HANGAR 9 ®

WE GET PEOPLE FLYING

Cessna 182 Skylane 1.50 ARF

ASSEMBLY MANUAL

Specifications

Wingspan: ....94.75 in (2406 mm)
Length: ....76.75 in (1949 mm)
Wing Area: ....1246 sq in (80.39 sq dm)
Weight: ....16.5–18.5 lb (7.48–8.22 kg)
Engine: 1.08–1.48 2-stroke, 1.20–1.80 4-stroke
                        23–38cc Gas
Radio: ....5-channels w/8 servos

Almost Ready-to-Fly

From commercial flight to skydiving to cross country transport, the Cessna 182 Skylane has been among the world's most popular high-performance single engine airplanes for almost 50 years. The Skylane of today, with its powerful engine, comfortable interior and exemplary safety record, is the SUV of the airways—a powerful, classy ride that works hard during the week and plays hard on the weekends. Now you will experience the spirit of the Cessna in this giant-scale dream—Hangar 9's 1.50-sized replica of the real thing. The Hangar 9® Cessna 182 Skylane 1.50 ARF, based on the latest version of the real plane, is an easy-to-assemble, easy-to-fly blast that boasts scale details never before seen in an ARF model.

Although this is an ARF (Almost Ready-to-Fly) kit, it does have some construction features that can be challenging to the less experienced modeler. If you encounter difficulty in any construction sequence, please feel free to contact one of our technicians. We stand ready to provide any assistance we can concerning the construction of your Hangar 9 Cessna 182 Skylane 1.50-size ARF.

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Warranty Information

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

In that Horizon Hobby has no control over the final assembly or material used for the final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

Please note that once assembly of the model has been started, you must contact Horizon Hobby, Inc. directly regarding any warranty question that you have. Please do not contact your local hobby shop regarding warranty issues, even if that is where you purchased it. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

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Contents of Kit
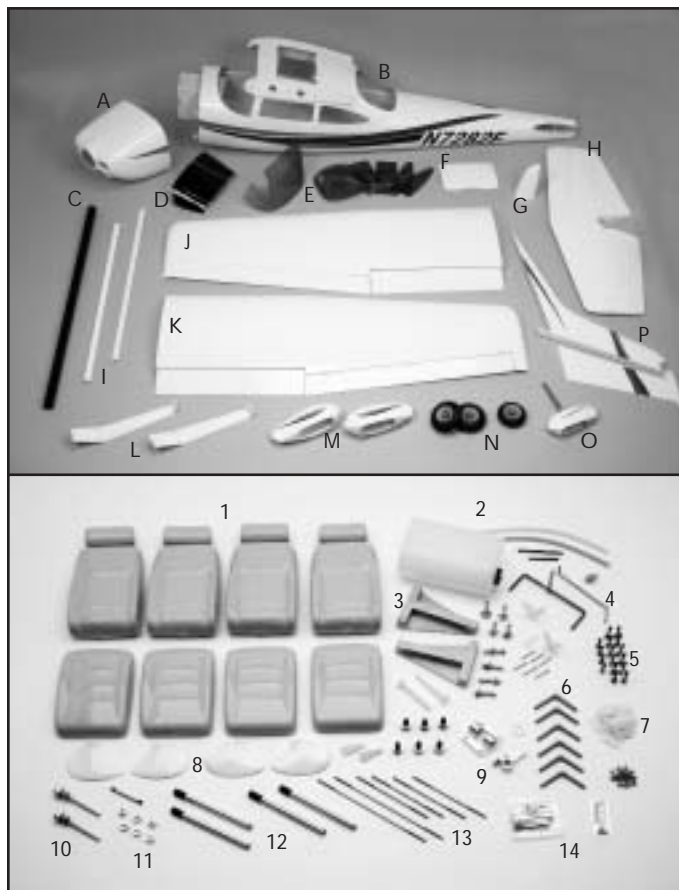
Large Parts

A. Cowl (HAN1891)
B. Fuselage (HAN1880)
C. Wing Tube (HAN1890)
D. Instrument Panel
E. Windshields (HAN1886)
F. Top Hatch Cover (HAN1893)
G. Tailcone (HAN1882)
H. Stabilizer and Elevator (HAN1878)
I. Wing Struts (HAN1892)

J. Left Wing Panel (HAN1876)
K. Right Wing Panel (HAN1877)
L. Landing Gear (HAN1883)
M. Wheel Pants (Mains) (HAN1884)
N. Wheels
O. Wheel Pant (Nose) (HAN1885)
P. Rudder and Fin (HAN1879)

Small Parts

1. Seats
2. Fuel Tank Assembly
3. Engine Mounts
4. Elevator and Rudder Control Horns
5. Screws
6. Flap Hinges
7. Rudder, Elevator, and Aileron Hinges

8. Wing Strut Fairings
9. Nose Gear Mount
10. Main Gear Axles
11. Wheel Collars
12. Wing Anti-Rotation Pins
13. Pushrod Linkages (HAN1887)
14. Control Horns and Hardware

Additional items sold separately: Decal Set (HAN1888) and Rear Fuse Hatch (HAN1881). HAN1889 includes parts D, 1, and 8.

Additional Required Equipment

Required Radio Equipment

- 5 channels (minimum)
- 8 servos (JRPS537 recommended)
- Receiver
- Deluxe Switch Harness (JRPA001)
- Receiver battery pack (1100mAh)

Recommended JR Systems

- JR XF662
- JR XP783
- JR XP8103
- PCM10X

Recommended Engines

- Zenoah® G26 gas engine
- 1.20–1.80 4-cycle engines
- 1.08–1.48 2-cycle engines

2-Cycle Engines

Webra™ 1.20
MDS™ 1.48

4-Cycle Engine

Saito™ 1.20–1.80
Saito 1.20GK–1.80GK

Gas Engine

Zenoah™ G26

Additional Required Adhesives and Tools

Tools

- Drill
- Drill Bits: 1/16", 1/8", 5/32"
- Soldering iron
- Phillips screwdriver (small and medium)
- Pliers: Z-bend and slip joint
- Moto-tool with sanding drum and cutoff wheel
- Hobby knife with #11 blades
- Mixing sticks
- Epoxy brush
- 90-degree triangle
- Sanding bar
- Sandpaper (medium)
- Straight edge
- Measuring device (e.g. ruler, tape measure)
- Canopy scissors

Adhesives

- CA (cyanoacrylate) glue: Thin and Medium
- Canopy glue (Formula 560)
- 6-minute epoxy
- 30-minute epoxy

Other Required Items

- Silver solder
- Hook and loop tape (Velcro®)
- Masking tape
- Threadlock
- Paper towels
- Rubbing alcohol
- Wax paper
- Felt-tipped pen/Pencil

Other Items Needed (not included in the kit)

- Aileron extensions
  1. 12" (JRPA098) (4 each) (if using a computer radio)
  2. 12″ (JRPA098) (2 each) and reversed servo or MatchBox™ (JRPA900) for non-computer radios
  3. 24" (JRPA102) (4 each)
- Fuel filter (HAN143)
- Fuel Filler (HAN115)

- Fuel tubing (for gas or glow fuel)
- Shut-off switch (Kill Switch-ZEN2000) for gasoline engine
- Radio packing foam
- Propeller
- Balsa stock 1"x 1"

Warning

An RC aircraft is not a toy! If misused, it can cause serious bodily harm and damage to property. Fly in open areas, preferably AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio and engine.

Section 1: Hinging the Ailerons

Parts Needed
- Wing panels with ailerons (right and left)
- CA hinges (8)

Tools and Adhesives Needed
- T-pins
- Thin CA
- CA remover/debonder
- Paper towels

> **Caution**: The hinges included with the Cessna are made of a special material that allows the thin CA to wick or penetrate and distribute throughout the hinge, securely bonding them to the wood structure. It is imperative that you properly secure the hinges in place, per these instructions using high-quality thin CA glue.

Step 1

Locate the right and left wing panels, right and left ailerons and eight CA hinges.

Step 2

Working with one wing panel at a time, place a T-pin in the center of four CA hinges. Slide each hinge into the precut slot in the outboard trailing edge of the wing as shown.

Step 2 Photo

Step 3

Slide the aileron onto the installed CA hinges until they touch the T-pins. Remove the T-pins and push the aileron in until there is only a slight gap (1/32" or less) between the wings trailing edge and the aileron. To prevent the aileron from binding, leave a 1/32" gap between the aileron and the wing tip.

Section 1: Hinging the Ailerons

Step 4

Deflect the aileron down. Use a high-quality thin CA to saturate each hinge with glue. Be sure to use enough CA to completely saturate the hinge and the hinge slot, forming a permanent bond between the wing and the aileron.

Step 5

Turn the wing over and deflect the aileron in the opposite direction and again saturate each hinge with thin CA.

Step 6

Wipe away any excess CA using CA remover/debonder and paper towels. Once the CA has completely dried, check the aileron for security. Using medium pressure, try to pull the aileron off the wing. Use caution while grasping the wing and aileron, as not to damage the wood structure.

Step 7

Repeat the previous steps for the opposite wing panel and aileron.

Section 2: Hinging the Flaps

Parts Needed

- Wing panel assembly with flap (right and left)
- Flap hinge points (6)

Tools and Adhesives Needed

- Sandpaper (Medium)
- Mixing cups and sticks
- Rubbing alcohol
- Masking tape
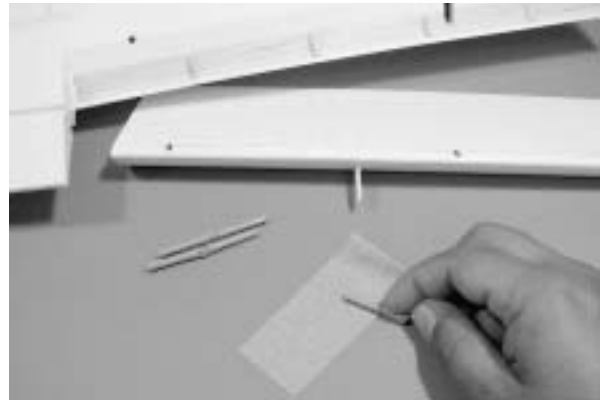- 30-minute epoxy
- Glue syringe
- Paper towels

Step 1

Locate the flaps and six hinge points. Test fit the flaps in place using the hinge points. Tape the aileron in the neutral position and then tape the flap to the aileron. Note that the hinge points will stick out on the under side of the wing; this is to give the flaps the scale movement simulating the movement of the Fowler flaps on the full-size Cessna Skylane. Once satisfied with the fit, remove the flaps and hinge points.
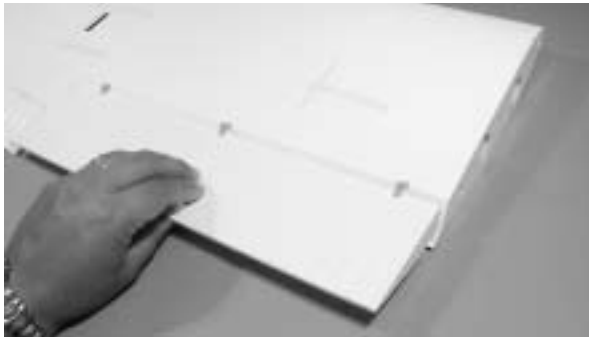
Step 2

Prepare the hinge points for gluing by lightly sanding them where they will be inserted into the flap and wing. Only sand enough to remove the shinny finish from the hinge points.

