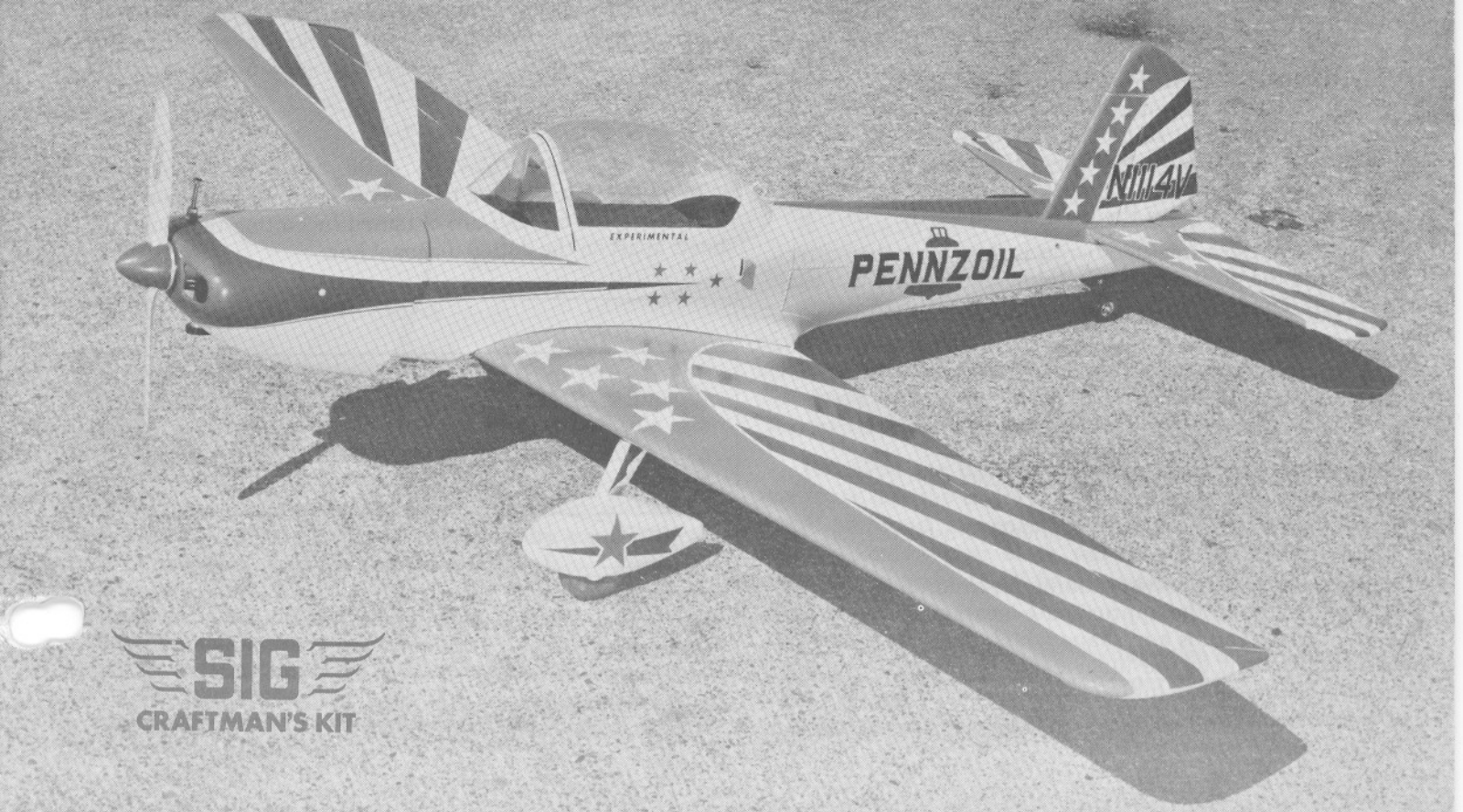
KWIK BILT*

*Patent 3699706

R-C Super Chipmunk

BUILDING AND FLYING INSTRUCTIONS

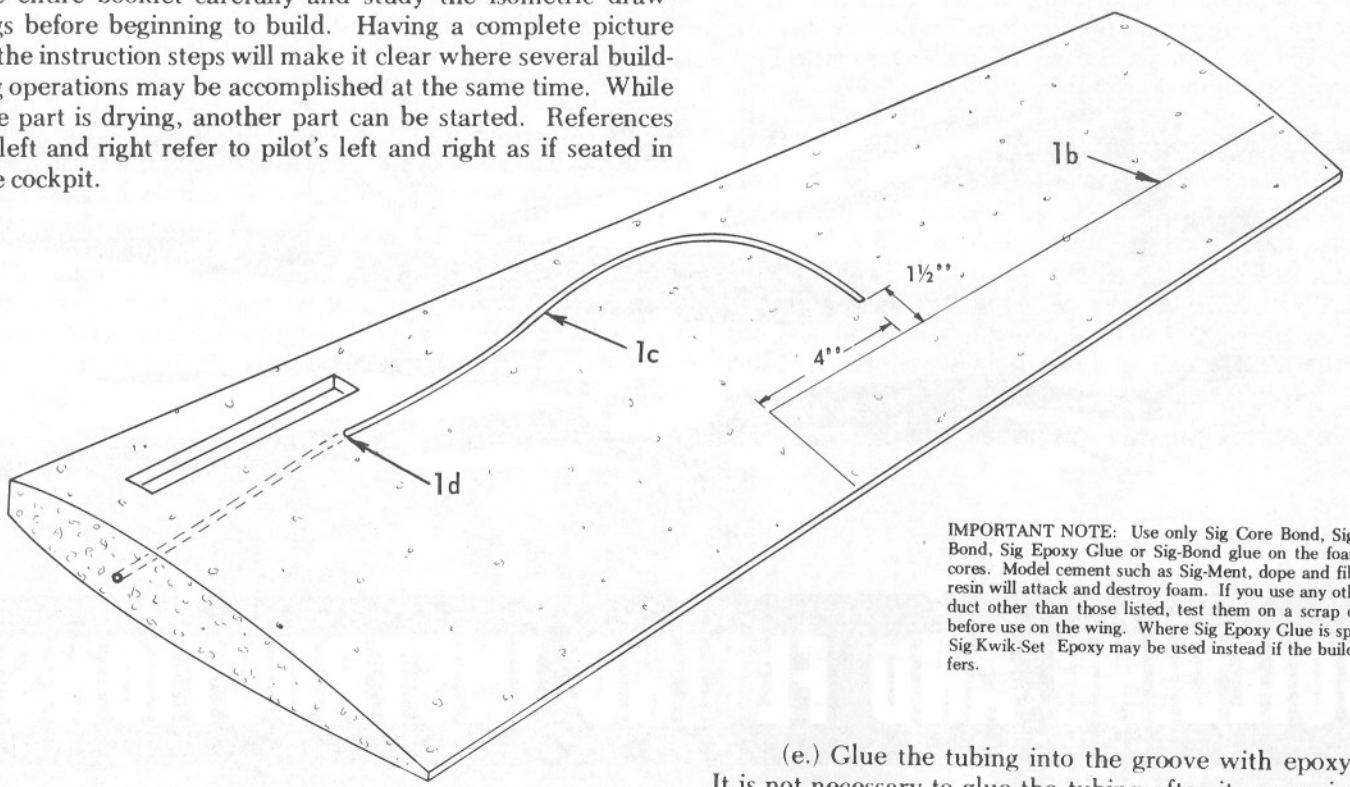


SIG
CRAFTMAN'S KIT

RC Super Chipmunk

BY MIKE STOTT

This Kwik-Bilt ® kit of the Super Chipmunk is planned so that no full-size drawing is required. By following the step-by-step instructions the model goes together quickly. Read the entire booklet carefully and study the isometric drawings before beginning to build. Having a complete picture of the instruction steps will make it clear where several building operations may be accomplished at the same time. While one part is drying, another part can be started. References to left and right refer to pilot's left and right as if seated in the cockpit.



IMPORTANT NOTE: Use only Sig Core Bond, Sig Kwik-Bond, Sig Epoxy Glue or Sig-Bond glue on the foam wing cores. Model cement such as Sig-Ment, dope and fiberglass resin will attack and destroy foam. If you use any other product other than those listed, test them on a scrap of foam before use on the wing. Where Sig Epoxy Glue is specified, Sig Kwik-Set Epoxy may be used instead if the builder prefers.

(1.) PREPARING THE FOAM WING CORES

(a.) Sand any irregularities from the foam cores with a large sanding block. Hold the halves of the wing core together and check how well they fit to each other. There may be small differences. Correct any mismatch now with the sanding block before the cores are sheeted.

(b.) A pattern for the aileron is shown on the pattern sheet. Mark the position of the aileron on the bottom of each wing half. The bottom has the landing gear block cavity.

(c.) Use a flexible nylon tubing cable pushrod. The wing pushrods are not furnished, but we recommend use of the following:

2 - Sig Flexible Cable Pushrod SH-560
or
2 - Su-Pr-Line Masterod No. 169
or
2 - Sullivan GRC-6 Golden-N-Pushrod

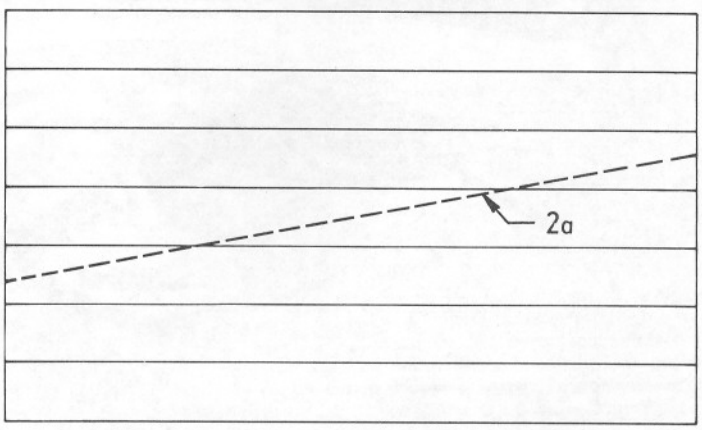
Trial bend the aileron nylon tubing pushrod on the surface of the wing core in the approximate location shown to find the exact curve radius and shape which gives the least friction to movement of the inner cable in the outer tubing. Mark the outline of the tubing on the surface of the core and cut a groove large enough to contain it.

(d.) At approximately this point (1d) the tubing is run through a hole that has been punched in the foam with a piece of music wire. The place in the center of the wing where the tubing will end is determined by the servo you intend to use and the way it is to be mounted. It is advisable to enlarge the hole in the foam near the center so that a certain amount of flexibility in positioning the tubing is permitted when hooking up the servo.

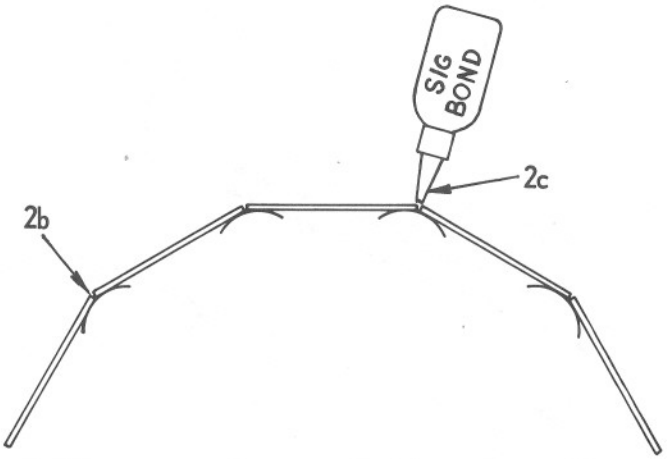
(e.) Glue the tubing into the groove with epoxy glue. It is not necessary to glue the tubing after it passes into the hole (1d) in the foam to the center section except that after the servo is mounted and operated it may be glued at the the center section in the servo cavity.

(2.) WING SKINS

(a.) Tape sheets of 1/16" x 36" wood tightly together on one side with masking tape. The diagram shows how two skins for one wing half are obtained by cutting the glued up sheets apart on the dotted diagonal line.



