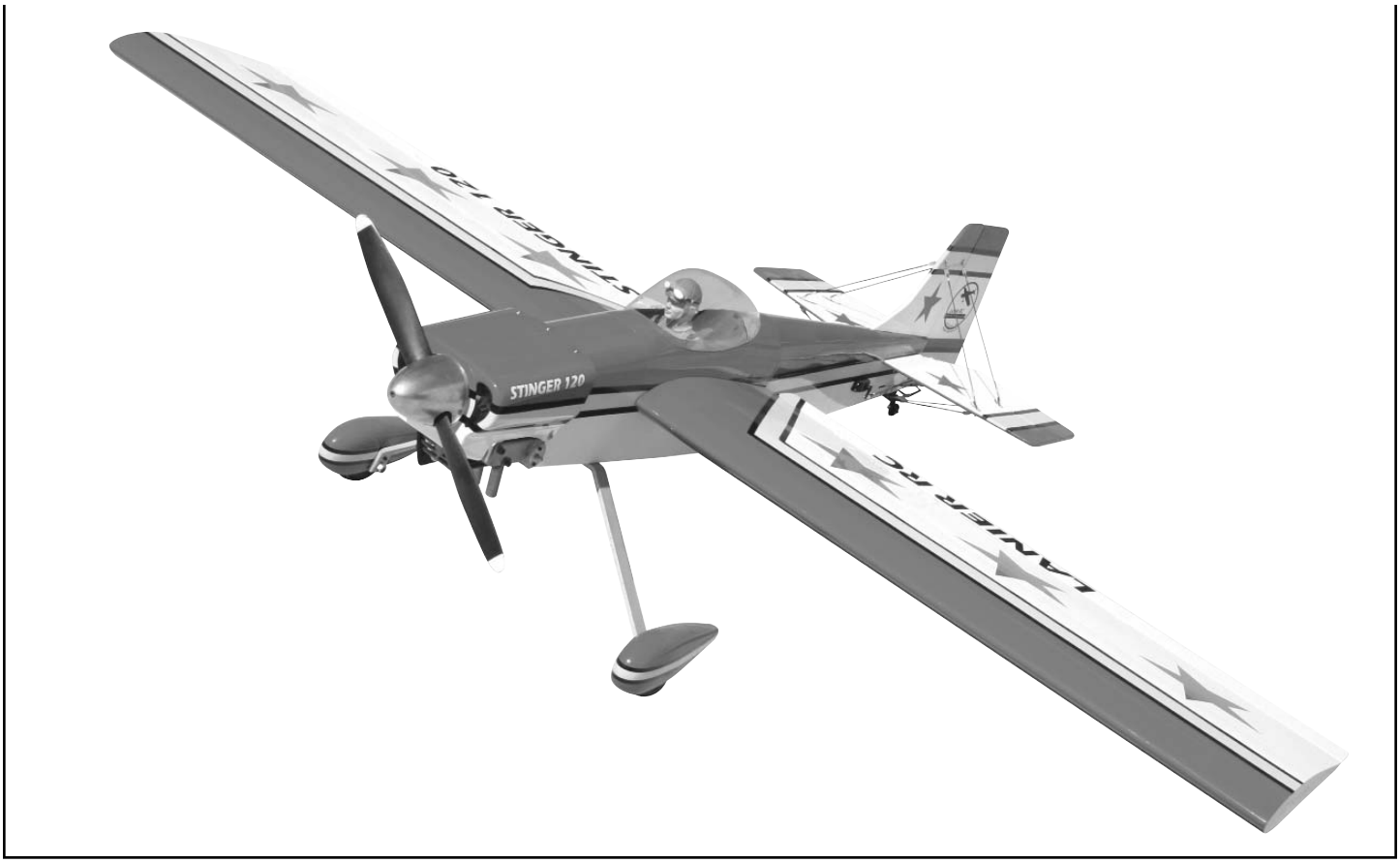
Stinger 120

Almost Ready to Fly



Important Information:

Please inspect the plane before beginning to assemble to make sure you are happy with it. After assembly has begun you cannot return the kit. If you find a problem before beginning to assemble the plane you must contact us, please do not return it to the dealer. Due to temperature changes the plane may develop some wrinkles in the covering that you will need to remove with an iron. Be sure to seal the edges down first so that you do not cause the covering to shrink and leave exposed areas of wood. The model is built light to ensure good flight characteristics. With the power available from the new breed of engines, it is necessary to use throttle management in order not to overstress the airframe. You must maintain good tight control linkage with no slop, good servos with plenty of power, and good servo arms to protect against flutter. Sloppy linkage and overspeeding the plane will cause flutter which is not covered in the warranty. Lanier R/C is proud of the care and attention that goes into the manufacture of parts for its model kits. The company warrants that for a period of 30 days, it will replace, at the buyers request, any parts

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or material shown to the company's satisfaction to have been defective in workmanship or material at the time of purchase.

No other warranty of any kind, expressed or implied, is made with respect to the merchandise sold by the company. The buyer acknowledges and understands that he is purchasing only a component kit from which the buyer will himself construct a finished flying model airplane. The company is neither the manufacturer of such a flying model airplane, nor a seller of it. The buyer hereby assumes the risk and all liability for personal or property damage or injury arising out of the buyers use of the components or the finished flying model airplane, whenever any such damage or injury shall occur.

Any action brought forth against the company, based on the breach of the contract of sale to the buyer, or on any alleged warranty there under, must be brought within 1year of the date of such sale, or there after be barred. This one year limitation is imposed by agreement of the parties as permitted by the laws of the state of Georgia.

Introduction

Thank you for purchasing the Lanier R/C Stinger 1.20. We are sure you will be happy with the quality of the kit and just as happy with the flying characteristics of the Stinger 1.20. Because of the light weight and large wing area, the Stinger 1.20 will accept a wide range of engines. With a glow engine such as the .91, the Stinger is as docile as a trainer. Install a 2.4 CID gas burner and it becomes an unlimited aerobatic machine.

This makes the Stinger 1.20 a perfect "first time" giant scale airplane. If this is your first giant scale please pay attention to the way we recommend setting up the controls. Bigger does fly better but some of the hardware used on small plane will not be suitable for a giant scale.

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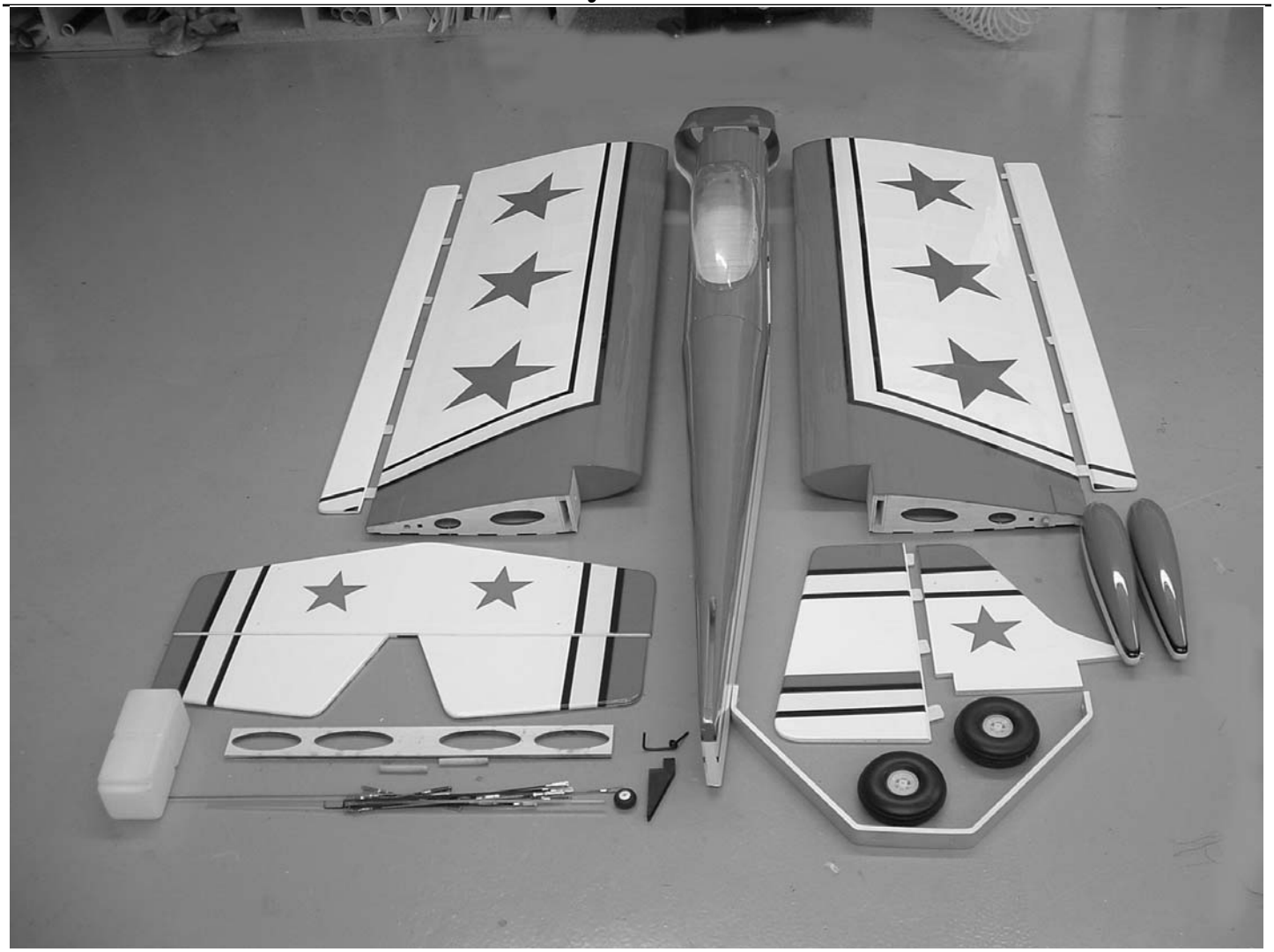

