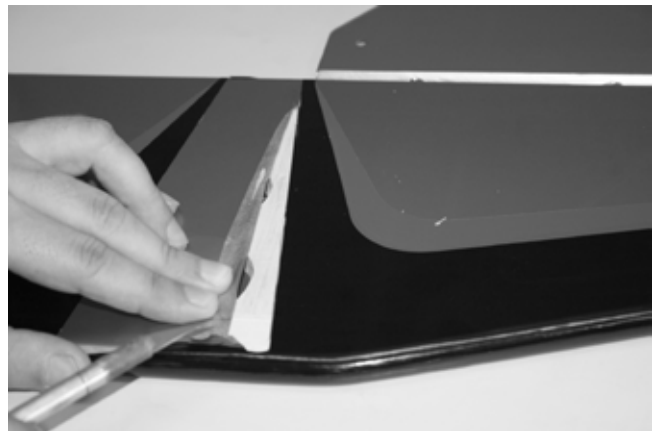
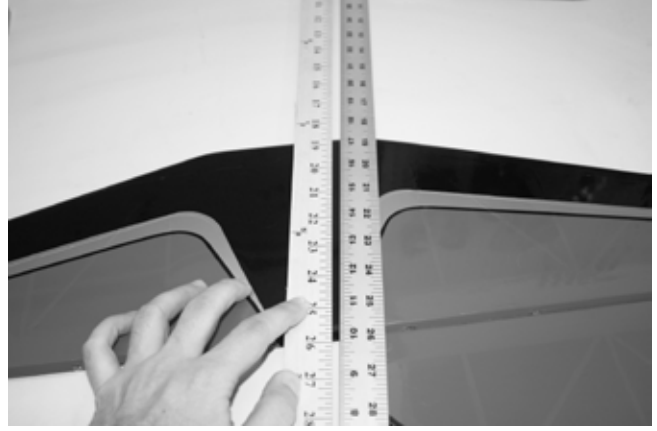


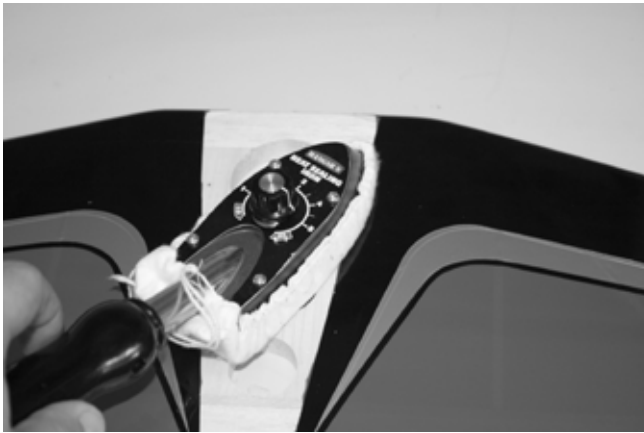
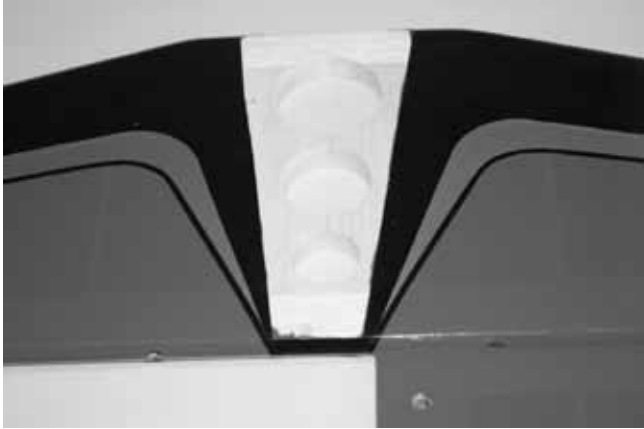
The measurement should read approximately 16 13/16 inch from the fuselage to the tip of the stab as shown in the first picture of Step 1 and 29 1/2 inch from the turtle deck to the tip of the trailing edge of the stab as shown above. Please note that it is the builders responsibility to ensure correct measurements of the plane. The above numbers are given as an estimate.

## □ Step 2

Once measurements are taken and you feel comfortable with them, mark the stab with a marker or pen. Remove the stabs and remove the covering 1/8 inch inside your markings. Go over the covering and edges using a heating iron.

It is very important you do not scar the stab while removing the covering. Make sure to use new blades and change as needed. If you scar the stab, apply thin CA over that area.





### □ Step 3

Reinsert the stab. Make measurements and make sure it is where it should be.

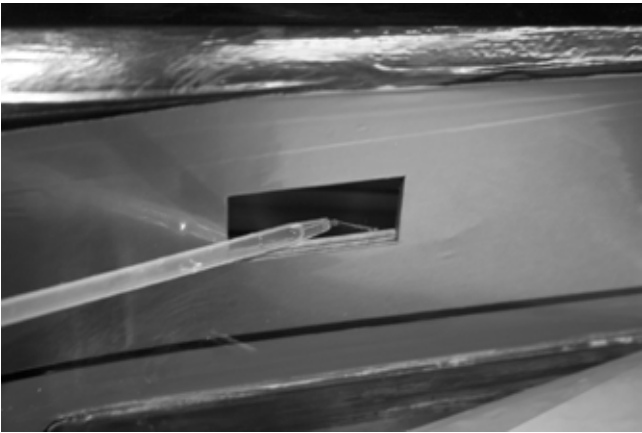
With the plane sitting upright and without moving it, use super thin (thin) CA to glue the stab to the fuselage. Do not move anything, thin CA will be absorbed. Glue little by little so the covering won't be saturated with CA. Glue on the left and right side of the stab and allow time for the balsa to absorb the CA.

Next flip the plane to knife edge and repeat the procedure all around the stab, top and bottom.

Use a CA extension nozzle and apply some CA from the elevator opening in the fuselage over the stab and braces.

Watch for running CA. If you move the plane before the CA is set, the CA will run onto the covering. 30 minutes after this process, use CA accelerator lightly and quickly. From 1 foot away spray over the stab and fuselage.





**Step 4**

To ensure your stab is properly glued, apply extra CA (medium) by extending your hand inside the fuselage and applying some CA over the horizontal bracing and stab.

# Elevator Hinging

## Required Parts

- Left elevator

## Required Tools and Adhesives

- 30-minute Epoxy
- Alcohol swabs
- Petroleum jelly
- Mixing cup and tooth pick
- Heating iron

### □ Step 1

The left elevator half is not hinged on the stab side so you are able to glue the stab in the fuse. Go over the edges with a heating iron. Then apply some petroleum jelly to the pins. Avoid getting oil on the hinge itself. Wipe with alcohol if that happens.



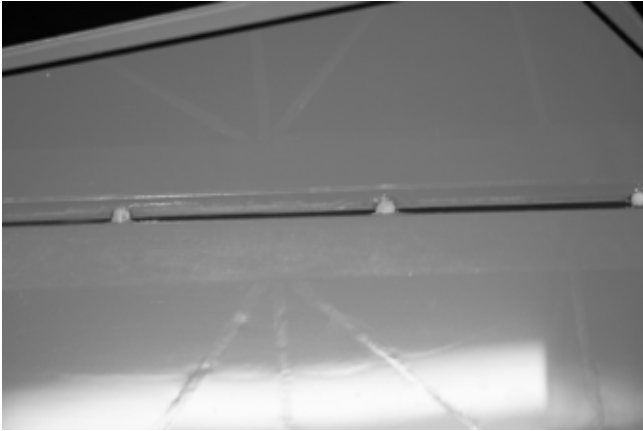
### □ Step 2

Using 30-minute epoxy, glue all the way in and around the pocket walls of the pockets in the stab. Then apply some to the hinge itself.



□ **Step 3**

Mate the elevator and stab. Make sure there is not too much of a gap between the two. Use the other side of the elevator gap as reference. Move the elevator through its full up and down deflection to ensure there is no binding. Wipe excess glue. Secure the elevator with masking tape and wait until the epoxy cures.



# Cabane and Mid-Wing Section Installation

## Required Parts

- Mid-wing section
- (8) 10mm, 4-40 screws
- (4) 6-32 screws

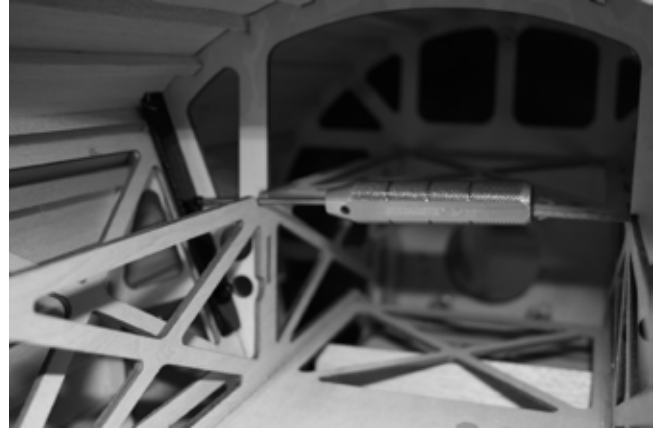
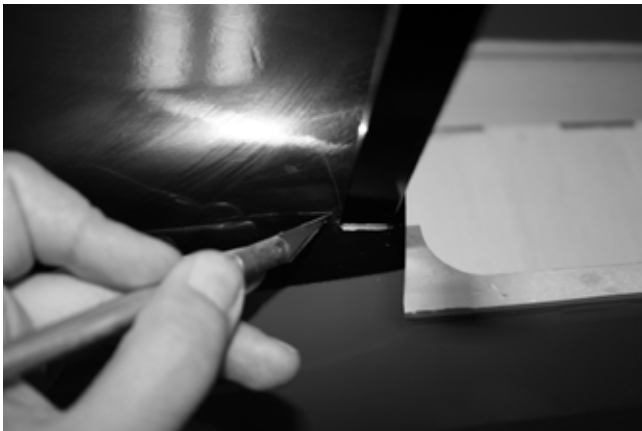
## Required Tools and Adhesives

- 3/32 in and 7/64 in ball drivers
- Threadlock

### □ Step 1

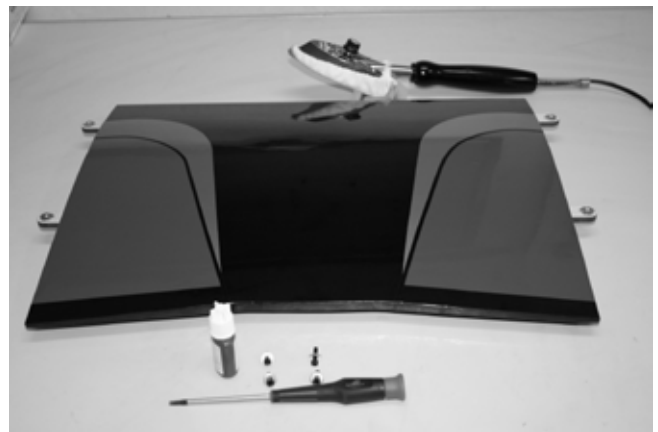
Insert the cabanes in the hatch slots such that the tabs face away from fuselage. If there is a need to slightly enlarge the slot, use a hobby knife and remove balsa as necessary. Apply a drop of threadlock to the screws and bolt the the cabane to the frame that has blind nuts.

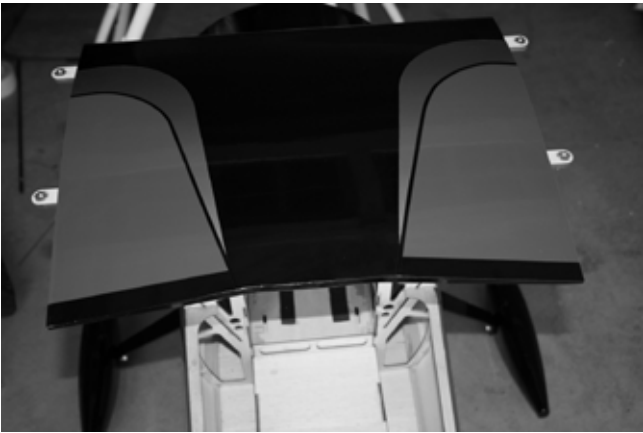
Note that there are slots to guide your ball driver.



### □ Step 2

Go over the mid-wing section with a heating iron before installation. Install the mid-wing section on the cabane. The mid-wing section attaches to the cabane via (2) 6/32-inch screws on each side. Use threadlock on the screws.