WING SKIN SHEETS

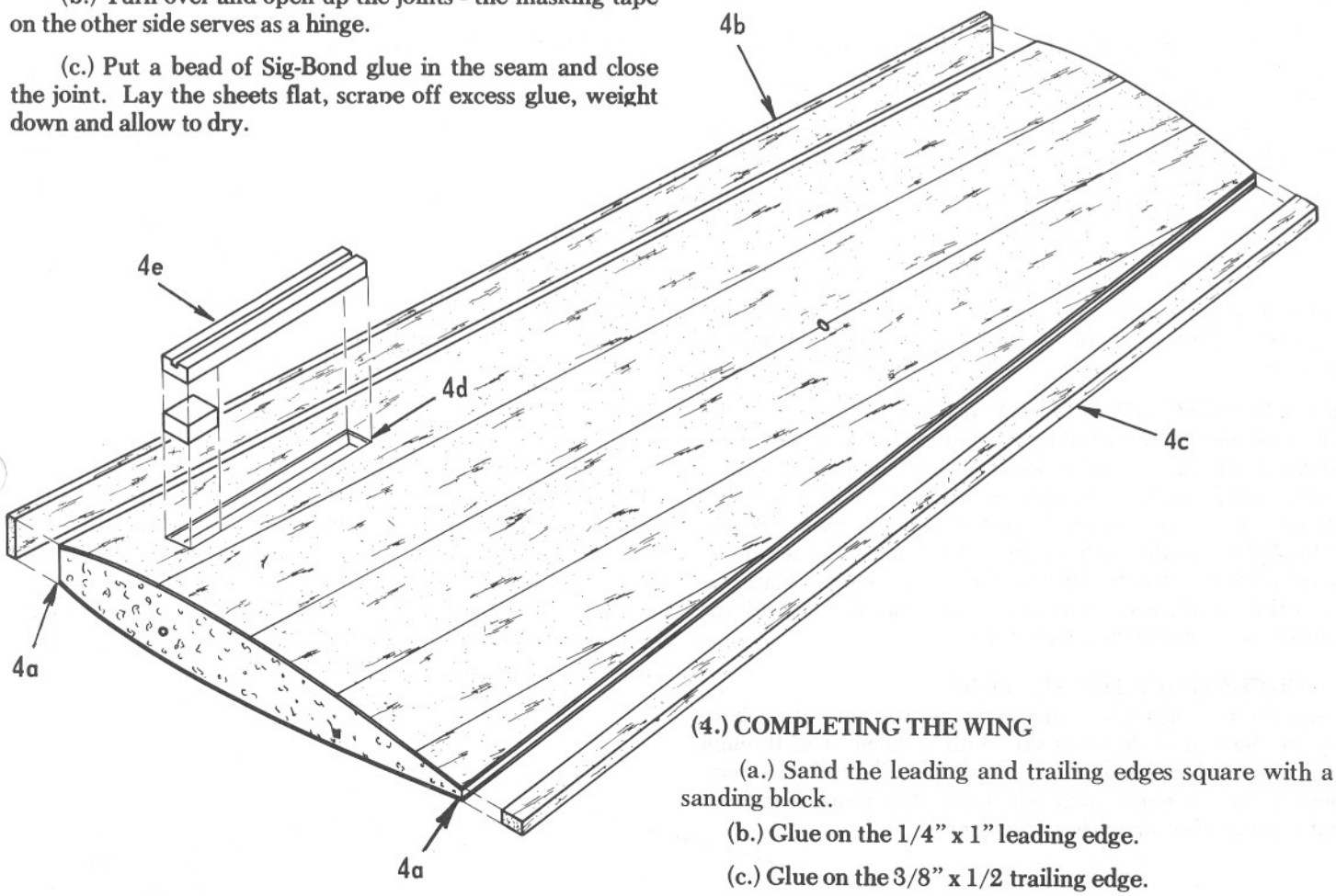


(b.) Turn over and open up the joints - the masking tape on the other side serves as a hinge.

(c.) Put a bead of Sig-Bond glue in the seam and close the joint. Lay the sheets flat, scrape off excess glue, weight down and allow to dry.

Press down along the trailing edge and roll the wing core forward on the wing skin with a rocking motion. Turn it over and rub down the skin, starting at the trailing edge and working forward, staying parallel with the wing span and with the wing resting on the high point of the airfoil in the area of the strip being worked down. Trim the edges of the wing skin to fit the core. Repeat the operation for the opposite side of the wing core. Check for twists or bows.

COAT EXPOSED FOAM ON ENDS OF CORE WITH EPOXY GLUE.



(3.) APPLYING THE WING SKINS

Proper application of the balsa skins to the foam core requires a smooth and perfectly flat surface. Cut the skins roughly to shape, slightly larger than the core. Apply one side at a time. Sig Core-Bond is recommended for gluing the the wing skins to the foam. This is a special adhesive, light and strong, that will not attack styrofoam. Apply a thin, even coat to the wing skin and to the foam core. Allow to dry completely — **at least one hour.** Lay the skin on a flat surface. Place the at least one hour. The Core Bond must be dry for good adesion, however, it is not advisable to leave it unused for too long a period after it has completely dried. Lay the skin on a flat surface. Place the trailing edge of the foam core down near the edge of the wing skin. Make sure that it is properly aligned before contact is made because it cannot be removed and replaced.

(4.) COMPLETING THE WING

(a.) Sand the leading and trailing edges square with a sanding block.

(b.) Glue on the 1/4" x 1" leading edge.

(c.) Glue on the 3/8" x 1/2 trailing edge.

(d.) Cut out the planking sheet over the landing gear block cavity. Cut a hole in the bottom of the landing gear block cavity to accomodate the landing gear anchor block. (See foam cutting directions in Section 5 following, called "Joining the Wing Halves.")

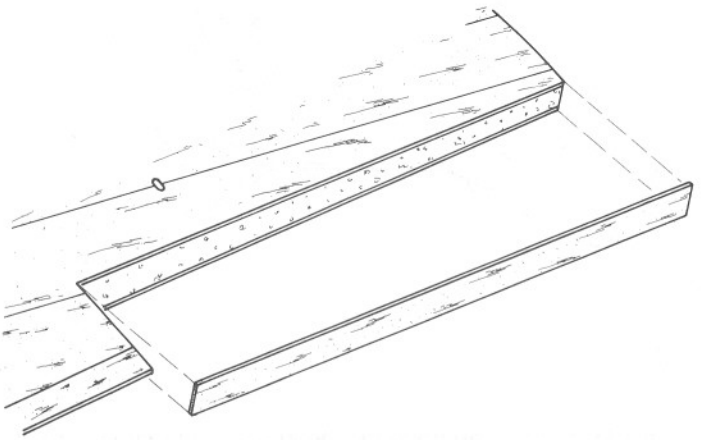
(e.) Glue the hardwood anchor block and the landing gear block into the cavity in the foam wing with epoxy glue. It will be found convenient to first glue the anchor block onto the landing gear block and then install the assembly. Use epoxy liberally to fill in any cracks between the blocks and the foam.

(f.) Sand and shape the leading edge and trailing edge to contour with a knife and a sandpaper block.

(g.) Sand the entire wing with fine paper.

(5.) JOINING THE WING HALVES

(a.) The angle cut into the foam wing halves sets an approximately correct dihedral angle. Block up one wing tip with the other wing half down against a flat surface so that the center joint fits perfectly together. The bottom of the raised wing tip should be 4-1/2" above the table. (2-1/4" under each wing tip when on the model). If it does not measure this amount, correct the joint in the middle with a large sanding block. Glue the halves together with Sig Epoxy Glue. Be certain that no twist between the halves is built into the wing when they are joined. Coat the outside surface of the joint thoroughly with Sig Epoxy Glue and reinforce the seam with fiberglass cloth or aircraft tape (not furnished in the kit). Liberally coat the surface of the cloth with Sig Epoxy Glue.



(b.) Cut out a cavity in the center of the wing for mounting the aileron servo. A tool may be made for cutting a cavity in foam by clamping a length of 1/16" brass tube or rod into the two ends of a soldering gun in place of the regular point. The tubing can be bent into a rectangle or whatever shape is most convenient for cutting a particular cavity in foam. Or a whittling blade on a modeling knife can be heated in a flame and used to cut the foam.

(c.) After the cavity for the aileron servo is cut and the servo fitted for installation, coat the inside of the cavity with Sig Epoxy Glue to protect it from being damaged by fuel or dope.

(6.) MOUNTING THE AILERON SERVO

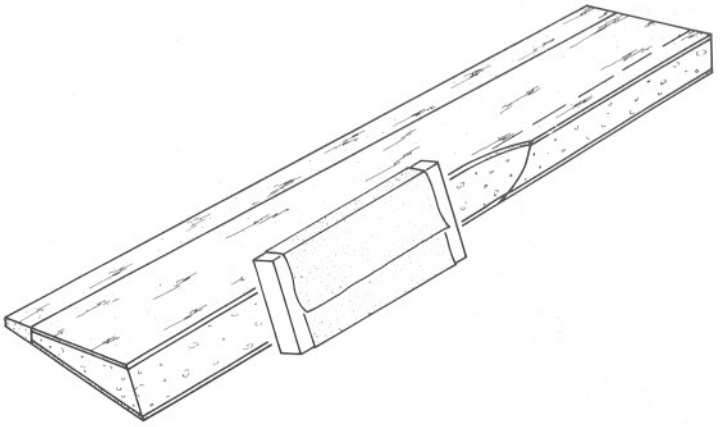
The best method of installing the aileron servo is on a horizontal plastic aileron servo mount which is furnished by most radio manufacturers to fit their equipment. This is screwed directly to a 1/8" plywood plate which has been epoxied to the bottom of the servo cavity in the wing. Use scrap plywood from the doubler die-cut sheet to make the platform. For other instructions regarding servo mounting, read the fuselage servo directions, Section 23.

(7.) CUTTING OUT THE AILERONS

Using the aileron pattern, mark the aileron cut-out on both top and bottom of the wing skin with a pencil. Cut through both sides of the wing on the marks to the full depth of a modeling knife. A quick snap will break the remaining foam and separate the aileron from the wing.

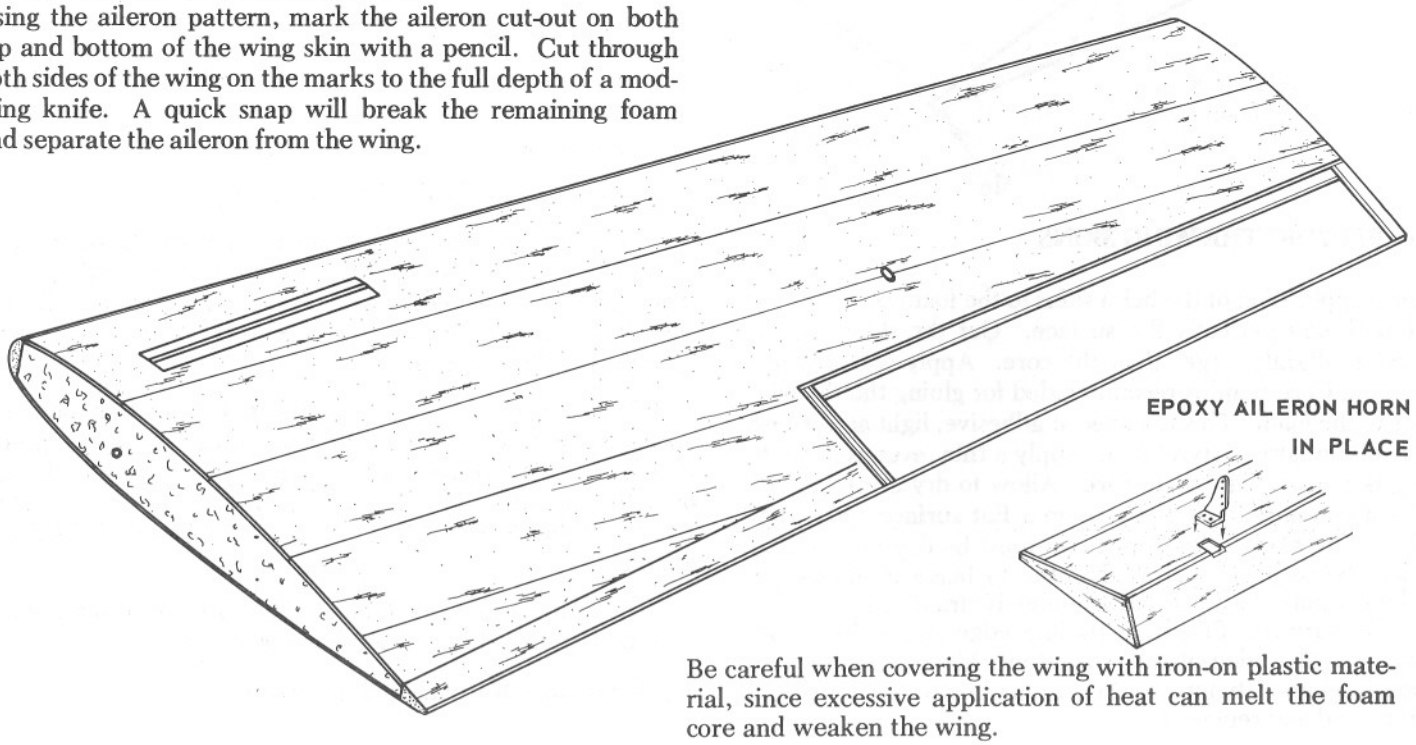
(8.) AILERON CUT–OUT SHEETING

Cover the exposed foam in the aileron cut-out opening with 1/16" sheet balsa.