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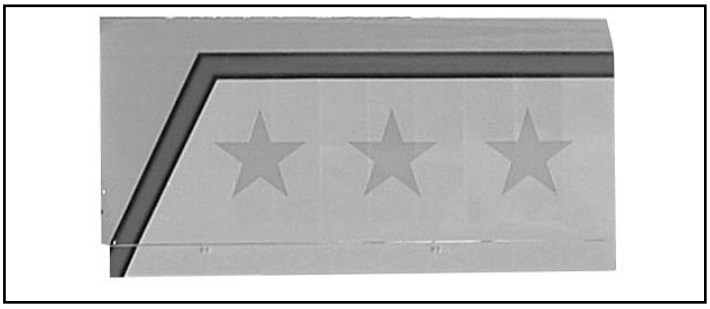
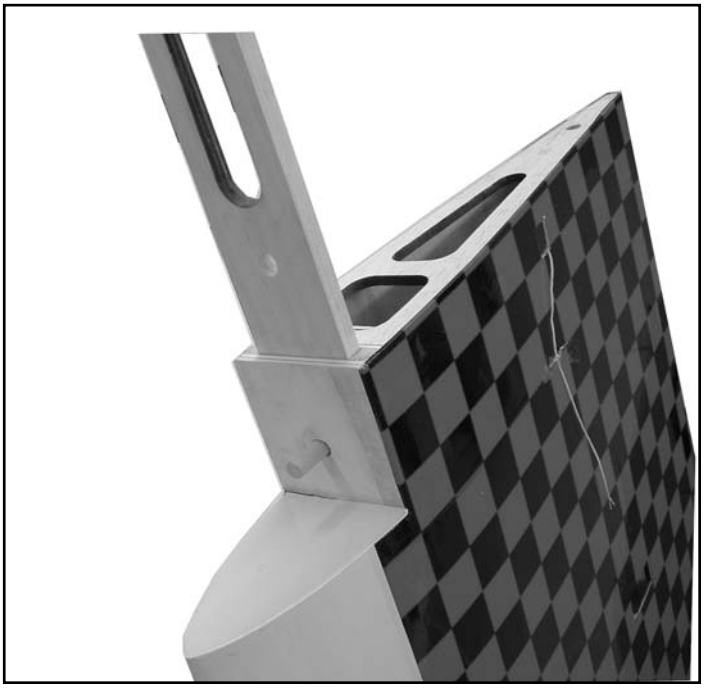
Wing Assembly

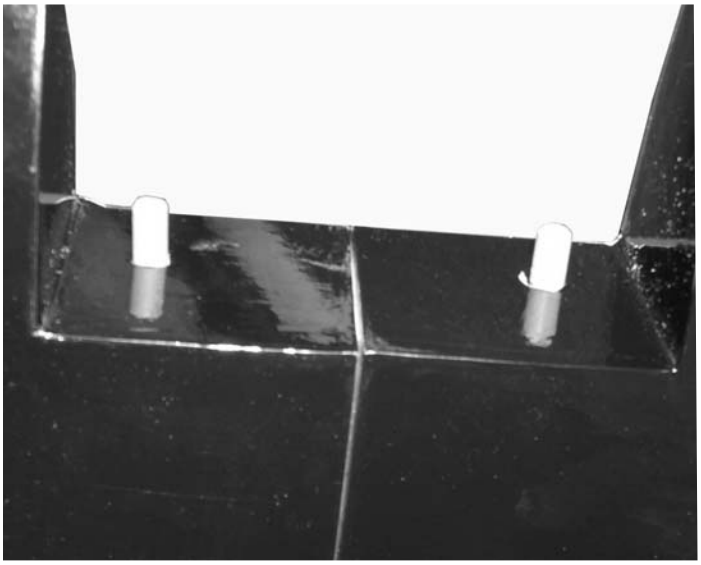
Start with one wing panel. Locate the aileron and trial fit them on the wing. You will need to determine which aileron is the left and which is the right by trial fitting. Make sure all the hinges are aligned and the aileron is flush with the wing tip. Now locate the other aileron and wing panel and fit the aileron. When you are satisfied with the fit remove the ailerons and lay them behind the wing in the correct position. The pin style hinges work best if installed in both wing and aileron at the same time. Apply a drop of oil in the hinge.Use 30 minute epoxy to glue them in. A syringe works great, if you don't have one
use a 1/8" dowel or piece of 3/32" wire to get the epoxy into the holes. With glue in the holes, push the hinges in wing up to the pin. Apply glue in the holes on the aileron and slide aileron into place. Work the aileron up and down several times and the pin hinges will rotate into position. Make sure you have a tight fit between the wing trailing edge and aileron leading edge.
Set aside to dry and install the other aileron.



Locate the dihedral brace.
Trial fit the brace into the slot with the holes aligned with the holes in the wing. Locate the two 3/8"x 1-3/8" dowels and make a mark 1/2" in from one end. Using an exacto knife, remove the covering from the holes in the front of the wing. Insert the dowel in the hole and through the hole in the dihedral brace.

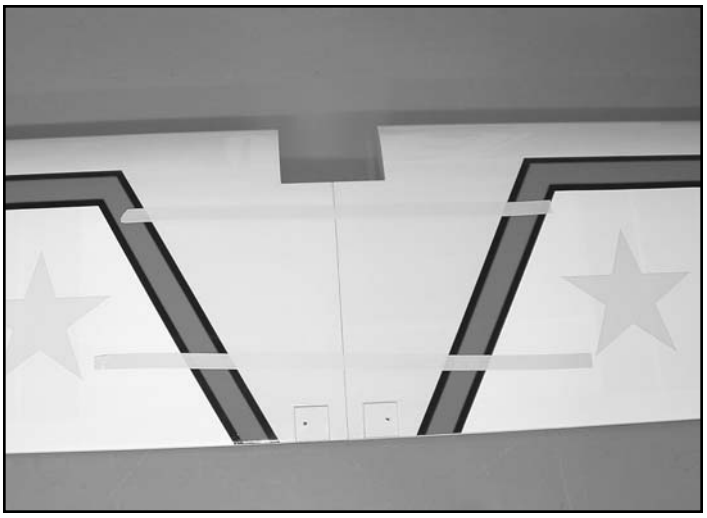


Now slide the other wing panel on the dihedral braces and insert dowel in hole.



