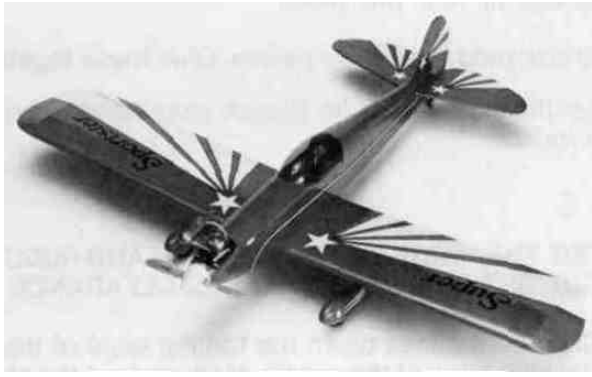
Super Sportster

INSTRUCTION BOOK



Sportster	20	40	66
Engine	.19-.25	.35-.45	.45-.61
Wing Span	48"	56"	61-1/2"
Wing Area	400 sq. in.	550 sq. in.	675 sq.in.
Length	39-1/2"	43"	48"
Weight	3-1/2-4 lbs.	5 lbs.	6-7-1/2 lbs.

MATERIALS NEEDED TO COMPLETE THIS KIT:

4 channel radio	Wheel collars	Covering
Engine	Wheels	Instant glue
Fiberglass cloth/resins	Epoxy	White glue
Engine mounting bolts	Fuel tank	
Propeller	Spinner	

The Super Sportster was designed for the sport flier The Sportster is fast, stable and aerobatic It has good looks, good performance and stability at low speeds For the creative builders it can be detailed to resemble a war bird, Formula 1 racer or a CAP 21 type aerobatic ship Materials are included for both trike gear and conventional gear (taildragger) to help you create your own Sportster

The parts are machine cut and sanded for accurate fit Some parts are razor cut in the 20 size for accuracy Should you notice a difference in size between plans and parts, it is usually because paper plans change size with moisture Most of the parts are self aligning and do not require building over the plans except where specified in the instructions

Different types of glues may be used such as epoxy, Cyanoacrylate or aliphatic (white) resin Be careful when using any kind of glue Make sure you have enough ventilation CA glues (instant) are especially harmful if not used correctly

We suggest that you build on a flat surface to insure a straight wing and fuselage When you build over the plans, cover them with waxed paper so the wood parts are not glued to the plans'

The following tools will be helpful when you build and X-Acto knife, razor plane, saw sanding block, flat building board T Pins hinge slotting kit, drill and drill bits, tap and tap holder, covering iron and heat gun, Dremel tool and cutter tor wire and router bits, soldering iron, screw drivers, needle nose pliers, files, clamps and a good square or right triangle

We recommend a plastic heat shrink covering such **as Super Monokote to keep your Sportster light Follow the manufacturer's instructions** concerning the use of this covering material

Please read through this step by step instruction book before you start building so you will get an overall idea of the construction steps and avoid mistakes Since these instructions do pertain to the 20, 40 and 60 size Sportsters, refer to the plan and parts list to help you identify the various parts Any differences in the instructions for the various size models will be noted at the appropriate steps with a star (•*)

These instructions and plans were intended tor 2 cycle engine use However starting on page 26 of this booklet, you will find adaptation instructions for the installation of 4-cycle engines

Please inspect all parts carefully before starting to build! If any parts are missing, broken or defective, or it you have any questions about building or flying this airplane, please call us at (217) 398-8970 and we'll be glad to help. It you are calling tor replacement parts, please look up the part numbers and the kit identification number (stamped on the end of the carton) and have them ready.

WARRANTY

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

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall **be** assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product.

By the act of using the user-assembled product the user accepts all resulting liability.

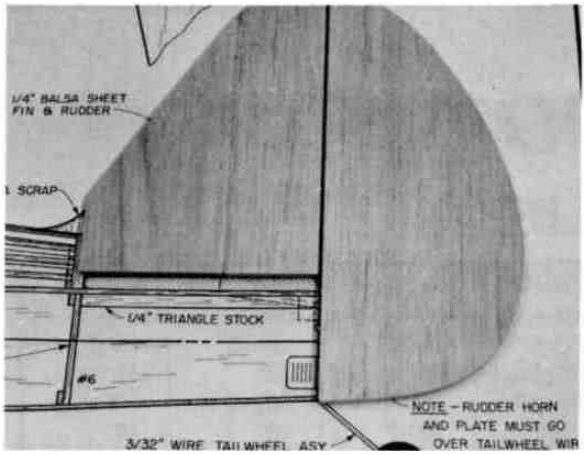
If the buyer is not prepared to accept the liability associated with the use of this product, he Is **advised** to immediately return this kit in new and unused condition to the place of purchase.

READ THROUGH THIS INSTRUCTION BOOK FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.
(SEE WARNING ON BACK COVER)

GREAT PLANES® MODEL MANUFACTURING COMPANY

POBOX788 URBANA, ILLINOIS 61801 (217)398-8970

BUILDING THE TAIL SECTION



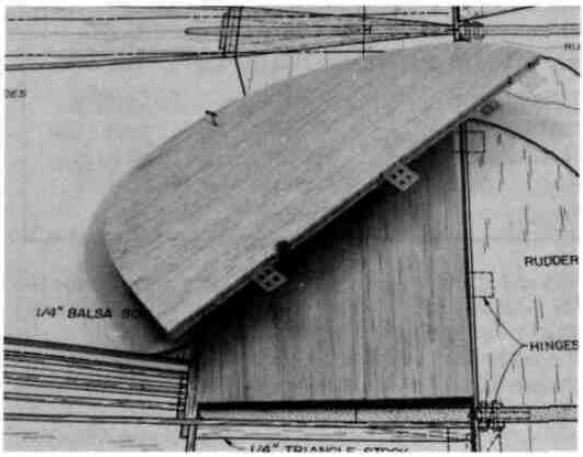
1. D PREPARE THE FIN AND RUDDER

Prepare the forward and rear fin sections by sanding if necessary for a good fit. Working over the plans, butt glue the fin section together. After the glue is dry, sand both sides of the fin. Also sand both sides of the rudder.

* The 20 size fin is in one piece.

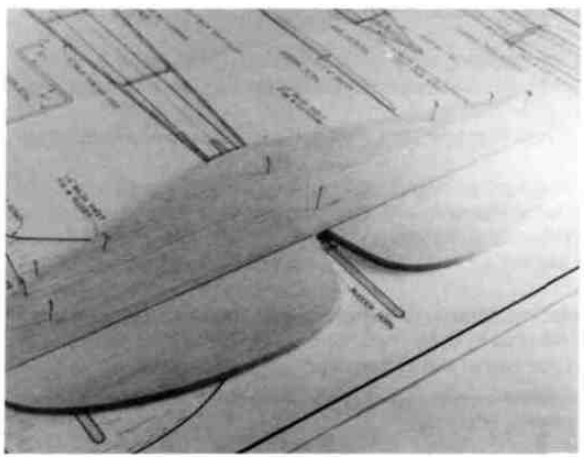
* The 60 size rudder is in two pieces. Glue these together.

Note: Specific instructions for tricycle gear installation are in *italics.*



2. D CUT THE HINGE SLOTS IN THE FIN AND RUDDER; CUT OUT RUDDER FOR JOINER CLEARANCE

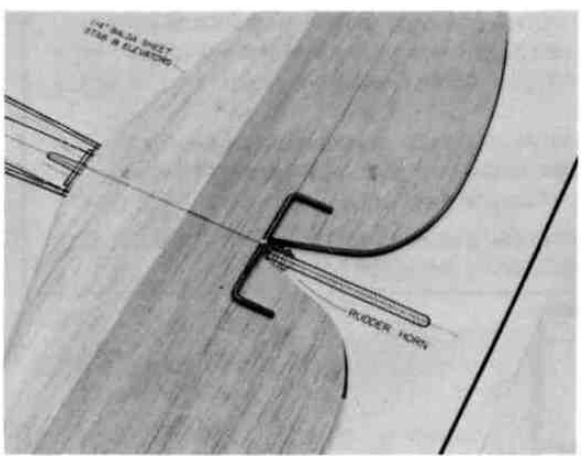
Draw centerlines down the trailing edge of the fin and the leading edge of the rudder. Mark and cut the hinge slots. Two hinges are used above the stabilizer. For conventional gear (Tail dragger) the third hinge should be just below the stab and above the tailwheel strut tab. *(For tricycle gear the third hinge should be near the bottom of the rudder. Check the plans.)* Relieve (cut out) the leading edge of the rudder for elevator joiner wire clearance. *(Shape the rudder leading edge to a "V"now for tricycle gear.)* For conventional gear wait to shape the leading edge until the hole is drilled for the tailwheel tiller arm later.



3. D GLUE THE STAB PARTS TOGETHER; SAND THE STAB AND ELEVATORS

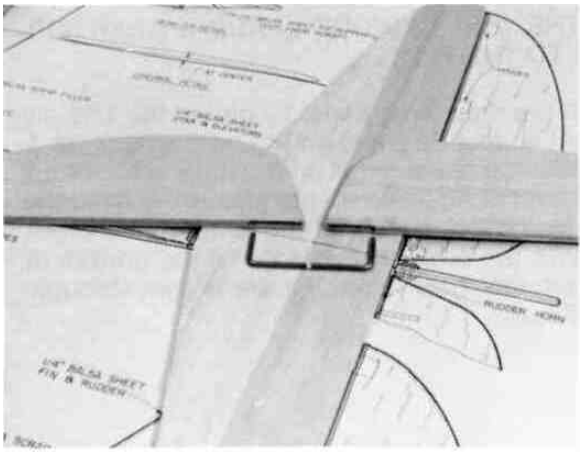
Check the fit and butt glue the stabilizer forward and rear sections together. Sand both sides of the stabilizer and elevator halves.

* The 20 size stab is in one piece.



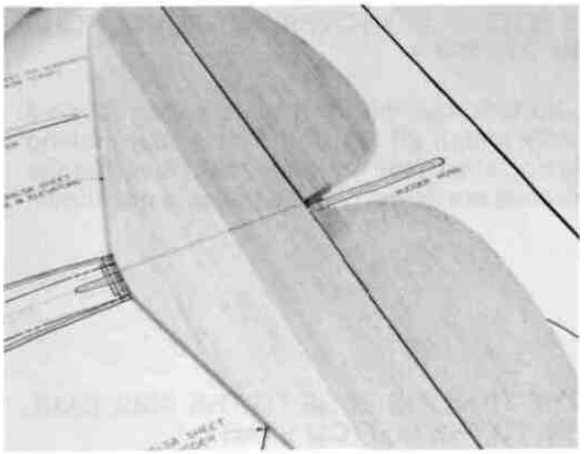
4. D DRILL HOLES IN THE ELEVATOR HALVES FOR ELEVATOR JOINER WIRE

Draw a front to back centerline down the top side of the stab and a centerline down the leading edges of the elevator halves. Mark the center of the elevator joiner wire. Align the stab, elevator and joiner wire and mark the hole locations for the joiner wire arms on the centerline of the elevator leading edge. Drill the holes.



5. D GROOVE OUT THE ELEVATORS FOR JOINER WIRE CLEARANCE

Cut a groove in the elevator leading edge inboard (inside) of the hole so when the joiner wire is installed it will be flush with the leading edge of the elevator. Groove both elevator halves.

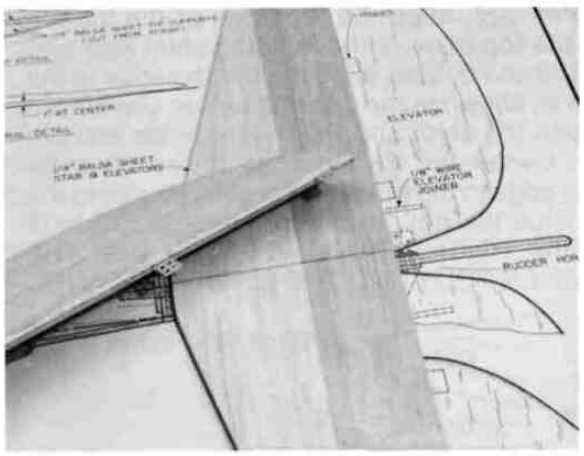


6. D TRIAL FIT THE JOINER WIRE

Temporarily install the elevator joiner wire into the elevator halves. Check to make sure that this assembly is aligned properly. Bend the joiner arms if necessary for a perfect fit. DO NOT GLUE THE JOINER WIRE TO THE ELEVATOR HALVES UNTIL AFTER THE PIECES ARE COVERED LATER.