(9.) COMPLETING THE AILERONS

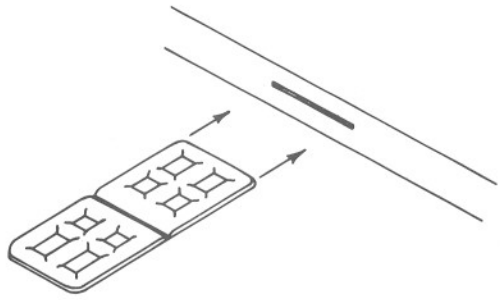
Mark the aileron pattern on the aileron and cut off the excess edges. With a large sanding block, bevel the front of the aileron at the angle shown on the aileron end pattern. Cover the beveled front face of the aileron with 1/16" sheet balsa. Cover the aileron ends with 1/16" sheet balsa.



Be careful when covering the wing with iron-on plastic material, since excessive application of heat can melt the foam core and weaken the wing.

(10.) AILERON HINGING

(a.) The aileron pattern shows the position of the nylon hinges.



(b.) Cut slots in the control surface to receive the molded hinges. Fill the slots with Sig Kwick-Set epoxy glue and insert the hinge into the slot. After the glue has set, repeat the process to attach the control surface to the model.

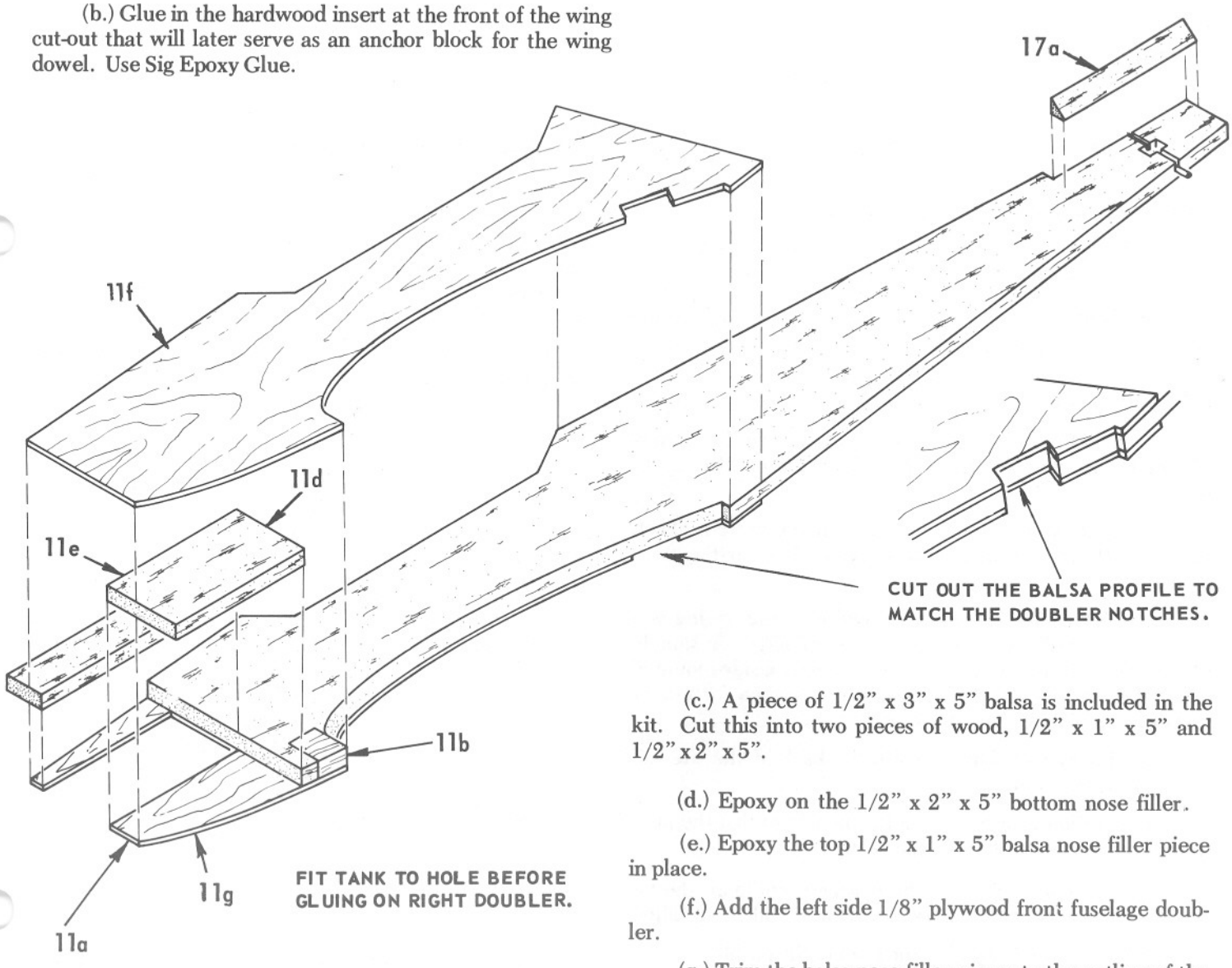
Note: For best control response, keep the gap between the surface and the model as narrow as possible.

(11.) FUSELAGE DOUBLERS

(a.) Glue the right side 1/8" plywood fuselage doubler to the 1/2" balsa fuselage profile. This is the doubler with the cut-out for the fuel tank.

(b.) Glue in the hardwood insert at the front of the wing cut-out that will later serve as an anchor block for the wing dowel. Use Sig Epoxy Glue.

GLUE ON PLY DOUBLERS BEFORE SANDING BALSA PROFILE TO MATCH.



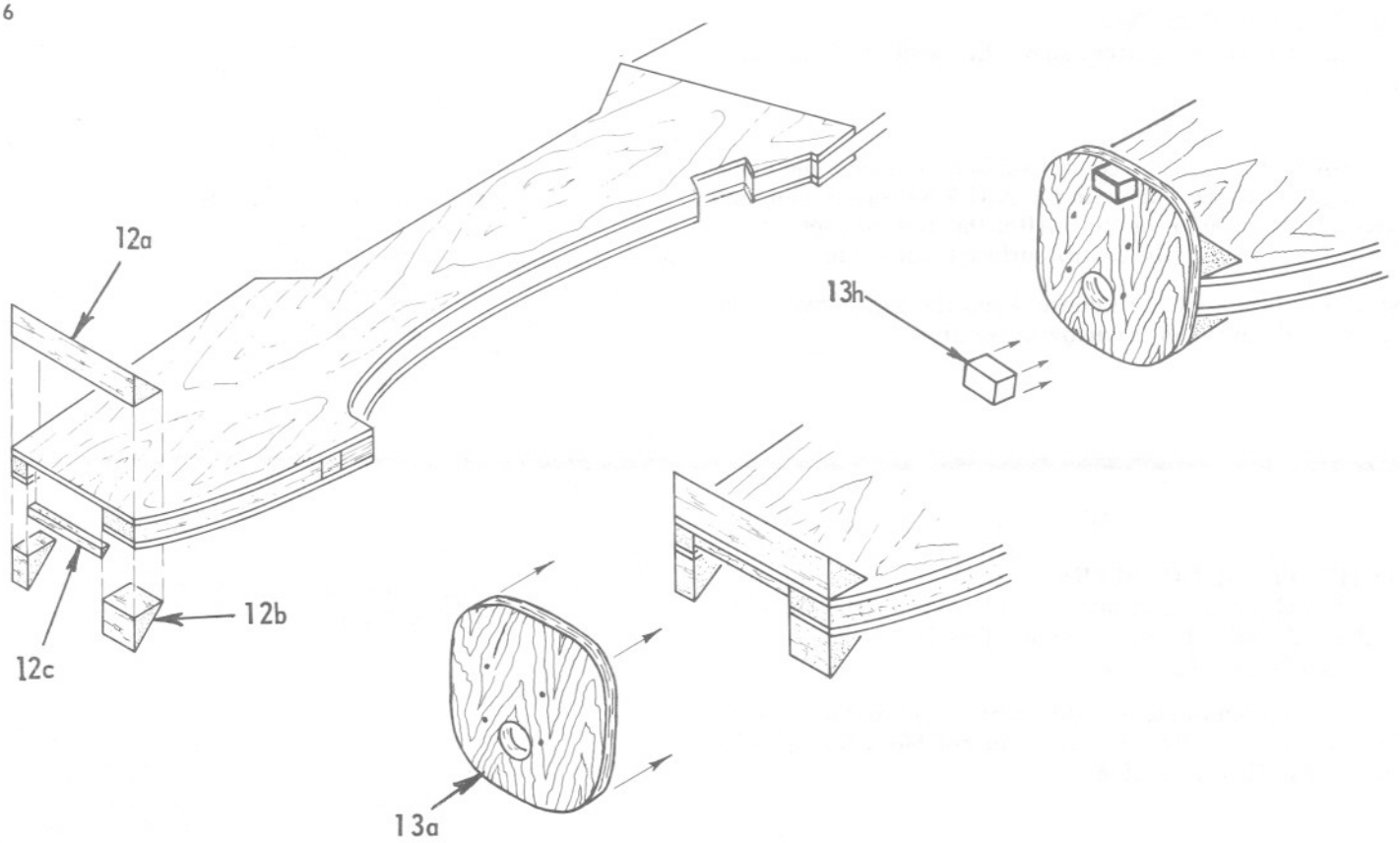
(c.) A piece of 1/2" x 3" x 5" balsa is included in the kit. Cut this into two pieces of wood, 1/2" x 1" x 5" and 1/2" x 2" x 5".

(d.) Epoxy on the 1/2" x 2" x 5" bottom nose filler.

(e.) Epoxy the top 1/2" x 1" x 5" balsa nose filler piece in place.

(f.) Add the left side 1/8" plywood front fuselage doubler.

(g.) Trim the balsa nose filler pieces to the outline of the fuselage doublers.



(12.) FIREWALL REINFORCEMENT

(a.) Epoxy the 1" triangular balsa firewall support to the front of the left side plywood fuselage doubler.

(b.) Add small pieces of 1" triangular balsa stock to the right side plywood fuselage doubler.

(c.) Glue a piece of 1/4" triangular balsa stock in the front of the tank opening in the right side doubler.

(13.) FIREWALL

(a.) The firewall is made by gluing the two die-cut plywood parts together to form a 1/4" thick piece. Use Sig Epoxy Glue.

(b.) A firewall pattern is shown on the pattern sheet. Mark the thrust line and vertical center line on the front of the firewall.

(c.) Determine the mounting width of the engine you will use and drill mounting holes accordingly. A sample installation is shown on the pattern. Use only a side-mounted engine so the tank will be in the correct location for proper fuel draw and idling characteristics.

(d.) Epoxy 6-32 blind nuts to the back of the firewall to retain the motor mounts.

(e.) Position your engine on the mounts so that the prop washer is 4-1/16" inches from the firewall.

(f.) Mark the center of the fuselage profile on the top and bottom at the front where the firewall will be installed.