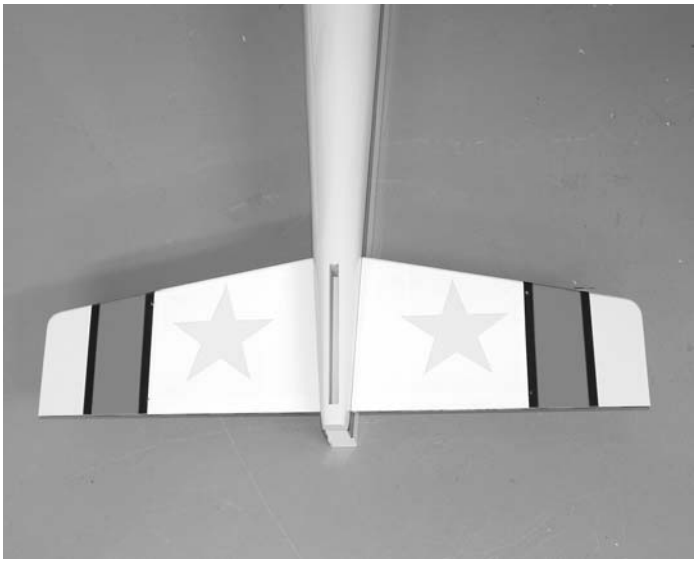
Both dowels should go completely through the dihedral brace and leave 1/2" exposed.

When satisfied with fit and alignment, take the wings apart. Mix 3 ozs. of 30 minute epoxy and apply a liberal amount to the root of both wings, both sides and the edges of the dihedral brace, and into the slots of both wings. Use a scrape piece of wood to work the epoxy down into the slots in the wings. Slide the dihedral brace into place and apply epoxy in the holes for the 3/8" dowels and install dowel.
Slide the other wing in place and install dowel. Use masking tape to hold the wing together till the epoxy cures. Check the trailing edge of the wing and use a pin to make sure it stays in perfect alignment. Lay the wing down on a flat surface till the epoxy cures, don't stand it on one tip. This will cause the epoxy to run to one end.



Tail Assembly

With the wing mounted on the fuselage, slide the stab into the slot in rear of fuselage.
Slide the fin into place in the slot on the top of fuselage.



Use a yard stick to measure from the rear corner of the stab to the front edge of the turtle deck. Move stab until this measurement is the same on both sides. Sight the stab, fin, wing alignment from the rear of the plane. The alignment can be changed slightly by pushing up or down on the stab tip. This is all that should be needed, but if more is needed you can sand the stab saddle till the alignment is perfect.

Do the same with the fin. When happy with the alignment, use a marking pen and mark a line on the stab, top and bottom and on both sides of the fuselage. Do the same to both sides of the fin.

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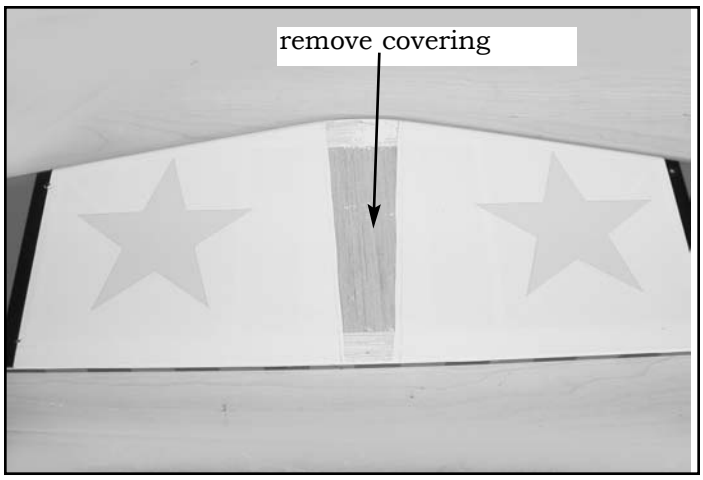
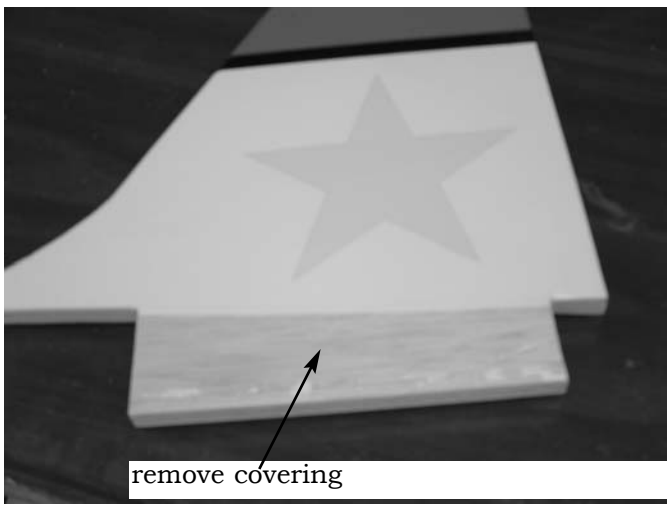
Remove stab and fin from fuselage and using a razor blade, remove the covering between the lines you just marked. Cut about 1/8" inside your mark so bare wood will not be exposed when glued in place. Cut carefully and cut only the covering, don't cut the balsa underneath as this would weaken the stab and fin.





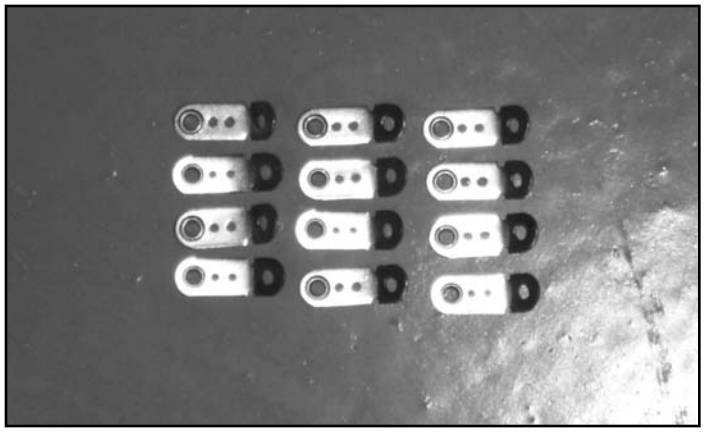
Using 30 minute epoxy, glue the stab and fin in place using the marks made earlier to align. Use masking tape to hold in place if necessary. Check alignment and allow epoxy to cure.

Trial fit the elevators and rudder in place. Glue the hinges in using the same method as you did on the ailerons. The photos show CA hinges which were used on the prototype but the kit is supplied with pin type hinges.

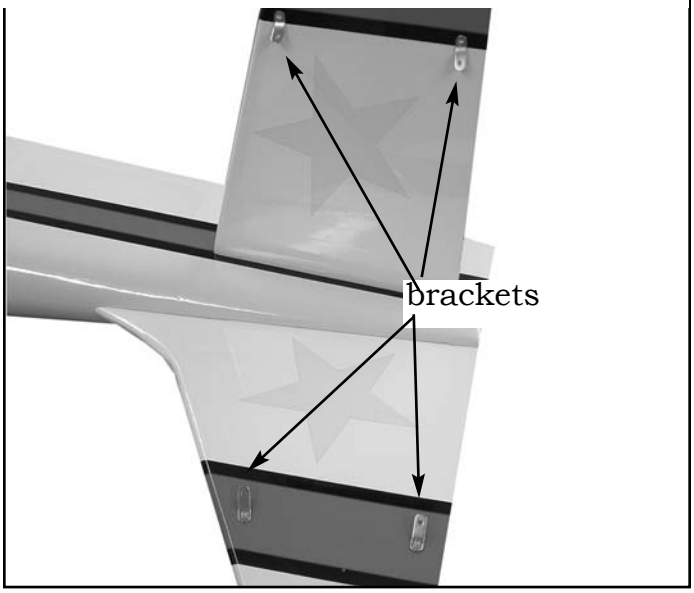
Locate the hole for control horn in the bottom of the rudder.

Flying Wires

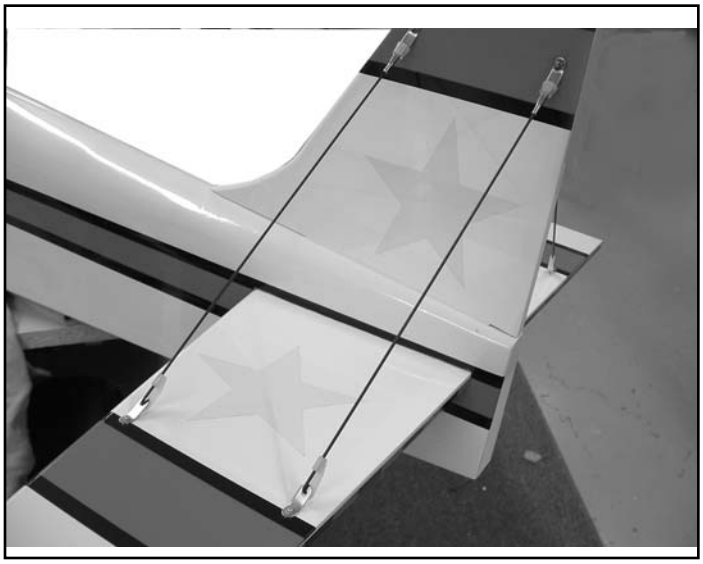
The flying wires are functional on the Stinger1.2 and must not be omitted. Locate the 12 flying wire brackets and bend a 45 degree angle on the end even with the notch. (hardware may vary from what is shown in the pictures).