# Stab Flying Wire Installation

## Required Parts

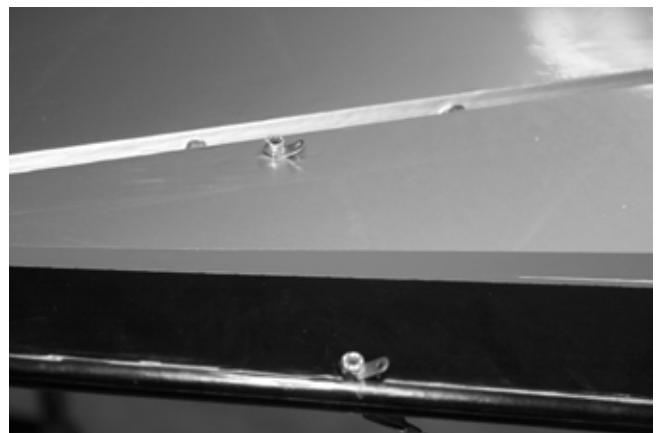
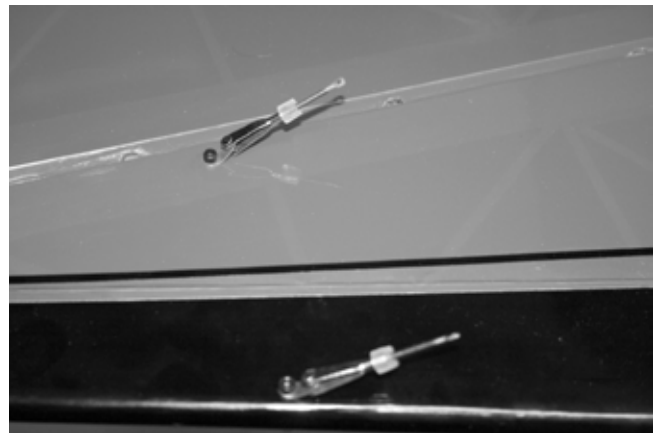
- Flying wire hardware package provided with the kit
- Tail gear

## Required Tools and Adhesives

- Crimper
- 1/4-inch wrench
- 3/32-inch ball driver
- Threadlock

### Step 1

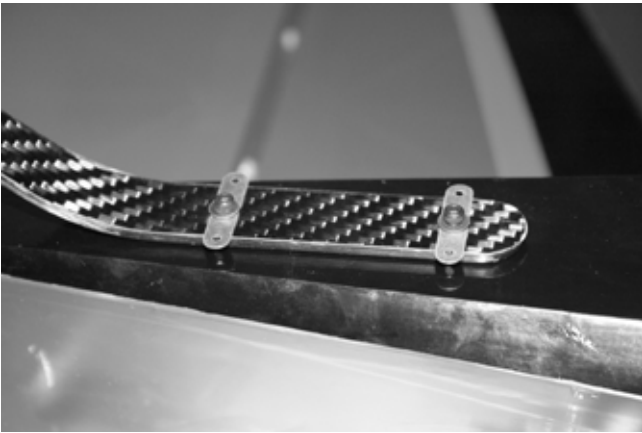
The brass plates included in the hardware will be used for this step. The brass plate has two different size holes one small and one big. The screw will pass through the larger hole, while the smaller hole is for the wire. Screw the brass plates to the vertical fin and horizontal stab, as pictured. Do not tighten down completely. If the holes are too tight for the screw to pass through, drill the holes carefully using a 1/8-inch drill bit. Do not put excessive pressure on the stab while drilling. Once the plate and screw are installed, rotate the brass plate over the hinge line or edge of the stab to be able to bend the side the wire passes through or the clevis gets connected to.



### Step 2

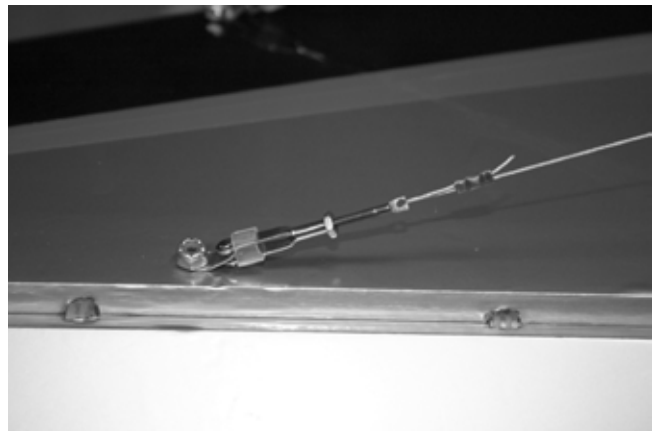
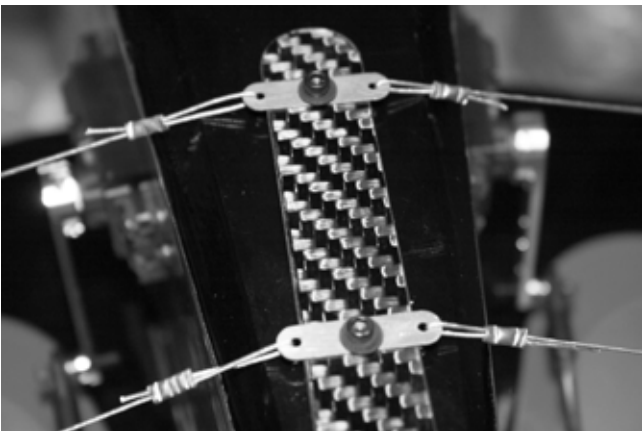
You will need to install the tail gear with the two plates that have 3 holes. The tail gear bolt goes through the center hole (use threadlock).





□ **Step 3**

Pass the wire through the crimp, through the plate and back through the crimp to loop it. Crimp the non-adjustable side. Repeat the same steps for the adjustable side but pull on it so there is no slack and then crimp. Adjust once all crimping is finished. Pictures below show the correct installation of the nut, clevis and fuel tubing.



# Tail Gear Steering Installation

## Required Parts

- Tail gear assembly

## Required Tools and Adhesives

- CA medium
- 1/16-inch drill bit and drill
- Phillips head screwdriver
- Z-bend pliers
- Threadlock
- Pin wise

Note: Before starting this section take the wheel collar off the tail gear assembly and apply threadlock to the setscrew. Check the nuts that hold the tail wheel. Failure to do so may result in losing the tail wheel in the air.

### □ Step 1

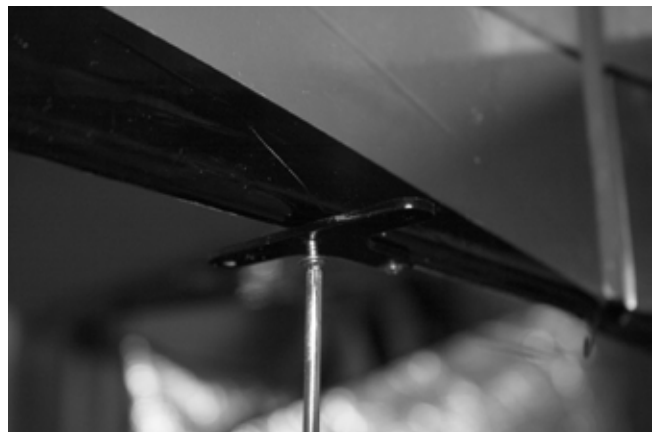
The tail gear is attached to the bottom of rudder via ball link on one side and Z-bend on the other side. It is best to attach the ball link to the tiller arm of the gear and Z-bend end to the T-plate.



### □ Step 2

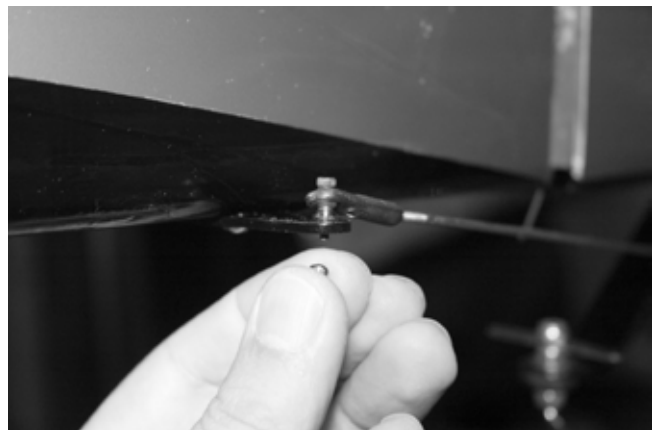
Mark where the plate will be attached to the bottom of rudder. Approximately 2 to 3 inches away from the hinge line. Do not attach the plate too far as it will result in poor steering.

Using a pin wise and 1/16-inch bit, make two pilot holes. Screw the T-plate to the bottom rudder using servo screws, then take them out, apply thin CA to the holes and attach the plate again.



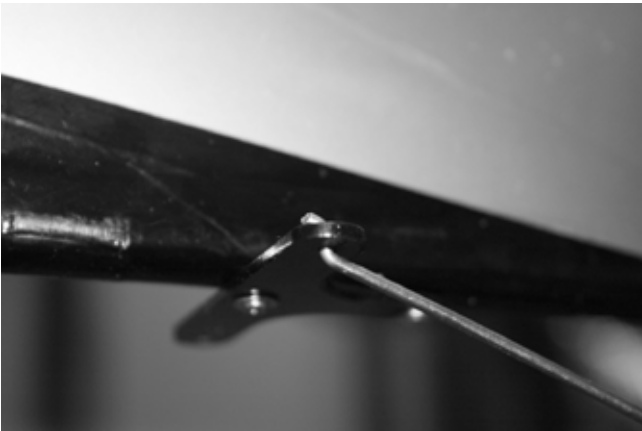
### □ Step 3

Screw the ball link into the rod about half length of the threads to have room for adjustments. Temporarily attach the ball link to the tiller arm.



□ **Step 4**

Make sure the rudder is centered and cut the rod to the appropriate length and Z-Bend the top of the rod to be inserted to the plate. Now proceed with final installation on the tiller arm. Apply threadlock to the nut, make any necessary adjustment to the length and tighten the nut.



# Rudder Servo and Pull-Pull Installation

## Required Parts

- Servo JR 8711 or JR 8911HV (1)
- 3-inch Servo arm
- Hangar 9 hardware pack

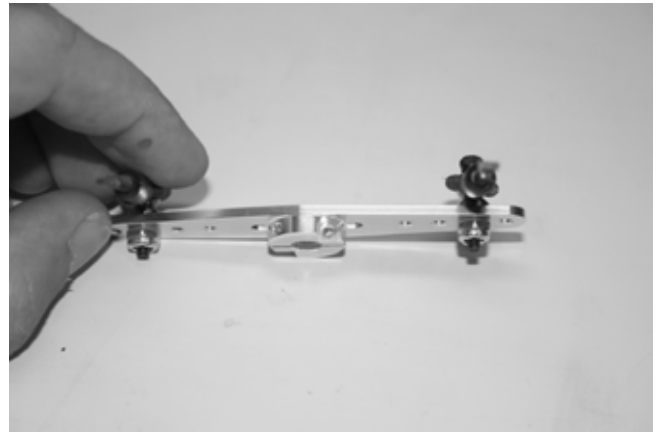
## Required Tools and Adhesives

- Crimper
- 1/4-inch wrench
- 3/32-inch ball driver
- Threadlock

The rudder servo needs to be digital and requires 400 oz-in of torque. The rudder tray can accommodate up to two servos. Use a JR 8711 or (2) digital servos with equal or greater torque combined and a JR MatchBox.

### □ Step 1

Install the rudder servo so the output shaft is toward the aft of the fuselage. Install the arm and ball links. Pass the cables through the tubes already mounted in the aft section of the fuselage. Cross the cables. Crimp the servo side first.





**Step 2**

Pull the cables in the rudder side before crimping. Adjust the tension by opening the Phillips head screw in the horn, tighten as necessary, then use threadlock and reassemble the horn.

Note that control horn assembly of the rudder was done in the rudder hinging section.