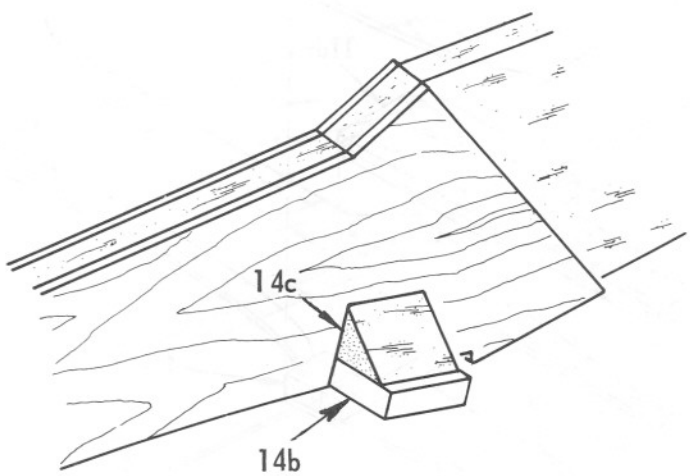
(g.) Epoxy the firewall to the front of the profile.

(h.) Epoxy the 1/2" x 1/2" x 3/4" hardwood cowl blocks on each side of the firewall.

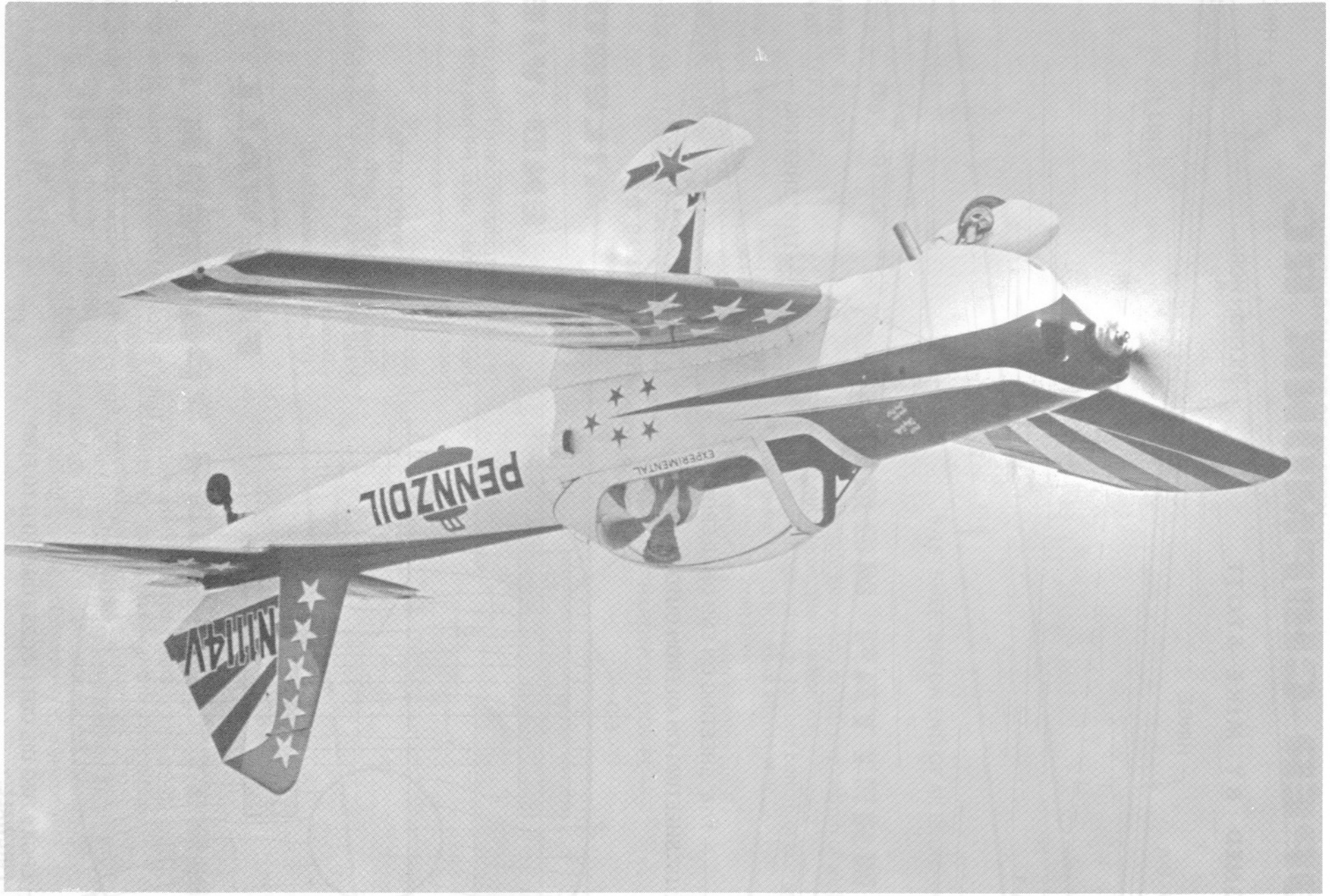
(14.) WING BOLT BLOCKS

(a.) Protect the area on the wing in which the fuselage wing bolt blocks will rest, with wax paper. Tape the fuselage profile in place on the wing. Check to be sure it is properly aligned and perpendicular to the wing center line. Correct it if it is not properly aligned.

(b.) Epoxy the hardwood wing bolt blocks into the notch in the plywood doublers at the rear of the wing cut-out.



(c.) Add a piece of 1" triangular balsa to brace the blocks. Make certain that the blocks are firmly against the wing surface.



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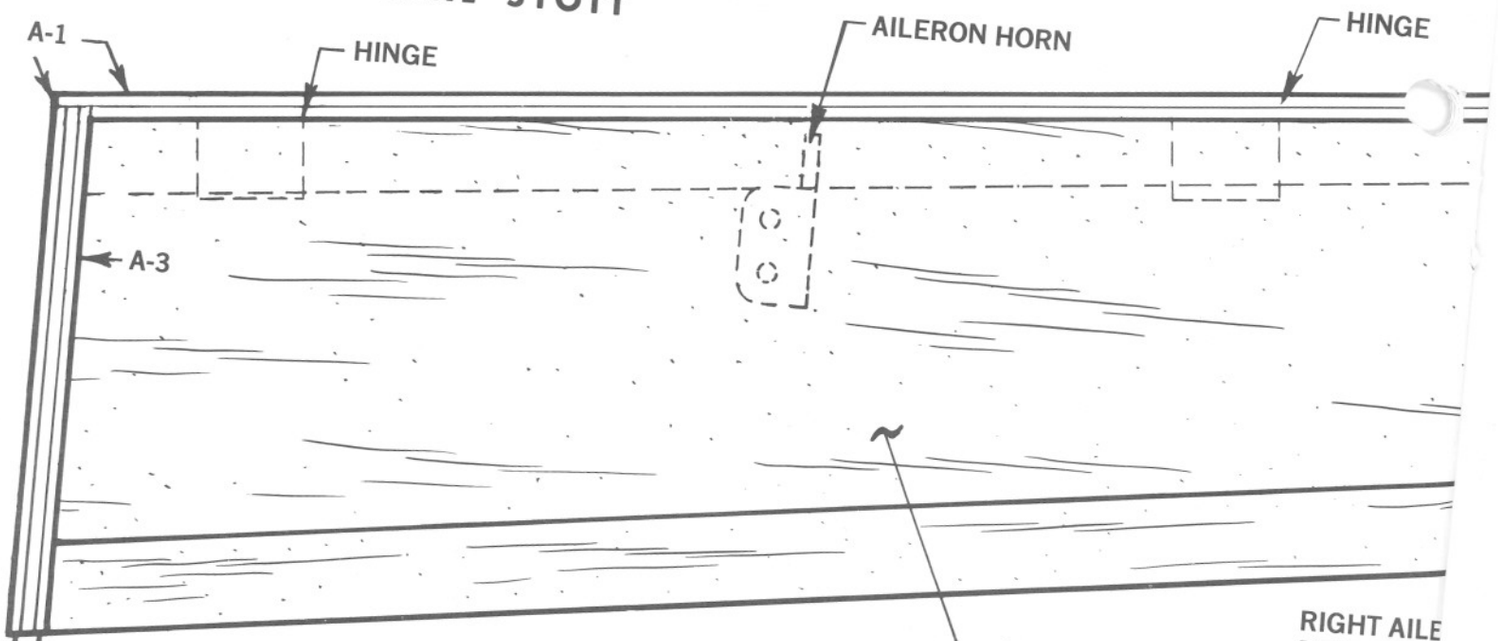
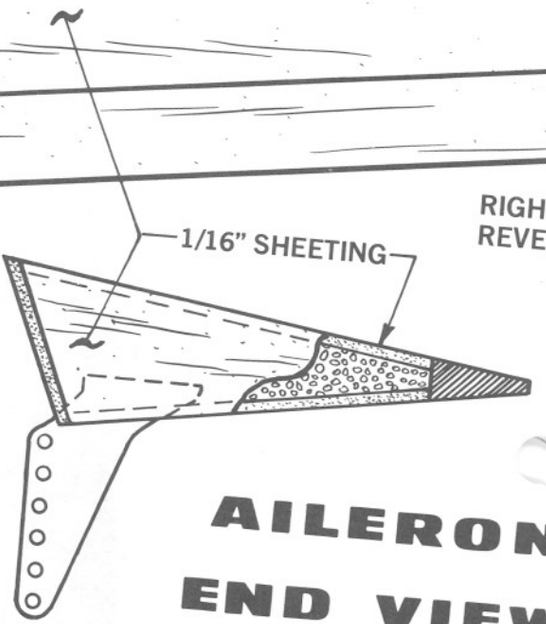
SUPER CHIPMUNK RC

DESIGNED BY MIKE STOTT



1/16" SHEETING ON END OF AILERON

1/16" SHEETING ON AILERON CUTOUT IN WING



RIGHT AILE
REVERSE P

NOTE
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3-1/4
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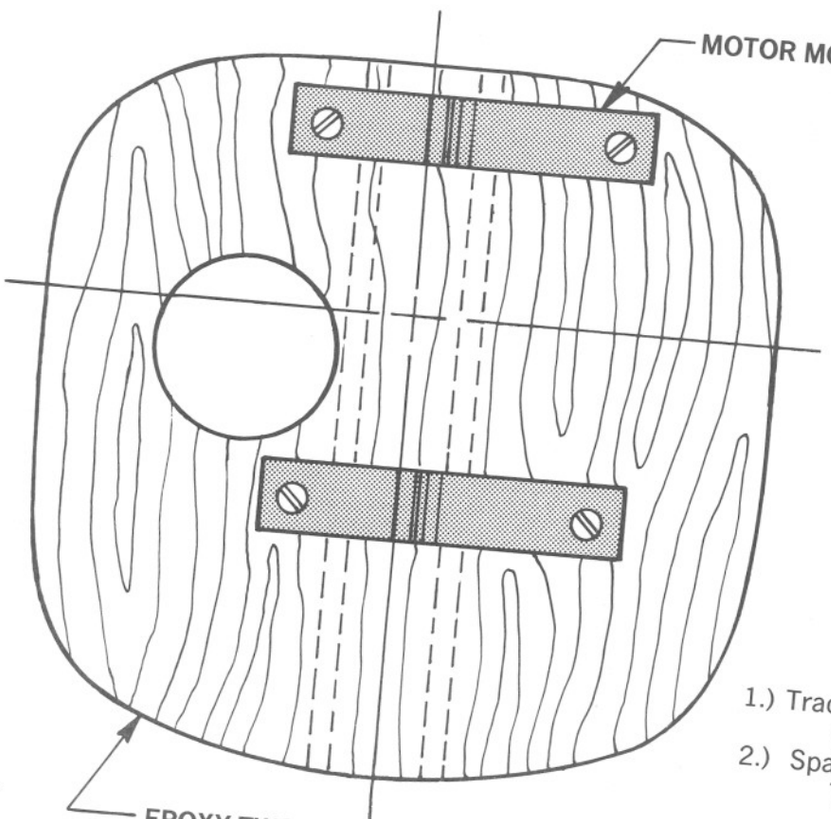
show

AILERON END VIEW

To install nylon aileron control horn, cut hole in bot sheeting and foam core. Fill hole with epoxy glue. place sheeting.



EPOXY TWO DIE CUT PIECES TOGETHER TO FORM FIREWALL.