7. D CUT HINGE SLOTS FOR THE STAB AND ELEVATOR

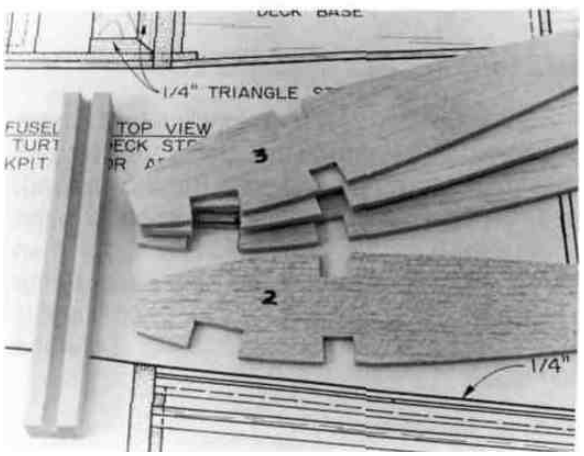
Mark and cut the hinge slots for the stab and elevator halves as you did with the fin and rudder. See the plans for locations. Shape the leading edges of the elevator halves to a "V".



BUILDING THE WING PANELS

READ THIS FIRST BEFORE YOU START BUILDING THE WING PANELS: It is very important that you build a straight wing with no warps or twists or you will get some flying characteristics you didn't expect! Be very careful when you align the ribs, spars, leading edges and trailing edges and sheeting at the various steps below. All these parts should be in their correct positions before you glue them in place. Hold or pin the parts in place, then glue. Use the following instructions to help you build the wing straight and warp free.

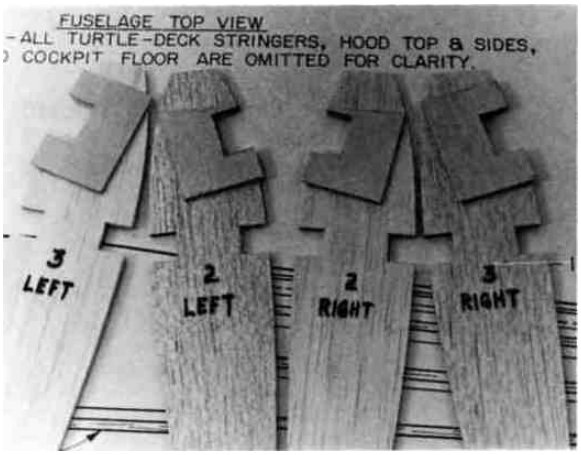
Remember: Anyone can build a wing. Only a careful builder can build a straight wing.



1. D NOTCH THE RIBS FOR LANDING GEAR BLOCK CLEARANCE

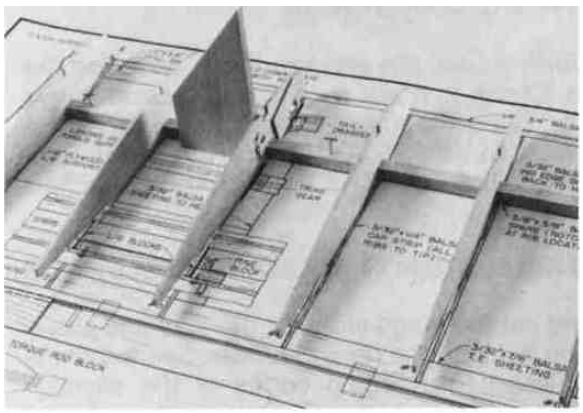
Notch the ribs to be installed at locations 2 and 3 for the hardwood main landing gear blocks. Conventional gear block notches are forward on the ribs. *(Tricycle gear notches are the rear cutouts.)* Check the fit with the block. Number these ribs 2 and 3. Cut the notches in the ribs for the other wing panel at the same time. (Conventional gear cut outs are shown.)

* 20 size ribs are notched already. Glue the scrap back into the notch you will *not* use.



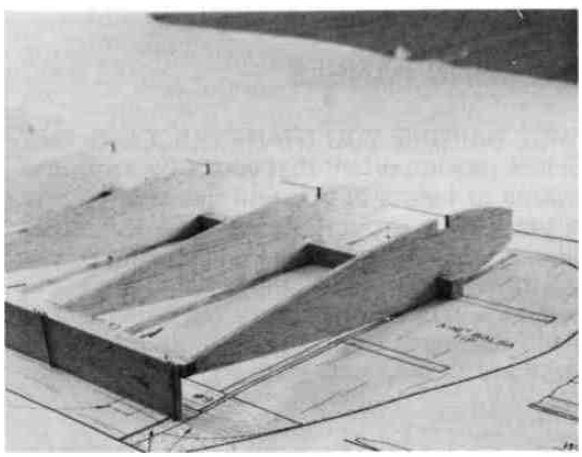
2. D GLUE THE 1/16" PLYWOOD **LANDING GEAR** SUPPORTS TO THE RIBS

Start on the right wing panel by gluing the 1/16 ply brace on the left side of rib 2 and on the right side of rib 3. (For the left panel the brace glues on the right side of rib 2 and on the left side of rib 3.) When the glue is dry sand the braces to the rib contour. Note that the landing gear block will be flush with the bottom sheeting not the bottom of the rib. (Conventional gear locations are shown throughout the instructions.)



3. D PIN THE BOTTOM SPAR OVER THE PLANS; PLACE RIBS ON THE SPAR

Pin the bottom spar on the waxed paper covered plans. Temporarily install all the ribs to the spar making sure they are 90 degrees to the building board and that the landing gear notches are down. (Waxed paper is not shown for clarity.)

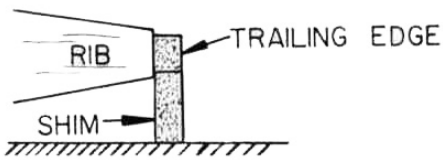


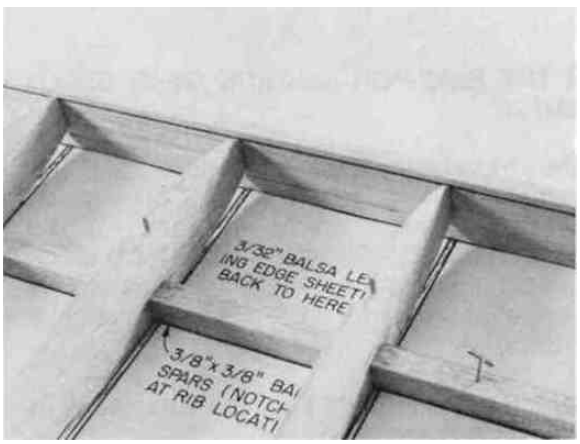
4. D GLUE THE TRAILING EDGE TO THE RIBS; GLUE **THE** RIBS TO THE BOTTOM SPAR

For the 40 size, align the top edge of the trailing edge stock to the top edge of the building shim (see size below). For the 20 and 60 size, align the trailing edge to the top of the shim as shown in the drawing below. Use waxed paper in between the shim and the trailing edge and pin them together. Center the trailing edge to the rib ends. Glue the trailing edge to the ribs with the shim pinned to the work surface. Glue the ribs to the bottom spar. DO NOT GLUE THE SHIM TO THE TRAILING EDGE! USE THE SHIM AGAIN WHEN YOU BUILD THE LEFT WING PANEL.

Shim Sizes:

20 = 1/4 x 5/8
40 = 3/32 x 7/8
60 = 1/4 x 3/4

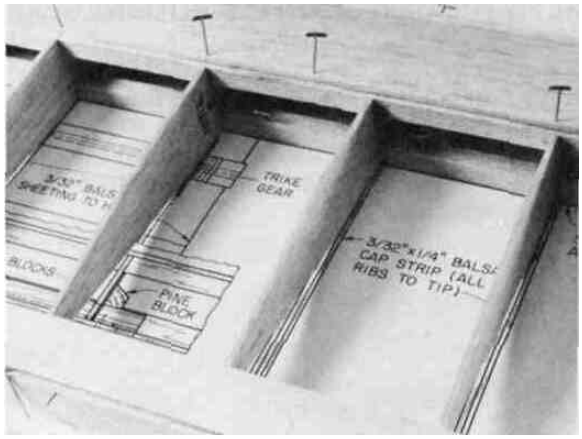




5. D GLUE THE RIBS TO THE LEADING EDGE

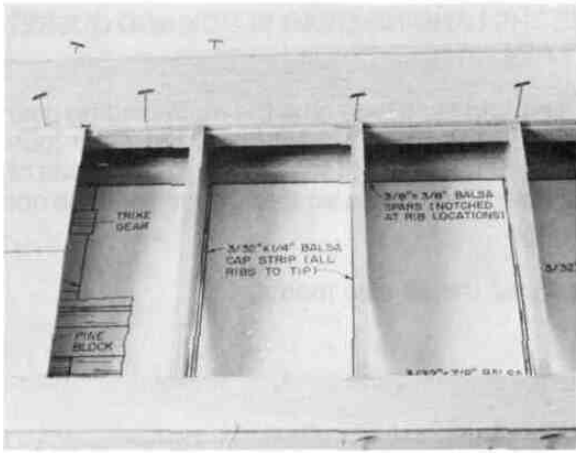
Use a straight edge and draw a straight line on the back of the leading edge about 3/32" from the top. Using 1/4 x 1/4 x 36 balsa stock as a shim under the leading edge (for the 40 size), align the top of the ribs to the line and glue them in place to the leading edge. The leading edge is intentionally wider than necessary to allow for slight warpage. Do not fight a slight warp but instead glue the leading edge to the ribs making sure there is at least 3/32" above and below the ribs for sheeting. Later the excess will be carved off.

* Use an 1/8" shim for the 20 size.
* Use a 5/8" shim for the 60 size.



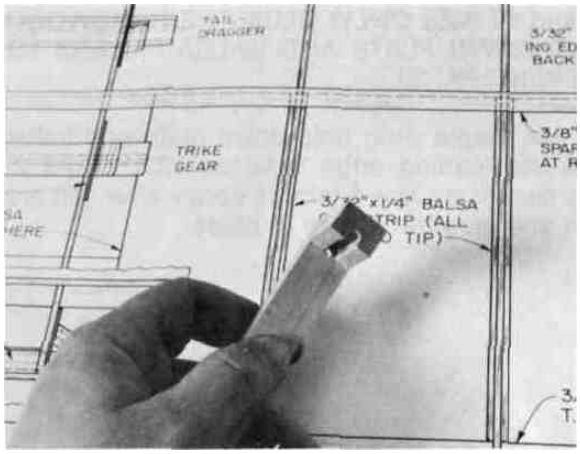
6. D ADD THE TOP SPAR, TOP LEADING EDGE SHEETING AND TOP TRAILING EDGE SHEETING

Glue the top spar in place. Glue the top leading edge sheeting between the leading edge and the dotted line on the top spar shown on the plans. Align the top trailing edge sheeting even with the back of the trailing edge and glue it in place.



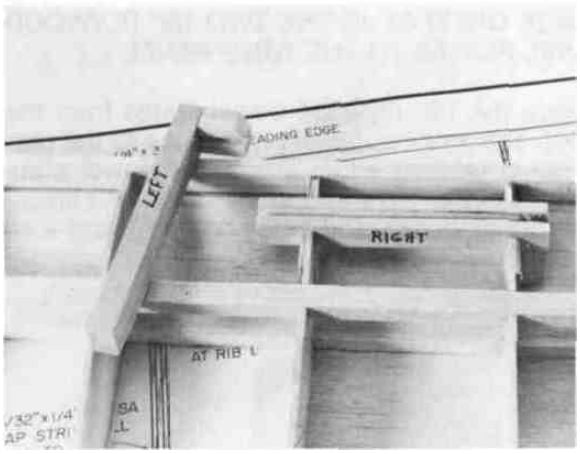
7. D ADD THE TOP CENTER SECTION SHEETING AND CAP STRIPS

Glue the top center section sheeting in place. Glue the front piece on first. Then cut the rear piece to fit and glue it in place. Add the top cap strips. Note that the cap strip on the tip rib (outer end of the wing) is offset so the outer edge is flush with the outer edge of the rib. After the glue sets up, remove the wing from the building board and check all the glue joints. Add more glue if necessary. Now remount the wing upside down reversing the trailing edge shim on your work surface.



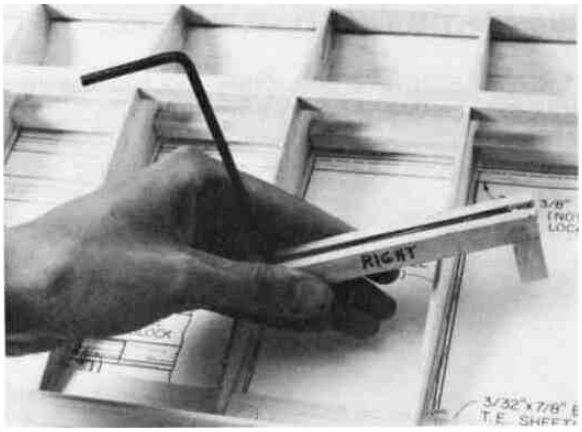
8. D PREPARE THE MAIN LANDING GEAR BLOCK

Glue the torque block to the inboard (inside) end of the ungrooved side of the landing gear block. The grooved side of the torque block should face toward the other end of the long landing gear block. After the glue dries, drill a 5/32" hole down through the landing gear block, using the groove in the torque block as a guide. Epoxy is recommended for the above procedure.