Attach the brackets to the stab and fin with six 2mm x 20mm screws and nuts. Locate the pre-drilled holes in the stab and fin by measuring down approximately 2-7/8" from the top of the fin and approximately 1/2" in from the leading edge and trailing edge. Press down the covering and with a pin you should be able to locate the hole. Remove the covering using a knife. On the stab measure in approximately 4-1/2" from the tip and approximately 1/2" in from the leading and trailing edge.

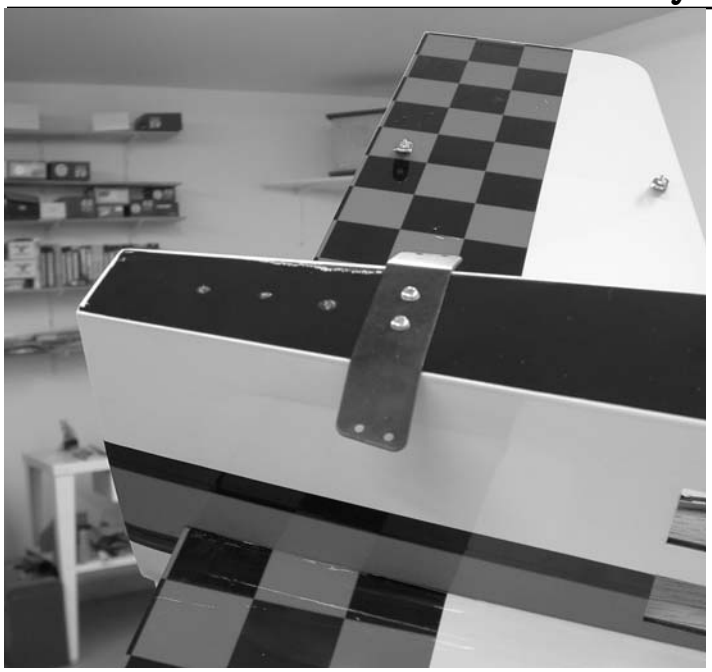


Attach brackets to both top and bottom of stab, and both sides of fin. Locate the eight 2-mm rods, 2mm clevises, nylon swing in keepers, and clevis retainer silicone tubing. Screw the clevis approximately half way on the threads of the rod and attach to the bracket on the fin.

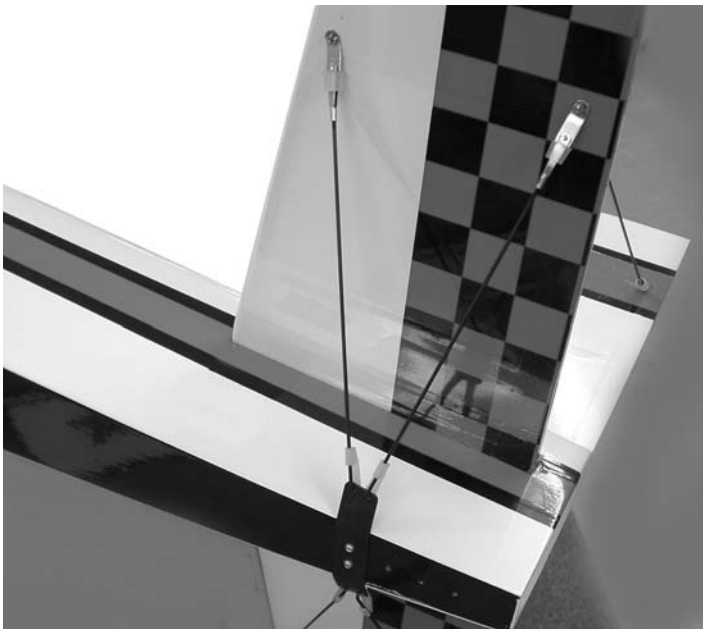


. Insert the 90 degree bend into the bracket and attach the swing in keeper.

Install the other 3 wires on top in the same manner. Be careful not to put pressure on any of the surfaces, after all the wires are installed we will adjust the tension.



Install the bottom flying wire bracket to the bottom of the fuselage with two 2mm screws.

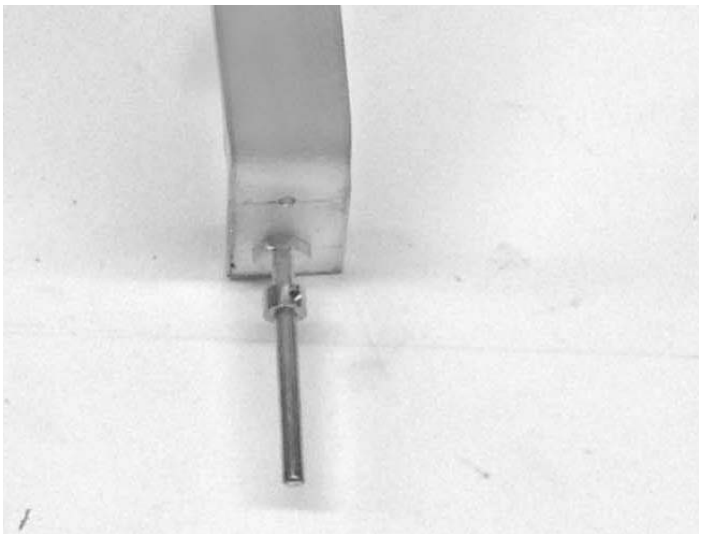


Install the bottom flying wires in the brackets using the nylon swing in keepers. When all wires are installed adjust each one so there is no play in the rod. Don't over tighten the clevis so as not to twist or bend the stab and fin.

Landing gear

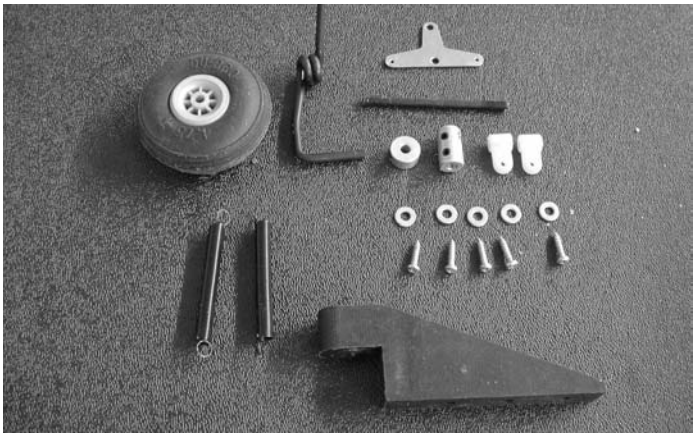
The landing gear holes are predrilled approximately 6" behind the front of the fuselage. Press down the covering to find the holes and remove the covering with a knife.

Place the gear over the holes with the "rake" in the gear going to the rear. Secure in place with the two 4mm x 20mm bolts into the pre-installed
blind nuts. Use lock-tite on the bolts to make sure they don't vibrate loose.

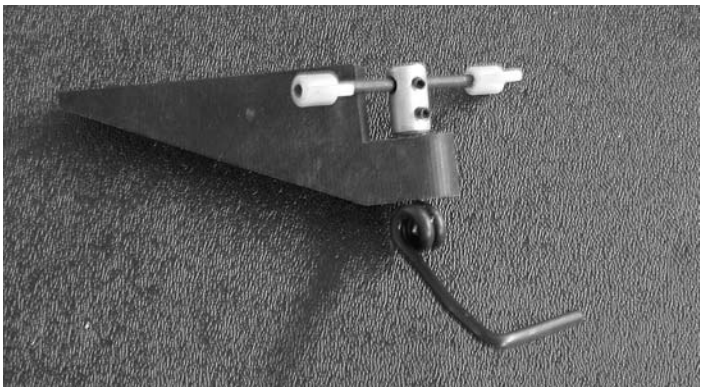


Install the axles in the pre-drilled holes in the landing gear using the aircraft lock-nuts. Be careful and don't over torque the bolts or they will break easily. Install one of the 3/16" wheel collars on the axel approximately 3/16" in from the landing gear. This will space the wheel in the middle of the wheel pant. Adjust later if necessary.