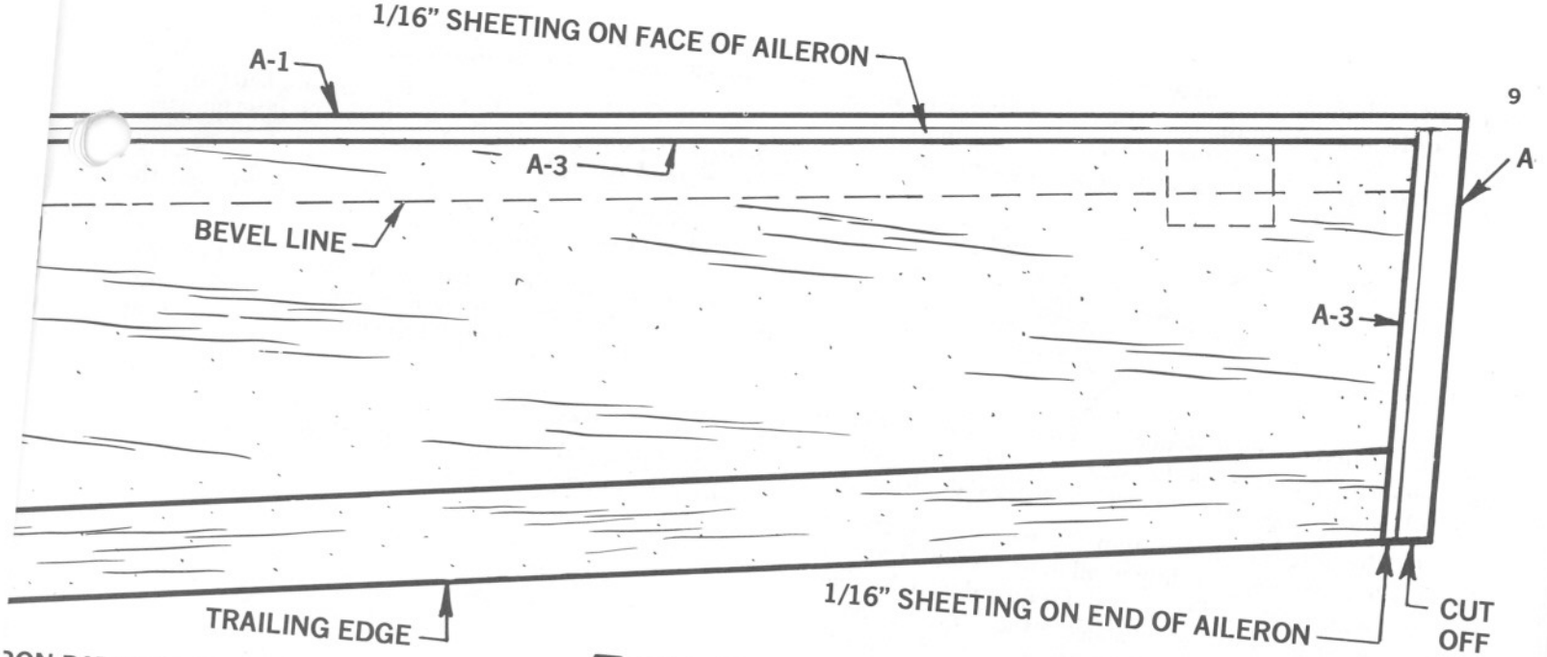
WHEEL SIZES

Main Gear - 2-3/4" Low Bounce Type
Tail Wheel - 1-3/4" to 1-3/8" Solid Sponge or Low Bounce Type.
(Wheels not furnished in kit)

FIREWALL PATTERN B

1.) Trace vertical and horizontal center lines onto the plywood.
2.) Space motor mounts according to motor used. Typical installation shown. Use only s mounted engine.

A 2" spinner was used on the prototype model.



RON PATTERN SHOWN.
ATTERN FOR LEFT WING.

AILERON PATTERN A

1.) Trace outside heavy line on top and bottom of wing.
2.) Cut out aileron. (See Section 7.)
3.) Trace inner heavy line on top and bottom of aileron.
4.) Add bevel line to bottom of aileron only.
5.) Cut off excess from aileron.
6.) Bevel front of aileron with sanding block. (See Section 9.)

: The stabilizer should be doweled onto the fuselage as shown by ll size drawing. After doing step (21. c.) on page 12, cut the 3/16" x dowel into 2 pieces - 1-1/2" and 1-3/4" long. With a 3/16" bit, drill gh the stabilizer and into the 1/2" balsa profile at the locations . Epoxy the dowels into the holes.

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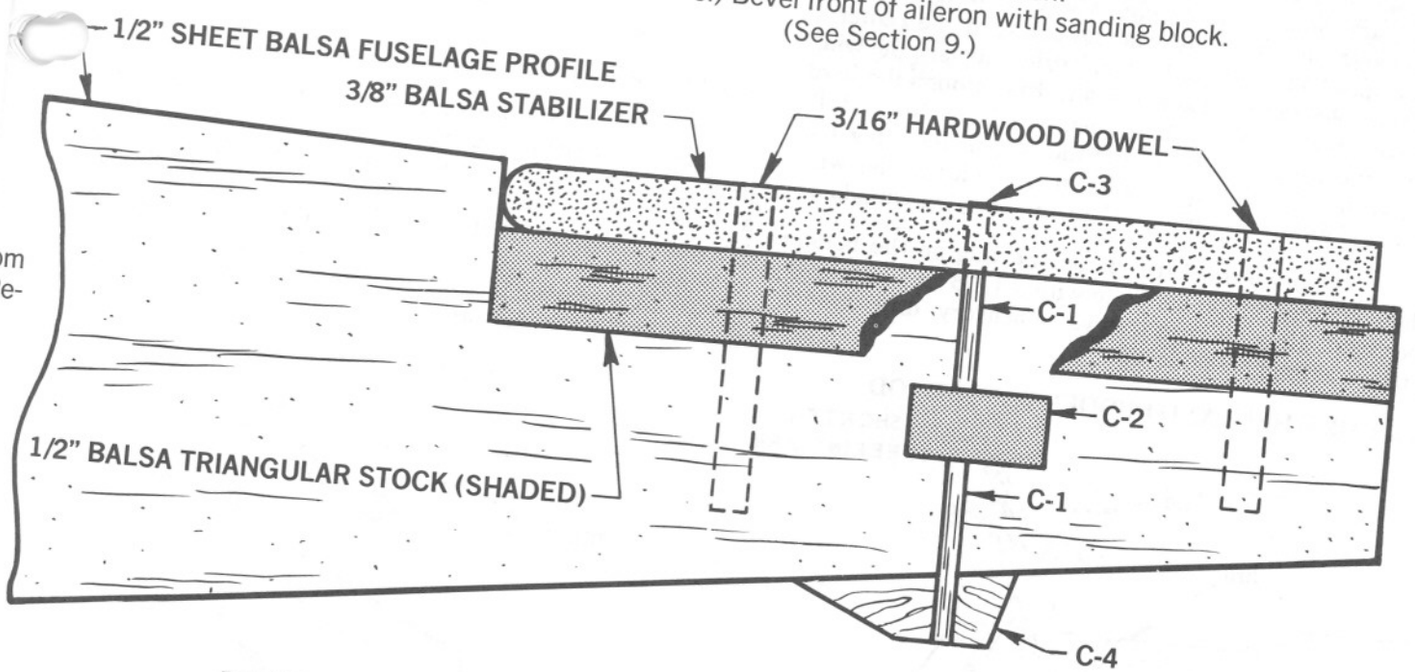


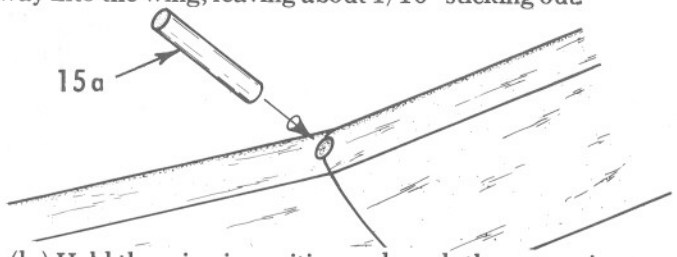
FUSELAGE REAR PATTERN C

1.) Cut slot for brass tubing bearing halfway into profile
2.) Cut opening for nylon steering arm completely through the fuselage profile.
3.) Epoxy the brass tubing in place (See Section 16.)
4.) After fuselage shells are installed, brace the lower brass tubing bearing with scrap 1/8" plywood.

SIG
BALSA-FOAM KIT

(15.) WING RETAINING DOWEL

(a.) Drill a hole in the center section of the wing to receive the 1/4" diameter wing dowel. Push it almost all of the way into the wing, leaving about 1/16" sticking out.



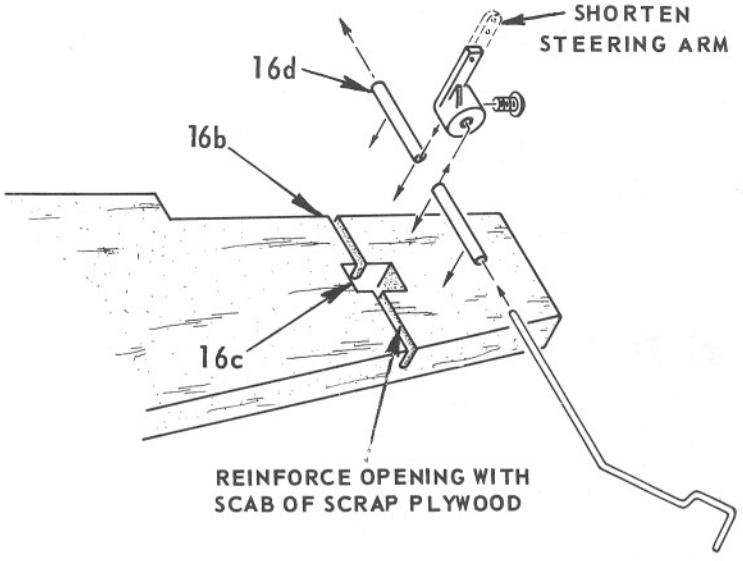
(b.) Hold the wing in position and mark the approximate location of the dowel in the fuselage hardwood insert block. Drill a 1/4" hole in the insert block to accomodate the dowel.

(c.) Remove the dowel from the wing. Enlarge the dowel hole in the wing slightly to allow room for gluing and to permit slight shifting of the dowel if required to make alignment between the wing and fuselage exact. Fill the dowel hole with Sig Kwick-Set 5-minute epoxy glue. Replace the dowel, allowing it to protrude about 1/4" to 3/8". Replace the wing in position with the dowel inserted into the block until the glue is firmly set. Be careful that glue has not oozed into the hole in the fuselage hardwood insert block.

(d.) Tape the wing in place on the fuselage and check the alignment carefully. Make certain it is straight. With a pencil, mark the spots on the wing where the wing bolt blocks sit. Remove the wing and drill through it in the center of the block position marks with a No. 7 drill. Replace the wing. Using the holes in the wing as a pilot, drill through the hardwood wing bolt blocks in the fuselage with the No. 7 drill. Remove the wing and thread the the hole in the wing bolt blocks with a 1/4-20 tap. Drill out the holes in the wing with a 1/4" drill to pass the 1/4" diameter nylon wing bolts.

(e.) Replace the 1/16" balsa sheeting on the bottom of the wing around the bolt hole with a 1/16" x 1" x 2" plywood scab. Glue on with epoxy. When dry, drill through the plywood from the other side.

(16.) TAIL WHEEL AND RUDDER TORQUE ROD



(a.) The exploded view shows the parts of the tail wheel and rudder torque rod assembly. A pattern is provided on the pattern sheet to show the location of the rudder torque rod and tailwheel wire in the fuselage profile.

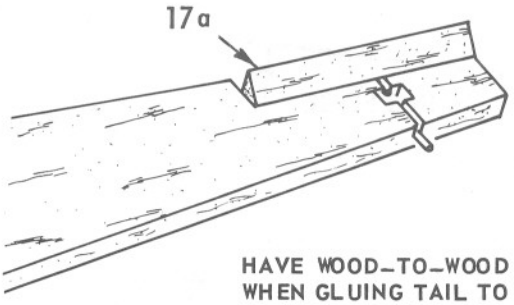
(b.) Notch the 1/2" balsa fuselage profile halfway thru to allow installation of the bearing tubes for the tailwheel and torque rod assembly.