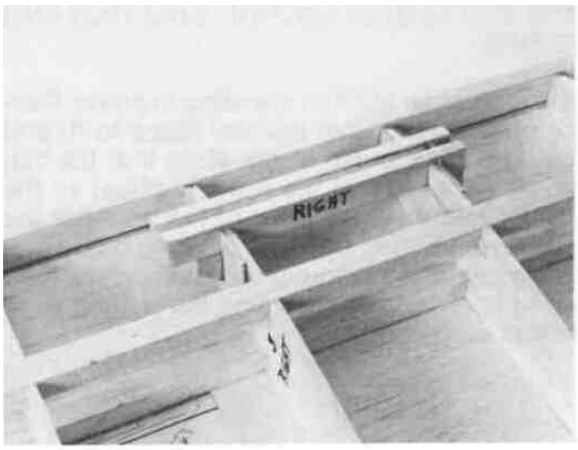
9. D TRIAL FIT THE LANDING GEAR BLOCK ASSEMBLY

Temporarily install the landing gear support assembly into the wing. Custom fit the assembly as follows. Shape the bottom end of the torque block to fit the contour of the wing sheeting to which it mates. The top of the long grooved block should be flush with the bottom sheeting (not yet installed).



10. D TRIAL FIT THE MAIN GEAR WIRE INTO THE GEAR BLOCK

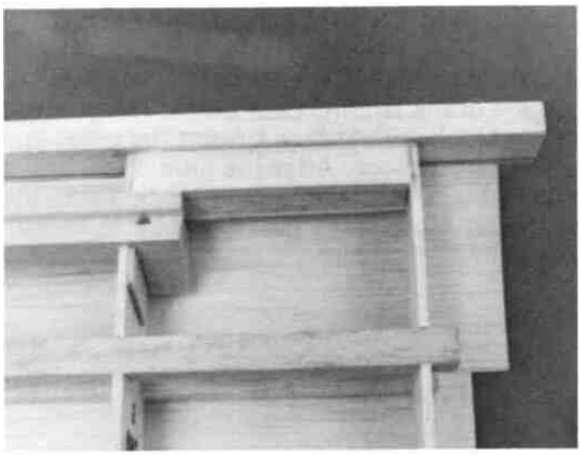
Remove the landing gear block from the wing and temporarily install the landing gear wire. The torque arm should slide into the hole you drilled earlier with the long arm resting in the groove in the long block. Custom fit as necessary. Remove the wire.



11. D GLUE THE LANDING GEAR BLOCK AND GUSSET IN PLACE

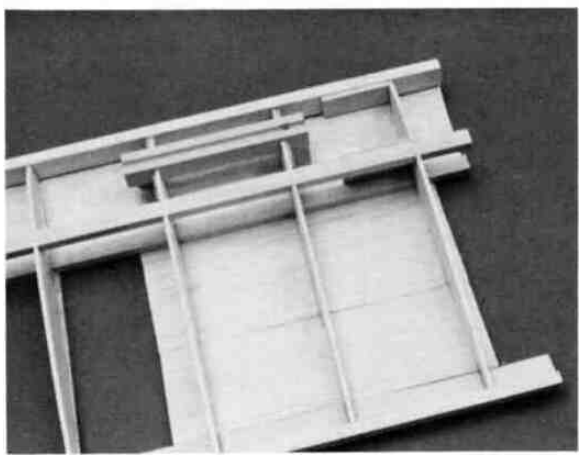
Use 5 minute expoxy to glue the main landing gear block in place. Add the small gusset under the outer (outboard) end of the long block. Fill the groove at both ends of the long block with scrap balsa so foreign matter does not get into the wing.

* Go to step 13 for the 20 size model.



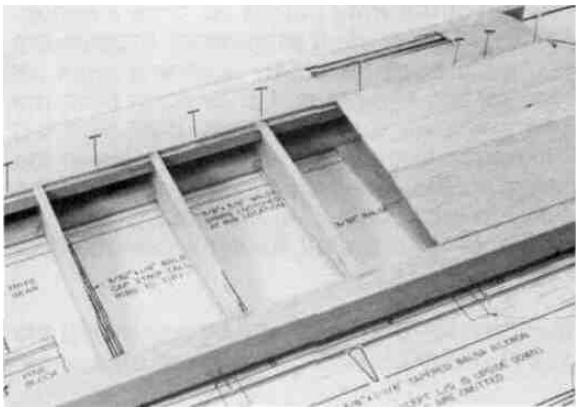
12. D (40 and 60 SIZE ONLY) GLUE THE HARDWOOD HOLD DOWN PLATE AND BALSA FILLERS TO THE WING PANEL

Add the maple wing hold down plate and balsa fillers behind the leading edge between ribs 1 and 2. Custom fit as necessary. Use 5 minute epoxy after you are sure of the fit and glue the pieces in place.



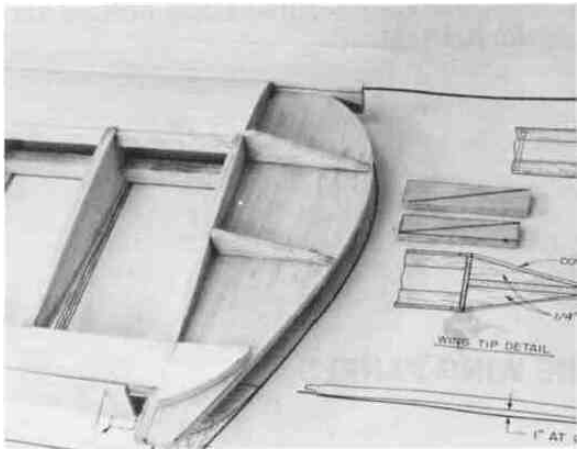
13. D (20 SIZE ONLY) GLUE THE TWO 1/8" PLYWOOD DOWEL PLATES TO THE WING PANEL

Remove the 1/8" Plywood dowel plates from the razor cut sheet. The smaller dowel plate glues to the rear of the wing panel leading edge. The larger dowel plate glues to the front of the top and bottom spars. Use epoxy and glue both plates in position between ribs 1 and 2 as shown on the plan.



14. D ADD ALL THE BOTTOM SHEETING TO THE WING PANEL

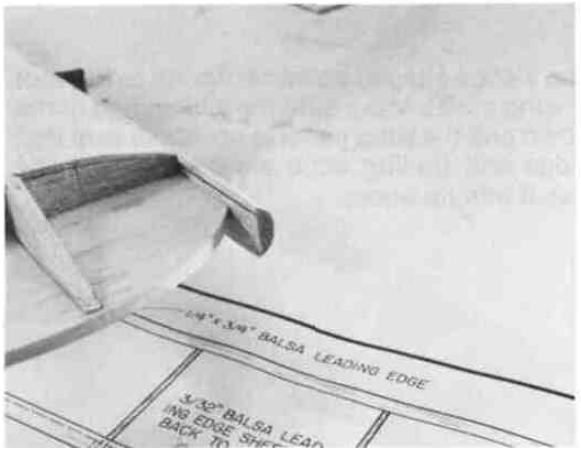
Add the bottom leading edge sheeting, the trailing edge sheeting and the center section sheeting. Relieve (cut away) the leading edge sheeting for landing gear block clearance. *(Relieve the center section sheeting for tricycle gear.)* Add the bottom cap strips. After the glue dries, remove the wing from your building board and turn it over.



15. D ADD THE WING TIPS, WING TIP FILLERS AND SUPPORT PIECES

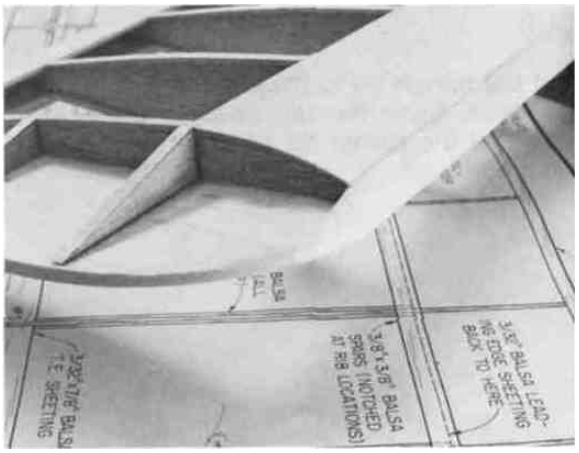
Cut off spars and sheeting even with the outboard edge of the tip rib. DO NOT CUT THE LEADING EDGE! Add the wing tip. It should be centered on the tip rib and on the leading edge. For the 40 and 60 size models, prepare and install the upper and lower forward and rear wing tip supports. Using the wing tip detail drawing as a guide, cut two rectangles from the 1/4" scrap piece. Cut the rectangles diagonally and you have two forward and two rear pieces. Custom fit all four supports and glue them in place. Use 1/4" scrap and make and glue the aileron filler piece. Glue it to the inboard side of the wing tip. Add filler pieces to the rear end of the wing tip, top and bottom. Sand these blocks to the aileron contour later after installing hinging and centering the ailerons.

* The 20 size kit includes the above parts in the 1/8" razor cut sheets.



16. D BUILD THE LEFT WING PANEL NOW

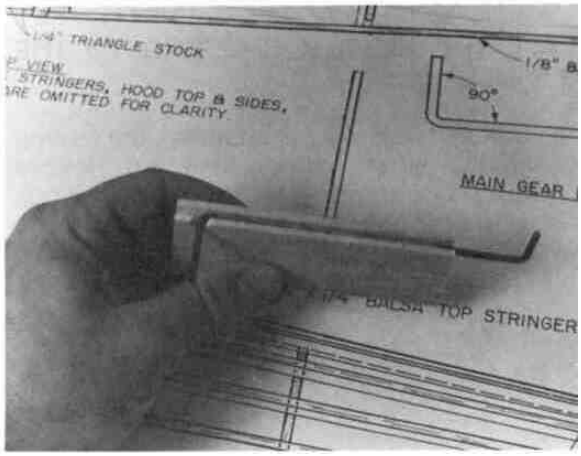
Build the left panel in the same manner except build it upside down. Gear cut outs are "up" and landing gear blocks are installed before any sheeting is added. Install the wing hold down plate and fillers in the 40 or 60 models (or the wing dowel plates in the 20 size) after you turn the wing panel over and before the top leading edge sheeting is installed.



17. D SAND THE LEADING EDGES OF THE WING PANELS TO THE ROUNDED SHAPE SHOWN ON THE PLANS

18. D FINISH SAND THE WING PANELS

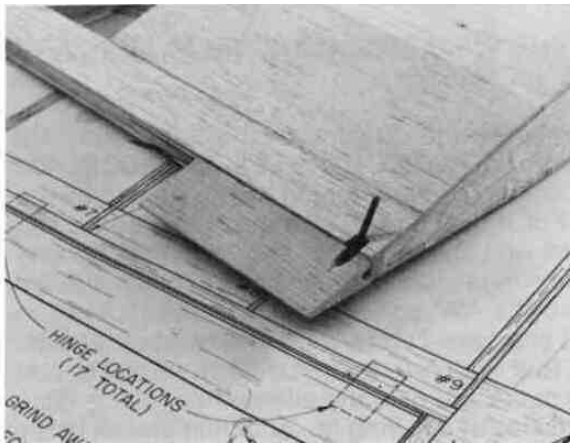
Sand the leading edge to match the wing tip contour. Remove the trailing edge building shim and cut and sand the wing parts flush with the root rib (inner rib). Finish sand the rest of the wing panel.



19. D PREPARE THE CENTER TRAILING EDGE PIECES

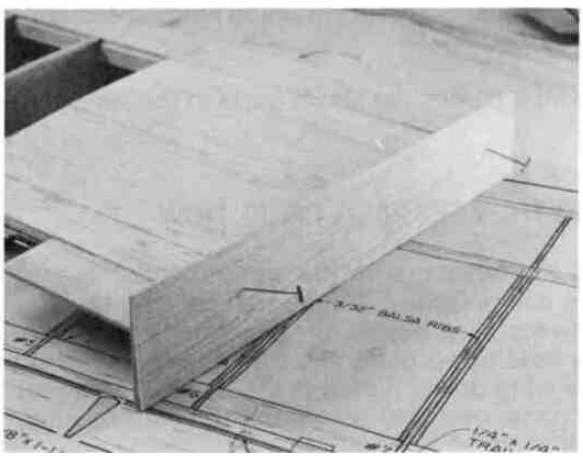
With the top of the wing panels up, draw a center-line down the trailing edge of each wing panel. Prepare the grooved center trailing edge pieces by notching them for the servo arm torque rod clearance 3/8" or so in from the wing center. See plans for location. Make right and left pieces. Glue the aileron torque rods into the groove in the center trailing edge pieces. Use vaseline at the ends of the outer tube so only the tube is glued to the block. Notch the trailing edge of the wing to permit forward movement of the torque rod arms.

* The center trailing edge pieces for the 60 size model are balsa. Cut a groove in the block for torque rod clearance.