The wheel pant has a 1/2" hole in one side that will fit over the inside nut on the wheel pant. Slide the wheel pant and wheel on at the same time and install the outside 3/16" wheel collar. You should file a flat spot on the axel where the set screw for the wheel collar fits. Screw the wheel pant to the axel using the 3mmx20 screw into the blind nut on the inside of the wheel pant. Be sure and use thread lock compound on the screw.



Tail Wheel Bracket



Assemble the tail wheel bracket by sliding the tail wheel wire through the plastic bracket and secure on top with the special collar. Thread the tiller rod through the top portion and secure with set screw . Screw the nylon control horns on each end of the tiller rod.

Bolt the tail wheel bracket in place using the three 2mm screws. Install the tiller bracket on the rudder using two 2mm screws. Connect the springs between the tiller arm on the rudder and the one on the tail wheel arm. Install the wheel using the 3mm wheel collar.

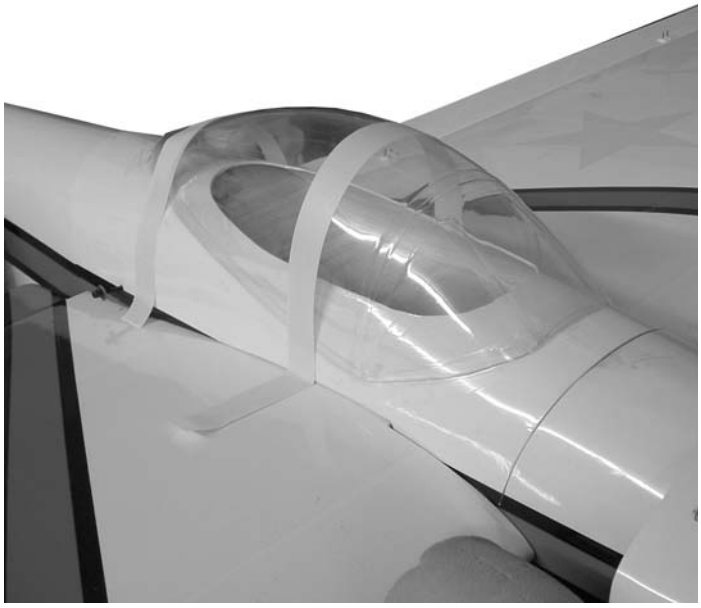
Canopy

Bolt the wing in place on the fuselage using the 4mm bolts and flat washers, the blind nuts are already installed. Fit the wing cover in place with the dowel in the hole in the F2 bulkhead. Use a pencil and make a mark on the wing approximately 2-1/2" in front of the leading edge at the edge of the wing cover.

Remove the wing cover and measure over from the line you drew 3/16". This should be at the outside edge of the wing bolt reinforcement plate at the trailing edge of the wing. Take the two 3/8" x 1-3/8" x 7/8" wooden blocks and place on this line at the front of the wing bolt reinforcement plate.

Mark around block on both sides and remover the covering on the wing under the marks. Epoxy the blocks in place.

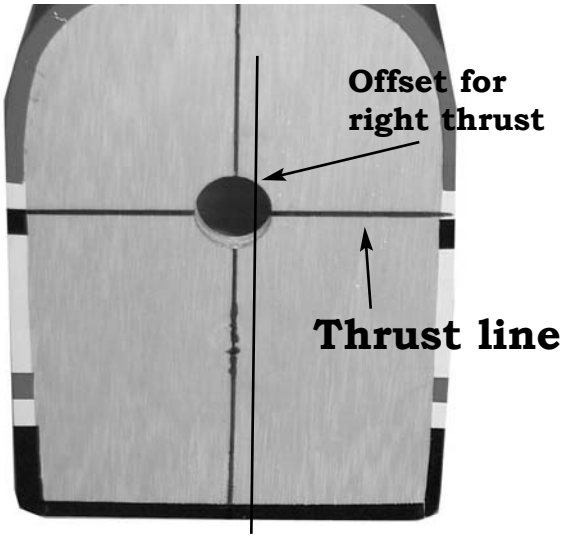
Make a mark on the wing at the center of the block. Reinstall the wing cover and measure up 1/2" from the surface of the wing on the wing cover at the mark you made. Drill a 9/64" hole through the wing cover and into the block. Repeat for the other side. Remove the wing cover and enlarge the hole in the block to accept the 4mm blind nut (7/32"). Seat the blind nut by installing the screw in the block without the wing cover in place and screwing the bolt into the blind nut pulling it into the wood. Very carefully glue the blind nut in place on the back side making sure not to get glue into the threads. Remove the bolts and reinstall the wing cover with the bolts in place.



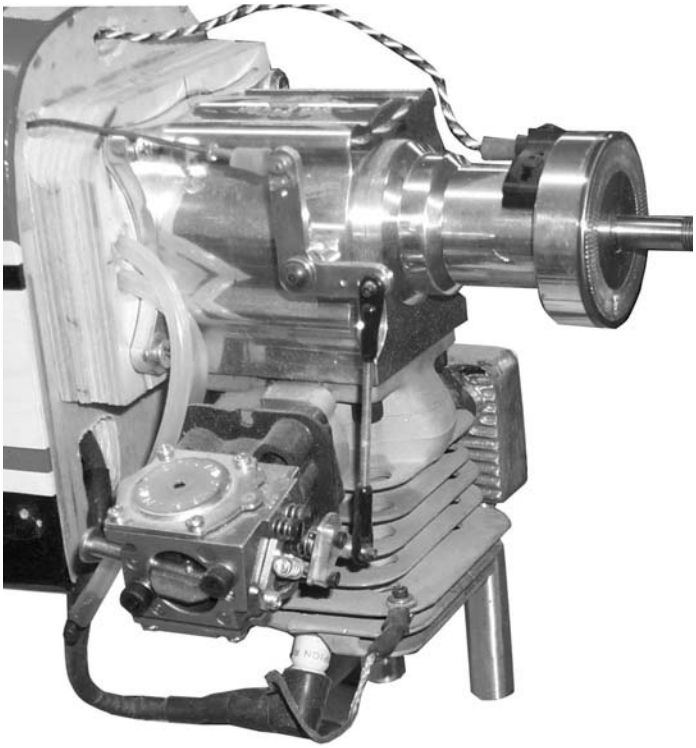
Trim the clear canopy to the scribe line and trial fit.This should be done with the wing bolted in place and the wing cover bolted in place.

If you are using a pilot or cockpit detail, now is the time to install it. When satisfied with the fit, glue in place with a bead of Zap Formula 560 canopy glue. This glue is white going on but will dry clear. Put about a 1/4" wide bead around the base on the inside and hold in place with masking tape until dry. Depending on heat and humidity it make a couple of days to get completely clear, but will be dry enough to use in about 8 hours. Any smudges can be cleaned with water while the glue is still wet.

Engine Mounting

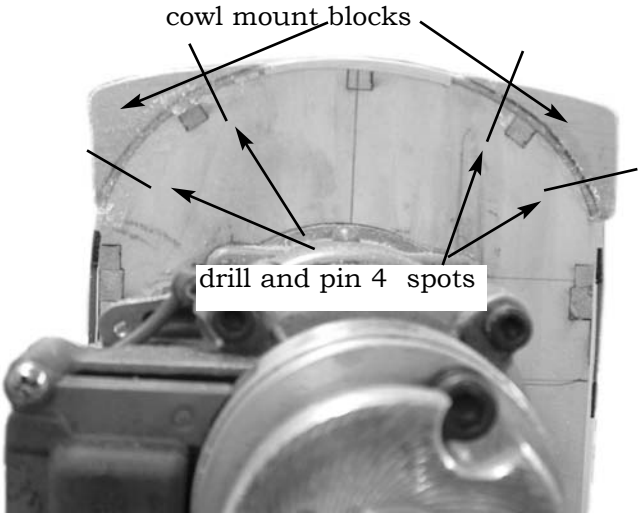


Draw a center line on the firewall from top to bottom. Draw a line across the firewall through the center of the hole, this is the trust line. You can mount your engine centered on these marks. Depending on the engine you use, you may want to use 2 degrees right thrust. This will offset the engine 3/16" to the left side of the firewall. The length of the cowl from the firewall to the nose ring is 6-1/2". This can be adjusted about 1/4" either way but your engine should be spaced to fit at this length.