(c.) Notch the 1/2" balsa fuselage profile to clear the nylon rudder steering arm.

(d.) Epoxy the bearing tubes in place. At this time, only tack glue the tubes. Later, after soldering on the torque rod arm (see paragraph 22b), fill the notches up with epoxy.

(17.) TAIL BRACES

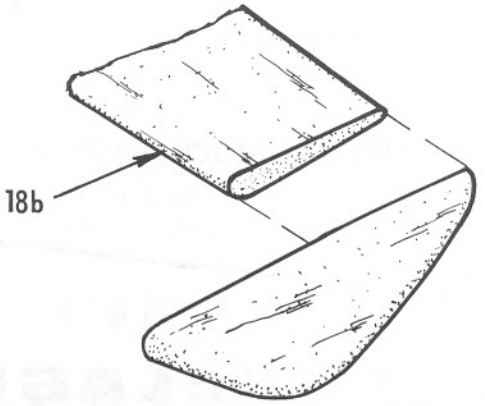
(a.) Epoxy 1/2" triangular balsa stock to the top of the stabilizer mounting cut-out on both sides of the fuselage.



HAVE WOOD-TO-WOOD CONTACT WHEN GLUING TAIL TO FUSELAGE WITH NO COVERING OR RESIN FINISH BETWEEN PARTS.

(18.) PREPARING THE TAIL SURFACES

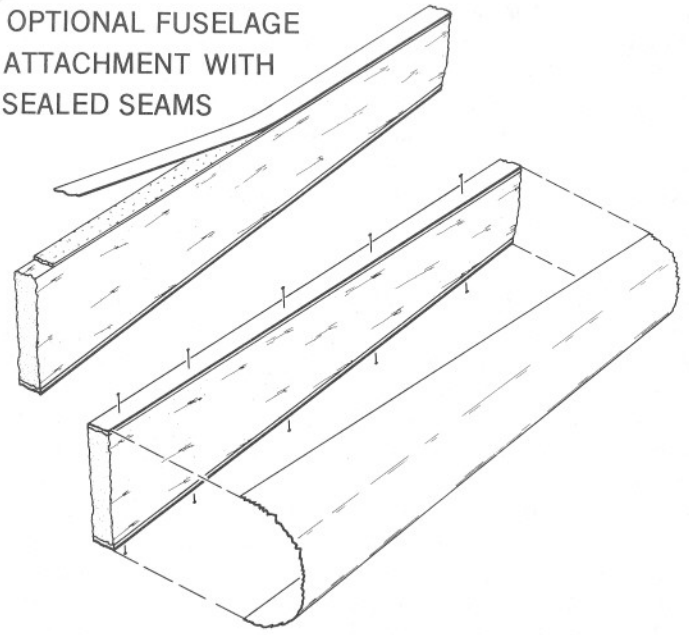
The tail surfaces are printed on 5/16" sheet balsa. Cut out with a sharp modeling knife or saw out on a jig saw. Dress down the mating edges with a large sanding block so that a neat-fitting seam is achieved. Pin down the sections of the tail surfaces on a sheet of wax paper and glue them together with Sig Epoxy or Sig-Bond Glue. Connecting key letters appear on the patterns to insure proper assembly. Connect the same letters to each other.



(b.) Shape and sand the tail parts to airfoil section.

Note: The stabilizer and rudder parts are easiest to cover before they are hinged and attached to the fuselage. Refer to the Finishing Section at this time and prepare the tail parts before hinging and attaching to the fuselage. Be certain to test assemble them on the hinges before covering to insure that a good edge and end match has been obtained in the sanding operation.

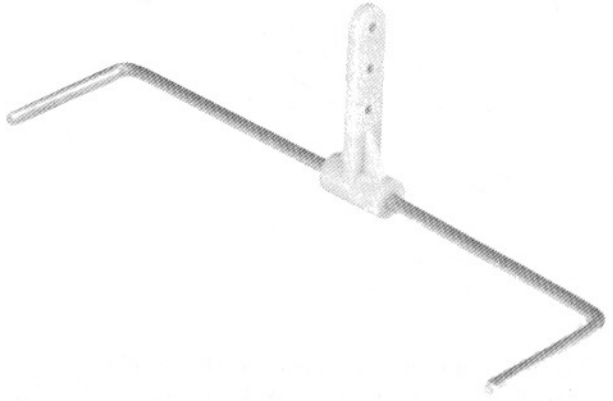
OPTIONAL FUSELAGE ATTACHMENT WITH SEALED SEAMS



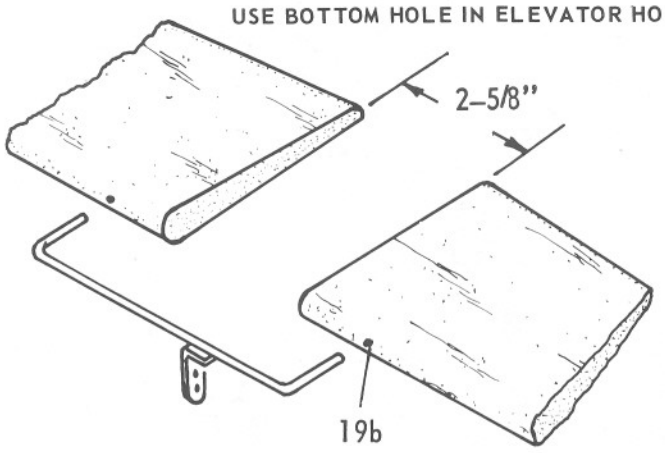
1/2" wide ABS strips are supplied for those who wish to mount their fuselage shells permanently. They can also be used for a sealed joint on the bottom front of the shells only, where fuel and oil sometimes loosen tape sealed shells. Follow booklet instructions except that the ABS strips are pressed onto the servo tape before putting on the center row of pins. A center line drawn on the strips can be used instead of pins. Shells may be held in place with several pieces of masking tape. Bond the shells to the strips with thinner, acetone or MEK applied sparingly to the joint. (See Cowling Assembly directions for procedure to follow in joining plastic parts.)

NOTE: The landing gear position on a taildragger is a compromise. With the wheels forward, the model is not so likely to nose-over on landing, but will ground loop easier. Select the position best suited to your flying skills. If you nose-over a lot on landings, bend the gear so the wheels are forward.

The elevator horn shown in (19.) on page 12 has been replaced by the new nylon arm control horn shown here. Use the bottom hole for test flights. Move up to the middle hole only after test flying if your personal preference is for quicker and more sensitive control reactions.



(b.) The elevators are located on the wire control horn, 2-5/8" apart.



(c.) Drill holes in the proper spots to produce the required separation of the elevators. Check before drilling to insure that the horn is in the right location to clear the fuselage shell and the fuselage profile when the elevators are hinged to the stabilizer.

(d.) Epoxy the horn into the elevators. Fill the holes with epoxy and coat the wire where it contacts the wood. Be careful not to build in a twist, with one elevator out of line with the other.

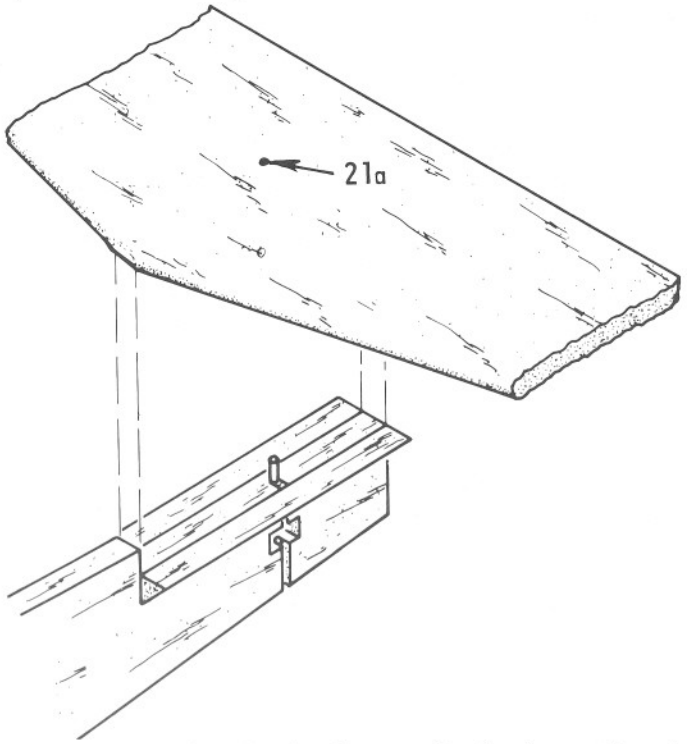
(20.) ELEVATOR HINGES

(a.) Positions of the nylon hinges are marked on the printed sheet.

(b.) See paragraph 10b for hinge instructions.

(21.) MOUNTING THE STABILIZER

(a.) Drill a hole in the stabilizer in the proper location to pass the rudder torque rod wire.



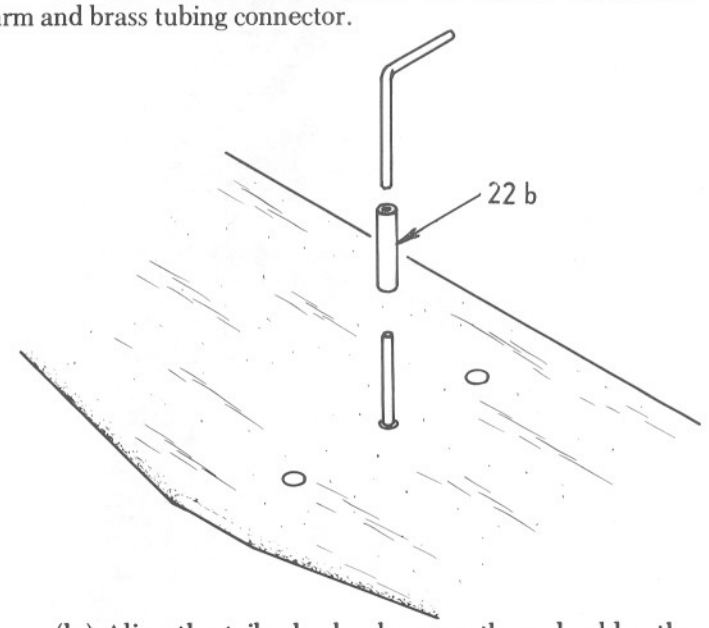
(b.) With the wing in place on the fuselage, align the stabilizer. If it does not sit squarely on the tail platform of the fuselage profile, sand the profile so that it does.

(c.) Epoxy the stabilizer in place.

(d.) Cut the 3/16" x 3-1/4" dowel into 2 pieces - 1-1/2" and 1-3/4" long. On page 9 is a full-size drawing showing the assembled stabilizer and dowel pins. With a 3/16" bit drill thru the stabilizer and into the 1/2" balsa profile at the locations shown. Epoxy the 3/16" dowels into the holes.

(22.) RUDDER TORQUE ROD ARM

(a.) The exploded view shows the rudder torque rod arm and brass tubing connector.



(b.) Align the tail wheel axle correctly and solder the rudder torque rod arm in place on the torque rod stub tha is protruding through the stabilizer. Polish the parts with sandpaper before soldering. Use non-corrosive soldering paste and a hot iron. Sweat the brass tubing joint so that solder flows down into it and makes a firm connection. Be careful that solder does not flow down into the tubing bearings in the fuselage profile. After soldering, permanently epoxy the brass bearings in place in the fuselage profile as noted in paragraph 16d.

(23.) FUSELAGE SERVO MOUNTS

The easiest method of installing servos in the Chipmunk fuselage is to use the plastic mounts supplied by most radio manufacturers for their brand of radio equipment. However, a type of mount must be selected that permits the servo to be removed by unscrewing through the bottom of the fuselage, not from the side. This is generally a horizontal aileron servo mount. If a mount were used in which the servo must be removed from the side then it would be necessary to take off the plastic fuselage shells to get to the servo for removal. It doesn't matter that the mount itself is screwed into the doubler from the side since it can remain in the model permanently, as long as the servo itself can easily be dropped out from the bottom.