Step 3

Mix 1/2 ounce of 30-minute epoxy. Working with one wing panel at a time, use a glue syringe or toothpick to apply epoxy to the hinge pockets of the wing panel. Insert the hinge points into the wing, making sure not to get any epoxy in the hinge pin area of the hinge point.

Step 4

Apply epoxy to the hinge pockets of the flap and slide the flap into position on the hinges. Position the flap at neutral and tape it in place using masking tape. Adjust the hinge points until they are centered over the leading edge of the flap as shown. Set the wing aside and allow the epoxy to fully cure.

Step 5

Repeat Step 3 and Step 4 for the opposite wing panel and flap.

Section 3: Installing the Aileron Servos

Parts Needed
- Wing panel assembly (right and left)
- Aileron servos (2) (JRPS537 or equivalent)
- 24" Servo lead extensions (JRPA102)(2)
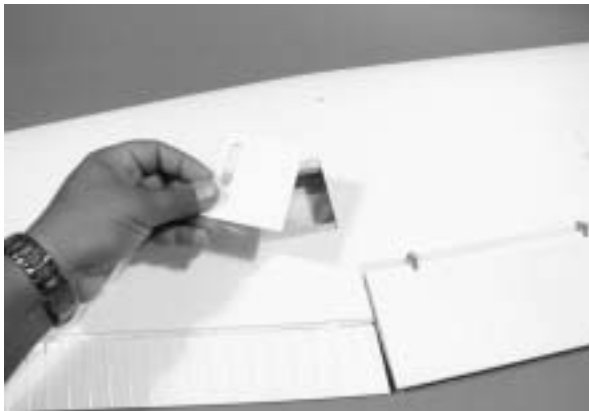- Long half servo arm (JRPA212)
- #2 wood screws (16)

Tools and Adhesives Needed
- Thin CA
- Thick CA
- Drill
- Drill Bit: 1/16"
- #2 Phillips screwdriver
- Masking tape

Step 1

Locate the aileron hatch on the underside of the wing panel and remove the hatch from the wing.

> **Note**: The aileron servo will be mounted to the hatch.

Step 2

Install the recommended servo hardware (grommets and eyelets) supplied with your radio system onto the aileron servo. Install a long servo arm (JRPA212) onto the servo and trim off the side you are not using. Test fit the servo to the hatch and ensuring the servo output shaft and control arm are centered in the slot of the hatch. Once satisfied, mark the location for the servo mounting blocks.
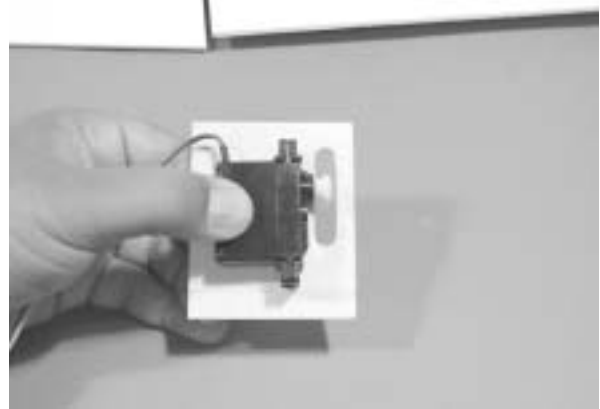
Section 3: Installing the Aileron Servos

Step 3

Locate the servo mounting blocks, and using a few drops of thin CA, tack glue them in place on the marks made in the previous step. Check the fit of the servo between the mounting blocks. When satisfied with the fit, permanently glue the mounting blocks in place by first wicking thin CA between the mounting blocks and the hatch. Use thick CA to create a fillet around the base. Let the CA completely dry before proceeding to the next step.
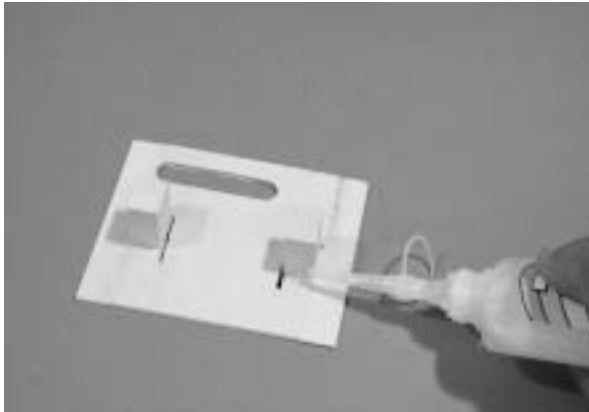
Step 4

Place the aileron servo between the mounting blocks and mark the location of the four servo mounting screws. Note that the servo must not touch the hatch in order to isolate it from vibration.

> **Note**: Before mounting the servo, we suggest that you electronically center the aileron servos and install the servo arm to avoid having to remove the servo to mount the servo arm in subsequent steps.

Step 5

Using a 1/16" drill bit, remove the servo and drill the four servo mount screw holes marked in the previous step. Using the screws supplied with your radio system, mount the servo to the mounting blocks.
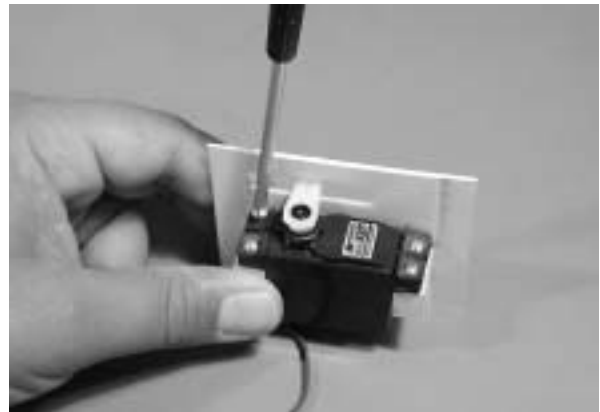
Section 3: Installing the Aileron Servos

Step 6

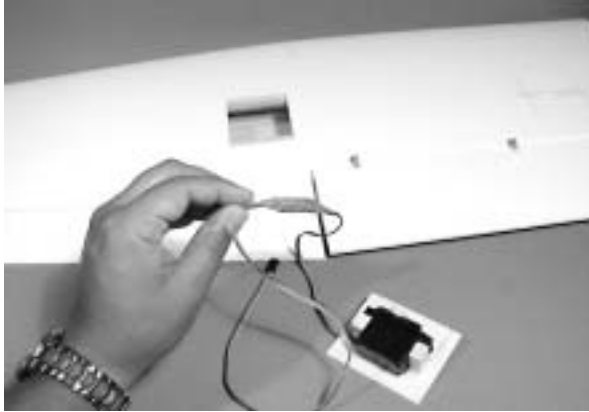Connect an 24" servo lead extension (JRPA102) to the aileron servo. Secure the connectors by tying them in a knot or use a commercial connector that prevents the servo lead connections from becoming disconnected. Tape the connection for added security.

Step 7

Tie a wheel collar to a 24" piece of string. Route the weighted end of the string through the wing and out the servo lead exit hole located in the wing root rib as shown. Tie the string to the servo lead extension and carefully pull the servo lead through the wing and out of the hole. Remove the string.
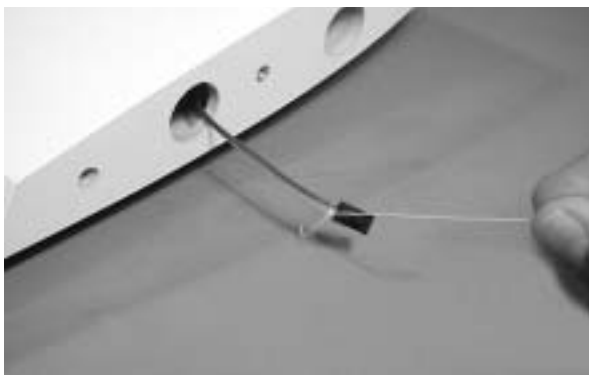
Note: To keep the aileron servo leads from interfering with the flap servo, route the aileron lead through the forward holes in the ribs adjacent to the flap servo opening.

Step 7 photo
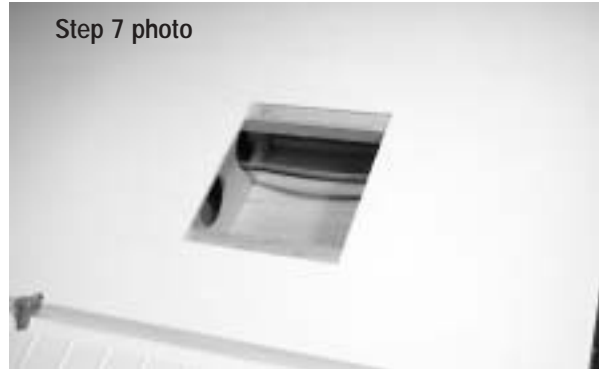
Step 8

Place the servo hatch assembly back into the opening and check the fit. Once satisfied with the fit, measure in from each corner 3/16". Use a 1/16" drill bit to drill the four mounting screw holes through the hatch and into the hardwood rail underneath.

Step 9

Locate four #2 x 3/8" wood screws and use a #2 Phillips screwdriver to secure the hatch to the wing.

Section 4: Installing the Aileron Horn and Control Linkage

Parts Needed
- Wing assembly
- Control horn (2)
- Horn back plate (2)
- Mounting screws (6)
- Aileron control wire (threaded on both ends) (2)
- Clevis (4)

Tools and Adhesives Needed
- Drill
- Drill Bit: 1/16"
- Felt-tipped pen/pencil
- #2 Phillips screwdriver
- Triangle
- Masking tape

Step 1

Locate the aileron control horn, backplate and three mounting screws.

Step 2

Place the wing assembly upside down on a flat work surface. Place a straight edge against the servo control arm, parallel to the servo arm travel as shown. Using a felt-tipped pen or pencil, mark the leading edge of the aileron. This will be the location for the center of the control horn.

Step 2 photo
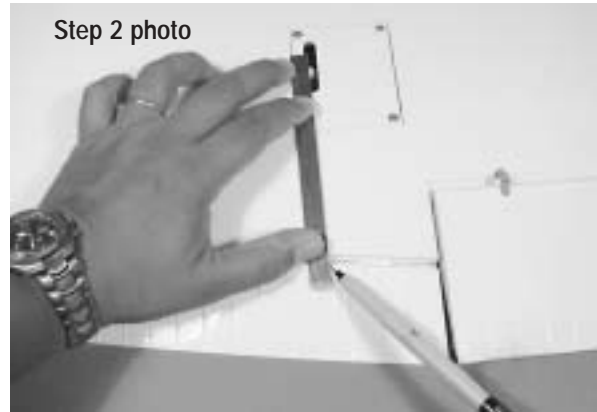
Step 3

Place the aileron control horn on the mark made in the previous step, aligning the center of the control horn on the mark. Align the clevis holes in the horn with the aileron hinge line as show below and mark the location of the three mounting screws.