# Cowl Installation

## Required Parts

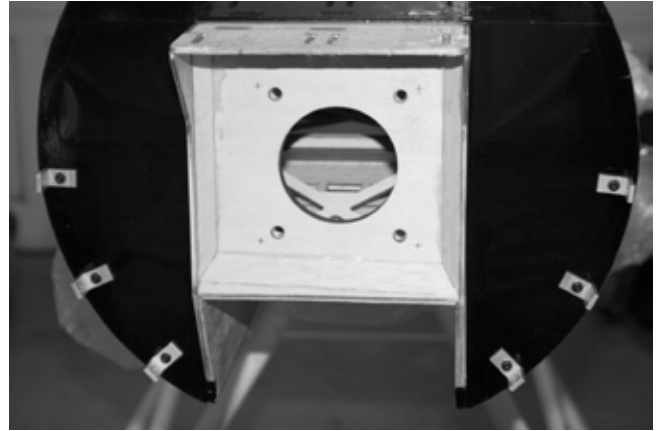
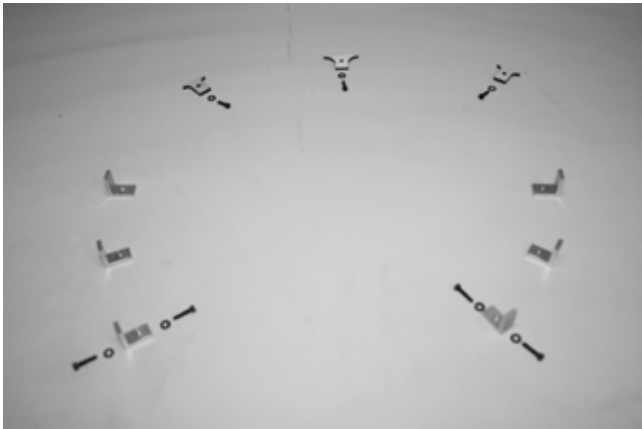
- Aluminum L-brackets and wooden tabs
- 4-40 screws 1/2-inch and 1/4-inch (6 and 12 mm)
- #4 washers

## Required Tools and Adhesives

- 3/32-inch ball driver
- Threadlock

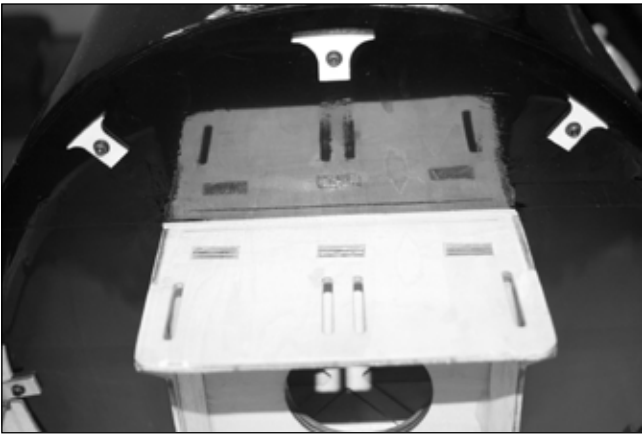
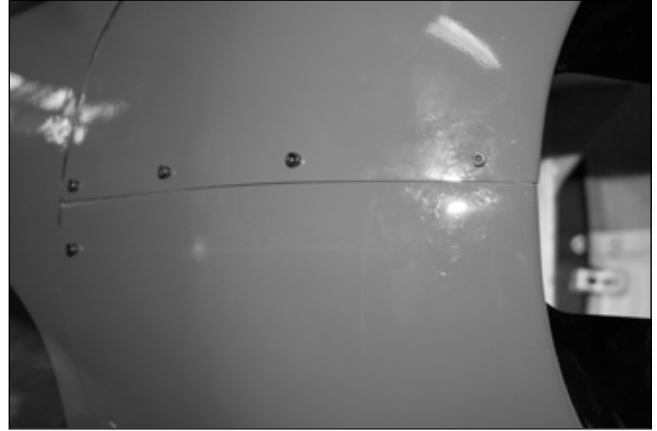
### □ Step 1

Loosely attach the L-brackets, using 1/4-inch 4-40 and #4 washers, to the bottom half of the fuselage. Use threadlock on the screws but do not tighten yet. Line up the bottom half of the cowl and bolt the cowl to the brackets using the included 1/2-inch 4-40 screws and washers. Once everything is lined up, tighten the L-brackets' screws to the fuselage.



### □ Step 2

Attach the top support tabs such that they are located at the radius of the top half of the fuselage. Use threadlock on the screws.



**□ Step 3**

Attach the top half cowl to check the connections. Use 1/4-inch 4-40 screws and #4 washers for mid section attachments.



# DA 100L Engine and Throttle Installation

## Required Parts

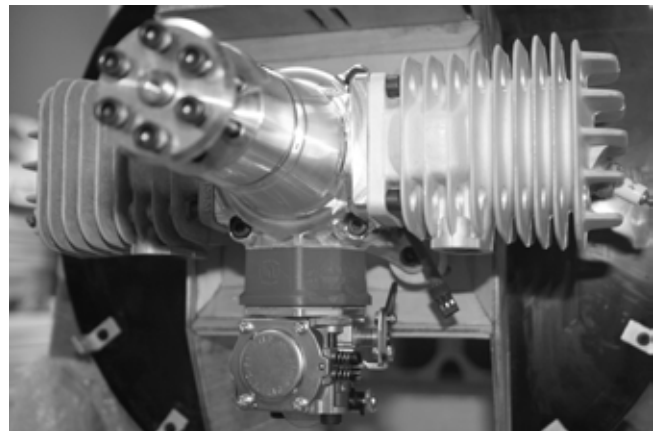
- Desert Aircraft 100L
- DA stock mufflers
- MTW TD 75 and 50mm drop flex header
- Du-Bro 4-40 E/Z connectors (2) (DUB490)
- JR 8717 or JR 4721 throttle servo
- 24-inch JR extension

## Required Tools and Adhesives

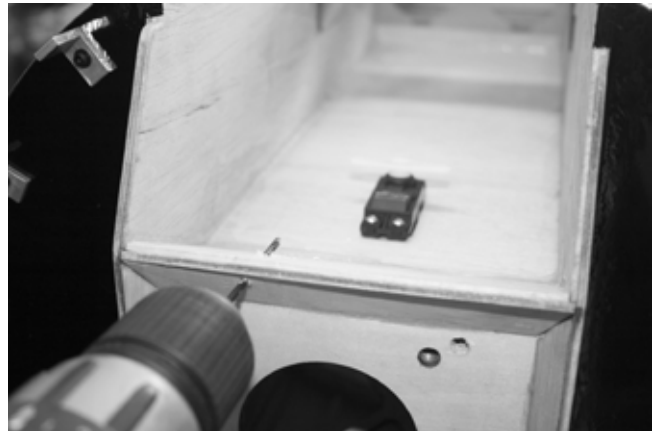
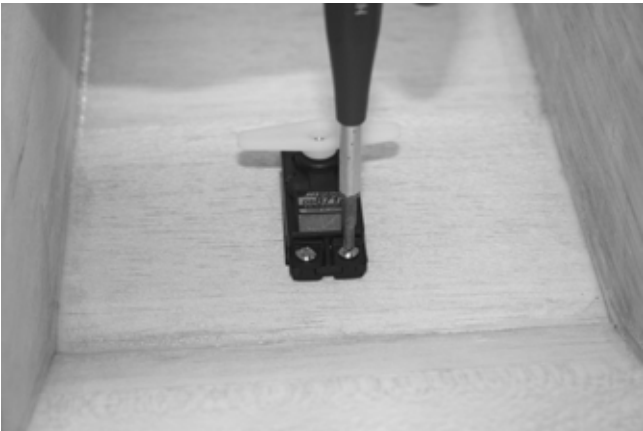
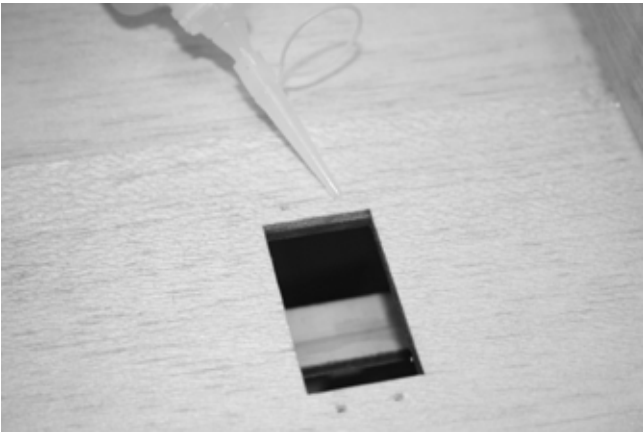
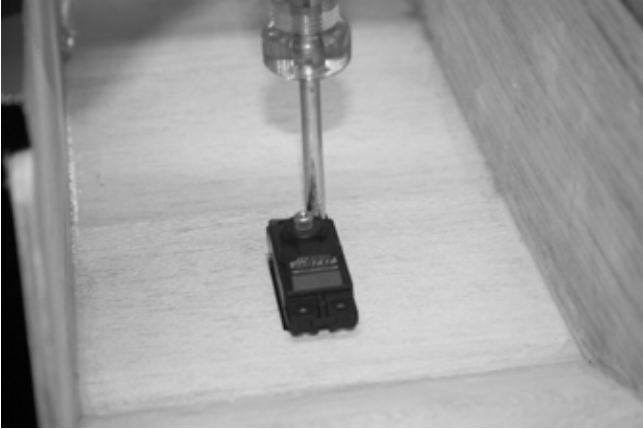
- Threadlock
- Vice-grip
- Hobby knife
- Phillips screwdriver
- Drill
- Drill bit: 1/16-inch and 1/8-inch
- CA
- Drill
- Ruler

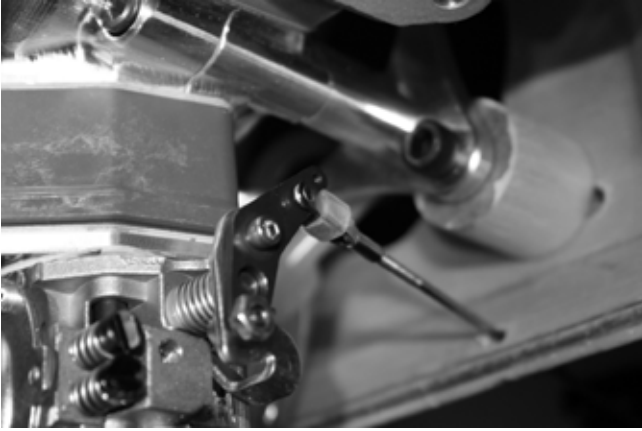
### □ Step 1

The engine box comes predrilled for the DA 100L and the blind nuts have been installed. Use the standoffs provided in the kit to mount the engine but go over the standoffs with thin CA first. Then mount the engine temporarily to mark the hole for your throttle rod. Mount the throttle servo so the output shaft is towards the aft of the aircraft. Drill through the marked hole. Goal is to have a straight shot at the servo arm. It has to pass through the tri-stock and the balsa sheeting. Approximate measurement is shown in the pictures below. Use the rod and clevis provided in the kit for the engine throttle arm and a Du-Bro 4-40 E/Z connector on the arm side or a Z-bend. Remount the engine, make sure to use threadlock on the bolts.



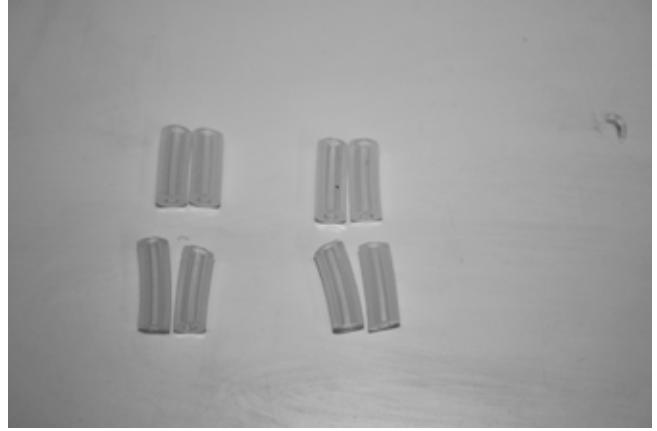






□ **Step 2**

Canister mounts come preglued but silicone supports are not in place. Cut (8) 9/16-inch pieces of silicone tube and mount them through the slots in the mounts.

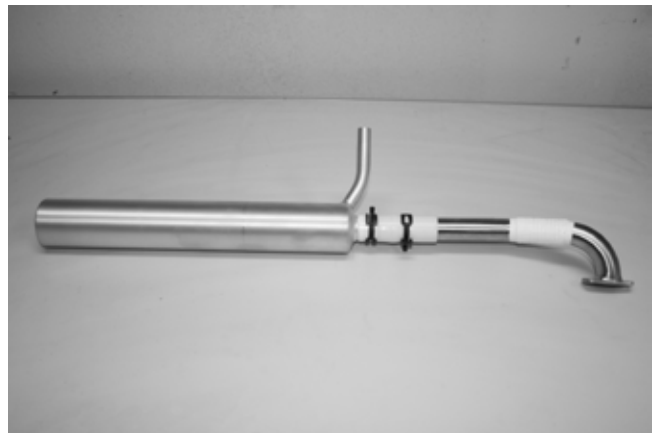
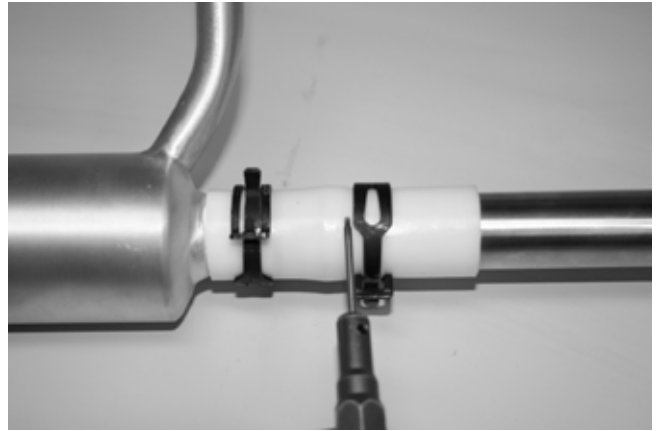
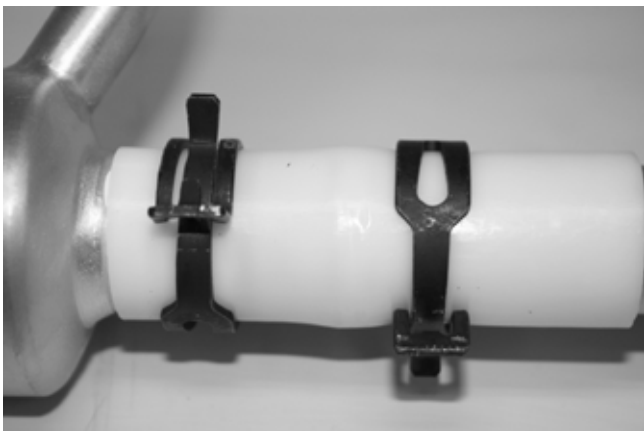