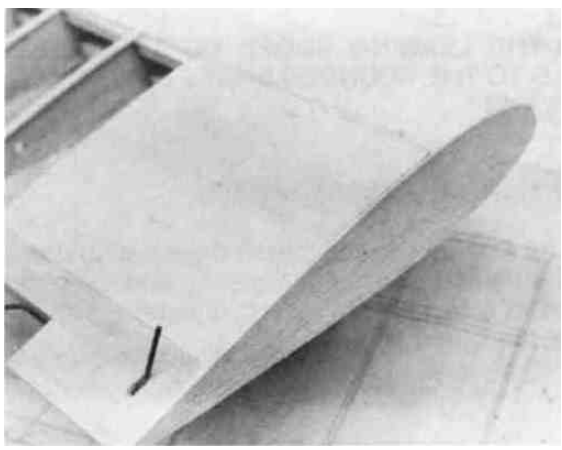
20. D GLUE THE CENTER TRAILING EDGE PIECES TO THE WING PANELS

JOINING THE WING PANELS



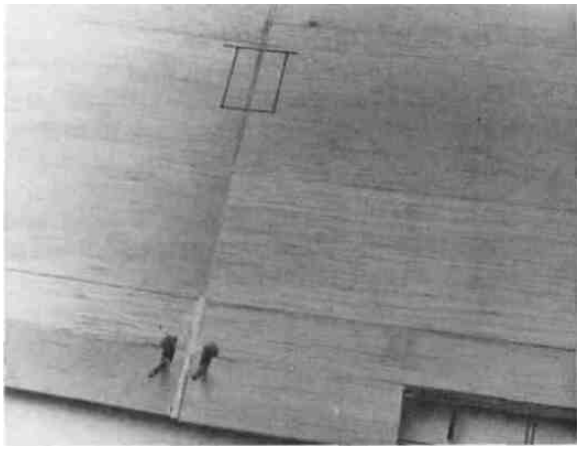
1. D GLUE THE CENTER RIB TO THE LEFT WING PANEL

Glue the wedge-shaped balsa center rib to the root end of the left wing panel. Make sure the wider edge of the center rib is down and the wing panel is up. Make sure that the leading edge and trailing edge are centered on the tapered rib. Use 5 minute epoxy.



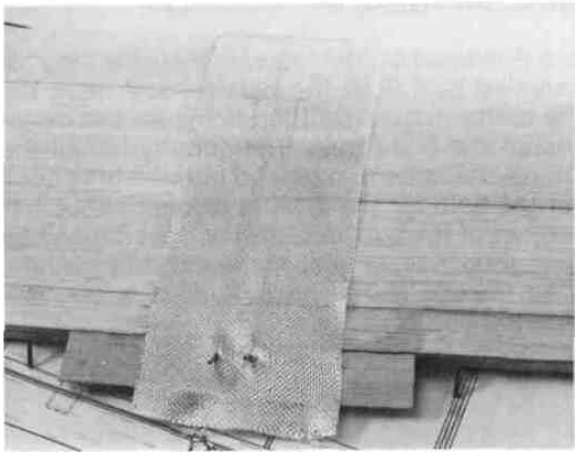
2. D SAND THE CENTER RIB TO THE WING PANEL CONTOUR

Roughcut the center rib to the wing airfoil, leaving it about 1/8" oversize. Sand the remainder away with a sanding block so that the center rib edges are flush with the wing sheeting surfaces.



3. D JOIN THE WING PANELS

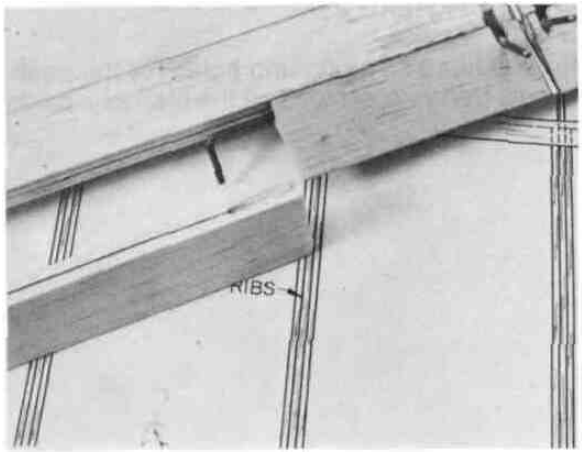
Join the wing panels upside down. Refer to the dihedral detail on the plans. Align at the leading and trailing edges. Use a straight edge to make sure the wing is straight. Block up the wing 3/4" at the center for the 20 size, 1" for the 40 size and 1-1/4" for the 60 size model. Glue the wing panels together using epoxy, rechecking the alignment before the glue sets up. When the glue is dry, mark the aileron servo well location. The servo well is located directly behind the spar and in the center of the top of the wing.



4. D GLASS THE CENTER SECTION OF THE WING

Use 6 ounce glass cloth (or nylon cloth) and glass the center section glue joint. Use a 4" wide piece of cloth and polyester resin or epoxy. Sand the center section when dry. Apply a second coat of resin or epoxy if necessary. IMPORTANT — Omitting this step will result in a wing failure during flight and result in a crash.

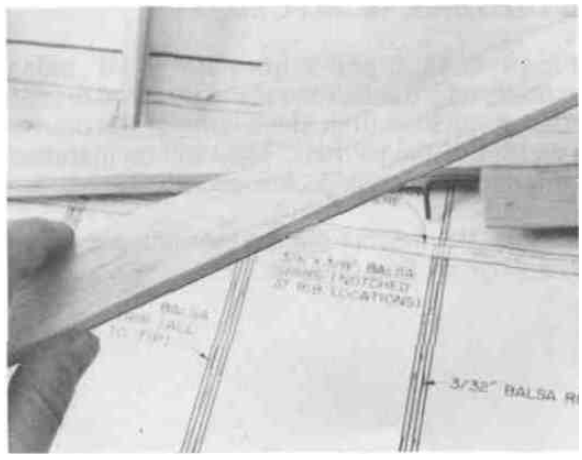
*Use a 5" wide piece of cloth in the 60 size.



THE AILERONS

1. D PREPARE THE AILERONS

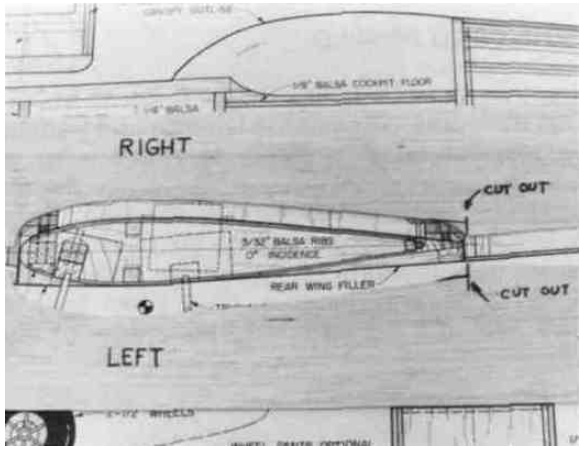
Cut the aileron stock to length and draw a centerline down the leading edge of the ailerons. Mark and drill the torque rod holes. Groove the aileron for torque rod clearance. Make right and left ailerons.



2. D CUT THE HINGE SLOTS; FINAL SAND THE AILERONS

Mark and cut the hinge slots into the ailerons and the wing trailing edge. Shape the leading edge of the ailerons to a "V". Temporarily install the ailerons with hinges to check the fit. Final sand the wing tips to match the aileron contour at neutral. Do not permanently hinge the ailerons until after they are covered.

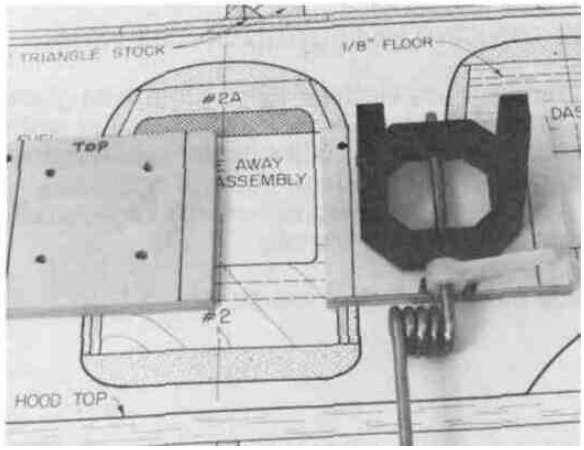
BUILDING THE FUSELAGE



1. D PREPARE THE FUSELAGE SIDES

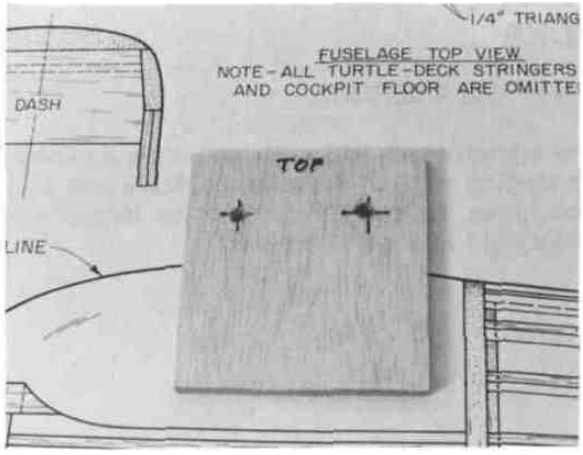
Mark the inside of the fuselage sides "right" and "left". Relieve the wing saddle area as necessary to match the plans.

STOP! If you plan to install a 4-cycle engine read and follow the instructions on installation of 4-cycle engines at the end of this instruction book starting on page 26.



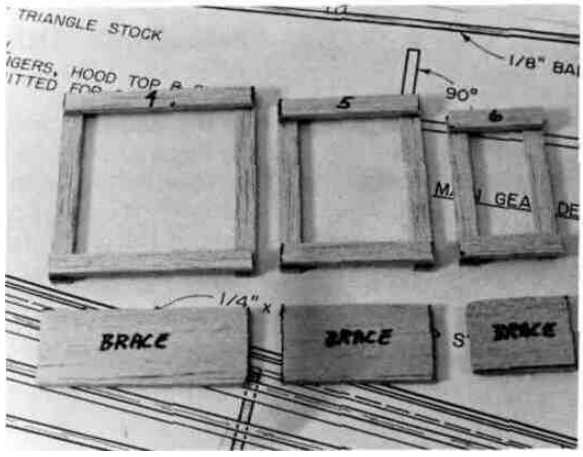
2. D PREPARE BULKHEAD #1

Prepare Bulkhead #1, the firewall. Mark the "top" of the firewall (slanted part is at the bottom) and mark the position of the motor mount. Drill the holes for the motor mount and install the blind nuts. Temporarily install the mount and cut off the bolts that extend into the tank compartment. Drill the hole for the throttle linkage about 1/4" from the top corner of the bulkhead (left or right depending on your engine). (For tricycle gear mark and drill the hole for the steering linkage in the firewall. Also relieve the firewall for steering arm clearance.



3. D PREPARE BULKHEAD #3

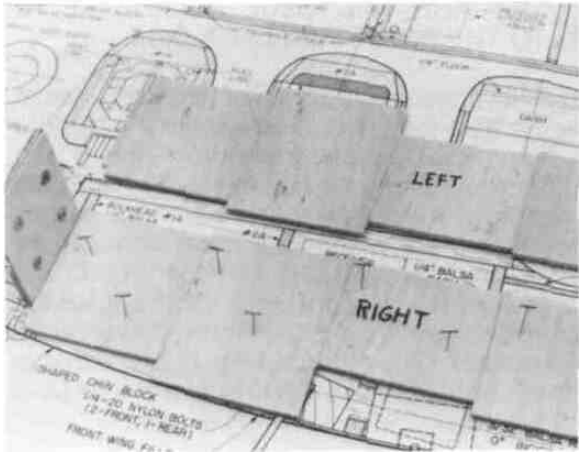
Prepare bulkhead #3 by drilling holes for the push-rod outer housings. Use your servos and the plan as a guide to placement.



4. D BUILD THE THREE REAR FORMERS

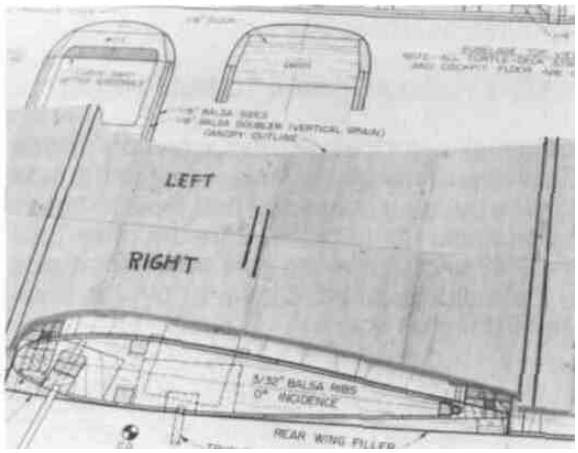
Make formers #4, 5 and 6 from 1/4" x 1/8" balsa stock. Use the plans as a guide. Also make pushrod braces from 1/8" or 3/32" scrap sheeting. The widths of the braces are the same as that of the formers. They will be installed later when the pushrods housings are added.