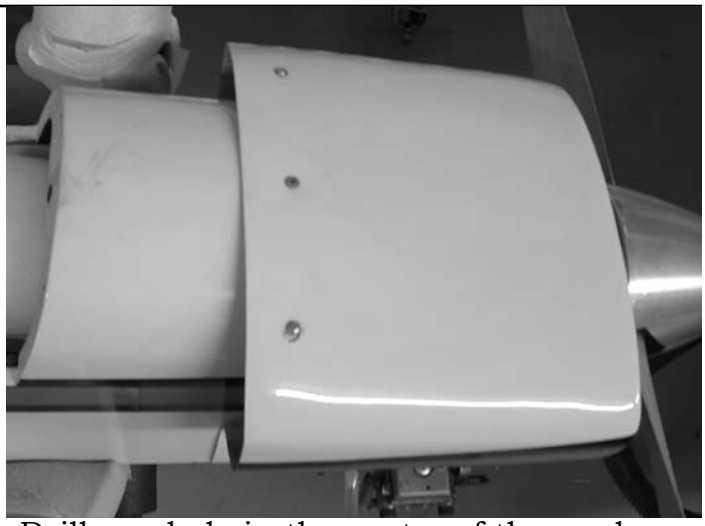


Bolt the engine in place using bolts with aircraft lock nuts on the back side (not included in kit). It is a good idea to go over the glue joints between the fuse and firewall on the inside with epoxy to make sure the joint is glued securely.

Cowl Mounting



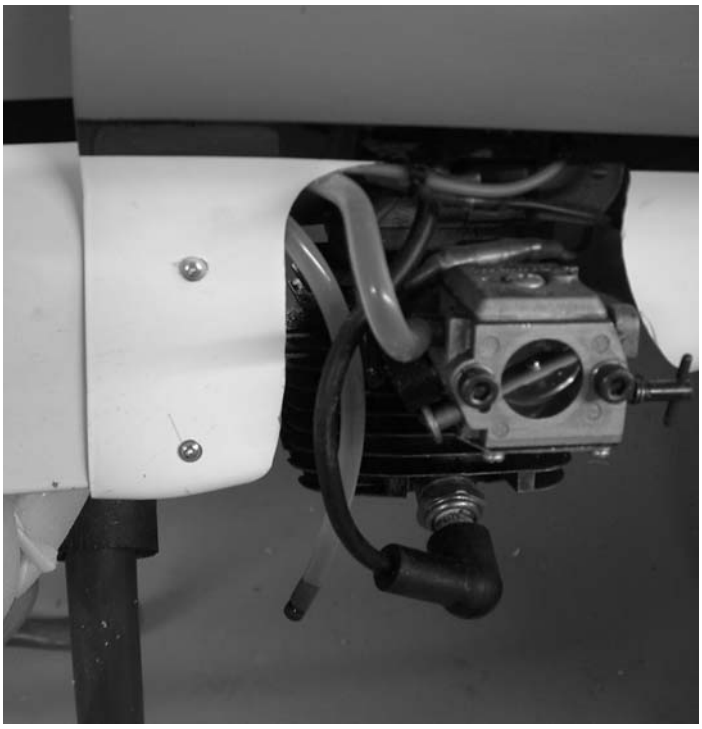
Locate the two shaped cowl mount blocks and locate them on the top of the fuselage flush with the front of the firewall.. Mark around them and remover the covering. Epoxy in place Drill four 3/32” holes and pin to firewall using round toothpicks and epoxy.



Drill one hole in the center of the cowl making sure it goes into the firewall.

Make the necessary cutouts in the cowl to fit over the engine you have installed.

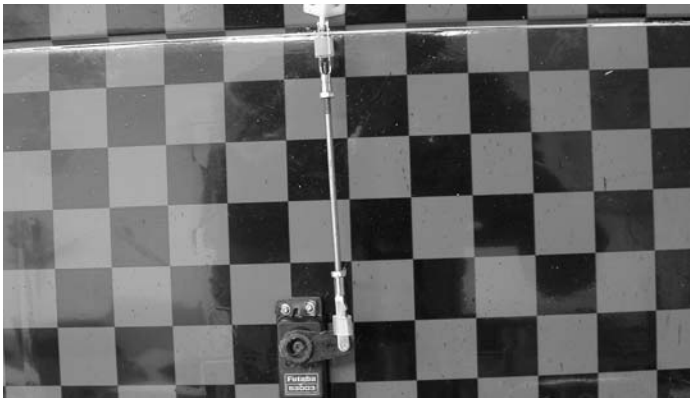
Slide the cowl in place so it overlaps the fuselage at least 3/8” top and bottom. Install the spinner back plate on your engine and leave 1/8” gap between the cowl and back plate. Tape the cowl in place and drill a 1/16” pilot hole through the cowl into the mounting blocks on each side at the top.



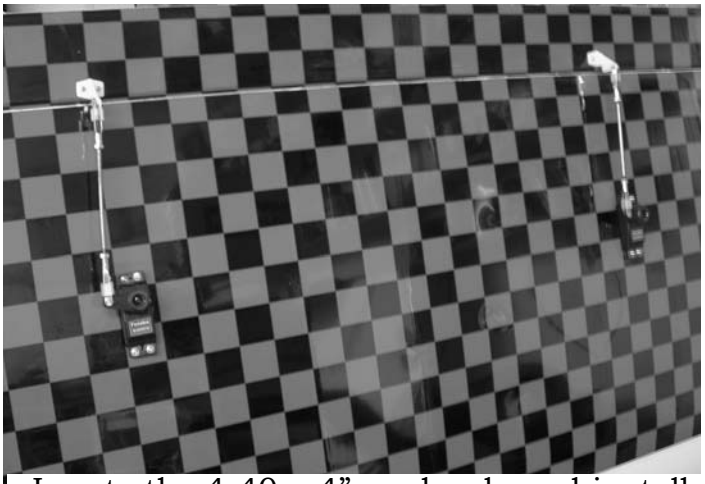
Drill two screw holes on each side of the cowl at the bottom again making sure they go into the firewall and not just the fuselage side. Secure the cowl in place using the 3mm screws.

Radio Installation

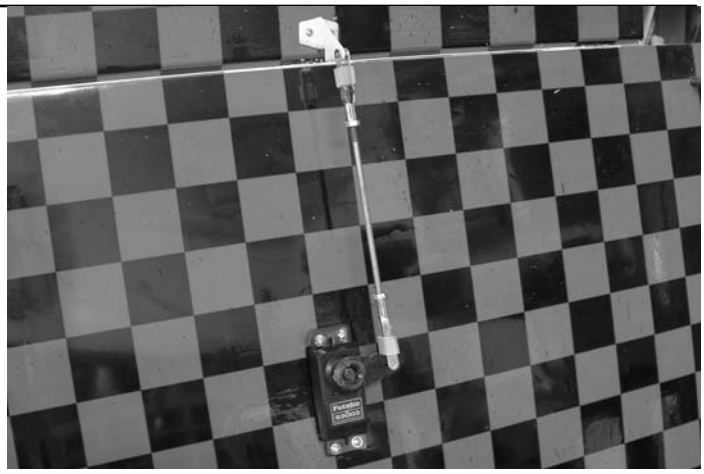
Install the aileron servos in the wing using the hardware that comes with the radio. The servo should be turned so the arm is position toward the rear of the wing and on the outboard side of the servo. Use the factory installed nylon fishing line to pull the aileron lead to the hole in the center of the wing. You will have to use a y-connector to tie the two servos together and a 12" extention to reach the center of the wing



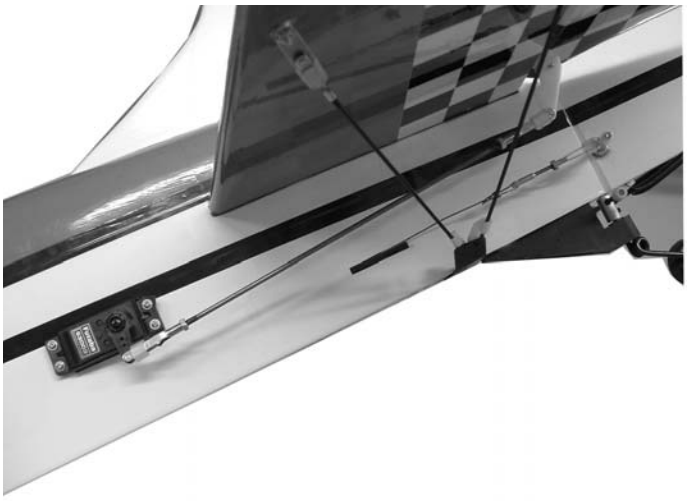
Align the control horn with the servo arm and screw in place using the #2x3/4" screws. The screws go into a plate on the top side of the aileron. The connection holes in the control horn for the pushrod should be aligned over the hinge line.