Section 4: Installing the Aileron Horn and Control Linkage

Step 4

With the mounting hole locations marked, drill the holes for the mounting screws using a 1/16" drill bit. Be sure to drill straight through the aileron at a 90-degree angle to the flat work surface not to the surface of the aileron.

Step 5

Using a small Phillips screwdriver, attach the control horn using the provided hardware.

Step 6

Locate the aileron control wire (threaded on both ends) and thread a 4-40 locknut and clevis a minimum of 12 turns onto each end. Attach one clevis to the outer hole in the servo arm. With the aileron at neutral and aileron servo electronically centered, adjust the length of the control wire and attach the other clevis to the middle hole in the control horn. Secure the locknuts against the clevis to keep the wire from rotating and coming loose.

Step 7

Repeat the previous steps for the opposite aileron horn and linkage.

Section 5: Installing the Flap Servos

Parts Needed
- Wing panel assembly (right and left)
- Flap servos with mounting hardware (2) (JRPS537 or equivalent)
- Servo mounting blocks (4)
- Long half servo arm (JRPA212)

Tools and Adhesives Needed
- Thin CA
- Thick CA
- Drill
- Drill Bit: 1/16"
- Felt-tipped pen/pencil
- #2 Phillips screwdriver
- Triangle
- Straight edge

Step 1

Locate the flap servo hatch on the bottom of the wing and remove the hatch from the wing.

 Note: The flap servo will be mounted to the hatch.
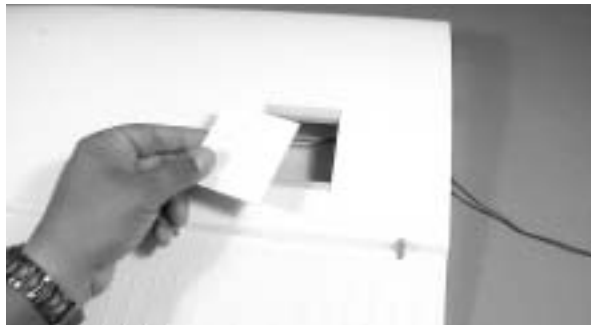
Step 2

Locate the flap horn attached to the flap and use a straight edge to project a line forward 90-degrees to the flap hinge line as shown. Mark the edges of the servo opening.
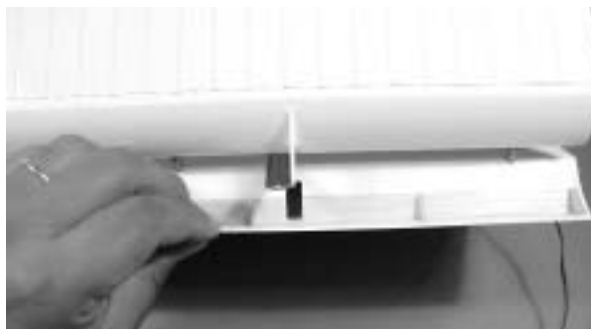
Step 2 photo
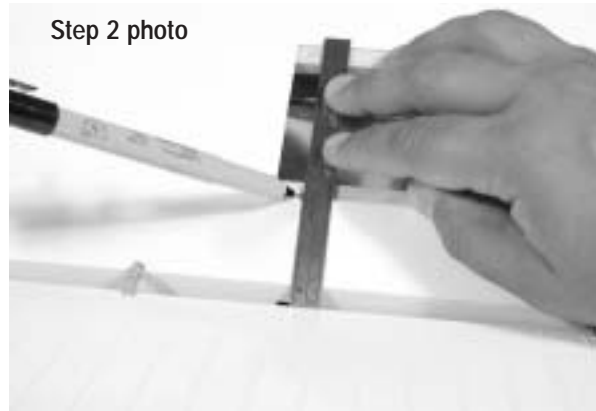
Step 3

Replace the hatch and mark the edge of the hatch. Remove the hatch and draw a line on the inside of the hatch connecting the two marks on the edge of the hatch. Also mark the hatch so you know which edge is the forward edge.

Section 5: Installing the Flap Servos

Step 4

Install the recommended servo hardware (grommets and eyelets) supplied with your radio system onto the aileron servo. Temporarily install a long servo arm (JRPA212) onto the servo. Trim off the arm not used and test fit the servo to the hatch. The servo output shaft should be towards the leading edge of the wing and the arm aligned with the line made in the previous step. Once satisfied, mark the location for the servo mounting blocks.

Step 5 photo

Step 5 photo

Step 6

Place the flap servo between the mounting blocks and mark the location of the four servo mounting screws. Note that the servo must not touch the hatch in order to isolate engine vibration.
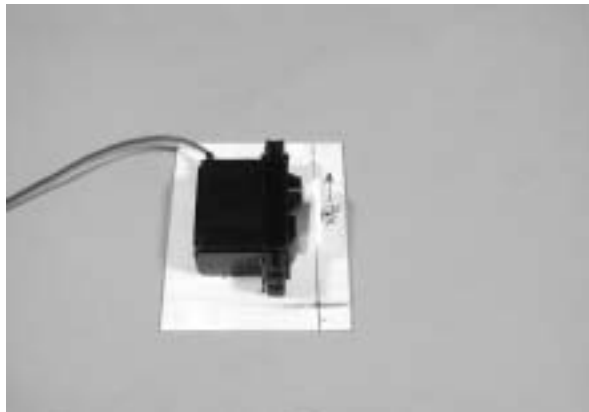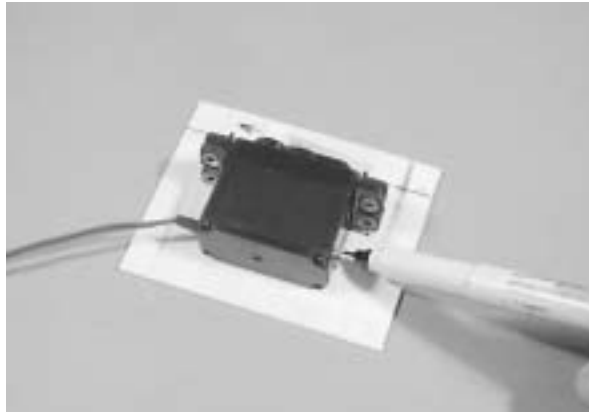
Step 5

Locate the servo mounting blocks and use a few drops of thin CA to tack glue them in place on the marks made in the previous step. Check the fit of the servo between the mounting blocks. When satisfied with the fit, permanently glue the mounting blocks in place by first wicking thin CA between the mounting blocks and the hatch. Use thick CA to create a fillet around the base. Let the CA completely dry before proceeding to the next step.

Section 5: Installing the Flap Servos

Step 7

Remove the servo. Use a 1/16" drill bit to drill the four servo mount screw holes marked in the previous step. Using the screws supplied with your radio system, mount the servo to the mounting blocks.
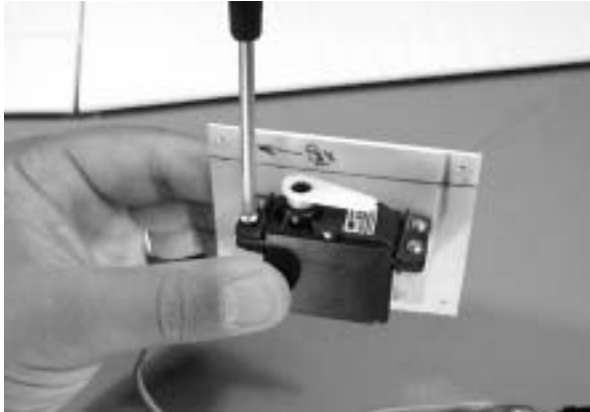
Step 8

Place the servo hatch assembly back into the opening and check the fit. Once satisfied with the fit, measure in from each corner 3/16" and using a 1/16" drill bit, drill the four mounting screw holes through the hatch and into the hardwood rail underneath.
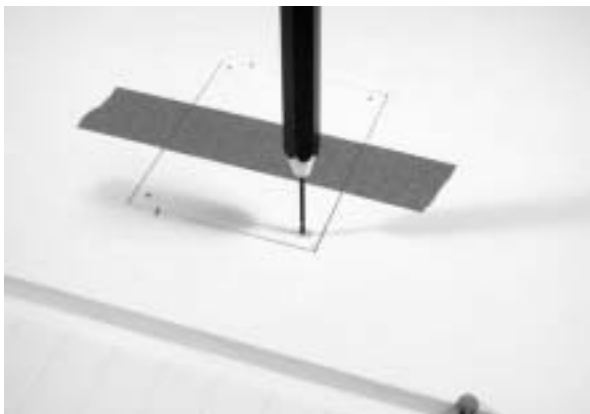
Step 9

Locate four #2 wood screws. Use a #2 Phillips screwdriver to secure the hatch to the wing.
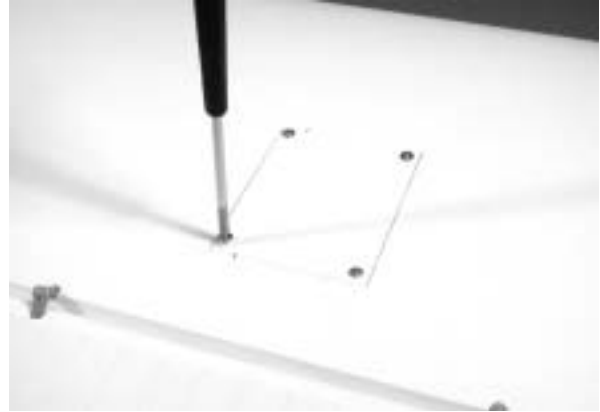
Step 10

Repeat the previous steps for the opposite flap servo.

Section 6: Installing the Flap Linkage

Parts Needed

- Wing assembly
- Flap control wire (threaded on both ends) (2)
- 4-40 clevises (4)
- 4-40 locknuts (4)
- Reversed Y-Harness (EXRA325) or
- MatchBox™ (JRPA900)

Tools and Adhesives Needed

- Adjustable wrench
- Pliers

> **Note**: The flap servos can be actuated through one channel of your receiver by utilizing a reversed Y-Harness (EXRA325). If you have a computer radio with spare channels, you may wish to use a programmable mix to set up the flap servos. Another option is to use a MatchBox (JRPA900) from JR. With this option, you only use one channel on your receiver but retain all the flexibility of using a programmable mix such as setting servo direction, center and end-points.

Step 1

Remove the flap servo and hatch assembly. Using your radio, adjust the flap servo arm to be approximately 45 degrees when the flap switch is in the up position. Make sure both flap servos are adjusted the same.

Step 2

Locate the flap control wires (2) 4-40 locknuts and clevises (4). Thread a locknut and clevis onto each end of the flap control wires a minimum of 12 turns.