STOP! Did you read the 4-cycle engine instructions if you plan to install a 4-cycle? See page 26.



5. D GLUE THE DOUBLERS TO THE FUSELAGE SIDES

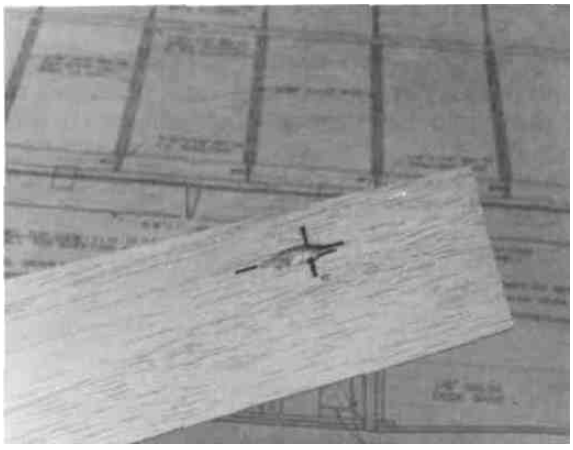
Using bulkhead #1 as a spacer, install the 1/8" balsa doublers (1/16" for the 20 size) cross-grain on the inside of the fuselage sides. Custom cut pieces from the stock provided. Use slow set epoxy glue or thick Cyanoacrylate. The doubler should extend 5/8" beyond the position of bulkhead #3. Trim and sand the doublers to match the fuselage contour.



6. D MARK BULKHEAD POSITIONS ON THE INSIDE OF THE FUSELAGE SIDES

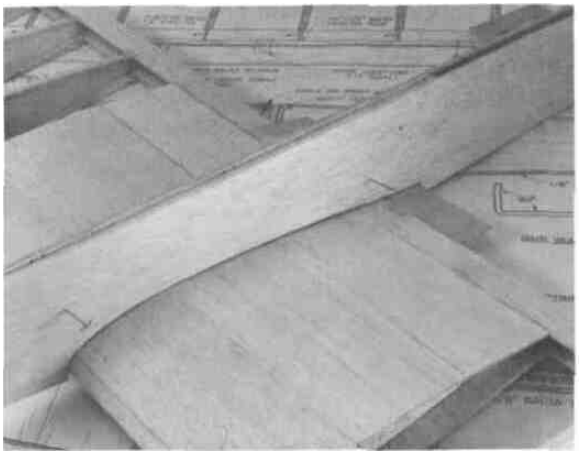
Mark the positions of Bulkhead #2 and 3 on the fuselage sides. Also mark the position of the **balsa dash** between #2 and #3 on the fuselage sides.

* Bulkhead #2 in the 20 size is located 1/8" forward of the wing saddle opening to allow for the dowel jig.



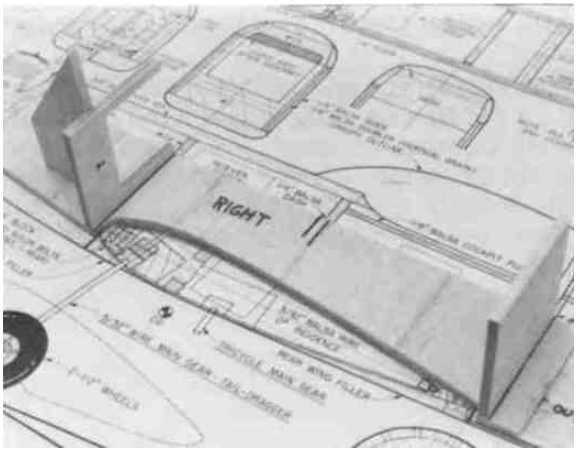
7. D DRILL PUSHROD EXIT HOLES

Mark and drill the holes in the fuselage sides for the pushrod exits for the elevator and rudder. See the plans for the locations. A piece of brass tubing sharpened on the inside with an X-acto blade and chucked in an electric drill makes a neat, clean angled hole for tube-style pushrods.



8. D TRIAL FIT THE WING INTO THE WING SADDLE

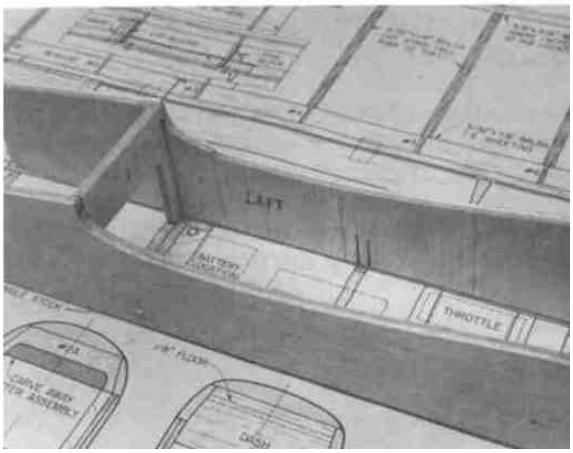
Pin the fuselage sides together perfectly aligned. Check the fit to the wing saddle cutout by placing the fuse sides on the wing. Custom sand if necessary but do not change the wing incidence.



9. D SAND FUSELAGE TAIL; GLUE BULKHEADS #2 AND #3 TO THE RIGHT FUSELAGE SIDE

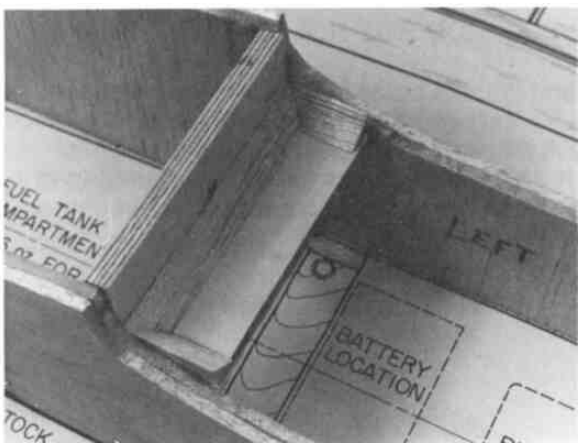
Slightly relieve the inside edges of the fuse sides at the tail for a better glue joint. Notch a hole for the throttle linkage in the side of bulkhead #2 first before gluing it to the fuselage side. Align and glue bulkheads #2 and #3 to the inside of the right fuse side which you have pinned down to your work surface. Make sure the bulkheads are 90 degrees to the fuselage side and that the tops of the bulkheads are toward the straight edge of the fuselage sides. Bulkhead #2 has an angled cut on the bottom edge in the 40 and 60 models. (The straight edge of the fuselage side is called the Fuselage Reference Line and will be used later to align the wing and stab to the fuselage.)

* Be careful to locate Bulkhead #2 1/8" forward of the wing saddle opening in the Sportster 20.



10. D GLUE LEFT FUSELAGE SIDE TO BULKHEADS

Align the fuselage side/bulkhead assembly upside down over the top view of the plans. Make sure the flat side is resting flat on the building board and that the bulkheads are aligned to the plans. Pin in place. Glue the other fuse side to bulkheads #2 and #3 making sure the second side is also flat on the building board. Clamp or pin the fuselage in place until the glue is dry.



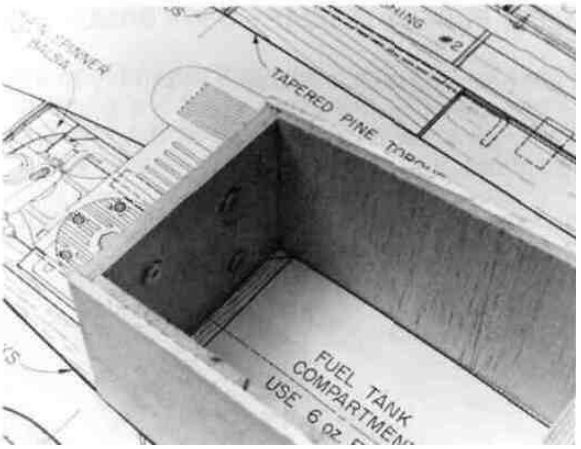
11. D GLUE IN THE HOLD DOWN PLATES

Add the 1/4" plywood front and rear wing hold down plates and the 1/4" tri stock braces on the bottom of the plates in the servo compartment as shown on the plans. Use epoxy to glue in the plates. You may want to saw or grind away the pushrod clearance area shown on the rear plate now. Otherwise do this in step 23.

* The 20 size model has a rear hold down plate only and uses 1/4" x 1/4" bracing.

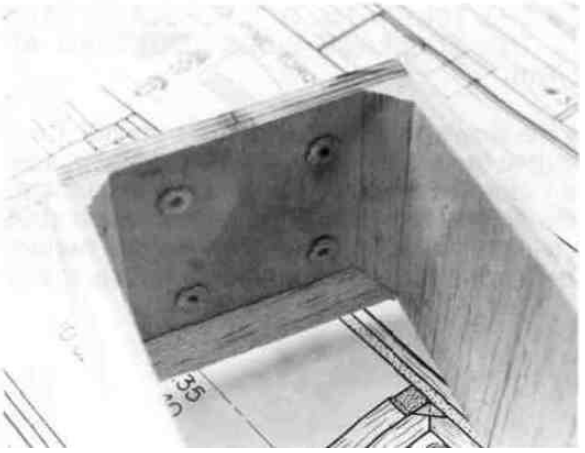
12. D GLUE IN THE 1/4" BRACING

Turn the fuselage over and add the 1/4" triangle stock *(or 1/4" x 1/4" for the 20)* on the front and rear hold down plates. Add the 1/4" tri stock behind bulkhead #2. *(40 and 60 only).*



13. D GLUE IN BULKHEAD #1

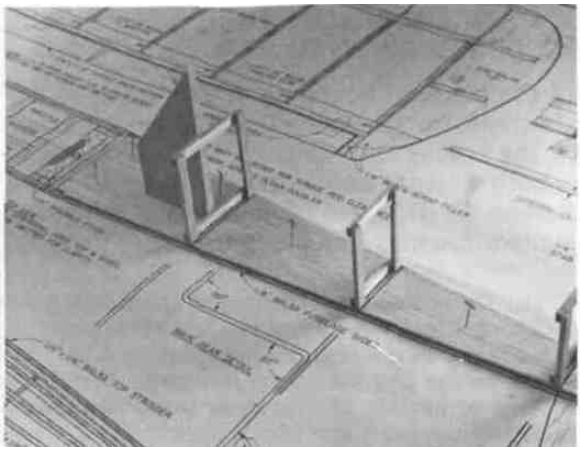
Realign the fuselage over the plans and glue the fuse sides to bulkhead #1. Make sure the top of the bulkhead is flat on the building board and that the front of the bulkhead is facing forward.



14. D ADD THE 1/4" BRACING BEHIND THE FIREWALL

Add three pieces of 1/4" triangle stock along the back side of the firewall. Extend the throttle linkage holes (and nosegear steering if used) through the tri stock.

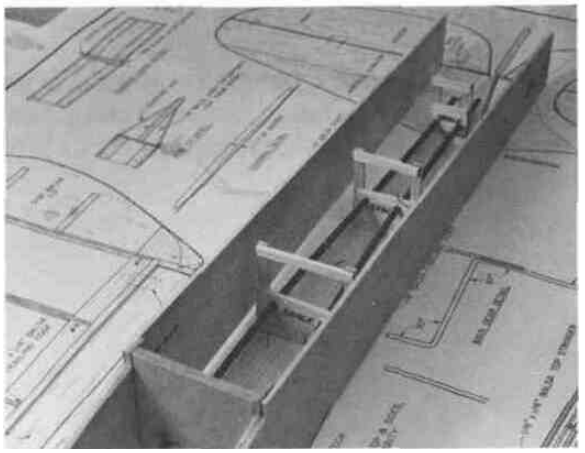
* The 20 size model has 1/4" x 1/4" stock behind bulkhead #1 and in front of bulkhead #2. Glue these pieces in now.



15. D GLUE FORMERS TO THE DECK BASE

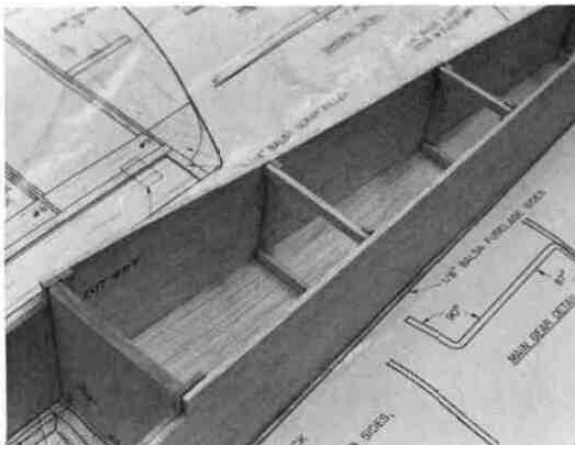
Notch the deck base at the corners to clear the doubler as shown on the plans. The deck base should butt up to bulkhead #3. Mark the location of formers #4, 5 and 6 and pin the deck base to the plans. Check the fit of the formers and glue them to the deck base making sure they are 90 degrees to the base.