Locate the 4-40 x 4" pushrods and install a 4-40 nut on each end. Screw a 4-40 clevis on each end and connect one end to aileron horn and the other to the servo arm.

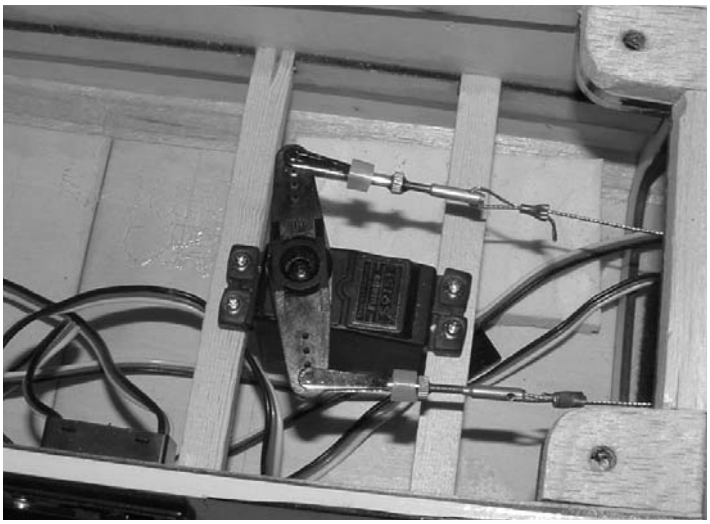


With the servo centered, adjust the linkage till the aileron is centered. Tighten the 4-40 jam nuts on each end and install the clevis keeper on each clevis. Don't forget to install the servo arm retaining screw. Put a drop of thread lock on both jam nuts.

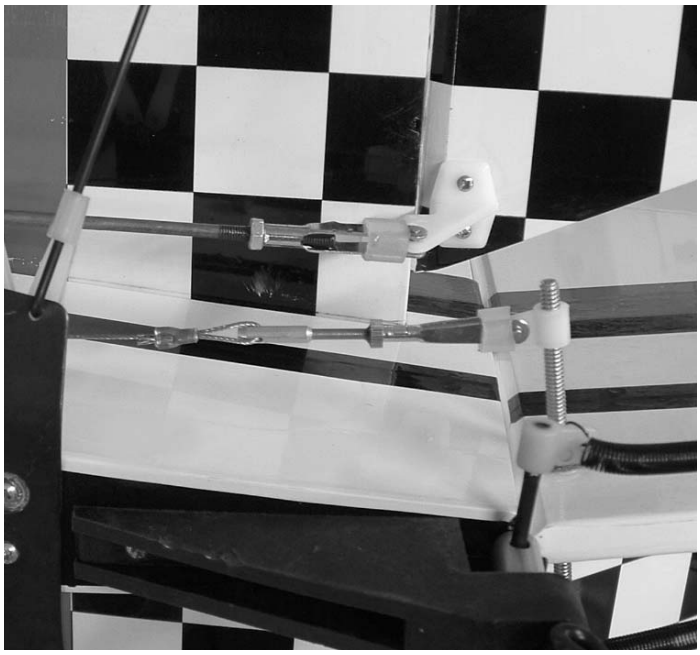


Install the elevator servos in the tail. You will need a 24" extension for each servo. Install the control horns using the #2 x3/4" screws into the plate on top for the elevators. Align the holes for the pushrod over the hinge line and mount as close to the inboard edge of the elevator as possible. Locate the two 7-1/2" long 4-40 pushrods, clevises, jam nuts and silicone keepers. Install a clevis on each end of the pushrod and connect the servo to the elevator control horn.

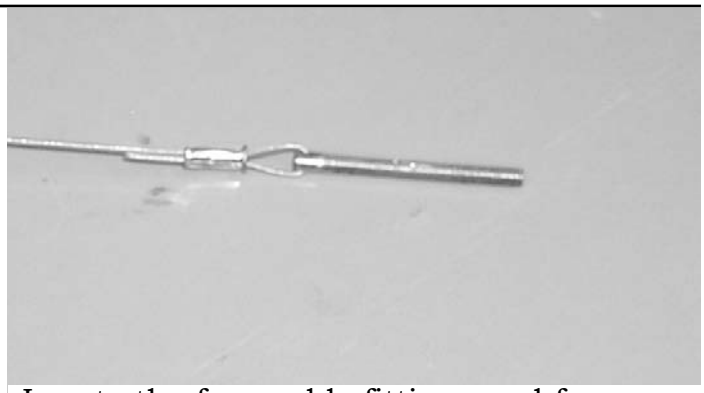
With the servos centered, adjust the linkage so the elevators are centered. Tighten the jam nuts and apply a drop of lock tite to each. Install the silicone clevis keeper and the servo arm screw.



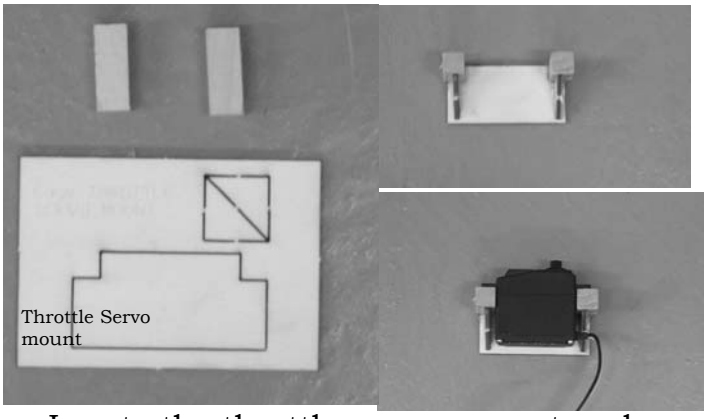
Install the rudder servo in the fuselage in the rail provided. Center the servo in the fuselage.



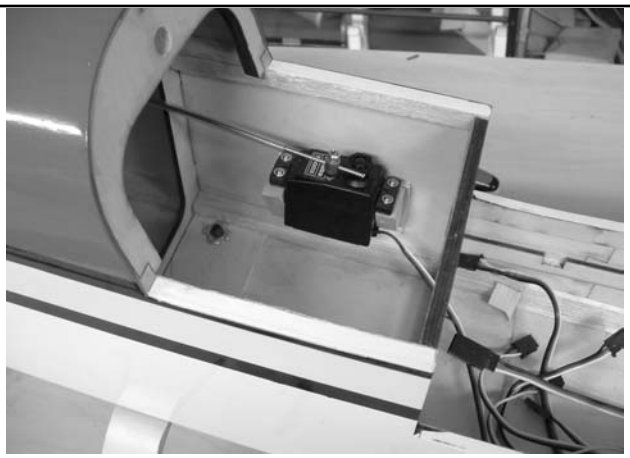
Install the rudder control horn in the hole provided in the bottom of the rudder. The horn is a 3" long 6-32 bolt with nuts and washers on each side. Use locktite on the nuts. Install the nylon fittings on each end.



Locate the four cable fittings and four swages. Thread the cable through the swage, throught the fitting and back through the swage. Pull the swage to about 1/8" from the fitting and crimp. Cut the cable into two equal lengths and install a fitting on the other cable. Put a jam nut and clevis on each fitting. Attach the clevis to the rudder horn on each side and feed the cable through the slots on the side of the fuselage. You will need to remove the covering over the pre-cut slots in the fuselage sides. Install a long control arm on the rudder servo. Screw a jam nut and clevis on the two remaining control cable fittings. Attach the clevises to the control arm on the servo. With the servo centered and the rudder centered, thread the control cable through the swage, through the fitting and back through the swage. Do both sides before crimping and pull tight and make sure servo and rudder are centered. Crimp the swage and cut the cable just behind the crimp.