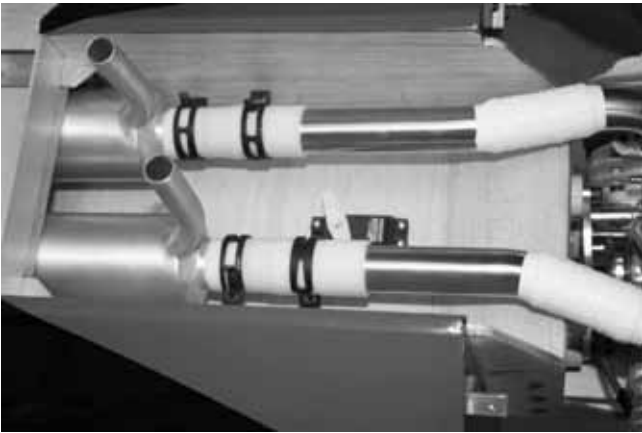
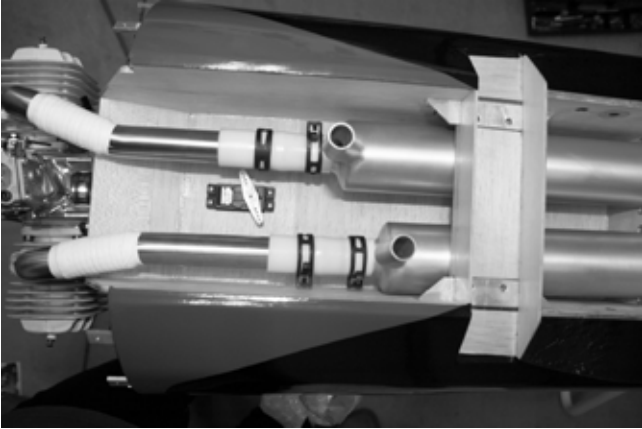
□ **Step 3**

Prepare the canisters and headers to slide in the tunnel as follows.

1. Install the Teflon<sup>®</sup> coupler on the header.
2. Using a vice-grip slide both clamps on the header.
3. Push the Teflon coupler on the canister inlet and slide the clamp over it.
4. Push the Teflon coupler over the header until there is 1/8- to 1/4-inch gap between the header and canister. Since this might be a little hard to do, use a heat gun and glove to move the coupler over the header easier.
5. Slide the other clamp so it is in front of the bump, towards the front of the plane. If you install the clamp on the other side of the bump, the canister will pull out in the air.
6. Install the canisters and use threadlock on the bolts.

Disclaimer: Teflon<sup>®</sup> is a trademark or registered trademark of E.I. DuPont de Nemours and Co. Corporation, Wilmington, Delaware.





## DA Muffler Installation

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### □ Step 1

Mount the muffler such that the smoke inlet is towards the outside and pipes are towards the aft of the aircraft. Make sure to use either a gasket or a red, high-temperature silicone. Threadlock on all the bolts is necessary.



## Cowl Cutting

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Use the template provided at the end of the manual to cut the cowl for DA100L stock muffler installation. Attach the template to the bottom cowl through the two bottom bracket screw holes. The template should lay tight on the bottom cowl. Mark the center of the holes through the template onto the cowl. Start with a small circle and adjust as needed for a perfect fit.

Note: This only works with the DA 100L and the 1-inch standoffs provided in the kit. You will need to fine-tune the cutting to a perfect fit. The template provides a good starting point. Do not cut to the bigger circle at first.

# Fuel Tank Installation

## Required Parts

- Fuel tank
- Du-Bro 1/4-inch foam (DUB513)
- Aluminum T-fuel filter (JRP960298)
- Fuel dot filler (HAN115)

## Required Tools and Adhesives

- Medium CA
- Scissors
- Hook and loop
- Double-sided tape

### □ Step 1

Tank comes assembled and ready to be installed. However, you should open up the cap and ensure the connections are solid before final installation

Note: The lines can get stiff if the plane sits for some time with no fuel in the tank after use. Please make sure to check your lines often.



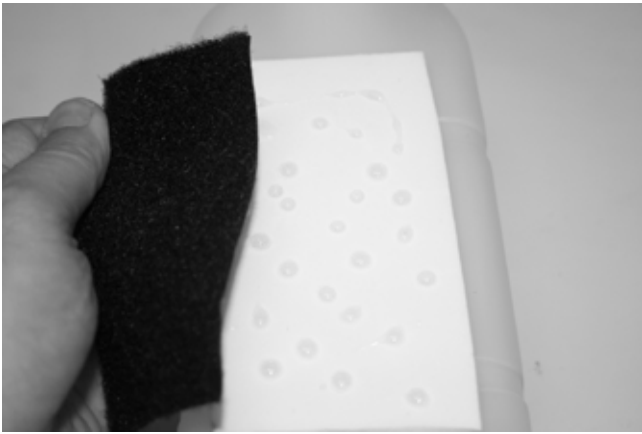
### □ Step 2

Reassemble the tank. Make sure the cap is secure but avoid over-tightening. Cut some 1/4-inch foam the size of the bottom of the tank. Use double-sided tape between the tank and foam or wrap masking tape to the bottom of the tank, then CA the foam to the masking tape.



□ **Step 3**

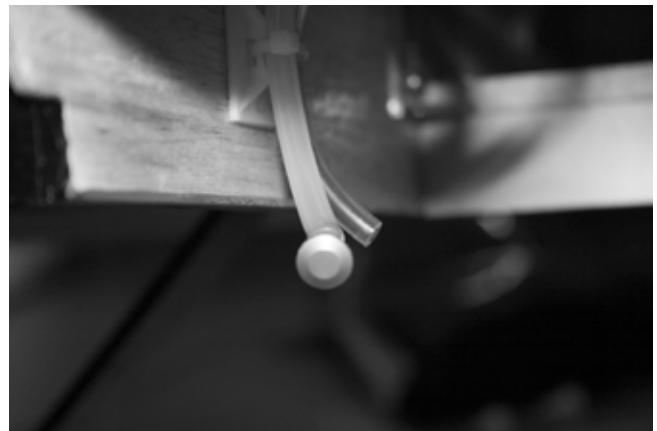
Use sticky back Velcro® to the foam. Then CA the opposite side of the Velcro to the tank tray in the fuselage. This prevents the tank from fore/aft movement.



Velcro® is a registered mark of Velcro Industries, B.V., Netherlands.

□ **Step 4**

Use the aluminum T-fueler for the carb connection. Tie wrap the connections to avoid any air leaks.



# Wing Servo and Control Horn Installation

## Required Parts

- Hangar 9 ball links, titanium rods and bolts
- (4) JR 8711 or similar power digital servo
- (4) JR 1.5-inch single sided arm
- (2) 6- and 12-inch JR-HD extensions

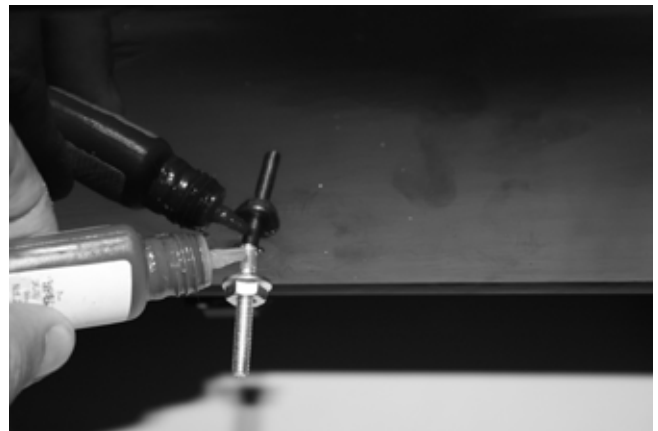
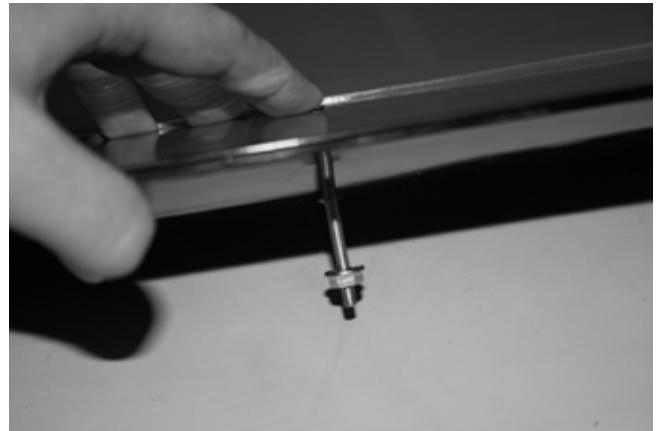
## Required Tools and Adhesives

- Threadlock
- Drill
- Drill bit: 1/16-inch
- Ball driver: .050-inch, 3/32-inch
- Dental floss
- Masking tape
- Thin CA
- Hex wrench
- 30-inch rod

### Step 1

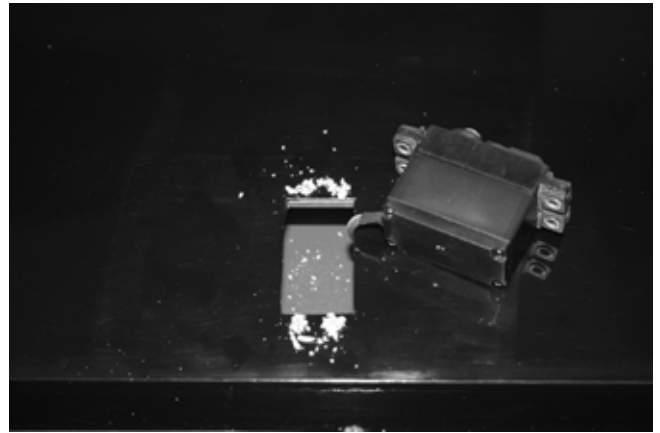
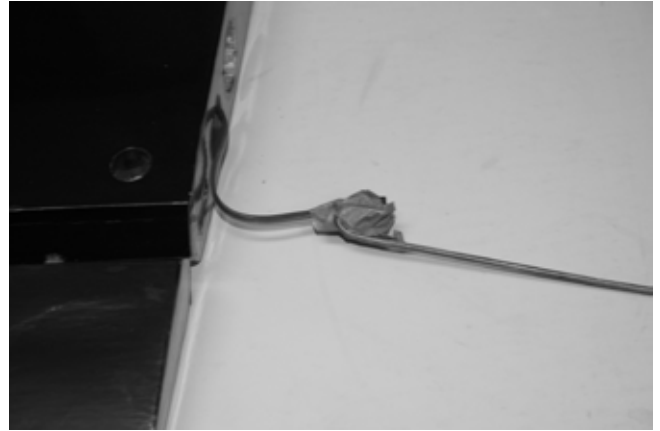
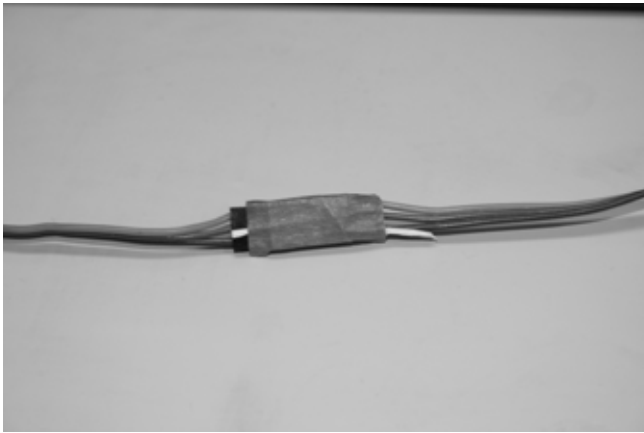
Assemble the linkage as in the pictures. Apply threadlock to the nut and tighten until it bites the wood but do not over-tighten.

The length of the titanium rod exposed from the ball link to the control horn should measure 22mm. Make sure to equally thread the titanium rod in the ball link and the control horn.