*The 20 size deck base is razor cut and has precut notches.



16. D PREPARE FORMER BRACES FOR PUSHROD HOUSINGS

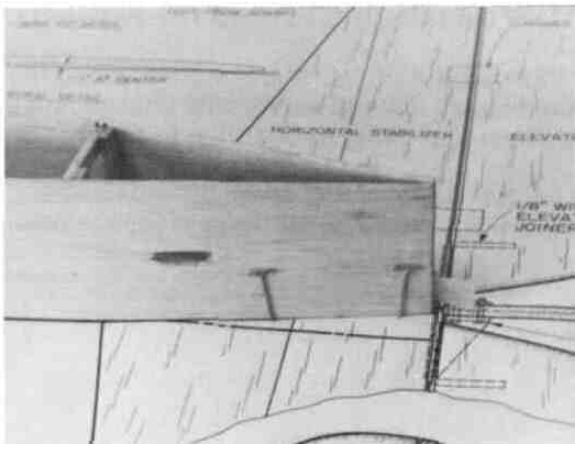
Temporarily put the fuselage/bulkhead assembly over the deck base. Use a pushrod housing and mark the locations of the housing holes in the former braces. Make sure the housing follows as straight a path as possible from bulkhead #3 to the exit. Drill the holes in the braces. Temporarily install the housings to check your work. Remove the housings. Tube in a tube style pushrods are shown here but other types may be used.



17. D GLUE THE FUSELAGE TO THE DECK BASE

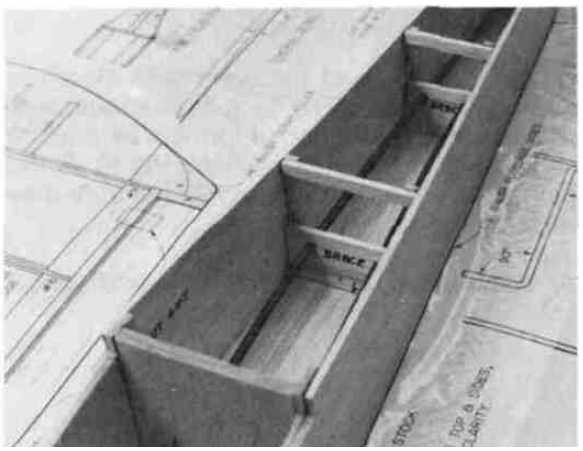
Glue the fuselage sides/bulkhead assembly to the deck base/former assembly. Fuselage sides are glued to the sides of the deck base and the sides of the formers. The deck base should glue to the rear of bulkhead #3.

DO NOT GLUE THE FUSELAGE TOGETHER AT THE TAIL UNTIL YOU READ THE NEXT STEP!



18. D GLUE THE HINGE TO THE FUSELAGE TAIL; GLUE THE FUSELAGE SIDES TOGETHER AT THE TAIL

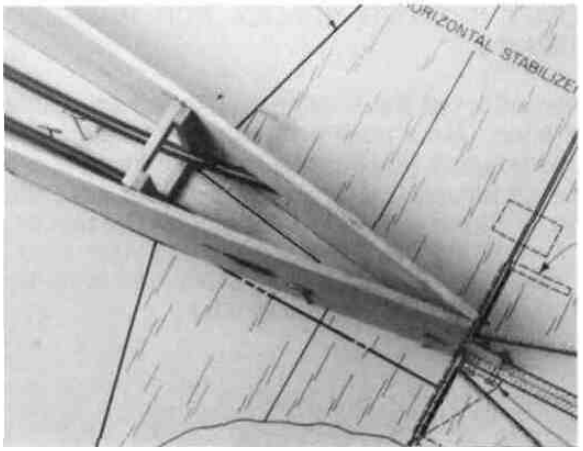
Glue the fuselage sides together at the tail. Conventional gear-glue the rudder hinge just below stab placement. Use the rudder hinge slot as a guide to placement. Do not glue the area at the tail where the tail wheel strut mounting tab will glue later. *(Tricycle gear-glue the bottom hinge at the tail at this time. Use the rudder as a guide to placement.)*



late glue, glue both elevator and rudder housings in place except at bulkhead #3. This will be glued later when the servos are installed. You may trim the housings at the exits now.

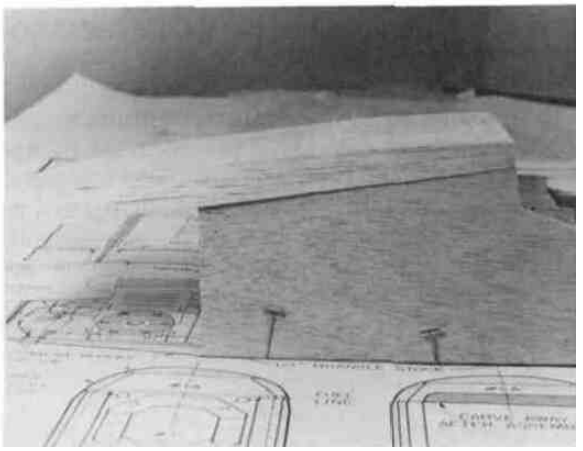
IMPORTANT NOTE: The pushrods supplied in this kit are steel rod-in-a-tub

installing them as straight as possible, as they provide a very rigid linkage between the servos and the control surfaces **We do not recommend the use of flexible plastic inner pushrods for this model,** as their elasticity may result in control surface flutter. See page 43 for recommended pushrod hookups.



20. D GLUE IN 1/4" BRACING AT THE TAIL

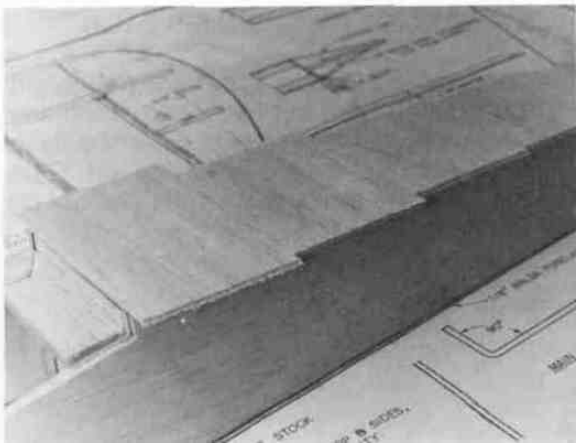
Glue 1/4" triangle stock (1/4" x 1/4" for the 20 size) at the bottom sides of the deck base between former #6 and the tail. Angle cut the ends of the tri stock at the tail for a good glue joint.



21, D GLUE THE CHIN BLOCK TO THE FUSELAGE

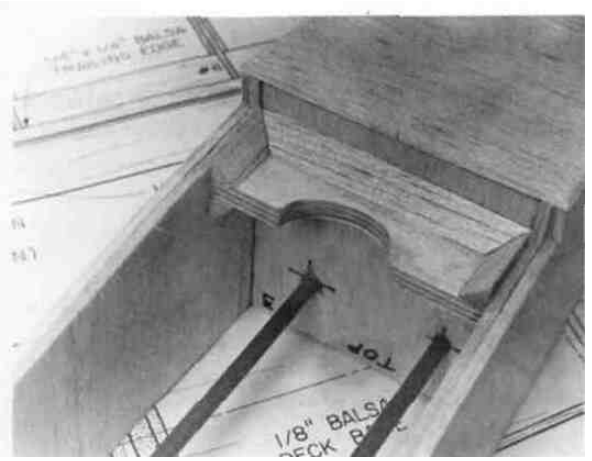
With the fuselage still at 90 degrees to the board and over the plans, align the chin block to the back of bulkhead #2 and glue the chin block to the fuselage.

*0n the Sportster 20 make the rear end of the block even with the wing saddle openings in the fuselage sides.



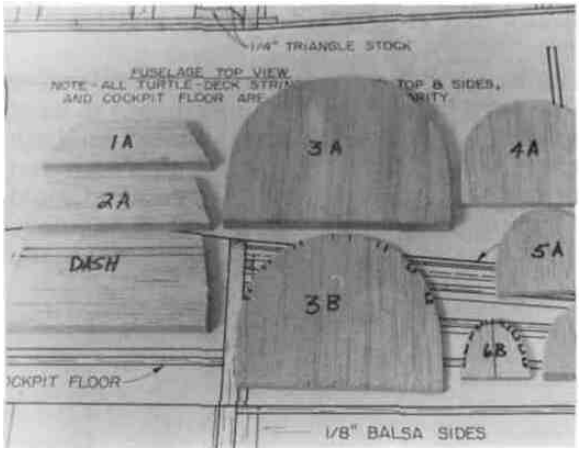
22. D ADD THE BALSA BOTTOM SHEETING

Remove all pins from the inside of the fuselage. Cut and glue on the bottom sheeting. For conventional gear, leave the last section of sheeting off until the tail wheel is installed later. When the glue is dry, remove the fuselage from your building board and trim and sand the bottom sheeting to shape.



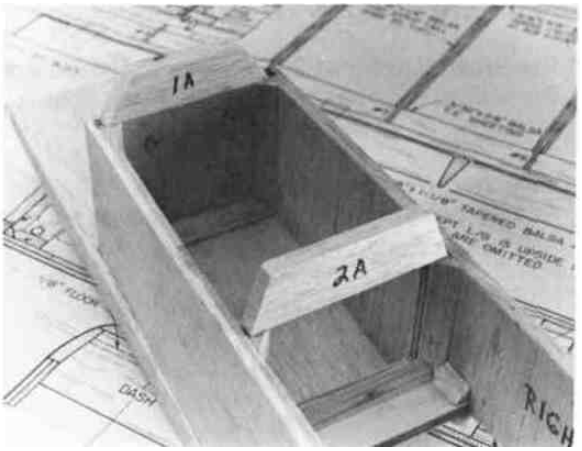
23. D CUT OUT AREA ON REAR HOLD DOWN FOR AILERON TORQUE ROD CLEARANCE

Align the fuselage over the wing and draw reference lines on the wing along both sides of the fuselage. Mark the locations to be relieved on the rear hold down plate for the aileron torque rod clearance. Remove the fuselage and cut away the area on the hold down. Check your work by placing the fuselage on the wing and operating the torque rods. A Dremel tool and router bit or grinding drum or a coarse wood rasp works well for this step.



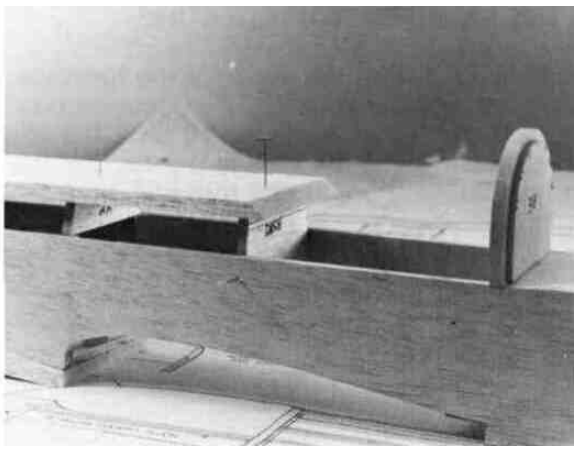
24. D PREPARE TOP FORMERS 1A THROUGH 6B

Prepare the fuselage top formers by numbering them to match the plans. Mark the locations of the stringers on formers 3B and 6B by referring to the plans. Glue former 3B to the back of 3A. Glue former 6B to the front of 6A. Draw the location lines for the cockpit floor on the back of the dash and on the front of the 3A/3B assembly.



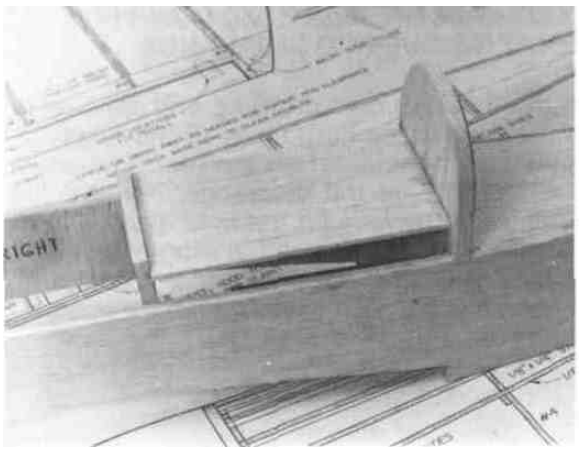
25. D GLUE ON FORMERS 1A and 2A; SAND THEM SO HOOD TOP FITS; TRIAL FIT THE FUEL TANK

Glue formers 1A and 2A to the tops of bulkheads 1 and 2. When the glue is dry sand the tops of these formers to a slight angle so the hood top will mate squarely when glued. Trial fit the assembled fuel tank. Carve out a section of former 2A for fuel tank clearance if necessary. If you leave the tank in permanently, plug all fuel lines so balsa dust does not enter the lines.