Step 3

Attach one end of the flap control wire to the flap horn as shown. Ensure that the clevis and locknut pass through the opening in the trailing edge without binding. If necessary, enlarge the opening in the trailing edge using a sharp hobby knife.

Section 6: Installing the Flap Linkage

Step 4

Feed the servo lead out through the wing root (no lead extension needed). Connect the flap linkage to the servo arm and adjust the linkage so there is no binding when the flaps are in the up position.
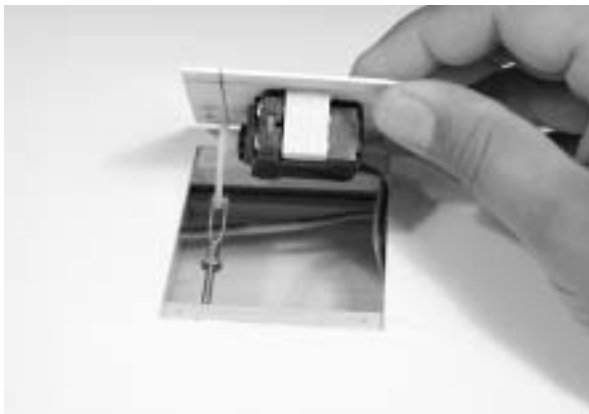
Step 5

Secure the flap servo hatch in place with the #2 wood screws and check the flaps for freedom of movement. You will adjust the flap travel in the control throw section.

Step 6

Repeat the previous steps for the opposite flap linkage.

Section 7: Mounting the Wing to the Fuselage

Parts Needed

- Fuselage
- Right wing assembly
- Left wing assembly
- Wing tube
- 1/4" x 20 nylon wing bolts (2)
- Aluminum anti-rotation tubes (4)

Tools and Adhesives Needed

- Flathead screwdriver
- 6-minute epoxy

Step 1

Locate the aluminum anti rotation tubes (two per wing panel). Using 6-minute epoxy, glue the tubes into the pockets in the wing root of each panel. Be sure to insert the tubes up to the black anodized bevel as shown. Allow the epoxy to cure before mounting the wings.

Step 2

Locate the aluminum wing tube and slide it into the fuselage leaving an equal amount on either side of the fuselage.

Step 3

Carefully slide one wing panel onto the wing tube. Feed the servo extension leads through the hole in the fuselage wing root. Align the anti-rotation tubes with the predrilled holes in the fuselage and seat the wing against the fuselage.

Section 7: Mounting the Wing to the Fuselage

Continued

Step 4

Thread a 1/4" x 20 nylon wing bolt and washer through the fuselage wing root and into the preinstalled blind nut in the wing. Use a large flathead screwdriver to tighten the wing bolt. Repeat the previous two steps for the opposite wing panel.

Step 5

Locate the wing strut mounting holes in the fuselage sides and wing bottom. There are 4-40 blind nuts installed at these locations. Using a sharp hobby knife, remove the covering from these holes.

Step 6

The wing struts are precut to length and have angled cuts at each end. Measure the opening of the ends to determine whether it attaches to the wing or the fuselage; 1/2" opening attaches to the bottom of the wing and the 3/4" opening attaches to the fuselage. Also note the shape of the fairing; flat attaches to the bottom of the wing and the curved attaches to the fuselage.

> **Note**: To install the wing struts, work with one wing at a time. Place a towel or other soft material on your workbench to prevent the top of the wings and fuselage from damage.

Step 7

Mark the wing bottom end of the strut 3/8" from the end and leading edge. Using a drill and 3/32" drill bit, carefully drill the strut at the location just marked.

> **Note**: Drill the hole approximately 90 degrees to the bevel of the strut end.

Section 7: Mounting the Wing to the Fuselage

Step 8

Mount the strut to the bottom of the wing using a 4-40 x 3/4"
cap screw. Next, slide the strut fairing onto the strut and drill a
hole at the cap screw location. Make the hole large enough to
allow the screw to be removed.

Step 9

Mark the location of the fuselage mounting hole and drill the
strut using the same method as in Step 8. Slide the other
fairing (curved to match the fuselage) onto the strut and secure
the strut in place with the 4-40 screw provided. Drill a hole to
access the mounting screw as done previously.

Step 10 photo

Step 10

Secure the fairings to the wing and fuselage using 30-minute
epoxy. Hold the fairings in place with masking tape and allow
the epoxy to cure.

Step 11

Repeat the previous steps for the other wing strut installation.

Note: You will need to reinstall the wings during
the installation of the horizontal stabilizer.

Section 8: Installing the Horizontal Stabilizer

Parts Needed

- Fuselage
- Right and left wings
- Horizontal stabilizer

Tools and Adhesives Needed

- Phillips screwdriver
- Hobby knife
- Ruler
- Felt-tipped pen/pencil
- Pencil
- 30-minute epoxy
- Paper towels
- Rubbing alcohol
- Mixing stick
- Epoxy brush
- Masking tape

Step 1

Use a Phillips head screwdriver to remove the hatch at the rear bottom of the fuselage and set aside.

Step 2

At the aft end of the fuselage is a notch cut out for the vertical stabilizer post to fit into. Slide the horizontal stabilizer into the horizontal stabilizer saddle. Align the notch in the stabilizer with the notch in the fuselage. Hold the trailing edge of the stab in place with a T-pin.
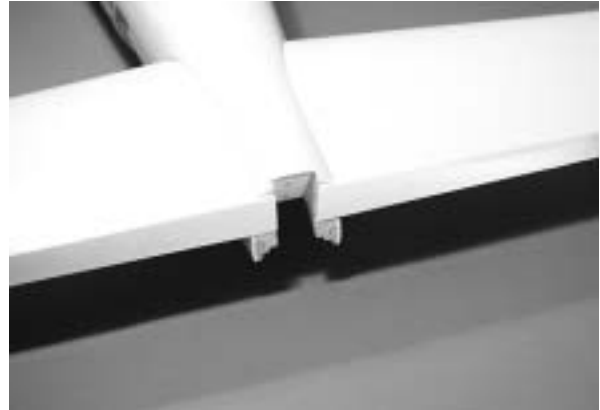
Step 3

Install the wing onto the fuselage.

Step 4

With the fuselage and horizontal stabilizer resting on a flat surface, align the horizontal stabilizer by measuring from fixed points on the wing tips to the outside of the trailing edge of the horizontal stabilizer. Be sure that the trailing edge of the horizontal stabilizer stays aligned with the notch. Adjust the stabilizer until you have an equal distance on both the right and left sides of the stabilizer to the wing.

A   A'

A = A'

Section 8: Installing the Horizontal Stabilizer

Step 5

When you're satisfied with the alignment of the horizontal stabilizer to the wing, carefully mark the stabilizer top and bottom at the junction where the horizontal stabilizer meets the fuselage.

Step 6 photo

Step 6

Remove the horizontal stabilizer from the fuselage ,and using a sharp hobby knife, carefully trim away the covering approximately 1/16" inside the lines you just marked.

> **Caution**: Do not press hard enough to cut into the wood structure, as doing so could weaken the horizontal stabilizer.
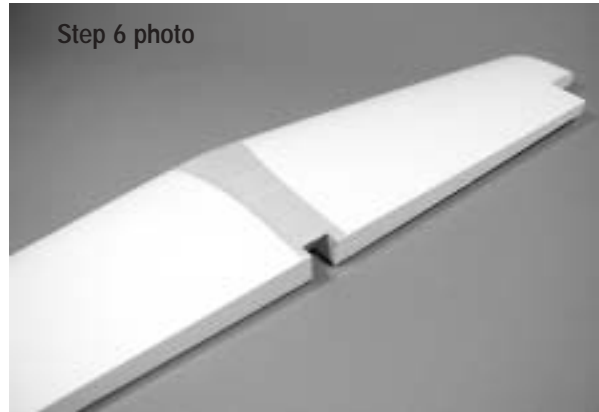
Step 7

Install the wing back onto the fuselage. With the fuselage and horizontal stabilizer together on a flat surface, be sure the wing and horizontal stabilizer are parallel with each other. If adjustments to the saddle are necessary because the wing and stabilizer are not parallel, carefully sand the horizontal stabilizer saddle until it aligns as shown in the illustration below.

B   B'
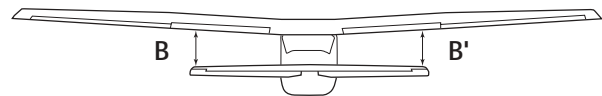
B = B'

Section 8: Installing the Horizontal Stabilizer

Continued

Step 8

Mix approximately 1/2 ounce (minimum) of 30-minute epoxy to install the horizontal stabilizer to the fuselage. Coat both the stabilizer saddle area of the fuselage and the stabilizer. Slide the stabilizer into the saddle and align the stabilizer as you did in Steps 4 and 7 using the wing as a reference.

Step 9

Secure the stabilizer using T-pins and masking tape. Wipe off any excess epoxy using a paper towel and rubbing alcohol. Allow the epoxy to cure fully before proceeding to the next section.

Section 9: Installing the Vertical Stabilizer (Fin)

Parts Needed

- Paper towels
- 90-degree square
- Epoxy brush
- Mixing stick
- Vertical stabilizer
- Fuselage

Tools and Adhesives Needed

- 30-minute epoxy
- Long straight edge
- Hobby knife
- Felt-tipped pen/pencil
- Masking tape
- Rubbing alcohol

Step 1

A slot is precut on the rear of the fuselage for the vertical stabilizer to notch into. Mark the center of the cut out using a felt-tipped pen or pencil. Also mark the center of the top of the fuselage. Align the two marks and draw a 20" line on top of the fuselage.

Step 2

Mark the forward center of the vertical stabilizer.

Step 3

Insert the vertical stabilizer into the slot in the rear of the fuselage and make sure it's firmly seated against the rear of the fuselage. With the fin properly aligned, use a felt-tipped pen or pencil to carefully mark the position of the vertical stabilizer on both sides where it meets the fuselage.
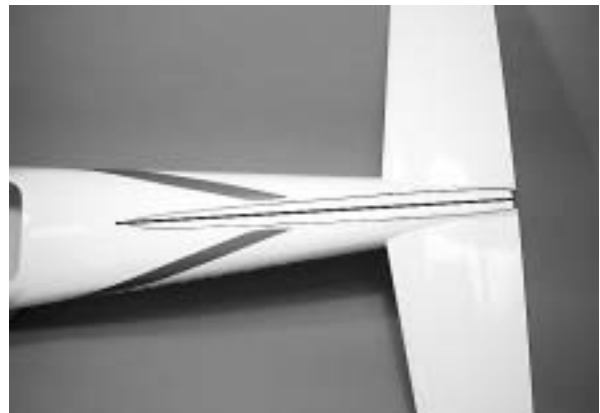
Section 9: Installing the Vertical Stabilizer (Fin)

Step 4

Remove the vertical stabilizer. Using a sharp hobby knife and straight edge, carefully cut away the covering on the fuselage approximately 1/16" inside the lines you just marked in Step 3.

> **Caution**: Do not press hard enough to cut into the wood structure, as doing so could weaken the vertical stabilizer.