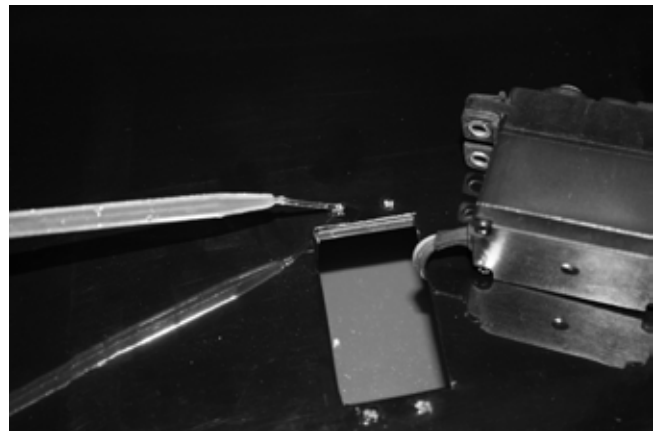
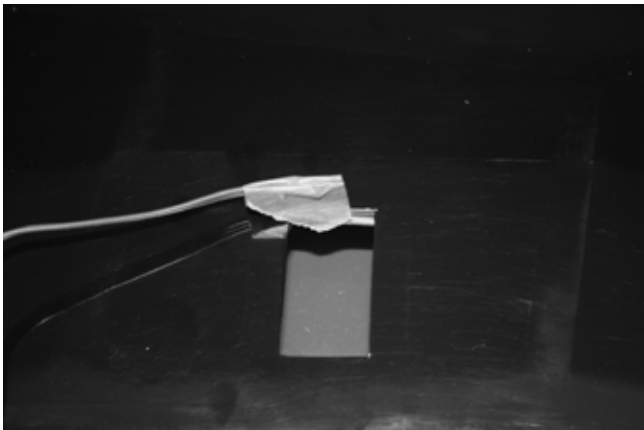
### Step 2

Attach a 6-inch extension for top wing or a 12-inch for the bottom wing. Use dental floss to secure the connectors and tie two knots. Wrap a round of masking tape over the knot as an extra safety precaution.



### □ Step 3

Install the servo in the wing so the output shaft is toward the leading edge of the wing. Use 1/16-inch drill bit to drill pilot holes for servo screws, then go over the holes with thin CA. Wait until it cures before inserting the servo in the bay and securing it. You can use a long rod to pull the servo extension to the wing root.



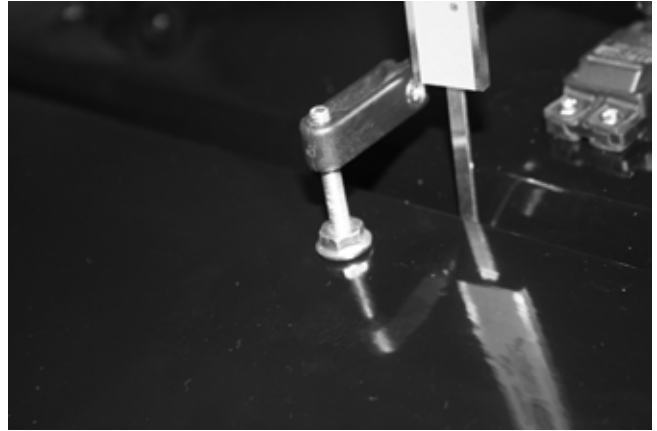
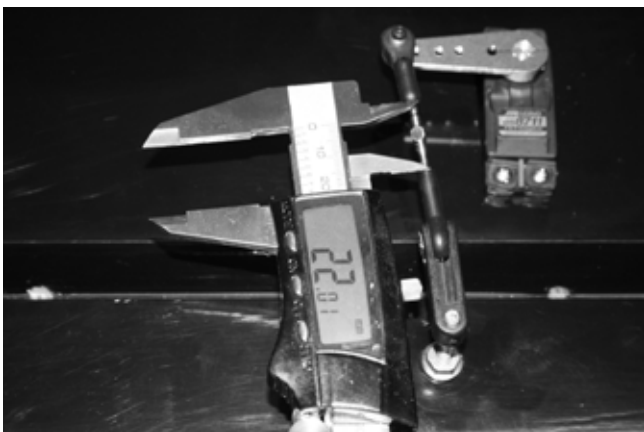




#### □ Step 4

The distance from the hinge line to the top of the bolt at the pivot point should measure 40mm. The length of titanium rod exposed should measure 22mm. These measurements should be the same for all 4 wings.

Attach the 1.5-inch arm to the ball link and complete the assembly.



#### □ Step 5

Make 3 more identical length control horn/ball link setups and complete the other 3 wings in the same exact way. Remember, top wings use 6-inch extensions where bottom wings use 12-inch extensions.

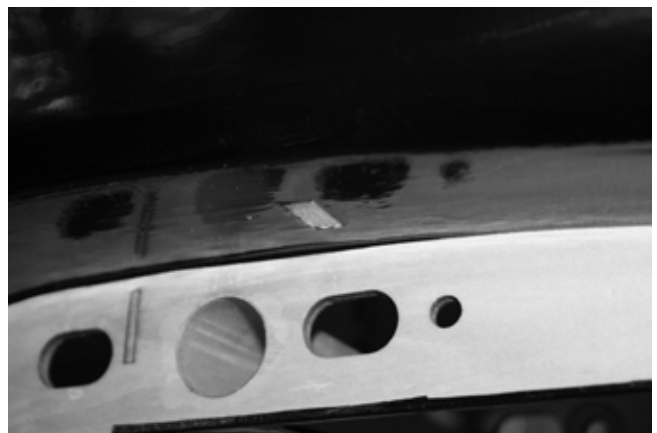
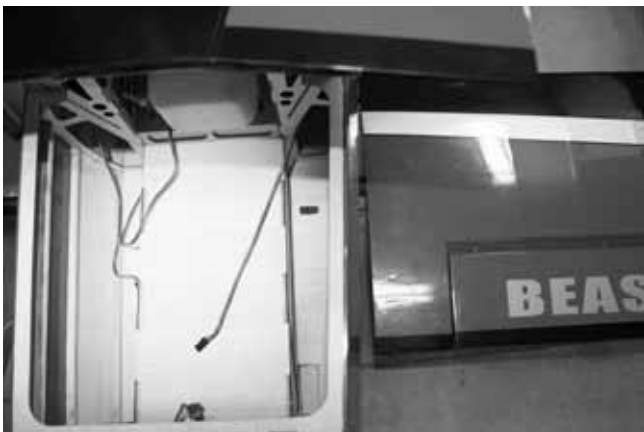


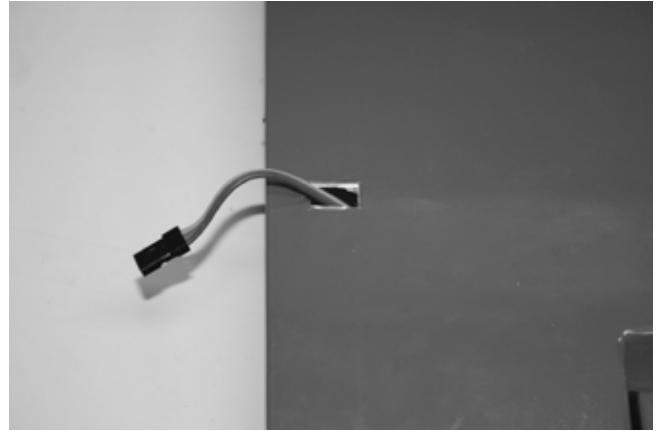
### □ Step 6

To pass the bottom wing extension inside the fuselage follow the directions below.

1. Make a size cut bigger than the plug in the fuselage where the wing root is going in and where it would line up with the extension exit from the wing root. The cut can be as big as 30x20mm so there is no problem with catching the extension.
2. Plug the wing and mark it through the fuselage slot.
3. Remove the marked balsa sheeting and pull the plug.

Note: When plugging the wing, pull the extension from inside the fuse to avoid damaging the extension by jamming it.





Note: The step below may not be necessary with production models. Please ignore if your model has the anti-rotation pin sleeve preglued.

#### □ Step 7

You will need to glue in the anti-rotation pin sleeve for the bottom wing by following the steps below.

1. Insert the sleeve and check the length. If it is longer than it needs to be, make one side flush with the side of the bottom fuse and mark the other side to cut using a hobby knife.
2. Insert the sleeve, making sure it is flush on both sides and has thin CA over the edges. The thin CA will soak in. Do not use CA accelerator. Repeat the process two times and allow time for it to dry. Do not build up any bumps or hard points with CA.



# Elevator Servo and Control Horn Installation

## Required Parts

- Hangar 9 ball links, titanium rods and bolts
- (4) JR 8711 or similar power digital servo
- (4) JR 1.5-inch single-sided arm
- (2) 24-inch JR-HD extensions

## Required Tools and Adhesives

- Threadlock
- Drill
- Drill bit: 1/64-inch
- Ball driver: .050-inch, 3/32-inch
- Dental floss
- Masking tape
- Thin CA
- Hex wrench 1/4-inch

### □ Step 1

Prepare the ball link/control horn linkage so it measures 59mm from horn to control horn. It is very important that the titanium rod equally protrudes in the horn and ball link. Otherwise there is a chance one side would have only a few threads and pull out unexpectedly in the air. Attach the servo arm at 1.5-inch hole to the ball link.

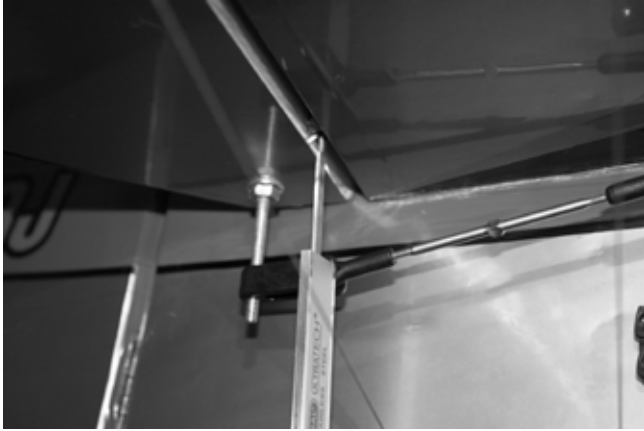


### □ Step 2

Elevator control horn installation is similar to the wings with a few considerations.

Insert the bolt through the elevator; do not tighten the nut but turn the nut up the bolt. Hold the control horn at the tip of the bolt and turn the bolt to grip the horn and stop when the center of the pivot point of the horn measures 1.5-inch to the hinge line. Now tighten the nut fully so there is absolutely no play in the bolt assembly in any direction. This is important since any play will cause play in the elevator movement.



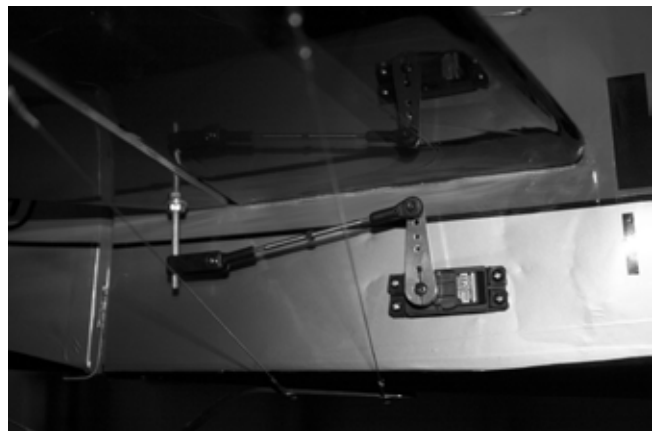
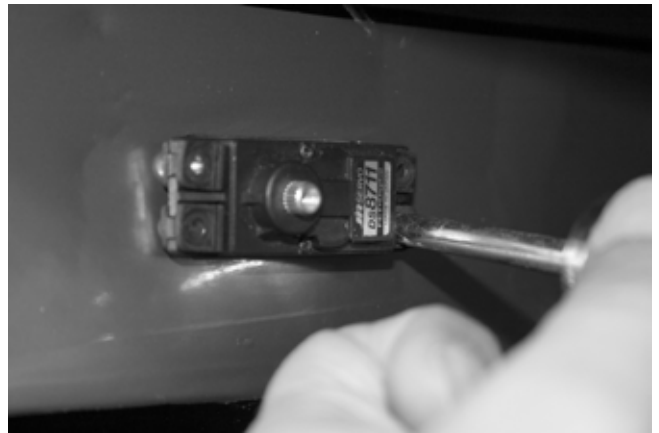
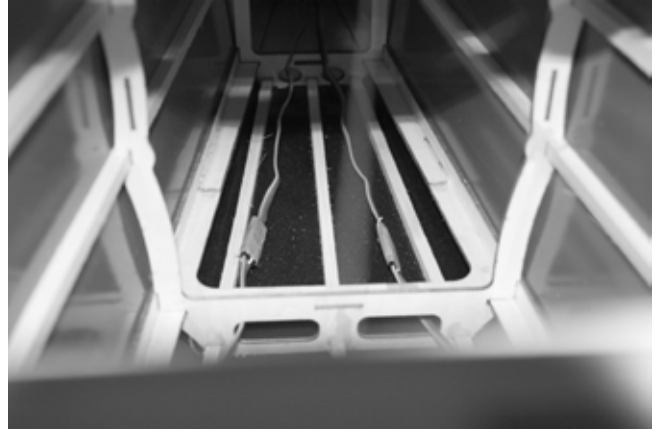


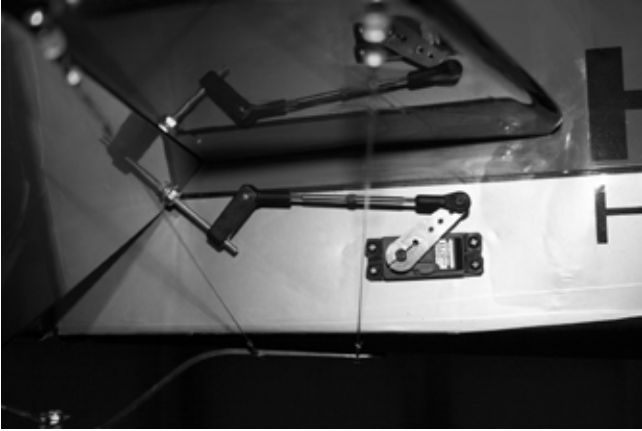
The picture above is how you need to measure 1.5-inch from the hinge line.