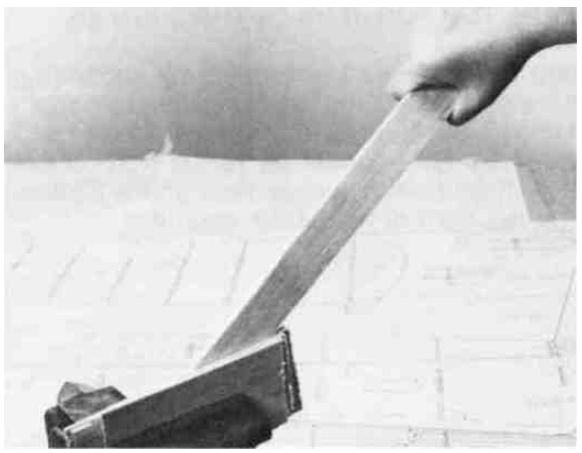
26. D GLUE IN THE DASH; ADD FORMER 3A/3B

Pin the hood top in place to determine the height of the dash. Put the cockpit floor in position to determine the placement of the dash on the fuse side. Glue the dash to the fuse sides. Do not glue on the hood top yet. Glue former 3A/3B to the fuselage at the rear of the cockpit on top of bulkhead #3.



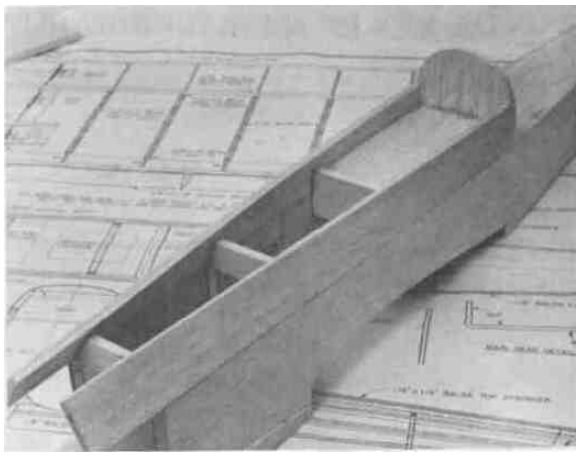
27. D GLUE IN THE COCKPIT FLOOR

Prepare and glue the 1/8" cockpit floor between the dash and former 3A/3B on the lines you drew earlier.



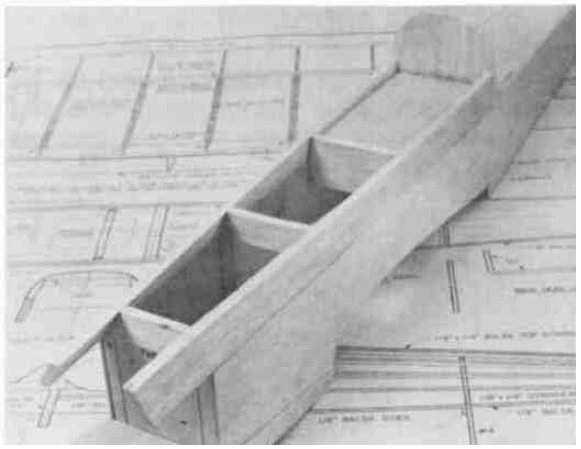
28. D PREPARE THE BALSA HOOD SIDE PIECES

The balsa hood side pieces need to be twisted slightly to fit the front of the fuse. To make it easy to twist the balsa as required, "paint" some ammonia on both pieces of the balsa sheets. Place one end in a vise and twist the other end somewhat more than is required. Hold or clamp this end until the wood dries (about 15 minutes). Note that the twist in the right piece is opposite that of the left piece.



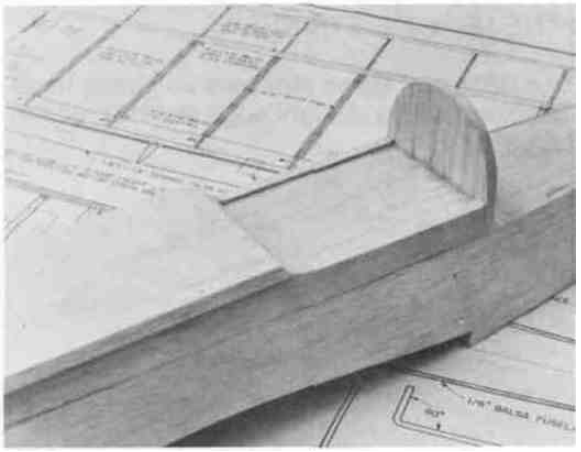
29. D INSTALL AND GLUE ON THE HOOD SIDE PIECES

Sand the bottom of the side pieces so they will mate squarely with the fuselage sides. Glue the side pieces from the front of former 3A/3B to beyond former 1A in the following manner. To prevent a twisted fuselage, glue both pieces at the same time, a little at a time starting at former 3A/3B. The hood side pieces should extend outside former 3A/3B slightly so they can be sanded to contour later.



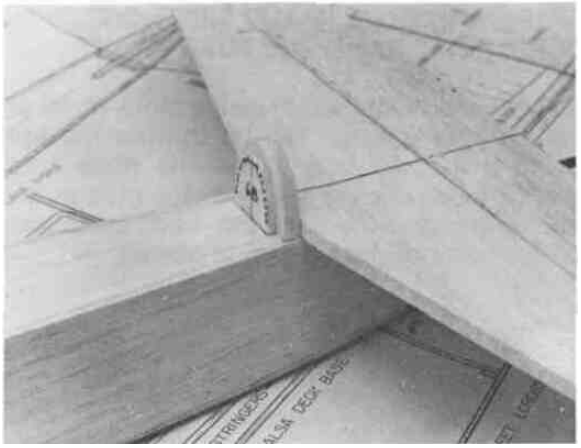
30. D SAND THE TOPS OF THE HOOD SIDE PIECES

Sand the top of the hood side pieces flush with the top of the formers so the hood top will mate squarely.



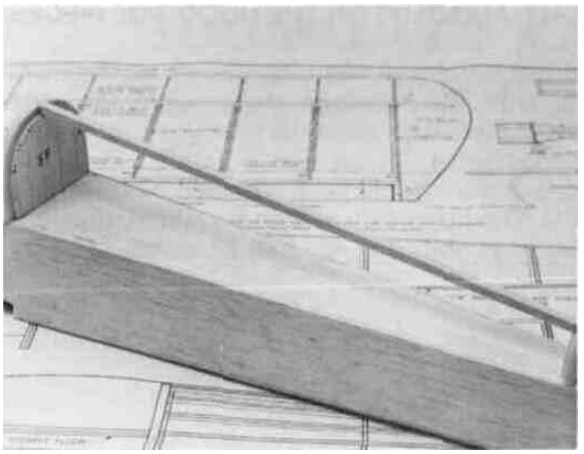
31. D GLUE ON THE HOOD TOP; SAND THE HOOD SIDES AT THE COCKPIT.

Sand the angle at the rear of the hood top and trial fit the hood top to the fuselage. Glue on the hood top. After the glue is dry, sand the side pieces in the area of the cockpit as shown on the plans.



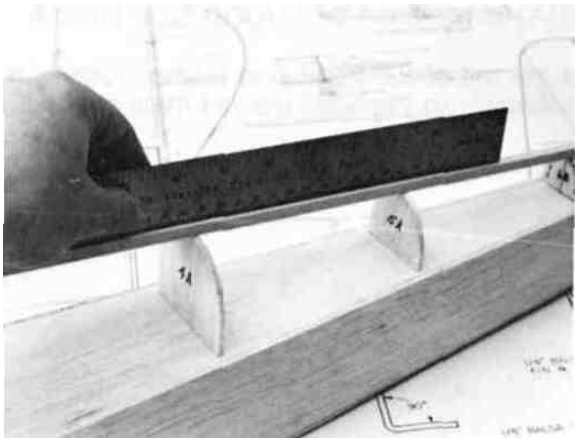
32. D ADD FORMER 6A/6B

Pin the stabilizer in place so the stab is aligned with the back of the fuselage. Mark the position of former 6A/6B and glue it in place. Remove the stab before the glue sets up.



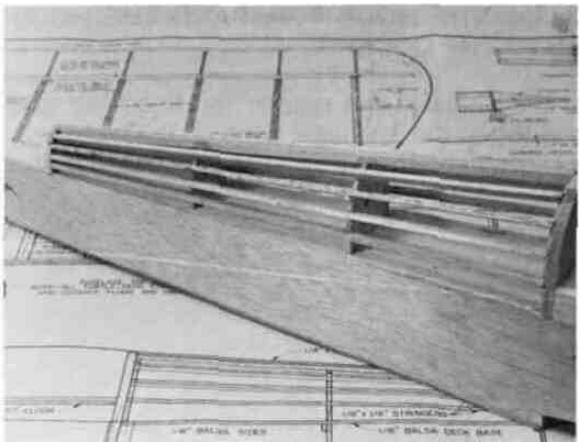
33. D GLUE ON THE 1/4" x 1/4" BALSA TOP STRINGER

Cut to length and glue the 1/4" x 1/4" balsa stringer in place between formers 3A/3B and 6A/6B.



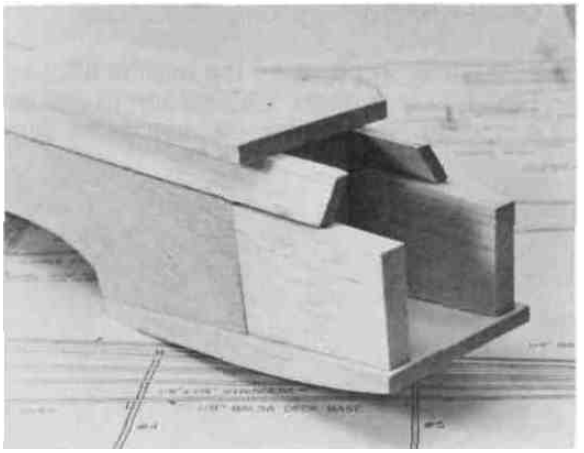
34, D ADD FORMERS 4A AND 5A

Locate the positions of formers 4A and 5A by placing a straight edge along the top stringer. Place and glue the formers so they mate with the stringer and are centered from side to side.



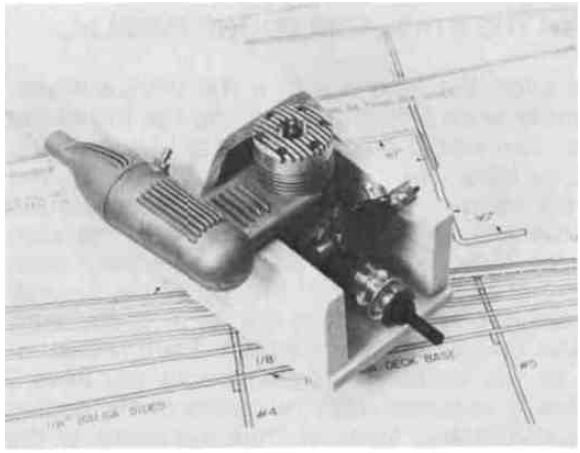
35. D ADD THE 1/8" x 1/4" STRINGERS

Add the 1/8" x 1/4" balsa stringers by gluing them at 6A/6B first, checking with a straight edge and then gluing to 5A, 4A and 3A/3B.



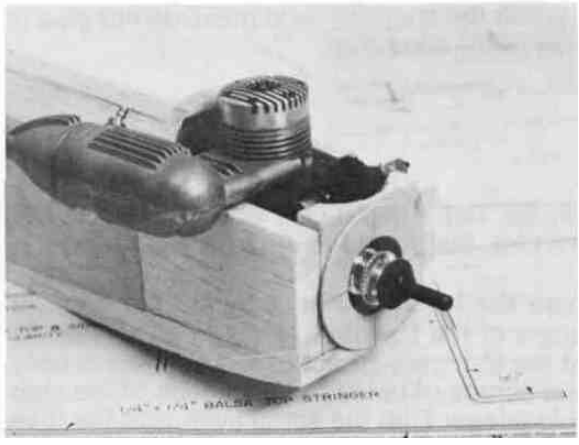
36. D PREPARE AND GLUE IN THE SIDE NOSE BLOCKS; FINAL SAND THE FUSE FRONT

Groove the inside of the nose side block (right or left depending on your engine) for the throttle linkage clearance. Using 5 minute epoxy, glue the nose side blocks in place. Remove excess epoxy at the chin block joint. Carve and rough sand the hood top, hood sides and chin block to the shape of the nose side pieces.



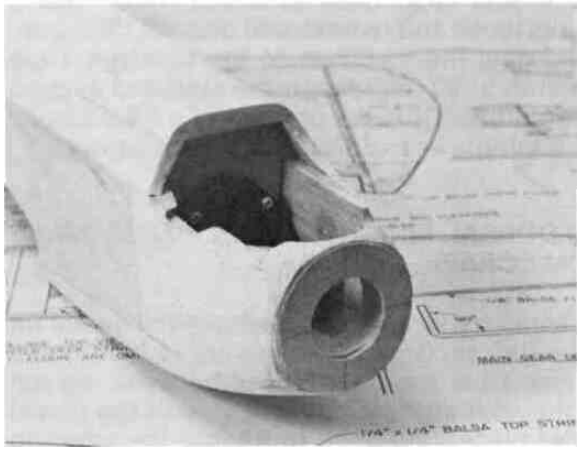
37. D CUT AWAY AREAS FOR ENGINE CLEARANCE; DRILL HOLES IN MOUNT FOR ENGINE; TEMPORARILY MOUNT ENGINE TO FUSE

Temporarily install your mount and engine. Relieve the engine compartment so the engine rests flat on the engine mount. Check for binding of the throttle arm. Mark and drill the holes in the mount for engine mount bolts. Tap the holes for bolts and nuts or use self-tapping bolts to hold the engine on the mount. The engine has no down thrust and no right thrust.