Step 5

Mix approximately 1/2 ounce (minimum) of 30-minute epoxy and apply it to the vertical stabilizer. Also apply epoxy to the fuselage where you removed the covering.

Step 5 photo

Step 6

Insert the fin into the notch in the rear of fuselage and align the fin with the center of the fuselage. Wipe away any excess epoxy using a paper towel and rubbing alcohol.

Step 7

Using a 90-degree square, make sure the fin is perpendicular to the horizontal stabilizer. Use masking tape to hold the vertical stabilizer in place until the epoxy cures.

Section 10: Hinging the Rudder

Parts Needed

- Fuselage Assembly
- Rudder
- Rudder torque rod assembly
- CA hinges

Tools and Adhesives Needed

- Thin CA
- CA remover/debonder
- 6-minute epoxy
- Sharp hobby knife
- Drill
- Drill Bit: 1/8"
- Rubbing alcohol
- Paper towels

> **Caution**: The hinges included with the Cessna are made of a special material that allows the thin CA to wick or penetrate and distribute throughout the hinge, securely bonding them to the wood structure. It is imperative that you properly secure the hinges in place per these instructions using high quality thin CA glue.

Step 1

Temporarily install the rudder using the hinges provided; **Do Not Glue the hinges at this time**. Hold the rudder torque rod assembly up to the rudder hinge line 3/4" from the bottom of the rudder and mark the location where the wire will insert into the rudder. Remove the rudder.

Step 2

Using a 1/8″ drill bit, drill the rudder following the marks you made in the previous step. Make sure to drill into the rudder following the lines made in Step 1.
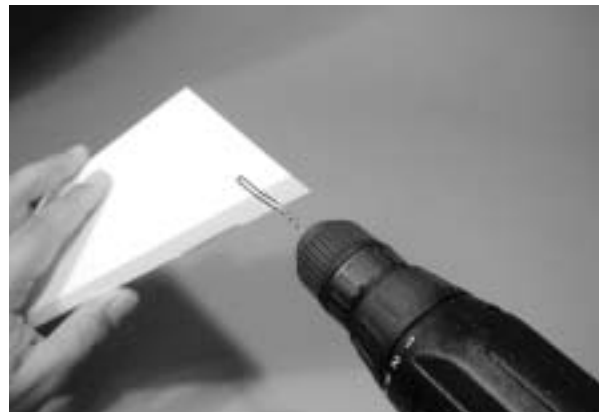
Step 3

Use a sharp hobby knife to make a notch in the bottom portion of the rudder to accept the wire and allow the rudder to seat properly against the vertical fin.

Section 10: Hinging the Rudder

Step 4

Mix at least 1/4 ounce of 6-minute epoxy and using a toothpick, coat the inside of the hole you drilled in the rudder. Also coat the wire that inserts into the rudder and the nylon bushing and notch. Slide the rudder torque rod wire into the rudder and notch and secure with masking tape. Use caution not to get epoxy into bushing. Allow the epoxy to cure before proceeding.

Step 5

Install the rudder hinges placing a T-pin through the center of each hinge to keep it centered while installing the rudder.

Step 6

Install the rudder and wire assembly onto the fin and mark the fin post where the nylon bushing will be glued. Remove the covering and make a shallow notch to allow the bushing to seat into the fin post. Tests fit the rudder assembly to the vertical fin and make adjustments until there is only a slight gap (1/32" or less) at the hinge line.

Step 7

Install the rudder and wipe off any excess epoxy using rubbing alcohol and paper towels. Remove the T-pins and snug the rudder against the fin until there is only a slight gap (1/32" or less). Use masking tape to secure the rudder and bushing to the fin and allow the epoxy to cure.

Step 8

Once the epoxy has cured, deflect the rudder fully in one direction and saturate each hinge with thin CA. Deflect the rudder in the opposite direction and again saturate each hinge with thin CA. Allow the CA to dry. Using CA remover/debonder wipe off any excess CA on the rudder hinge line.

Step 9

Once the CA has completely dried, check the rudder for security by trying to pull the rudder from the fuselage. Use only enough pressure to test for security and be careful not to damage the wood structure of the rudder or fin.

Section 11: Hinging the Elevators

Parts Needed
- Fuselage assembly
- Left and right elevator halves
- CA Hinges

Tools and Adhesives Needed
- Thin CA
- CA remover/debonder
- 6-minute epoxy
- Drill
- Drill Bit: 9/64"
- T-pins
- Rubbing alcohol
- Paper towels

Note: The elevator halves are joined together with the U-shaped wire elevator horn supplied with the kit. This wire is used to drive both elevator halves and is epoxied into elevators.

Caution: The hinges included with the Cessna are made of a special material that allows the thin CA to wick and distribute throughout the hinge, securely bonding them to the wood structure. It is imperative that you properly secure the hinges in place, per these instructions using high-quality thin CA glue.

Step 1
Locate the left and right elevator halves and temporarily install the elevators to the horizontal stabilizer. Center the elevator joiner wire horn on the elevators. Use a felt-tipped pen or pencil to mark the elevators where the wire will be inserted. Note that the control horn tab is offset to allow clearance for the rudder torque rod.

Step 2
Remove the elevators. Use a 3/32" drill bit to carefully drill the holes into the elevators using the marks you made in the previous step as a guide. Drill 90 degrees to the hinge line directly down the center of the elevator and only as far as needed.

Step 3
Using a sharp hobby knife, notch the elevators to allow the wire to fit flush with the hinge line. Temporarily install the elevators back onto the horizontal stabilizer and check for fit. The elevators should be equal and move up and down freely. If the elevators are not equal, remove them and carefully bend the joiner wire until they come into alignment. Once satisfied with the fit, remove the elevator halves.

Section 11: Hinging the Elevators

Step 4

Place a T-pin in the center of each hinge and slide the hinges into the horizontal stabilizer until the T-pin is snug against the trailing edge as shown.

Note: In the following steps, you will permanently install the elevators. Do not glue the hinges in place until the joiner wire epoxy has cured.

Step 5

Mix at least 1/2 ounce of 6-minute epoxy. Use a toothpick or glue syringe as an applicator to coat the inside of the joiner wire holes and the wire where it inserts into the elevators.
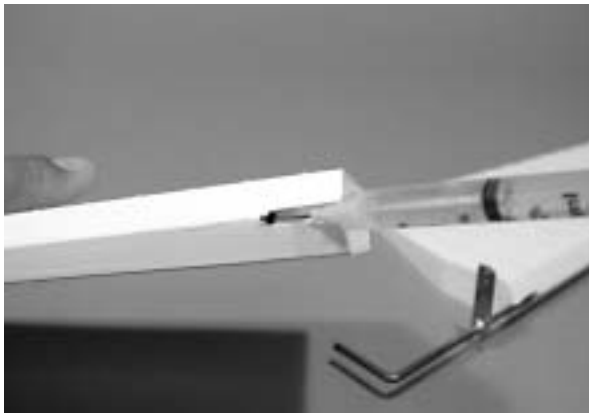
Step 6

Install each elevator onto the hinges and the joiner wire. Remove the T-pins and snug the elevators up to the stabilizer until there is only a slight gap (1/32″ or less) at the hinge line. Wipe away any excess epoxy with rubbing alcohol and paper towels. Use masking tape to hold the elevators in place and allow the epoxy to cure completely before moving to the next step.

Step 6 photo

Step 6 photo
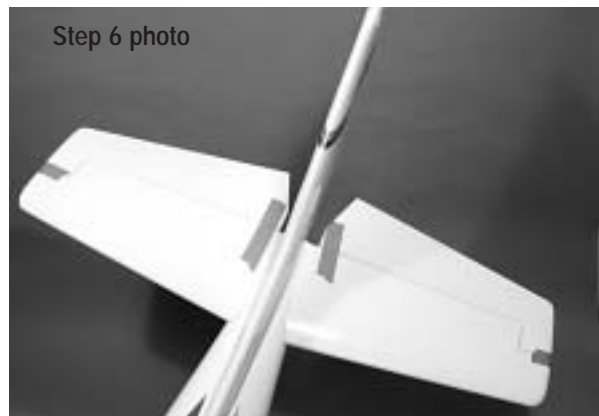
Step 7

Once the epoxy has cured, deflect the elevators down. Use a high-quality thin CA to completely saturate each hinge. Turn the fuselage over and repeat the hinge gluing process by deflecting the elevators in the opposite direction; completely saturate each hinge with thin CA. Allow the CA to completely dry.

Step 8

Once the CA has dried, check the hinges for security by trying to pull the elevators from the stabilizer. Use only slight pressure and be sure not to crush the wood structure of

Section 12: Installing the Elevator and Rudder Servos and Linkage

the stabilizer or elevator.

Parts Needed
- Fuselage assembly
- Servo (2) (not included)
- 24" Servo lead extension (JRPA102) (2)
- Tail cone w/mounting hardware

Tools and Adhesives Needed
- Hobby knife
- Drill Bit: 1/16"
- Masking tape
- Drill
- Thin CA

Step 1
Install the recommended servo hardware (grommets and eyelets) supplied with your radio system onto two servos (elevator, rudder). Use the "X" servo arm supplied with the servo, clipping off three arms and leaving one arm as shown below.

Step 2
Temporarily install the rudder and elevator servos into the openings at the rear of the fuselage and mark the location of the servo mounting screws. Remove the servos. Use a 1/16" drill bit to drill the holes for the servo mounting screws.

> **Hint**: Place a drop of thin CA onto each screw hole to harden the wood around the hole. Allow the CA to completely dry before installing the servos.

Step 3
Replace the servos into the openings with the output shaft to the rear of the fuselage as shown. Secure the servos using the screws supplied with your radio system.
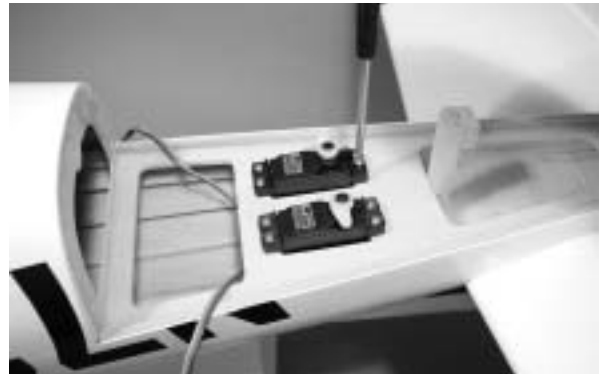
Step 4
Install a 24" servo lead extension onto the rudder and elevator servo and secure the connectors by tying them in a knot or use a commercial connector that prevents the servo lead and extension from becoming disconnected. Feed the servo lead and extensions through the installed tube in the fuselage and into the radio compartment as shown.

> **Hint**: Use masking tape to identify the elevator and rudder servo leads.