**□ Step 3**

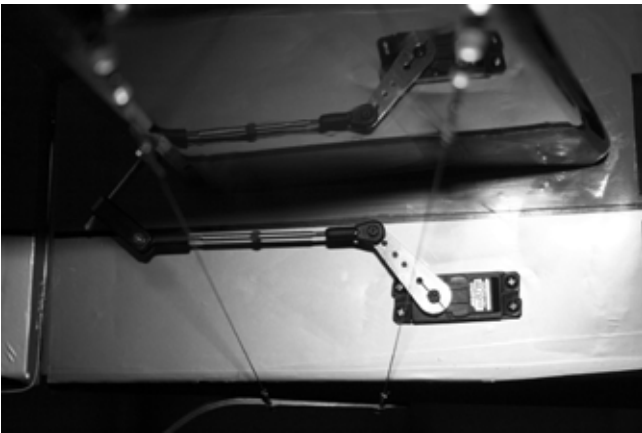
Install the servo so the output shaft is toward the tail of the aircraft. Pass the extensions through the bottom former's lightening holes, secure the connector using dental floss and the masking method described in the wing section. Turn on power to the servo with the sub-trim at 0. Try to put the arm on the output shaft so the servo arm is directed slightly to the front of the plane or at 90 degrees. With this method, max up/down deflection should be 43-45 degrees equally.

Note: Do not lengthen the linkage any longer than 60mm as it may not be safe. It is OK to carry some sub-trim if the servo arm doesn't fit in the above positions.





Full down Elevator



Full Up Elevator

## Battery Installation

### Required Parts

- Battery Tray
- (2) Spektrum 2S, 2000mAh Li-Po

### Required Tools and Adhesives

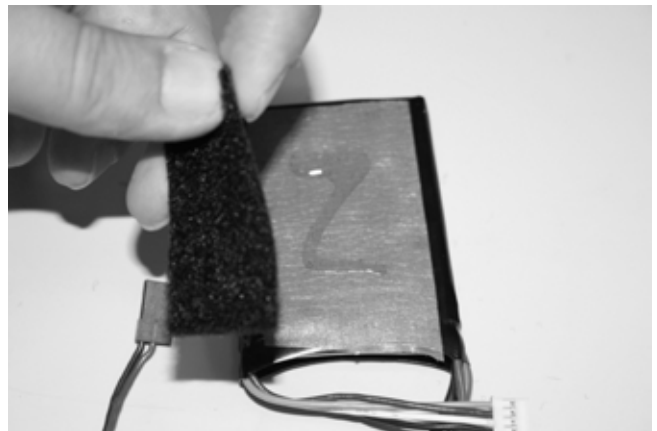
- 30-minute epoxy
- Hobby knife
- Tie wraps
- Sticky-back Velcro (both sides)
- Masking tape
- Medium CA

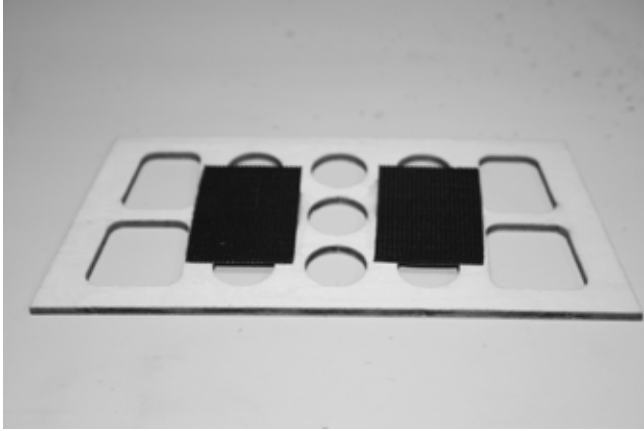
Note: Do not glue your battery tray in if the installed engine is not the DA 100L, so the model can be balanced by relocating batteries.

### □ Step 1

Prepare the tray completely before gluing it in place.

Wrap masking tape to the bottom of each battery. Then CA Velcro to the masking tape on the batteries and also the tray. (i.e., soft part of Velcro to the batteries and mating part to the tray).





## □ Step 2

The tray is now ready to be secured to the fuselage frame. Scratch up the surface that will sit on the fuselage rail with a hobby knife. Mix some 30-minute epoxy and brush it up on the tray. Apply a small amount to the fuselage frame and place the tray in the fuselage. Add some weight until the epoxy cures.



Note: In the picture above a crescent wrench that has some weight has been placed on top of the batteries with two small clamps. Make sure you do not move the fuselage, which can drop the weight and damage the fuselage.



# Regulators and Receiver Installation

## Required Parts

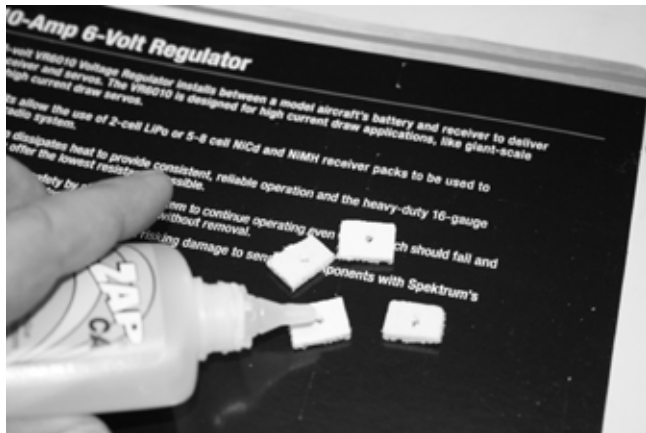
- (2) Spektrum 10-Amp Regulators (SPMVR6010)
- AR9100 PowerSafe (SPMAR9100)
- (2) 24- and 36-inch JR HD Extension

## Required Tools and Adhesives

- 1/8-inch lightweight plywood
- Medium and thin CA
- Servo screws
- 1/16-inch drill bit
- Hobby knife

### □ Step 1

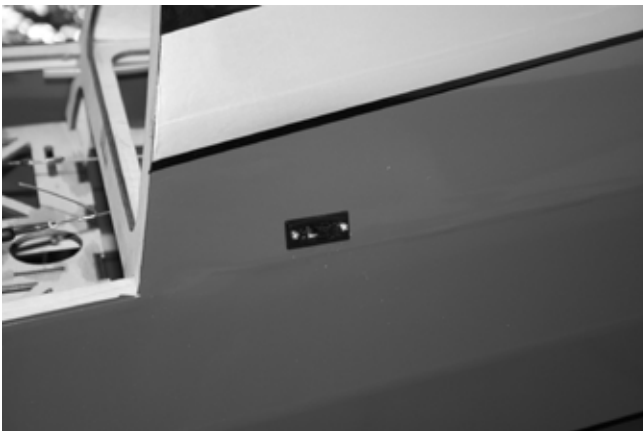
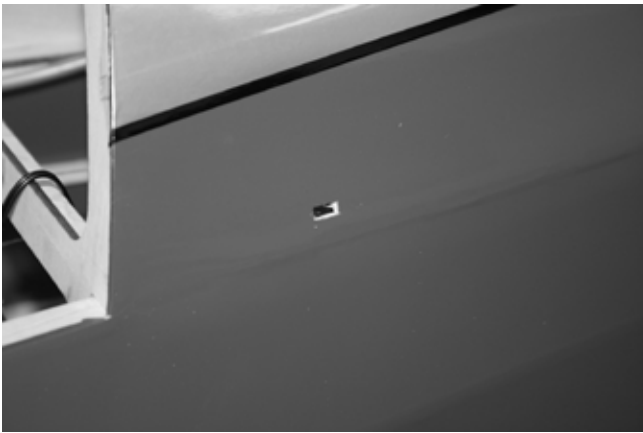
The regulators will be mounted under the rudder tray toward the end of the pipe tunnel. It is best to make 4 small footprints with light plywood to mount each regulator on. Cut (8) small pieces of light plywood. Use 1/16-inch drill bit to mark the screw locations and apply a drop of thin CA to the holes for strength. Then glue the light plywood to the fuselage balsa floor. Complete the installation by screwing the regulators to the fuselage floor.



### □ Step 2

Switches will be installed at the side of fuselage right behind the turtle deck. Mount the cover of the switch over the fuse where it needs to be installed and mark. Make sure it looks straight and is in-line with the canopy floor where the canopy sits. With a hobby knife cut the balsa sheeting and complete the installation following the pictures below.





### □ Step 3

Switch number two follows the same step as switch number one. Before installing the screws, use a 1/16-inch drill bit and slowly drill pilot holes in the sheeting, then add a tiny bit of thin CA to the screws before completing the installation. If the steps are followed properly as described, there is no need to back the screws with a sheet of light plywood.



### □ Step 4

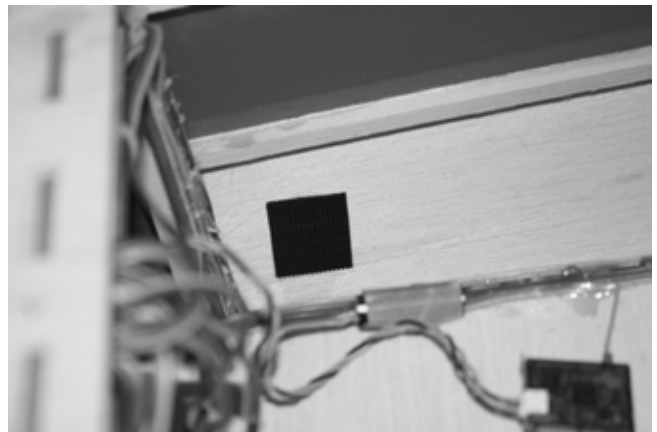
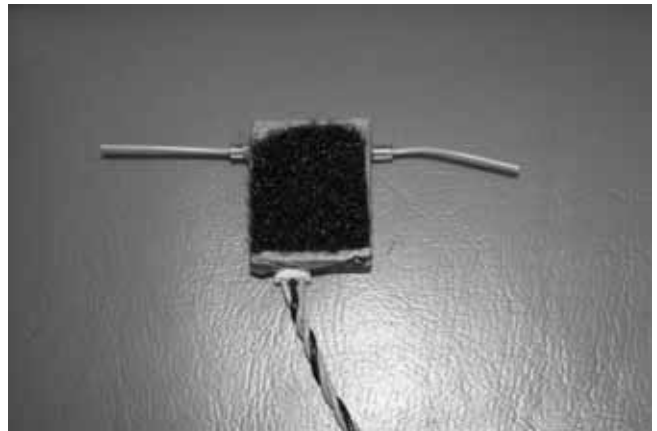
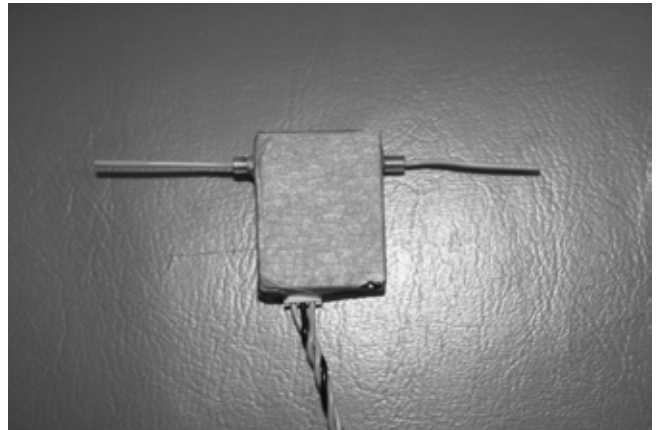
Follow the steps below to prepare the receiver for mounting.

1. Apply masking tape to the bottom of the receiver.
2. Glue using (CA) 1/4-inch foam to masking tape.
3. Glue using CA (medium) Velcro (soft part) to foam.

4. Glue using CA opposite side of Velcro on the rudder tray to complete the installation.

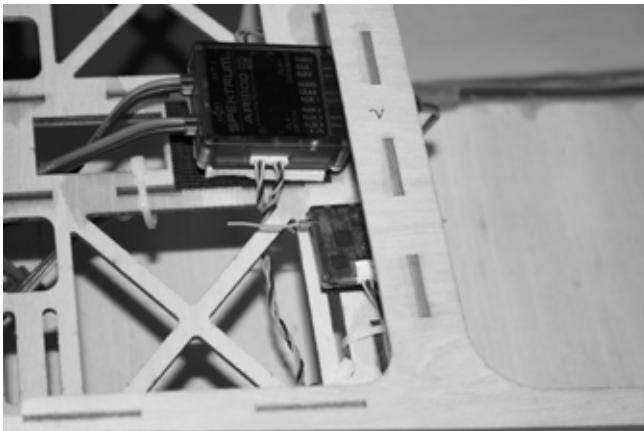


Note: It is still necessary to perform a healthy range check and make any adjustment needed to the location of satellite receivers for best results. A Spektrum Flight Log (SPM9540) can be very helpful for this process.