If the manufacturer of the radio equipment does not supply a plastic mount that will permit installation of the servo from the bottom opening, then the servo should be mounted on hardwood triangles epoxied to the plywood fuselage doublers in appropriate locations. The servos can then be screwed directly to the hardwood triangles. Do not screw the rubber

servo grommets down tightly or too much vibration will be transmitted to the servos. The best way of insuring a secure mounting directly on the hardwood triangles is to use a servo mounting hardware kit which has eyelets furnished (see Sig catalog). These permit the mounting screws to be tightened down on the hardwood triangles without compressing the rubber grommets too tightly.

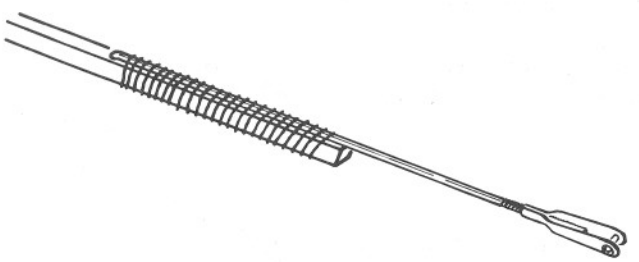
There are plastic servo mounts, such as the vertical aileron type, which have built in vibration absorbers and can be used on the hardwood triangles and screwed down tightly without transmitting vibration. Easy removal of the servo from the bottom of the fuselage should be possible with this type of mount because, if necessary, the entire mount can be unscrewed from the hardwood triangles.

The elevator servo should be mounted on the left side of the doubler. Leave space enough in front of it for inserting and removing the battery pack and receiver. Each of these should be wrapped in a package of foam rubber, held on with rubber bands or tape. Put the battery pack and receiver in the nose section on the left side between the shell and the center profile. Pack some foam rubber around them to hold them in place but do not pack it too tightly or vibration will be transferred to them.

The rudder and motor control servos are located on the right side of the fuselage profile.

Note: No servo mounting material is supplied in the kit.

(24.) FUSELAGE PUSHRODS



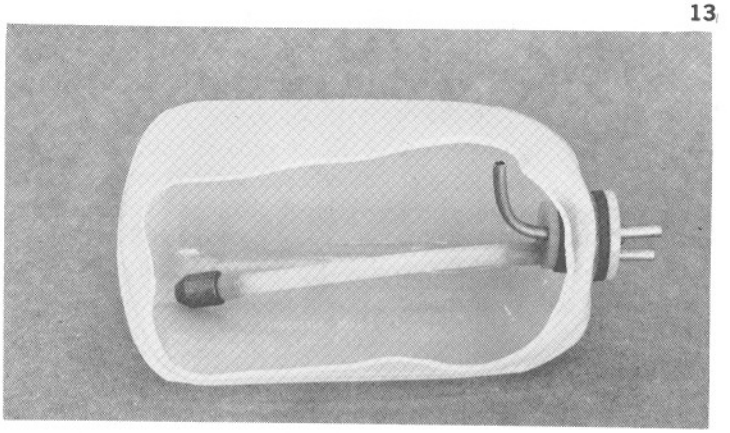
5/16" square balsa is provided to make the fuselage pushrods that run to the elevator and rudder. Bind the fittings to each end with heavy carpet thread and epoxy glue. Use the R/C links at the tail end so that trimming adjustments can be quickly made.

(25.) NOSE OIL PROOFING

After any hardwood servo mounts used are installed, give the profile from the wing trailing edge forward one coat of Sig Fiberglass Resin or Finishing Resin and two coats on the front and back of the firewall and the fuel tank area.

(26.) TANK INSTALLATION

(a.) The fuel tank mounts in the cavity on the right side of the fuselage profile. A rectangular plastic klunk tank such as a Kavan 10 oz., or a Sullivan RST 10 or 12 is required. Use only a side mounted engine so the tank will be in the correct location for proper fuel draw and idling characteristics.



(b.) The tank must be in place, with the fuel lines run through the firewall before the plastic fuselage shells are added. For vibration absorbing purposes it is a good idea to wrap a piece of 1/4" thick foam rubber around the tank before putting it into the cavity. Tape the tank to the profile to hold it in the cavity during the addition of the plastic fuselage shell. After the shell is installed, stuff a piece of foam between the tank and the shell to hold the tank in place. Use G. E. Silicone Seal to plug the firewall fuel line hole and prevent fuel seepage.

(c.) Should it be necessary to remove the tank, it can be done by cutting loose the shells from the double coated servo tape at the bottom front of the profile. They may then be separated enough to get the tank out. After replacement of the tank, new double coated servo tape is installed and the plastic shells re-fastened.

(27.) PLASTIC FUSELAGE SHELLS

(a.) With a sanding block, sand any rough spots from the edges of the 1/2" balsa fuselage profiles.

(b.) Leave the protective cover on the top of the servo tape and press it in place on the profile.

(c.) Put a row of pins down the center of the tape for use as a guide in centering the fuselage shells on the profile.

(d.) Check fit the shells to the fuselage. With a sanding block remove any high spots in the plastic where the halves join.

(e.) Take out the pins and remove the protective strip from the top of the double coated tape. Replace the pins.

(f.) Slip the shell onto the profile against the pins and press down against the servo tape to stick it in place.

(g.) Remove the row of pins and repeat the process with the other shell.

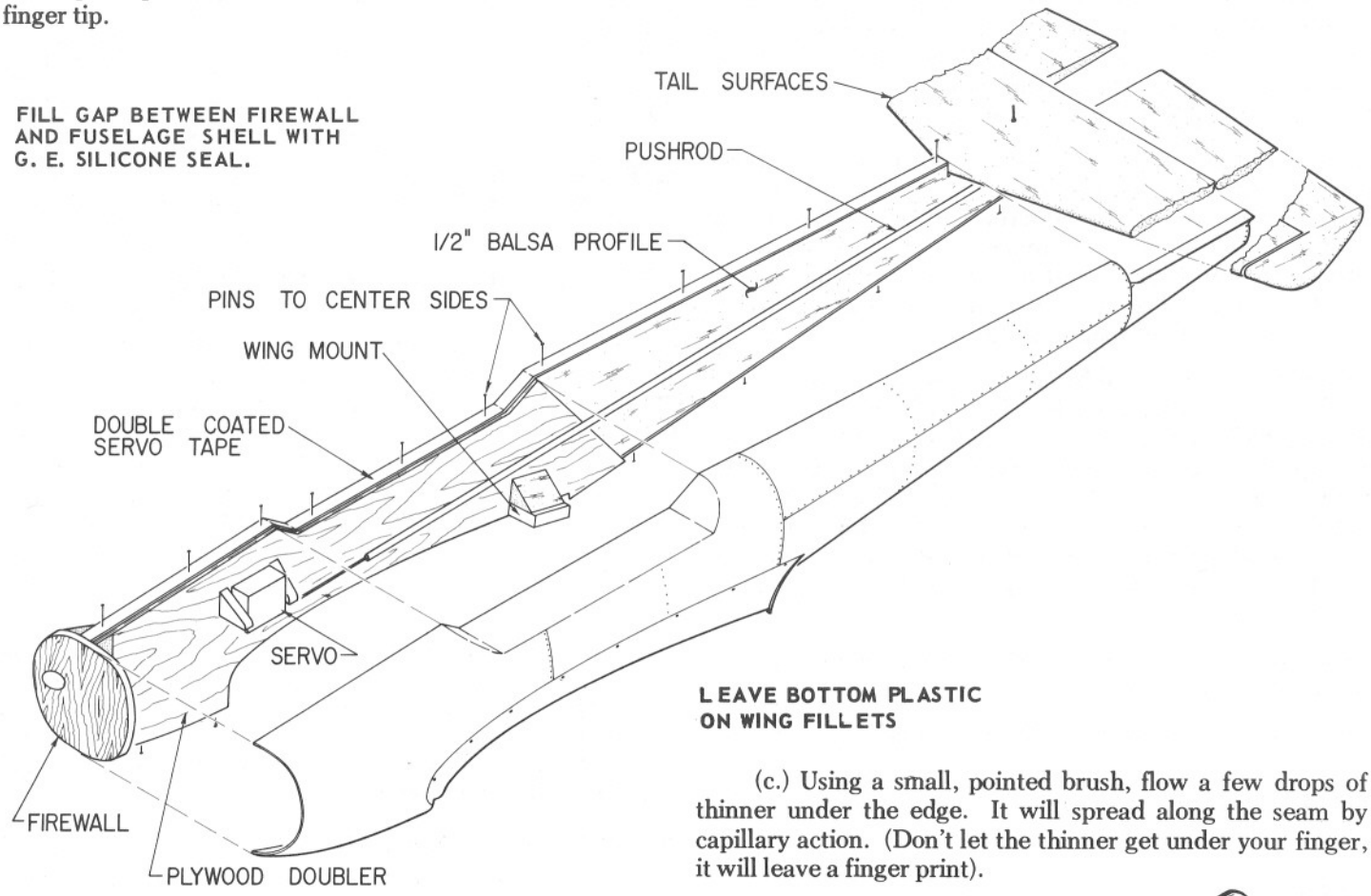
(h.) Cover the seam between the halves with a strip of Stripe-Rite plastic tape on the top and bottom of the fuselage to seal it. Do not tape the rear part of the fuselage on the top where the dorsal fin will later be glued.

(i.) The seam around the fuselage shells at the firewall should be sealed with a generous bead of G. E. Silicone (bathtub) seal.

(j.) Put a small bead of Sig-Ment around the edge of the tail fillet where it contacts the bottom of the stabilizer. The purpose of this bead is to serve as an oil seal in the seam

between the stabilizer and the plastic shell. Do not put on a large bead that will spread over a large area or it may melt or warp the plastic. Smooth the bead into the seam with a finger tip.

A .60 size engine and an 11"-7" to 11"-7-3/4" prop is recommended for the Super Chipmunk. Do not fly with a prop larger than 12"-6".



(c.) Using a small, pointed brush, flow a few drops of thinner under the edge. It will spread along the seam by capillary action. (Don't let the thinner get under your finger, it will leave a finger print).

Don't try to cover any of the plastic parts with monokote or other iron-on types of covering material. The heat will damage the plastic parts.

(28.) FIN AND RUDDER

(a.) The fin and rudder are covered and hinged in the same manner as the stabilizer and elevator. (See Section 20).

(b.) Epoxy the fin in place on top of the stabilizer and fuselage. Use epoxy glue where it contacts the stabilizer, Sig-Ment where it contacts the fuselage.

(c.) Align the rudder in the proper location and mark and drill it to receive the torque rod arm.

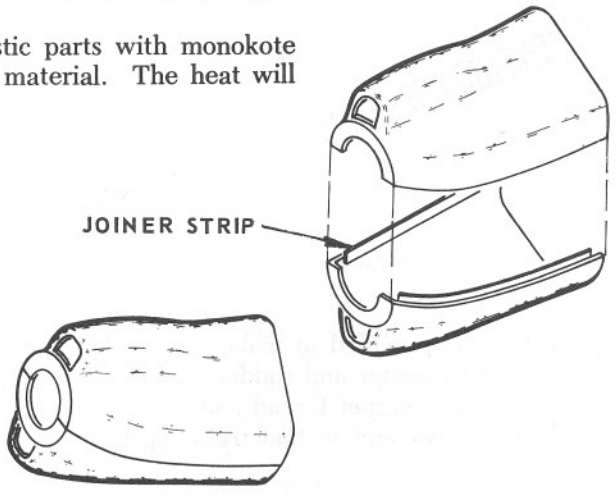
(d.) Simultaneously epoxy the hinges and torque rod arm in place to attach the rudder to the fin and to the tail wheel.

(e.) The dorsal fin is glued in place with Sig-Ment on top of the plastic fuselage shells and to the front of the fin.

(29.) COWLING

(a.) Match the two cowling halves by gently rubbing over a sheet of sandpaper laying on a flat surface.

(b.) Trial fit the halves and sand the edges as above with a sanding block. Hold the plastic joiner strips supplied in place on the inside of one half. Leave half of the strip extended over the edge so as to lap onto the other part half when it is attached.



(d.) Join the halves with several strips of masking tape. Flow butyrate thinner or acetone into the seam from the inside. Scrape and sand the seam. A putty may be made from shavings of the waste plastic dissolved in acetone to fill any parts of the seam that have not completely closed on the cowling.