Section 12: Installing the Elevator and Rudder Servos and Linkage

Step 5

Install a nylon horn bracket onto the rudder torque rod. Thread it on until the hole is approximately 1/2" from the rudder hinge line. It may be necessary to make a cut out in the fuselage stringer to allow the horn to move through its full range of travel.
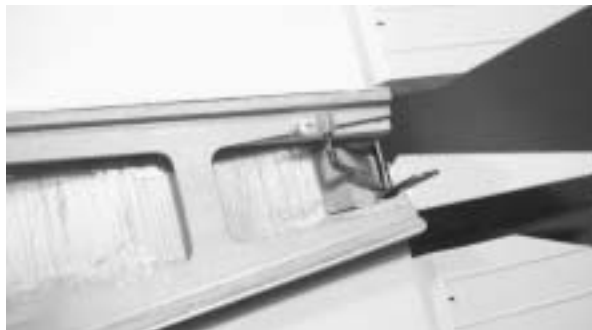
Step 6

Locate the rudder and elevator control rods (threaded on both ends) and install a jam nut and clevis onto each end (4 total). Install the rudder and elevator control rods as shown, adjusting the length to achieve the proper neutral settings.

Step 7

Install the bottom hatch and secure it with the supplied screw.

Step 8

Locate the tail cone and mounting blocks. Use masking tape to locate the hole in the tail cone. Mount the tail cone as shown using the small #2 wood screws.

Section 13: Installing the Main Landing Gear and Wheel Pants

Parts Needed
- Fuselage
- Aluminum main landing gear (right & left)
- Wheel pants (2 main)
- 5/32" Axles (2)
- 3.5" main wheels (2)
- 5/32" wheel collars (4)
- 4-40 blind nuts (4)
- 4-40 x 3/8" socket head screws (4)

Tools and Adhesives Needed
- Hobby knife
- Drill
- Drill Bit: 5/32", 9/64"
- Hex Wrenches: 3/32", 3/16"
- Adjustable wrench
- Felt-tipped pen/pencil
- Threadlock

   Note: The Cessna main landing gear comes in two pieces: right and left. The landing gear is angled to sweep forward; be sure to mount the wheel pants to the correct landing gear. A plywood mounting plate is glued in place inside the wheel pants for mounting the wheel pant to the landing gear.

Step 1 photo

Step 1 photo

Step 1

Locate the main landing gear wheel pants (right & left). Use a 90-degree square and measure 3/4" up from the bottom in two places. Connect the two marks and draw a line across the entire mounting plate side of the wheel pant. Mark the center of the line and draw a vertical line as shown.
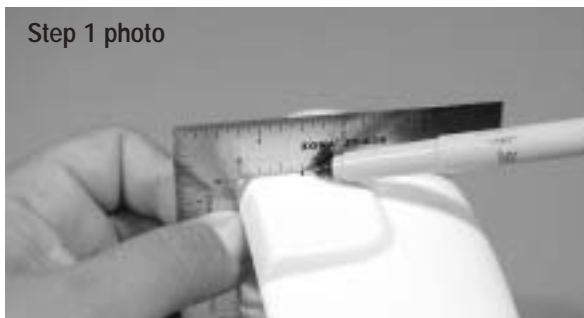
Step 2

Drill a 5/32" hole at the location marked in the previous step. Slide the axle into the hole and draw the outline of the axle base as shown.

Section 13: Installing the Main Landing Gear and Wheel Pants

Step 3

Use a moto-tool to enlarge the hole and allow the axle base to slide through the wheel pant.

Step 5 photo

Step 4

Install the axles in the landing gear as shown. Secure them in place using an adjustable wrench.

Step 6

Remove the wheel pants and carefully drill a 9/64" hole through the wheel pants at the mark made in the previous step.

Step 5

Fit the wheel pants over the axle and align the small holes with the horizontal line made in Step 1. With the wheel pants properly aligned, mark the location of the mounting holes through the landing gear on the wheel pants using a felt-tipped pen or pencil.

Step 7

Install the 4-40 blind nuts from inside the wheel pants. Fully seat the blind nuts into the wheel pants and secure them in place using thin CA.

Section 13: Installing the Main Landing Gear and Wheel Pants

Step 8

Install the following items onto the axle: wheel pant, 5/32" collar, wheel and then another 5/32" collar. It will be necessary to fit the parts inside the wheel pant and slide them onto the axle.

Step 9

Secure the wheel pants in place using 4-40 x 3/8" screws through the landing gear and into the blind nut in the wheel pants. Use threadlock to securely tighten the screws to properly seat the blind nuts.

Step 10

Center the wheels in the wheel pants and tighten the collars against the wheels to secure them in place. Use threadlock on the wheel collar set screws. The wheels should rotate freely without binding.

Caution: Do **not** over tighten the mounting bolts. The bolts thread directly into the aluminum landing gear and will strip if over tightened Use threadlock on the threads of the mounting bolts.

Step 11

Remove the covering from the landing gear slots located on the bottom of the fuselage. Slide the landing gear in place and secure them in place through the top of the fuselage as shown. Use threadlock on the threads of the bolt.

Section 14: Installing the Nose Landing Gear and Steering Servo

Parts Needed

- Fuselage
- Nose gear assembly with mount and hardware
- Aluminum nose gear axle (1)
- 3" nose wheel
- 5/32" wheel collars (2)
- 4-40 x 1/4" socket head screws (2)
- Nose gear

Tools and Adhesives Needed

- Phillips screwdriver
- Hex Wrenches: 3/32", 1/16"
- Adjustable wrench
- Felt-tipped pen
- Threadlock

Step 1

Locate the nose gear and axle hardware along with the 3" nose wheel.

Step 2

Slide the aluminum axle through the wheel. Install a wheel collar onto each side of the wheel as shown. Do not tighten the wheel collars at this time.

Step 3

Install the wheel and axle assembly into the nose gear/wheel pant and secure it in place using two each 4-40 x 1/2" cap screws. Tighten the wheel collars onto the axle, making sure the nose wheel rolls freely with no binding.

Step 4

Locate the nose gear mount, steering arm and nylon washers. Slide the nose gear through the mount and steering arm with the nylon washers between the steering arm and mount as shown.

Section 14: Installing the Nose Landing Gear and Steering Servo

Step 5

Mount the nose gear assembly in place using the screws and blind nuts provided. Use threadlock on the threads to prevent them from backing out.

Step 7 photo

Note: The steering servo is connected to the rudder channel via a Y-harness.

Step 8

With the steering servo centered and the steering arm 3/4" from the firewall, mark the wire where it crosses over the outer hole in the arm. Make an L-bend at that mark and trim of the excess wire 5/16" from the bend. Secure the wire to the steering arm using an L-bend wire keeper.

Step 6

Install the recommended servo hardware (grommets and eyelets) supplied with your radio system onto the nose wheel steering servo. Mount the servo into the servo mount as shown. Drill 1/16" pilot holes at the mounting screw locations.

Step 7

Locate the nose wheel steering wire threaded on one end and install a clevis onto the threaded end. Slide the wire through the slot in the former and firewall and connect the clevis to the steering servo arm.

Step 9

Test the steering for proper direction. The right rudder will turn the nose wheel to the right and opposite for left rudder input.

Section 15: Mounting the Engine

Parts Needed

- Fuselage
- Engine (Zenoah G26)
- Kill Switch (ZEN20000)
- Throttle servo
- Mounting hardware (4 each, 8-32 screws, washers and blind nuts)

Tools and Adhesives Needed

- Phillips screwdriver (large and medium)
- Z-bend pliers
- Drill
- Drill Bits: 1/16", 5/32", and 3/16"
- Hex Wrench: 5/32"
- Ruler
- Felt-tipped pen/pencil

In this section we will install the Zenoah® G26 gas engine. We have included a Hangar 9® aluminum engine mount for beam mounting 2- and 4-stroke glow engines ranging in size from 1.08 and up. When mounting these engines, center the mount left to right on the engine box and measure down $1 \frac{7}{8}$" to get the center location for the prop shaft. The firewall-to-prop hub measurement is $6 \frac{1}{4}$".

Step 1

Remove the aluminum back plate from the G26 engine using a large Phillips screwdriver.
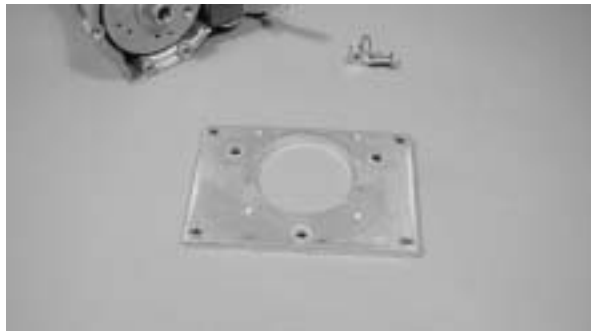
Step 2

Mark the locations for the four mounting screws as shown below. To locate the upper mounting hole, use a straightedge ruler diagonally across the mount and mark 5/8" in from the corner. For the lower holes measure in 9/16" from each side of the mount centered over the existing mount holes. Carefully drill the four mounting holes using a drill and 5/32" drill bit.
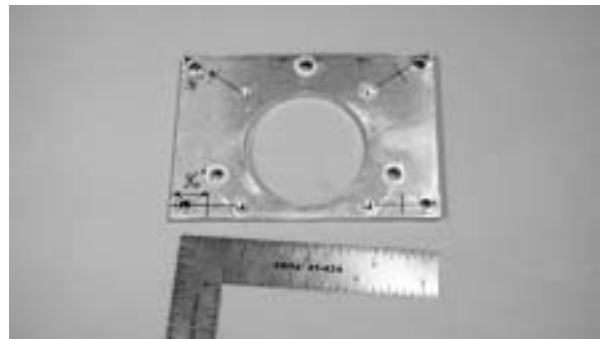
Step 3

Draw a line across the top of the engine box 1/4" down from the top. Position the mounting plate centered on the engine box with the top edge aligned with the line you just drew. Mark the four mounting hole locations onto the firewall using a felt-tipped pen or pencil.

Section 15: Mounting the Engine

Step 4

Carefully drill the four mounting hole locations in the firewall using a 3/16" bit.

Step 5

Install the blind nuts into the holes by first pressing them in place with your finger and then seating them using the mounting plate and screwdriver as shown. Place a few drops of thin CA on the backside of the nuts to secure them in place, making sure not to get any glue on the threads.

Step 6

Secure the mounting plate back onto the engine using the same screws you removed in Step 1. Use threadlock on the threads to prevent them from backing out. Mount the engine using the 3/4" standoffs 8-32 screws and washers.