**□ Step 5**

Satellite receivers need to be prepared the same way except they do not need foam. The following pictures show preparation and mounting of satellite receivers.



#### □ Step 6

Run (2) 24-inch extensions from the receiver for the bottom wings and (2) 36-inch extensions for the top wings. Extensions can be secured with hot glue or CA but the advantage of hot glue is it won't damage the extension coating and is easy to remove. In case of using CA, it would be best to pass your extensions through nylon tubing or heat shrink.

Top wing extensions can be secured to the struts using black electrical tape or by cutting strips of black UltraCote, making a loop and ironing them to the struts.



# Ignition and Switch Installation

## Required Parts

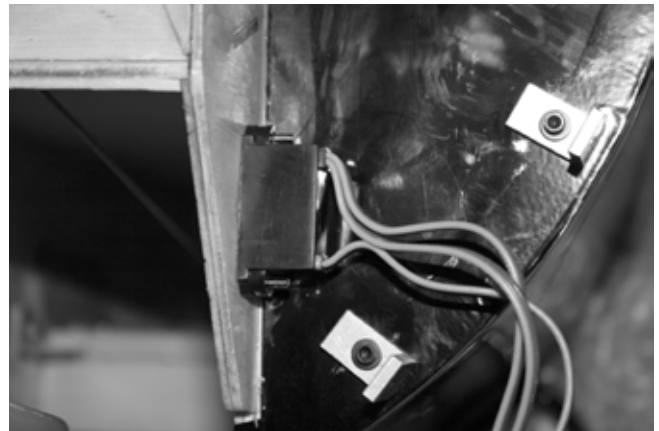
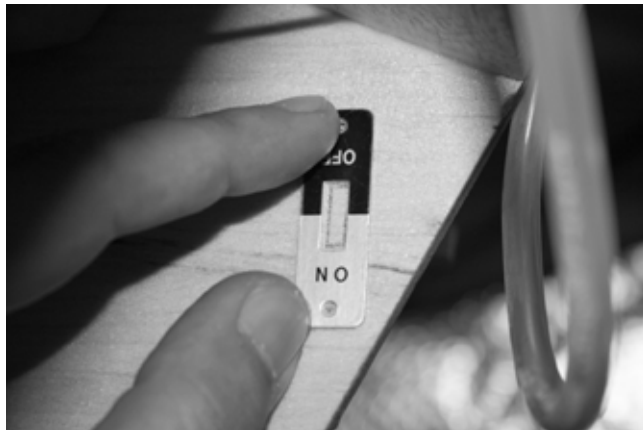
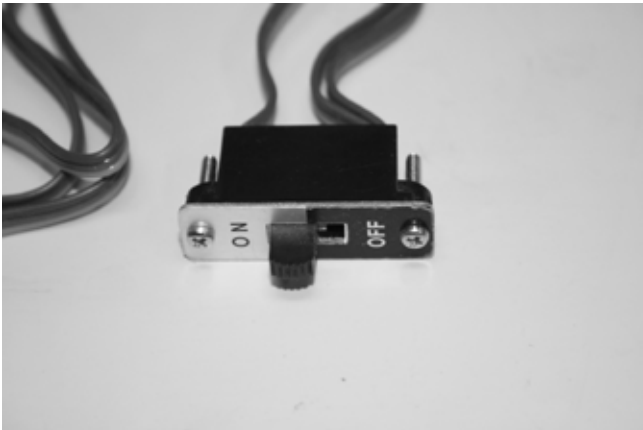
- Deluxe switch harness (JRPA001)
- (1) Spektrum 2S, 1350mAh Li-Po with Spektrum regulator (VR5203)
- Ignition module
- Flex Guard 1/4-inch split convoluted tubing for spark plug wire protection
- Sticky back Velcro
- Hook and loop

## Required Tools and Adhesives

- Tie wraps
- Hobby knife
- Masking tape
- Medium CA
- Pin wise
- 1/4-inch Du-Bro foam

### □ Step 1

Mark the switch location on the side of bottom of the fuse below the engine box. Remove the plywood and make the pilot holes for screws using a pin wise and 1/16-inch drill bit. Complete the installation.



### □ Step 2

Prepare the ignition module by following the same method for receiver preparation/installation.

Use 1/4-inch split flex guard and tie wraps to protect the spark plug wire and complete the installation by securing the ignition with hook and loop straps.



**Step 3**

Use hot glue to secure the ignition switch wires to the side of the engine box.



**Step 4**

Mount the appropriate battery for your ignition module next to the ignition in an available slot. It is best to mount the battery closer to where the switch is mounted.

# Applying Decals

All large decals should be applied wet so the bubbles can be worked out by squeegee. Allow 24 hours for decals to dry and adhesive to set.

It is important to take all the wrinkles in the covering out and would be best to apply the decals after the plane has been taken to a flying field a couple of times and all the wrinkles have been removed. The following pictures are the schematic of where the stickers belong on the full size model.

## VENDOR & END USER DECALS



## Balancing the Model

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This is a very important step that should not be skipped before your first flight. Balancing the model correctly not only improves the flying performance but also reduces the amount of coupling.

The best Center of Gravity is at 63mm from the leading edge of bottom wing toward the trailing edge of the wing. The range of the CG is from 60-70mm. Use masking tape and mark the range and recommended CG on both bottom wings. Ask someone to help you by picking up the model from the other side. Make sure to pick up the model from a rib or strong location to avoid any damage.



## Plane Assembly

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1. Start by Bottom wing assembly.

Each bottom wing panel is attached to the fuselage with two 1/4-20 plastic bolts. Do not forget the CF anti-rotation pin.

2. Attaching the top wings.

Each wing panel is attached to mid-wing section with (2) 6-32 bolts and washers.

Use a short (1.5-2 inches long) 7/16-inch hex driver for ease of use.

3. Interplane struts attach top and bottom wings together with (4) 4-40 screws and washers using a 3/32-inch hex driver. Note that left and right interplane struts are different.

4. The canopy uses (2) 6-32 screws and washers.

To keep track of your assembly, it is best to keep all of your bolts and washers pertaining to your plane in a small box such as a matchbox case. By the time the plane is put together at the field that box should be empty.



# Control Throws

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Use a throw meter such as Hangar 9 digital meter or similar. For the rudder, you do not need to use the throw meter. Adjust for maximum possible throw and half that for flight mode 2 explained below. Throws are equal for up and down elevator and left and right aileron. This aircraft does not need differential on ailerons.

Expo should be in the direction that softens the sensitivity of the sticks close to center.

Set your aircraft for 4 different flight modes as follows:

Flight Mode	Aileron		Elevator		Rudder	
	Throw (deg)	Expo	Throw (deg)	Expo	Throw (deg)	Expo
<del>1</del>	<del>23</del>	<del>55%</del>	<del>15</del>	<del>35%</del>	<del>45</del>	<del>70%</del>
<b>1</b>	23	55%	15	35%	45	70%
<b>2</b>	25	60%	10	30%	22-25	35%
<b>3</b>	25	60%	10	30%	45	65%
<b>4</b>	45	75%	45	70%	45	65%

## ***Explanation:***

**Flight Mode 1:** Set this flight mode for takeoff and landings as the precision rate may not have enough elevator for adverse condition/slow speed landings.

**Flight Mode 2:** This flight mode is for precision flying including snaps.

**Flight Mode 3:** This flight mode is also for precision flying but used for stall turns, rolling circle or maneuvers that require more rudder.

**Flight Mode 4:** This flight mode is mainly for 3D flying.

Note: Flight mode and expos are listed as reference only. Do not hesitate to adjust to your preference, e.g, increasing expos for 3D rates or decreasing throws for 3D rates.

# Rudder to Elevator and Aileron Mixes

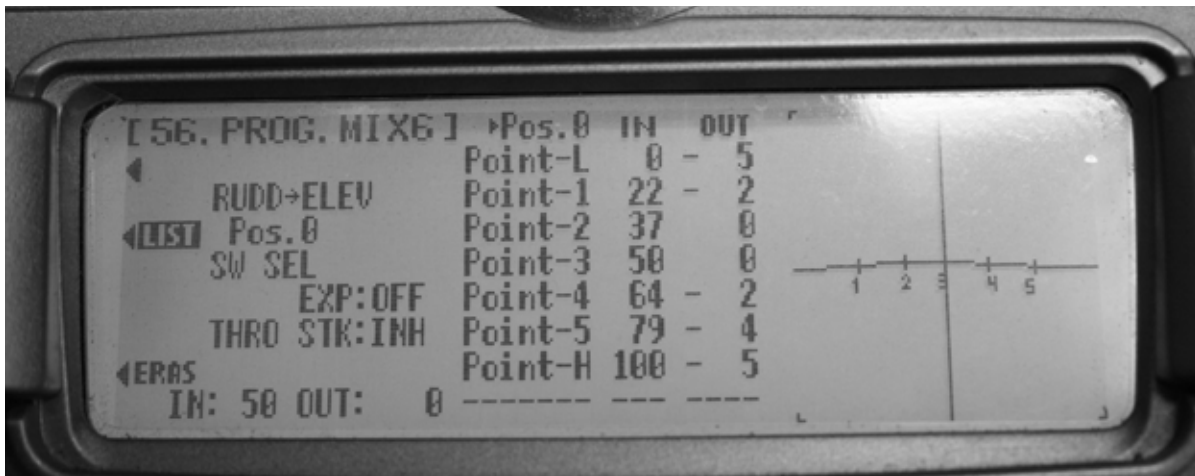
Quique Somenzini has designed the Beast to have minimum roll and pitch coupling, but at the same time pitch and roll coupling of any plane is extremely dependent on its CG. Quique uses multi-point (curve) mixes for Rudder to Elevator and Rudder to Aileron. The numbers below are from his own transmitter. This should provide modelers a good reference point.

Rudder to Elevator Curve Mix

Point	2	1	L	3	4	5	H
R.Rudd	0	-2	-5				
L.Rudd				0	-2	-4	-5

(-) means up elevator. Each point represents 1/3 of full deflection i.e., point 2 is first 1/3 of stick deflection and L is full right rudder. Point 3 is stick at center.

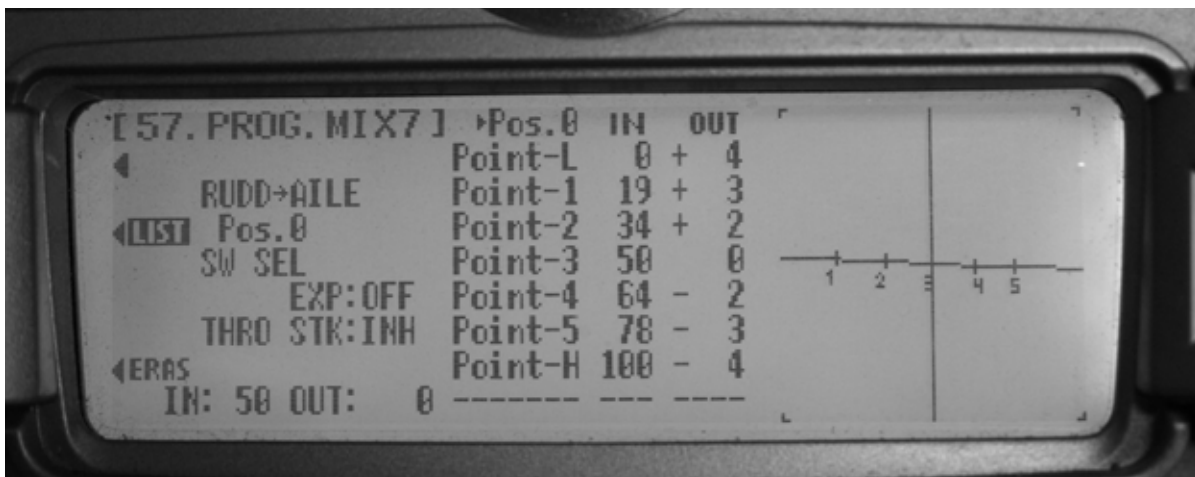
The photograph below is a screenshot of the 12X radio programmed with the information from the table above.



Rudder to Aileron Curve Mix

Point	2	1	L	3	4	5	H
R.Rudd	+2	+3	+4				
L.Rudd				0	-2	-3	-4

(+) means left aileron and (-) right aileron.