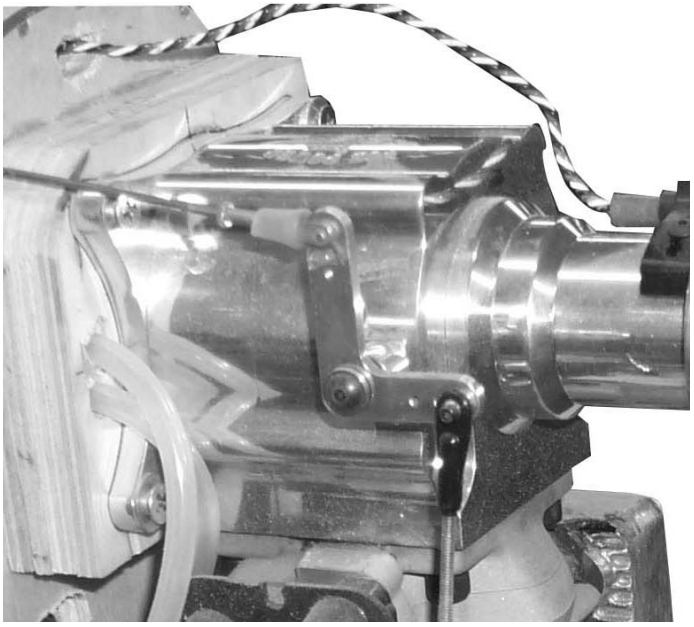
Locate the throttle servos mount and glue the 3/8" square spruce block and the 1/8" ply angles in place. Mount the servos to the plate using the hardware supplied with the radio.



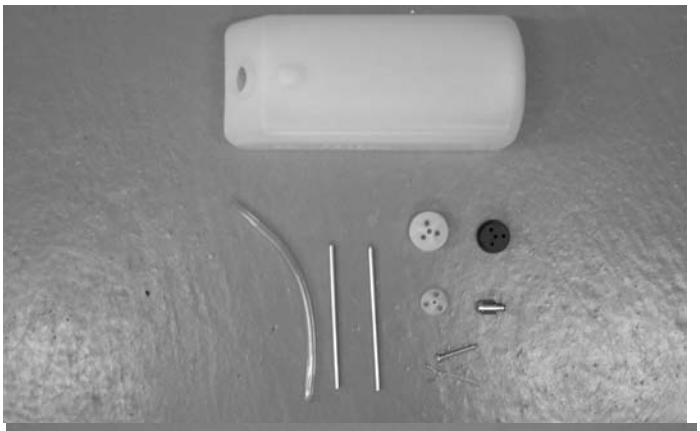
The servo mount can be glued to the side of the fuselage just in front of the F2 bulkhead (the one with the wing dowel holes). There will be room for the fuel tank below it and the ignition system can sit on top of the tank. Install the E-Z connector (supplied) to your servo arm. Take the 2-56x12" push rod and install the 2-56 jam nut and the clevis.

Drill a hole in the firewall to line up with the throttle arm on your engine. Install the pushrod with the clevis on the engine and the other end in the E-Z connector. This set up shows a Fox 2.4, if you are using a different engine you will have to adjust accordingly.

On our Fox 2.4 installation a hole was cut in the firewall to allow the ignition wire to pass through. The module sits on top of the fuel tank and a switch is installed in the fuselage in the nose section.



A hole is drilled at the top of the firewall to allow the ignition pickup wire to pass through and the fuel line holes are drilled just above the carb.



Assemble the fuel tank so the klunk is about 1/4" off the bottom of the tank and free to flop about. If you are using glow fuel you must use silicone tubing and if you are using gasoline you must use tygon or
neoprene tubing. The tank supplied has a gas stopper and neoprene tubing. If you use glow you must replace these. Install the tank in the nose section and drill the appropriate holes.

The radio receiver and switch can be mounted in the rear section of the compartment under the wing (there is lots of room). Depending on the engine used, the battery (or batteries if ignition is used) can be mounted where needed for balance. With the Fox 2.4, both batteries were mounted as far to the rear as possible.

The Stinger 120 has a wide CG range and can be very docile at the forward setting, 4-1/2" inches. For expercienced pilots it can be moved back past our rearward recommendation by an iinch or more for unlimited aerobatics.

Control Throws

Low Rate

Elevator 1" up and down
Aileron 3/4" up and down
Rudder 1-1/2" each way

High Rate

Elevator All you can get
Aileron All you can get
Rudder All you can get

Center of Gravity

4-1/2" to 5" behind leading edge

Parts List

Airframe components

1. Fuselage 1
2. Wings 2
3. Aileron 2
4. Stab 1
5. Fin 1
6. Rudder 1
7. Elevators 2
8. Wing cover 1
9. Clear Canopy 1
10. Landing gear 1
11. Wheel pants 2
12. Cowl 1

Wing Hardware

1.Dihedral brace
2. 3/8" x 1-3/8" dowels 2
3. Control horns 4
4. Control horn plates 4
5. Control horn screws 8
   #2x3/4"
6. 4-40 clevises 8
7. 4-40 nuts 8
8. clevis keepers 8
9.4-40x4-3/4" pushrod 4
10.Wing bolts 2
   6mm x40mm

Flying wire hardware

1. 2-56 rods 8
2. 2-56 clevises 8
3. Clevis retainers 8
4. Nylon swing in keepers 8
5. Aluminum bracket 1
6. Flying wire brackets 12
7. #2 x3/4" socket head
   screws 6
8. #2 nuts 6
9. sheet metal screws
   tail wheel and flying wire
   bracket 2

Elevator, Rudder Hardware

1. Control horns 2
2. Control horn plates 2
3. Control horn screws
   (Elevator)#2x3/4" 4
4. 4-40 x 7-1/2" control rods
   (Elevator 2) 2
5. 6-32 x 3" threaded rod 1
   rudder horn
6. 6-32 nuts
2
7. nylon pushrod ends
2
8. 4-40 nuts (elevator pushrods) 4
9. 4-40 clevises (elevator) 4
10 Clevis keepers
   4 rudder 4 elevator 8
11. braided cable
60"
12. cable swages 4

Landing Gear Hardware

1. Main gear bolts
   1/4" x3/4" 2
2. 2
4. 3-1/2" wheels 2
5. 3/16"x 2" axles with nuts 2
6. 3/16" wheel collars 4
7. 3mm bolts for wheel pants 2
8. Tail wheel assembly 1
9. Spring for tail wheel 1
10. 1/8" wheel collar 1
11. 1-3/4" tail wheel 1

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Canopy Mounting Hardware

1. Phillips head metric screws 3mm x 20mm 2
2. Flat washers 2

Fuel tank 16 oz.

Decal Sheet 1

Instruction Booklet 1

Adhesives

1. Thin CA (cyanoacrylate) glue
2. Medium CA. Glue
3. CA remover/debonder
4. 5-Minute Zap Z-Epoxy
5. 30-Minute Zap Z-Epoxy
6. Zap Z-42 Threadlock
7. Zap Canopy glue.

Throttle Hardware

1. E-Z connector 1
2. 12" 2-56 pushrod 1
3. 2-56 clevis 1
4. 2-56 nut 1
5. Lite-ply servo mount 1
6. 3/8" sq. x 3/4" spruce blocks 2

Tool need to complete the Stinger.

1. Drill and assorted bits
2. Hobby Knife with #11 blade
3. Masking Tape
4. T-pins or straight pins
5. Felt tipped pen/pencil
6. Rubbing alcohol
7. Paper towels
8. Phillips screwdriver
9. Allen wrenches
10. Metric tap 6mm.
11. Pliers (needle nose)
12. Mixing sticks
13. 36" yard stick or tape measure
14. Scissors
15. Moto tool with sanding drum.

Equipment Required

1. Four channel radio or better
2. Servos- 70in.oz. or better 8
3. 1200mah battery pack or larger
4. Y-connectors 3
5. 12" extensions (Aileron) 2
6. 24" extensions (Elevators) 2

If you have a programmable radio that will allow you to mix two channels to control the two elevator servos you will not need a servo reverser. If not you will need 1 servo reverser, and one more Y-Connector.

7. Heavy duty control arms to fit your servos.
8. Switch harness (your radio)
9. Motor (gas or glow)
   If gas , battery pack, and switch for ignition.
10. Prop and 3-1/2"" Spinner for your motor.
11. Fuel line (for gas or glow)
12. Pilot figure (optional)

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