Step 6 photo

Step 6 photo
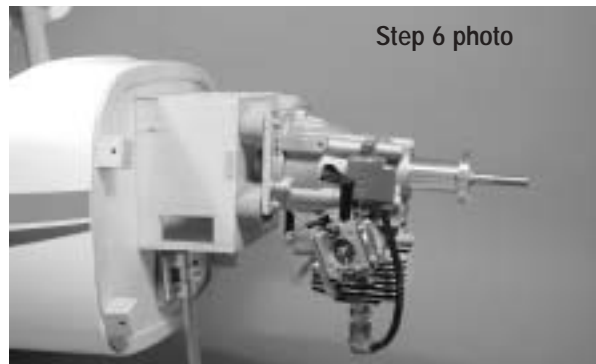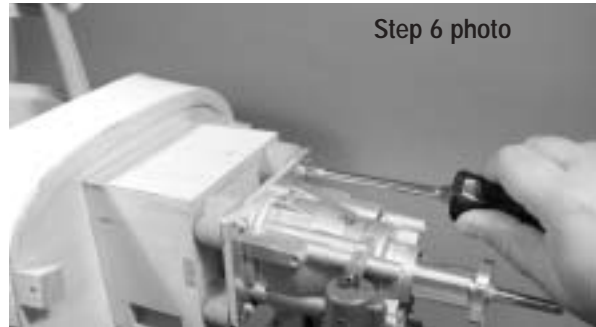
Step 7

Install the recommended servo hardware (grommets and eyelets) supplied with your radio system onto the throttle servo. If using a gas engine mount the servo into the servo mount as shown. Drill 1/16" pilot holes at the mounting screw locations. If using a glow engine, mount the servo from the inside of the motor box. Drill a hole in the firewall for the linkage to pass through to the carburetor.

Section 15: Mounting the Engine

Step 8

Connect the throttle linkage using the 2-56 wire threaded on one end and nylon clevis. With the servo centered and the throttle butterfly half open, mark the wire where it crosses the servo arm. Make a Z-bend and connect the wire to the servo arm.

Step 9

Mount the Zenoah® Kill Switch (ZEN20000) to the right side of the fuselage. Follow the instructions included with the switch for proper connection to the engine. Use either silicon sealant or Shoe Goo to seal the firewall where the kill switch wires come through.
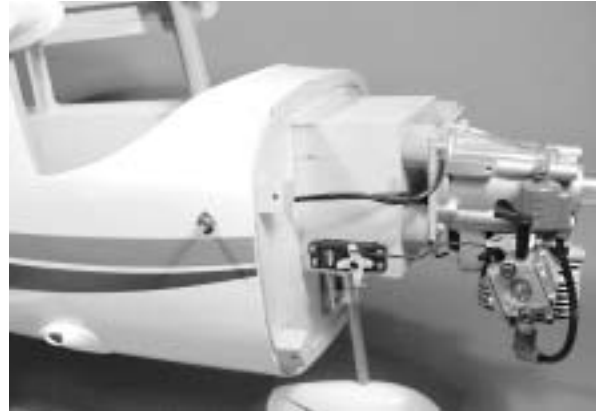
Section 16: Assembly and Installation of the Fuel Tank

Parts Needed

- Metal tubes (2)
- Clunk (fuel pickup)
- Fuel tubing (silicone for glow, neoprene or Tygon for gas)
- Fuel tank
- Metal caps (2)
- Fuel stopper (gas/glow)
- 3mm screw and nut
- RC foam
- Fuel Filler (HAN115)

Tools and Adhesives Needed

- Hobby knife
- Phillips screwdriver

> **Note**: The stopper provided with the Cessna can be used for gasoline or glow fuel. If using a gas engine, you will need to supply approximately 3 feet of the appropriate fuel tubing compatible with your gas engine.

Step 1

Locate the fuel tank and related parts.

Step 2

Locate the tank stopper and insert the short metal fuel tube into one of the holes in the stopper so that an equal amount of tube extends from each side of the stopper. This tube will be the fuel tank pickup that provides fuel to the engine.

Step 3

Slide the smaller of the two caps over the tube on the smaller end of the tank stopper. The small end will be inserted into the fuel tank. The larger cap is placed on the other side of the stopper. Loosely install the 3mm screw through the large cap and stopper and into the small cap and nut.

Step 4

Locate the longer metal fuel tube and bend it using your fingers as shown. This will be the fuel tank vent tube. Do not kink the tubing.

Section 16: Assembly and Installation of the Fuel Tank

Step 5

Slide the vent tube into one of the two remaining holes in the stopper from the tank (small cap) side.

Caution: Use the appropriate fuel tubing for the type of engine you are using.

Step 6

When using gas tubing, place a dab of solder onto the tubes as shown to help secure the tubing and prevent it from slipping off.

Step 7

Use a short piece of gas-compatible fuel tubing for the G26. Locate the fuel tank clunk. Install the clunk onto one end of the tubing and the other end onto the fuel tank pickup tube (straight tube) in the stopper.

Step 8

Carefully insert the assembly into the fuel tank. Note the position of the vent tube. It must be at the top portion of the fuel tank to function properly. Also, it may be necessary to shorten the length of the fuel pickup tubing and make sure the clunk does not rub against the back of the fuel tank. You should be able to turn the tank upside down, allowing the clunk to freely drop to the top of the tank.

Step 9

Tighten the 3mm screw carefully; do not over tighten. This allows the rubber stopper to form a seal by being slightly compressed, thus sealing the fuel tank opening.
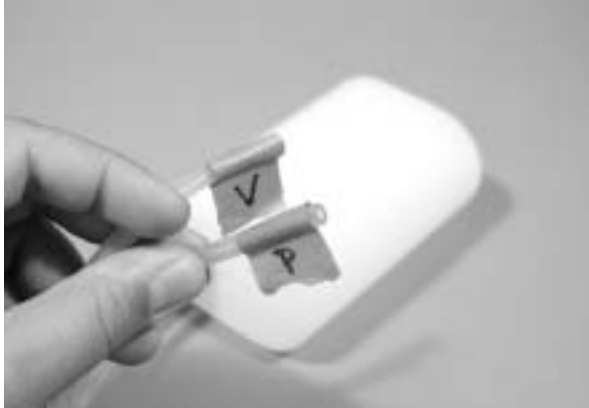

Important: Be sure to differentiate between the vent and the fuel pick-up tube. Once the tank is mounted inside the fuselage, it will be difficult to tell the tubes apart.

Section 16: Assembly and Installation
of the Fuel Tank

Step 10

Cut two lengths of fuel line (gas or glow to match engine choice) approximately 12 inches long. Attach the tubing to the fuel tanks pickup and vent tubes. Use masking tape marked with a "P" (Pickup) and "V" (Vent) for identification on the ends of the fuel lines.

Step 11 photo

Step 12

Connect the fuel pickup line to the engine and secure the vent line to the firewall. In this case we used a Hangar 9® Fuel Filler (HAN115) for ease of fueling when the cowl is in place.
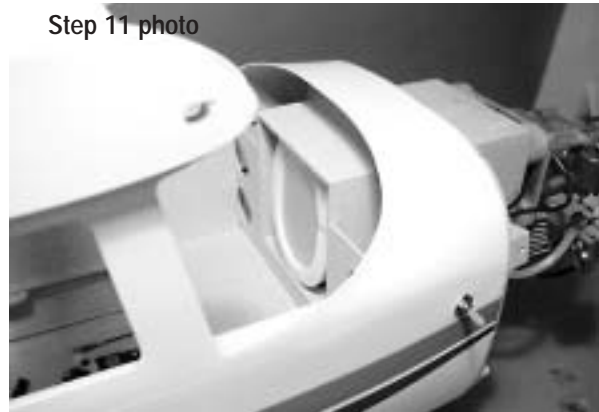

Step 11

Wrap the fuel tank in protective foam. Feed the marked fuel lines through the opening in the firewall and slide the tank into place in the front of the fuselage. The stopper is oriented towards the top and should line up with the hole in the firewall. The foam placed around the fuel tank is used to isolate it from vibration and hold the tank in place.

Section 17: Mounting the Cowl
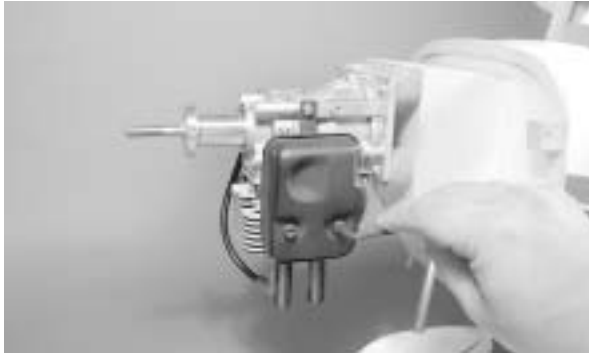
Parts Needed

- Fuselage assembly
- Cowl
- 4-40 x 1" mounting bolts (4)
- 4-40 blind nuts (4)
- Fuel filler (HAN115)

Tools and Adhesives Needed

- Pliers
- Hex Wrench: 3/32"
- Moto-tool w/cut-off wheel and sanding drum
- Thin CA

Step 1

Mount the muffler onto your engine.

Step 2

With the engine and muffler in place, carefully mark and cut away the areas of the cowl that come in contact with the engine. Work slowly until you are satisfied with the fit of the cowl.

Step 3

Install the 4-40 blind nuts into the four predrilled cowl mounting blocks. Seat the blind nuts using a pair of slip joint pliers and place a few drops of thin CA on the back of the nuts. Do not allow the CA to get onto the threads of the blind nuts.

Step 3 photo
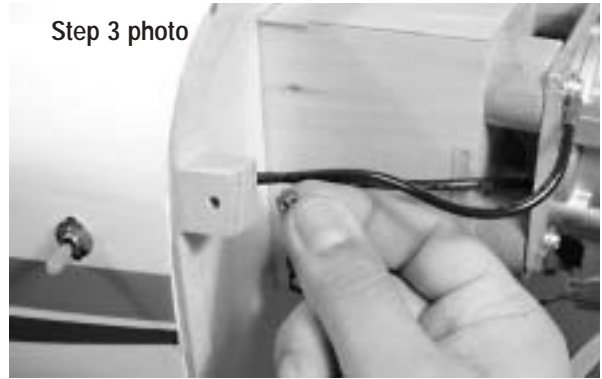
Step 4

Locate and drill the four cowl mounting block locations. Use the graphics and spinner back plate to help align the cowl. Mount the cowl using the 4-40 x 1" mounting bolts, washers and split washers.
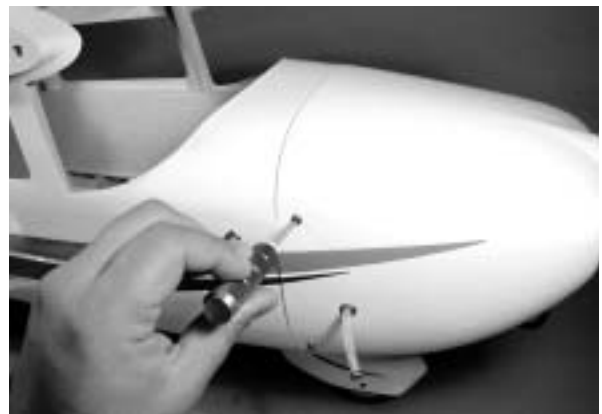
Step 5

Pull the fuel fill line through the cowl and install a fuel filler.

Section 18: Installing the Radio

Parts Needed
- Fuselage assembly
- Radio hatch
- #2 wood screws (2)
- Foam
- Receiver
- Receiver battery
- Switch harness

Tools and Adhesives Needed
- Hobby knife
- Drill
- Drill Bit: 1/16"
- Masking tape

Step 1
Mark the location for the switch harness on the lower right side of the fuselage. Make sure the switch is in the radio compartment area of the fuselage and will allow the radio hatch to close without hitting the switch.