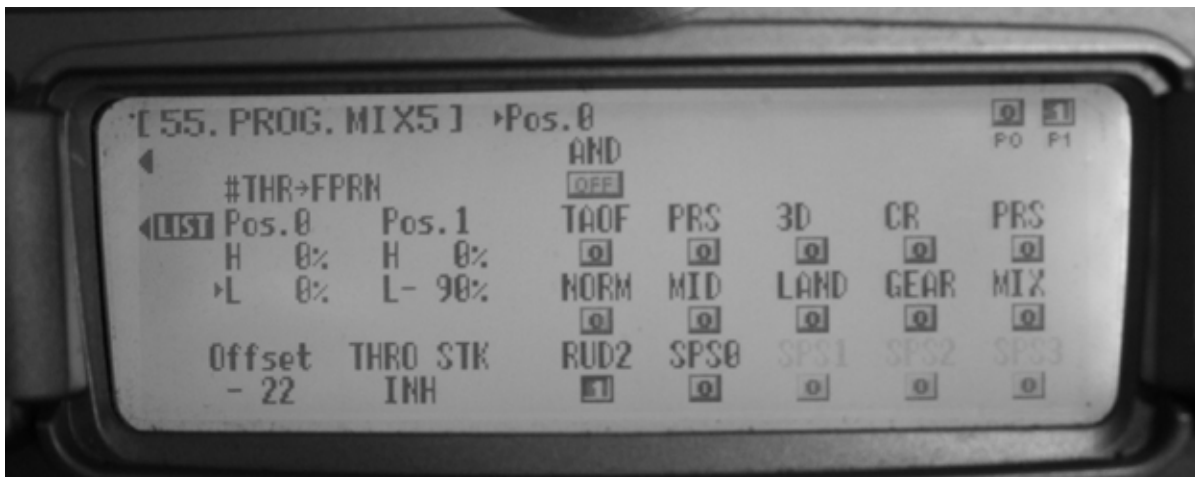


# 12X Crow Feature

Follow the table below for appropriate aileron connections.

<b>Right Top Wing</b>	<b>Ail</b>
<b>Right Bottom Wing</b>	<b>Gear</b>
<b>Left Top Wing</b>	<b>Aux3</b>
<b>Left Bottom Wing</b>	<b>Aux2</b>

Define the mix below and assign it to a switch. The example switch below is Rudder D/R and crow is mixed with throttle. As throttle decreases deflection increases and at full throttle ailerons will be back to normal. Please check [www.hangar-9.com](http://www.hangar-9.com) for Quique's personal program for the Beast. The program can be downloaded by JR 12X owners.



## Extreme 3D Setup

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How can an already excellent setup be improved? What factors are involved?

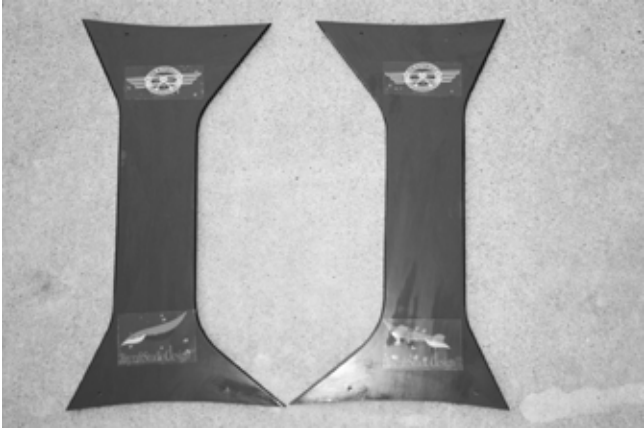
1. Weight/wing loading
2. Speed and torque of the servos
3. Deflection of surfaces
4. Power/weight ratio

The Setup covered in the manual will result in excellent performance but for those modelers who like to go to the limits, we've included some tips below.

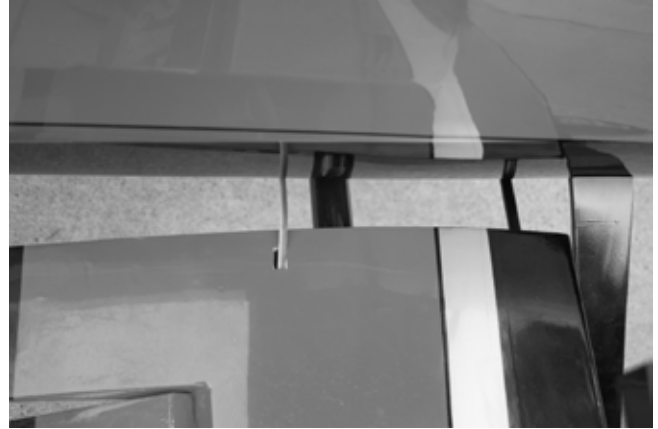
1. Eliminate regulators by using JR 8911HV servos and 8917HV for throttle. The speed and torque of JR 8911HV servos are superior to the JR 8711. At the same time the 8911HV offers new SuperSteel™ gears to take the extra abuse.
2. Get 50 to 55 degrees of elevator deflection by replacing the 2.5-inch titanium pro-link included in the kit with the 3-inch Hangar 9 pro-link (HAN3553). The extra 10 degrees in deflection would allow even tighter pitch maneuvering.

Performing the tips above reduces wing loading, increases power to weight ratio and agility.

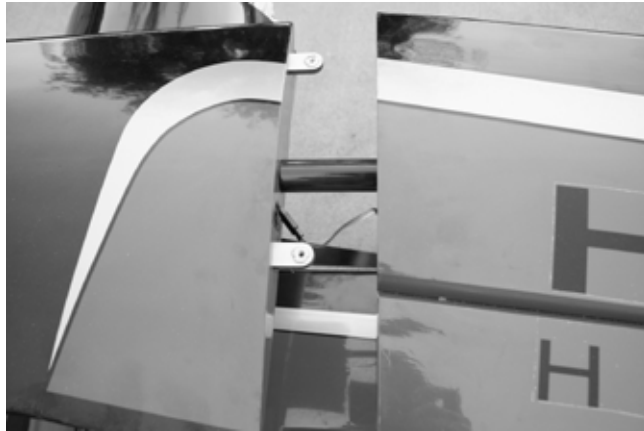
# Final Pictures of Plane Assembly and Setup



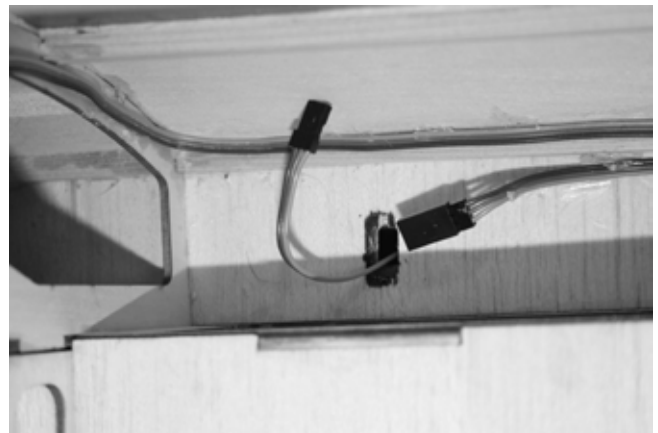
Left and right interplane struts in order from left to right



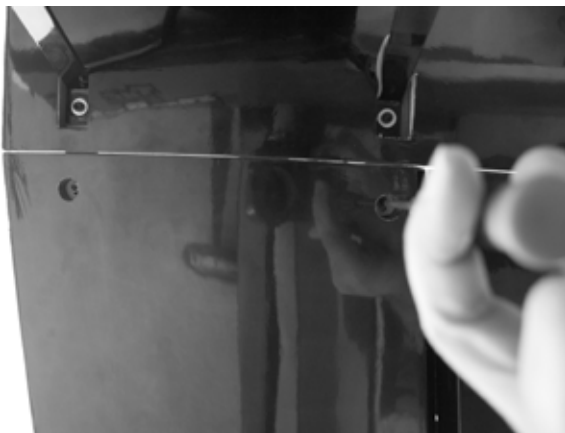
Bottom wing attaching to fuselage



Top wing attachment



Bottom wing extension in the fuse



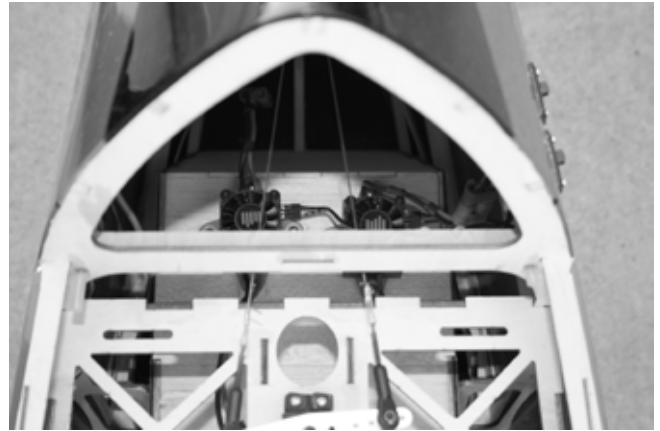
Top wing 6-32 screw joint



Left interplane strut assembled



Top wings extension routing



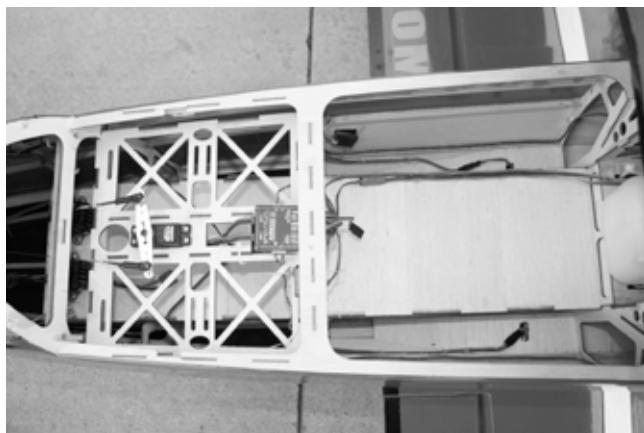
Regulators location



Bottom wing attachment



MatchBox setup, one on each side of receiver



12X setup, no MatchBox



Engine and ignition setup

## Warranty Period

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Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warrants that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

## Limited Warranty

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**Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.**

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

## Damage Limits

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HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

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

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

## Safety Precautions

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This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

## Questions, Assistance, and Repairs

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Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to [productsupport@horizonhobby.com](mailto:productsupport@horizonhobby.com), or call 877.504.0233 toll free to speak to a service technician.

## Inspection or Repairs

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If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as **Horizon is not responsible for merchandise until it arrives and is accepted at our facility**. A Service Repair Request is available at [www.horizonhobby.com](http://www.horizonhobby.com) on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

## Warranty Inspection and Repairs

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**To receive warranty service, you must include your original sales receipt** verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.



# Non-Warranty Repairs

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**Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost.** By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. **Please note: non-warranty repair is only available on electronics and model engines.**

## United States

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center  
4105 Fieldstone Road  
Champaign, Illinois 61822  
USA

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Product Support  
4105 Fieldstone Road  
Champaign, Illinois 61822  
USA

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.

## United Kingdom

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Hobby UK  
Units 1-4 Ployters Rd  
Staple Tye  
Harlow, Essex  
CM18 7NS  
United Kingdom

Please call +44 (0) 1279 641 097 or e-mail us at [sales@horizonhobby.co.uk](mailto:sales@horizonhobby.co.uk) with any questions or concerns regarding this product or warranty.

## Germany

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Technischer Service  
Hamburger Strasse 10  
25335 Elmshorn  
Germany

Please call +49 4121 46199 66 or e-mail us at [service@horizonhobby.de](mailto:service@horizonhobby.de) with any questions or concerns regarding this product or warranty.

## France

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Hobby SAS  
14 Rue Gustave Eiffel  
Zone d'Activité du Réveil Matin  
91230 Montgeron

Please call +33 (0) 1 60 47 44 70 with any questions or concerns regarding this product or warranty.

## Safety, Precautions, and Warnings

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This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is advisable to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

- Always operate your model in an open area away from cars, traffic, or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model into the street or populated areas for any reason.
- Never operate your model with low transmitter batteries.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

# Instructions for Disposal of WEEE by Users in the European Union

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This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal

will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



# 2010 Official AMA

## National Model Aircraft Safety Code

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### GENERAL

1. A model aircraft shall be defined as a non-human-carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.
2. The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.
3. I will abide by this Safety Code and all rules established for the flying site I use. I will not willfully fly my model aircraft in a reckless and/or dangerous manner.
4. I will not fly my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.
5. I will not fly my model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. I will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.
6. I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.
7. I will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will I operate model aircraft with fuels containing tetranitromethane or hydrazine.
8. I will not operate model aircraft carrying pyrotechnic devices which explode burn, or propel a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they may not be launched from model aircraft. Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Air Show Advisory Committee Document.
9. I will not operate my model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.
10. I will not operate my model aircraft while using any drug which could adversely affect my ability to safely control my model aircraft.
11. Children under six (6) years old are only allowed on a flightline or in a flight area as a pilot or while under flight instruction.
12. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

# 2010 Official AMA

## National Model Aircraft Safety Code

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### Radio Control

1. All model flying shall be conducted in a manner to avoid over flight of unprotected people.
2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.
3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.
4. At all flying sites a line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the line. In the case of airshows demonstrations straight line must be established. An area away from the line must be maintained for spectators. Intentional flying behind the line is prohibited.
5. I will operate my model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency-management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.
7. With the exception of events flown under official AMA rules, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and located at the flight line.
8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.
9. Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's attitude and direction at all times.
10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.



*Fly First Class™*



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