(e.) Carefully cut out the opening for the motor. Don't try to get it large enough on the first cut. Cut it out undersize and trim to fit, trying it out on the airplane. A twisting motion is necessary to put on the cowl over the engine and fuselage.

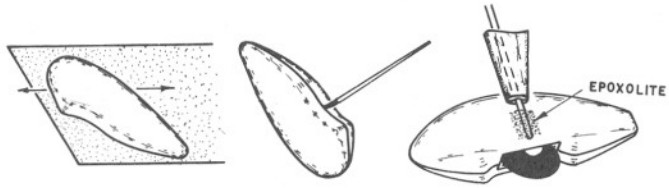
(f.) Tape the completed cowl in place on the fuselage in the desired position over the engine. Locate the points on the outside of the cowl that will reach the center of the two cowl blocks on the sides of the firewall. Drill through the cowl with a number 43 drill and into the cowl blocks. Thread the hole in the wood blocks with a 4-40 tap to receive the two 4-40 nylon screws furnished in the hardware pack.

(g.) The cowling top screws are No. 4 x 1/2" sheet metal screws. Drill a pilot hole into the center of the top of the firewall to install the front screw. The rear screw is fastened directly into the balsa profile. Strengthen the threads in the balsa by putting Sig-Bond glue into the hole.

(h.) A chamber-less stack-style muffler can be installed easiest on the Chipmunk. Mufflers too large to be located inside the cowling should be mounted on an extension pipe below the cowl.

(30.) WHEEL PANTS

The wheel pant halves are joined in the same manner as the cowl except that the joiner strips are not necessary.



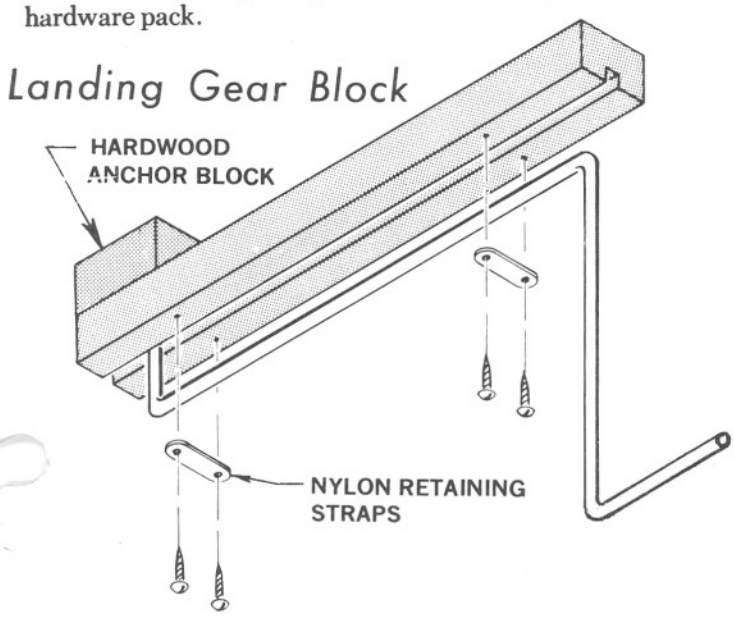
(31.) MOUNTING THE PANTS

Fasten the pants to the landing gear with Epoxolite putty. Make the leg fairing from scrap wood.

(32.) LANDING GEAR

(a.) Drill into the anchor block at the end of the slot in the landing gear block with a 5/32" drill. Be careful that the drill does not go through the top of the wing when making this hole.

(b.) Insert the torsion arm of the landing gear into the hole in the anchor block and retain the gear in the slot with the metal retaining straps and #2 screws provided in the hardware pack.



(33.) TAIL CONE

(a.) The halves of the tail cone should be fastened together in the same manner as the cowling.

(b.) Cut the cone to fit over the top of the stabilizer. Cut openings to clear the elevator control horn. The tail cone goes under the plastic fuselage shell. A notch must be cut in the profile at the bottom to pass the cone. Attach the cone with tape (not supplied) or with wood screws (not supplied) into the stabilizer and profile. This will allow it to be removed for access to the elevator and rudder linkages.

(34.) WING TIPS

The plastic wing tips may be attached with either Sig-Ment or G.E. Silicone Seal. Do this after covering and clear-doping the wing. Do not use an excessive amount of Sig-Ment since a large bead may melt or warp the plastic.

(35.) COVERING AND FINISHING

The plastic fuselage shell, wing tips, cowling and wheel pants may be painted with Sig Supercoat Dope. Care should be used not to apply heavy, wet coats of dope. Put on light coats and allow them to dry thoroughly before applying a second coat. Spraying is a good method of getting a good finish with a minimum amount of dope. Be especially careful with spray cans not to wet the plastic too much. Spray several light dusting coats with adequate drying time allowed. Do not use other paints without testing first on scrap plastic.

Wood parts of the model should be covered with silk, Silkspan. This strengthens the model and keeps the wood and finish from cracking. The wood parts are first prepared with two brushed-on coats of Sig Lite-Coat clear or Sig Supercoat clear dope. Sand each coat when dry.

The bottom of the wing is a good place to start covering. Cut a piece of material about 1" larger than half of the wing with the grain running lengthwise. Dip in water and apply. Work around the edges, pulling out all the wrinkles and stretching it smooth. Brush around the outside edge with clear dope and it will soak through the covering and adhere to the dope already on the surface of the wing. After drying, trim off the edges with a sharp razor blade. Go over any loose edges that have not completely adhered with dope. The top half is done in identical fashion except that the material should be brought down over the edges and lapped over the bottom covering at the leading edge and over the back of the trailing edge.

Use the same process on the tail section parts.

Apply two or three coats of clear dope to the covered parts.

Sand with 220 3-M Tri-M-Ite or other no-load paper. For an excellent finish, one or two coats of Sig Sanding Sealer can be applied and sanded smooth. It must be remembered that extra coats of sealer or dope will add weight.

Spray or brush all of the covered parts with two coats of Sig Supercoat White Dope. Mask off the trim color scheme with masking tape. Go over the edges of the tape with clear dope to seal them and prevent the color dope from running underneath the edge. Two coats of Supercoat Color Dope will give good coverage for trim. Spray two coats of clear over the color dope.

(36.) DECALS

Dip the decals in water for a few seconds, remove and allow the moisture to soak into the backing to completely loosen the glue. Don't slide the decal off too soon or it may tear. Slide about 1/4" of decal at the bottom over the edge of the backing and align on the surface. Hold the decal and carefully slide away the backing from underneath. Use a small paddle of 1/8" sheet balsa about 3/8" wide as a squeegee to remove excess water from under the decal. Hold down one edge of a similar paddle while squeegeeing to prevent the decal from being moved. Allow plenty of time for the glue under the decal to dry before wiping away the excess glue remaining on the surface of the model with a damp cloth.

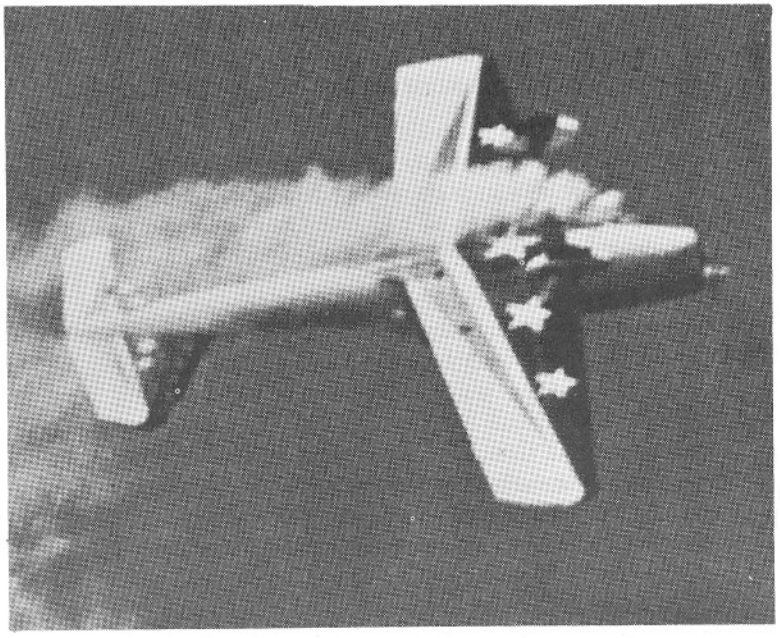
Putting the fuselage decals over the rivets causes a small area of decal material to not stick down properly. With a fine pointed brush, apply a TINY drop of butyrate dope thinner to the rivet area to melt the decal material and cause it to sag down around the rivet.

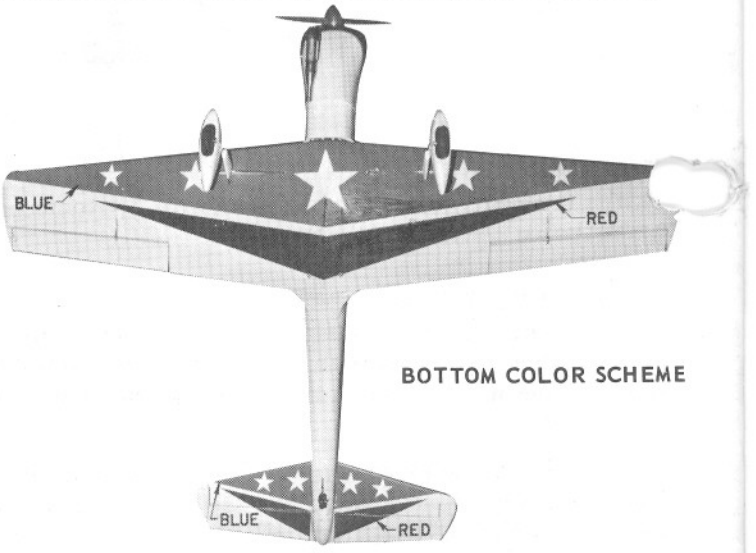
The decals are fuel proof with most fuels but will dissolve in dope or cement. Do not try to dope over the decals. Some types of clear fuel proofer may be used over the decals to increase their durability but test them in advance before applying.

(37.) FLYING

Balance the Chipmunk by suspending from the wing tips at a point 1/4" to 1/2" from the leading edge at the wing tip. If it balances farther back, add lead to the nose as necessary. Trying to fly with the C.G. too far back is much more dangerous than the slight increase in wing loading caused by adding lead to the nose. Balance with an empty fuel tank. When slightly nose heavy the model is much more stable and less likely to snap roll or stall. The reaction to control movements is less sensitive so its not so easy to overcontrol. Some aerobatic ability may be sacrificed with a forward C.G. so you may wish, after test and familiarization flights, to move it farther back to get more aerobatic ability. Do this slowly and check results and control response in the air at a good altitude.

Hold a small amount of up elevator during the first part of the takeoff run to keep the tailwheel steering effective until air speed is high enough for the rudder to take over. The Chipmunk will drift to the left from torque during take-off. Feed in some right rudder as soon as the tail wheel clears the ground, earlier if required. The Chipmunk is not difficult to handle in the air and can be flown by anyone who is capable of handling a low-wing multi-channel model.



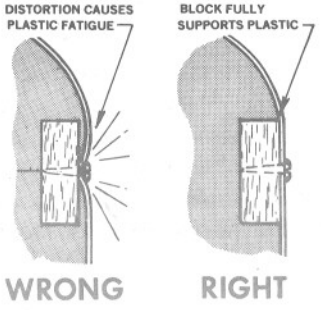


BOTTOM COLOR SCHEME

Sig Manufacturing Co., Inc.
Montezuma, Iowa 50171

TO PREVENT COWL CRACKS:

The most common cause of plastic cowls cracking is distortion of the plastic from improper installation of the mounting blocks and screws. If the plastic is fully supported by the block underneath, no strain will occur when the screws are tightened down.



Use a small amount of Sigment or a "super" cyano-acrylate glue to fasten the canopy to the fuselage. We recommend Sig Plastinamel for painting the framing outline on the canopy. Dope is very difficult to use on canopy plastic because of its warping action. Epoxy paint can be used, but it does not stick on the plastic quite as well as Plastinamel. Sanding the gloss off the plastic will help adhesion. Other enamels and plastic paints probably can be used, but test in advance, because no assurance can be given for other types.