Step 2
Using a sharp hobby knife, cut out the balsa sheeting to allow the switch to move freely. Once satisfied with the fit, mount the switch with the screws provided with the switch.

Step 3
Wrap the receiver and receiver battery in foam and secure them in the radio compartment. Connect the elevator, rudder and throttle servos to the receiver as well as the switch harness.

Step 4
Drill a hole in the bottom of the fuselage and route the receiver antenna down the bottom of the fuselage. Secure the antenna to the fuselage with clear plastic tape.

Step 5
Connect four 12" servo extensions (JRPA098) to the receiver for the aileron and flap servos. Mark each extension with the appropriate receiver channel. Make cutouts in the radio hatch for the extensions and charging leads to exit the radio compartment. Secure the hatch in place with the #2 wood screws provided.

Section 19: Installing the Windows and Scale Detail

Parts Needed

- Fuselage assembly
- Dash panel
- Decal sheet
- Seat parts (4 each seat bottoms and backs)
- Balsa blocks (not included)
- Hook and loop tape (not included)

Tools and Adhesives Needed

- Hobby Knife
- Canopy scissors
- Shoe Goo or Silicone adhesive
- CA

Step 1

Cut out the instrument panel from the decal sheet and apply it to the instrument panel.

Step 2

Install the dash panel into the cockpit. Secure the panel by placing a drop of CA along the edge where the dash meets the fuselage interior.

Step 3

The windshield and windows are installed from inside the cockpit. Use canopy scissors to trim the windows where necessary. Test fit the windows before gluing them in place.

Step 4

Glue the windshield and windows in place using canopy glue such as Formula "560" from Pacer. Secure the windows with masking tape while the glue dries. For best results, allow the glue to set up overnight.

Step 5

While the window glue is setting up, attach the seat backs to the seat bottoms using either Shoe Goo or a silicone adhesive. Also allow these to set overnight if possible.

Section 20: Mounting the Engine

Step 6

To attach the seats to the cockpit floor, glue balsa blocks to the floor. Use hook and loop tape to secure the seats to the balsa blocks. This method allows the seats to be removed for access to the radio compartment.

Step 7

Construct the scale radio antennas using the antenna bases provided with the Cessna. Glue 1 $1/2$" pieces of music wire to the bases and paint them white to match the plane. Attach them to the fuselage at the position shown.
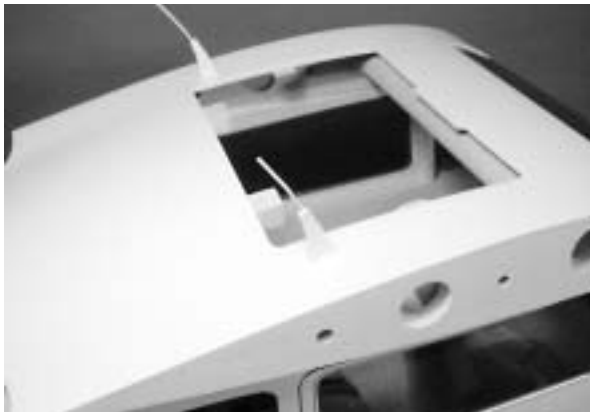
Step 8

Secure the top hatch in place using the #2 wood screws provided. Use a 1/16" drill bit to drill pilot holes through the hatch and into the mounting blocks.
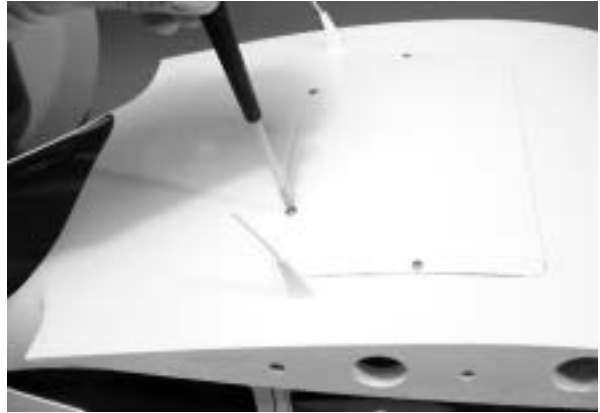
Step 9

Add door and window outline as desired, using a permanent marker pen with a fine point.

Center of Gravity (CG) and Control Throws

Caution: Do not inadvertently skip these steps!

Recommended CG Location

An important part in preparing your Hangar 9® Cessna aircraft for flight is properly balancing the model. This is especially important when various engines are mounted.

The recommended Center of Gravity (CG) location for the Hangar 9 Cessna Skylane 182 is 4" behind the leading edge
of the wing measured at the fuselage sides. If necessary, move the battery pack or add weight to either the nose or the tail until the correct balance is achieved. Stick-on weights are available at your local hobby shop and work well for this purpose.

The following control throws offer a good place to start with your first flights on the Hangar 9 Cessna. We recommend only one rate setting for Cessna. As you become more familiar with the handling of you model you may wish to add a second rate setting.

Recommended Control Throws

Aileron	$1/2$" up	$3/8$" down
Elevator	$1\,3/8$" up	$1\,3/8$" down
Rudder	$1\,1/2$" right	$1\,1/2$" left
Half Flaps	$1\,1/2$" down	
Full Flaps	3" down	

Setting up Dual Ailerons and Flaps

Non-Computer Radio

The Hangar 9 Cessna has two aileron and two flap servos. Use a Y-harness to connect the two aileron servos to the aileron port of the receiver. The Y-harness splits the signal and moves the ailerons in opposite directions. You will also need to use a Y-harness to connect the flap servos to the flap port of the receiver, but in this case you will need to use a reversed servo for one of the flaps, as you want the flaps to move in the same direction. Another option for the flaps would be to use a JR MatchBox™(JRPA900) to run the flaps. The MatchBox can be used to run up to 4 servos through a single port in your receiver. It allows the adjustment of the servo's center and end points as well as reversing of the servos. The MatchBox would eliminate the need for a reversed servo as well as making flap setup a breeze.

Computer Radio

When using a computer radio you will connect one of the aileron servos to the aileron port of the receiver and then mix the opposite aileron to an auxiliary channel, generally the aux 1 channel. Most modern computer radios have a pre-mix for dual aileron setup. For setting up the flaps you will connect one flap to the flap channel and then mix the other flap servo to an auxiliary channel similar to what you did for the dual aileron servo setup. For ease of setup you may want to use a JR MatchBox™ (JRPA900) to run the flaps. The MatchBox can be used to run up to 4 servos through a single port in your receiver. It allows the adjustment of the servo's center and end points as well as reversing of the servos. The matchbox would eliminate the need for a reversed servo as well as making flap setup a breeze.

Preflight at the Field

1. Before each flying session, be sure to range check your radio. This is accomplished by turning on your transmitter with the antenna collapsed. Turn on the radio in your airplane. With your airplane on the ground, you should be able to walk 30 paces (75' to 100') away from your airplane and still have complete control of all functions. If not, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

2. Double-check that all controls (aileron, elevator, throttle, rudder, etc.) move in the correct direction.

3. Be sure that your batteries are fully charged, per the

instructions included with your radio.

4. Completely read the instructions included with your engine and follow the recommended break-in procedure. At the field, adjust the engine to a slightly rich setting at full throttle and adjust the idle and low-speed needle so that a consistent idle is achieved. Before you fly, be sure that your engine reliably idles, transitions and runs at all throttle settings. Only when this is achieved should any plane be considered ready for flight.

2003 Official AMA National Model Aircraft Safety Code

Flap/Elevator Mix   3/8" down at full (3") down flap

Effective January 1, 2003

Model Flying MUST be in accordance with this Code in order for AMA Liability Protection to apply.

GENERAL

1) I will not fly my model aircraft in sanctioned events, air shows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.

2) I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.

4) The maximum takeoff weight of a model is 55 pounds, except models flown under Experimental Aircraft rules.

5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. (This does not apply to models while being flown indoors.)

6) I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.

7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind) including, but not limited to, rockets, explosive bombs dropped from models, smoke bombs, all explosive gases (such as hydrogen filled balloons), ground mounted devices launching a projectile. The only exceptions permitted are rockets flown in accordance with the National Model Rocketry Safety Code or those permanently attached (as per JATO use); also those items authorized for Air Show Team use as defined by AST Advisory Committee (document available from AMA HQ). In any case, models using rocket motors as a primary means of propulsion are limited to a maximum weight of 3.3 pounds and a G series motor. (A model aircraft is defined as an aircraft with or without engine, not able to carry a human being.)

8) I will not consume alcoholic beverages prior to, nor during, participation in any model operations.

9) Children under 6 years old are only allowed on the flight line as a pilot or while under flight instruction.

RADIO CONTROL

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

2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.

3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.

4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.)

5) Flying sites separated by three miles or more are considered safe from site-to site interference, even when both sites use the same frequencies. Any circumstances under three miles separation require a frequency management arrangement which may be either an allocation of specific frequencies for each site or testing to determine that freedom from interference exists. Allocation plans or interference test reports shall be signed by the parties involved and provided to AMA Headquarters. Documents of agreement and reports may exist between (1) two or more AMA Chartered Clubs, (2) AMA clubs and individual AMA members not associated with AMA Clubs, or (3) two or more individual AMA members.

6) For Combat, distance between combat engagement line and spectator line will be 500 feet per cubic inch of engine displacement. (Example: .40 engine = 200 feet.); electric motors will be based on equivalent combustion engine size. Additional safety requirements will be per the RC Combat section of the current Competition Regulations.

7) At air shows or model flying demonstrations a single straight line must be established, one side of which is for flying, with the other side for spectators.

8) With the exception of events flown under AMA Competition rules, after launch, except for pilots or helpers being used, no

2003 Official AMA National Model Aircraft Safety Code

powered model may be flown closer than 25 feet to any person.

9) Under no circumstances may a pilot or other person touch a powered model in flight.

Organized RC Racing Event

10) An RC racing event, whether or not an AMA Rule Book event, is one in which model aircraft compete in flight over a prescribed course with the objective of finishing the course faster to determine the winner.

A. In every organized racing event in which contestants, callers and officials are on the course:

1. All officials, callers and contestants must properly wear helmets, which are OSHA, DOT, ANSI, SNELL or NOCSAE approved or comparable standard while on the racecourse.

2. All officials will be off the course except for the starter and their assistant.

3. "On the course" is defined to mean any area beyond the pilot/staging area where actual flying takes place.

B. I will not fly my model aircraft in any organized racing event which does not comply with paragraph A above or which allows models over 20 pounds unless that competition event is AMA sanctioned.

C. Distance from the pylon to the nearest spectator (line) will be in accordance with the current Competition Regulations under the RC Pylon Racing section for the specific event pending two or three pylon course layout.

11) RC Night flying is limited to low performance models (less than 100 mph). The models must be equipped with a lighting system that clearly defines the aircraft's attitude at all times.

Notes

Notes

HANGAR 9®

WE GET PEOPLE FLYING

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For HAN1875