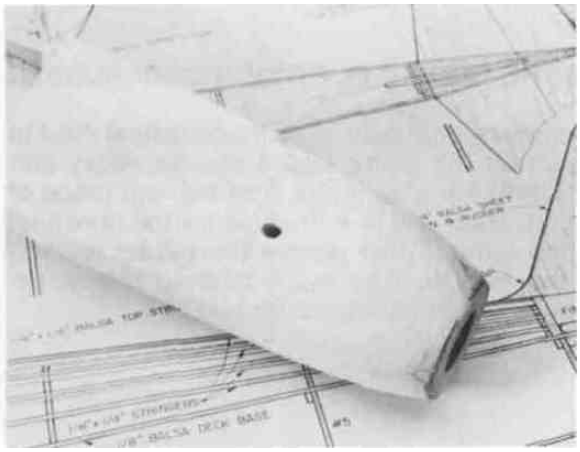
38. D GLUE NOSE FILLER BLOCK IN PLACE; ADD SPINNER RING

Using your engine as a guide, locate the placement of the front filler block. The engine thrust washer should extend 1/16" to 1/8" inches forward of the filler block. Cut away areas on the block for engine clearance. The placement of these parts depends on what brand spinner you will use. Inspect your spinner backplate and locate the block accordingly. When you are sure of the placement, glue the crossgrain spinner filler block in place. Sand the front of the nose if necessary. Glue the ply spinner ring in place on the filler block using your engine and spinner backplate as a guide for placement.



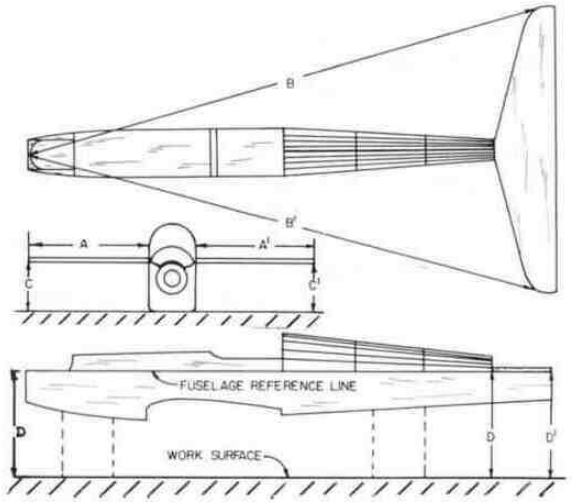
39. D ADD 3/8 TRI STOCK TO NOSE; SAND NOSE TO SHAPE

Remove the engine and add the 3/8 triangle stock along the bottom sides of the engine compartment and behind the filler block. Custom fit these pieces so they glue to the firewall and front filler block. Sand and carve the nose to the shape of the spinner ring.



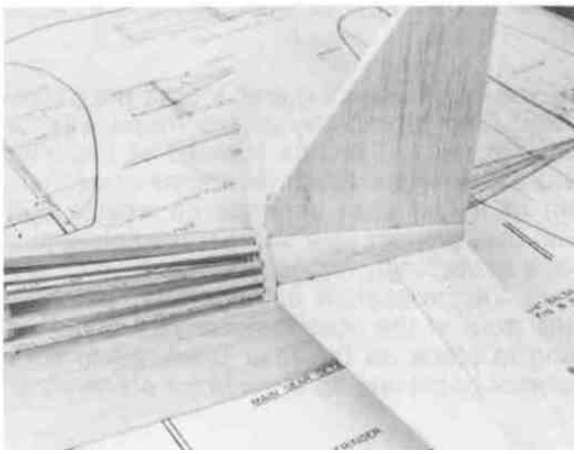
40. D DRILL FUEL LINE AND DRAIN HOLES; DRILL NOSEGEAR CLEARANCE HOLES FOR TRIKE GEAR

Drill the holes in former 1A for the fuel lines. For conventional gear, drill a drain hole in the bottom of the engine compartment just in front of the firewall. *(For tricycle gear, drill a hole in the chin block for nosegear, Relieve the chin block for nosegear spring clearance. Relieve the 3/8 tri stock for steering arm clearance.)*



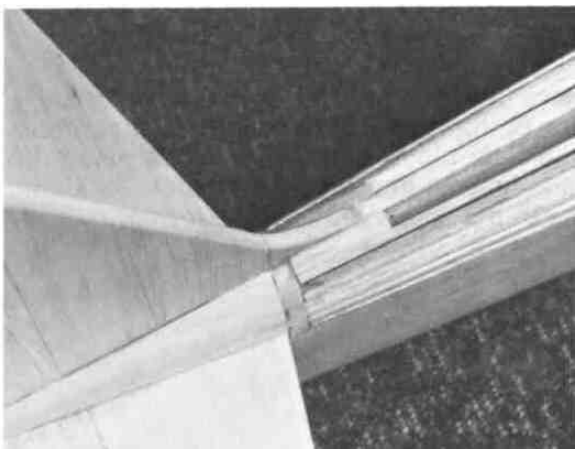
41. D ALIGN THE STABILIZER TO THE FUSELAGE

First align the fuselage to a flat work surface. The fuselage reference line (the line along the top of the fuselage side - see step 9 on page 12) should be parallel to the work surface. Now align the stabilizer to the fuselage in this manner: A - Draw a centerline down the stab bed at the end of the fuselage. Line up the stab centerline to the fuse centerline. B - Measure from each stab tip to a point at the center of the top of the firewall area. Each measurement should be the same. C -Measure from each stab tip to the work surface. Each measurement should be the same. D - To make sure you have 0 degrees incidence, measure from the center of the leading edge to the work surface. Measure from the center of the trailing edge to the work surface. These distances should be the same. When the stabilizer is aligned, do not glue in place but go on to the next step.



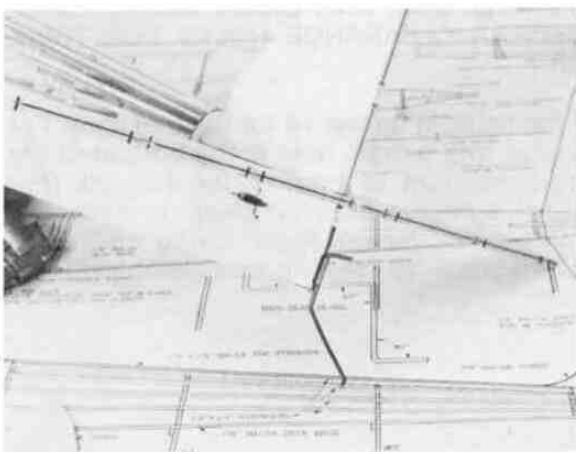
42. D PREPARE THE FIN FILLER BLOCKS; GLUE ON THE STAB, FIN AND FIN FILLER BLOCKS

Prepare the fin filler blocks by cutting them to pick up the angle of the top stringer. Then sand them to the contour of the stringers. Shaping and sanding is easy **if** you tack glue scraps of balsa the thickness of the stab and fin to the fuselage. Trim the scrap even with the fuse sides and stringer line, then tack glue the blocks in place and razor plane and sand them to shape. When ready, break the blocks loose and remove and discard the scrap. Use epoxy and glue the stabilizer to the fuselage. Glue the fin to the stab at 90 degrees to the stab and aligned on the stab centerline. Glue the prepared fin filler blocks in place with 5 minute epoxy. Remove excess epoxy.



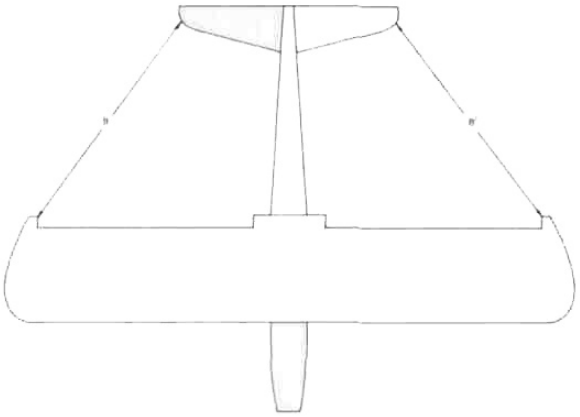
43. D ADD DORSAL FIN AND FILLER PIECES (MAKE FROM SCRAP)

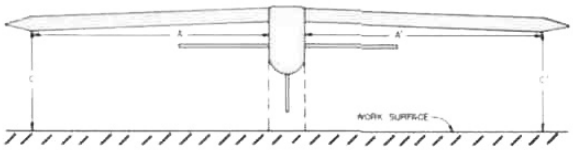
Use scrap balsa and custom make the dorsal fin piece and filler pieces. Glue the dorsal fin to the fin and 1/4" top stringer. Glue the filler pieces between the top stringer and the next stringer on each side of the dorsal fin. These filler pieces are used to anchor the covering material later.

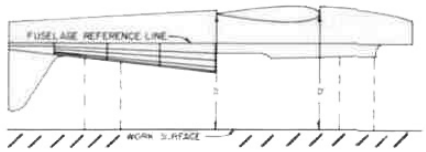


44. D ADD THE TAILWHEEL STRUT; FINISH RUDDER

For conventional gear, glue the tailwheel strut in place as shown on the plans. Use 5 minute epoxy and clamp the tail until the glue is dry. Add the last piece of bottom sheeting. Mark and drill the hole for the tailwheel tiller arm in the rudder. Also groove the rudder leading edge below the hole for the nylon bearing clearance. Shape the leading edge of the rudder to a "V".





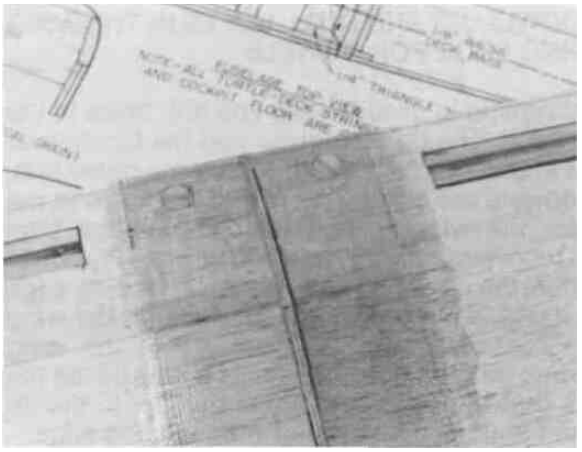


FINAL ASSEMBLY

1. D ALIGN THE FUSELAGE TO THE WORK SURFACE AND THE WING TO THE FUSELAGE

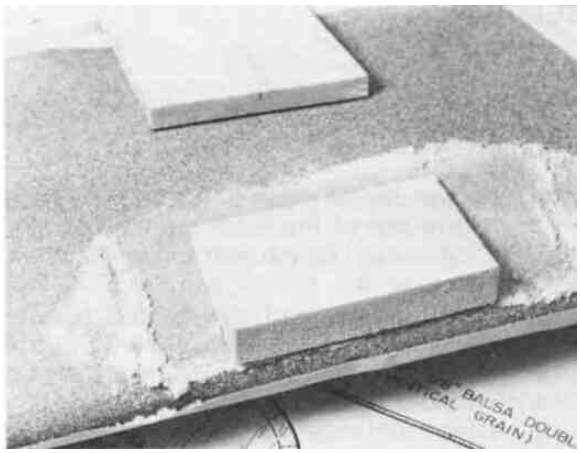
Align the fuselage upside down to the work surface using the line along the top of the fuselage side as the reference line. This line should be parallel to the flat work surface. Align the wing to the fuselage by making the following measurements: A - Center the wing side to side in the saddle. The distance from the fuselage side to the wing tip on each side should be the same. B - The wing tip to stab tip distance should be the same on both sides. C - Wing tip to work surface distance should be the same on both sides. D - The wing has 0 degrees incidence like the stabilizer. The leading edge to work surface should be the same as the trailing edge to work surface distance. When the wing is aligned correctly, mark the position of the wing on the fuselage so you can realign the wing again. Remember these measurements will not work unless you have aligned the fuselage to the work surface first. The reference line should be parallel to the work surface. Measure from this line down to the work surface at several points on both sides of the fuselage. All the measurements should be the same from one side to the other.

WING MOUNTING (40 AND 60 SIZE ONLY) (GO TO STEP 5 IF YOU ARE BUILDING A 20 SIZE.)



2. D DRILL AND TAP WING BOLT HOLES IN THE WING AND FUSE

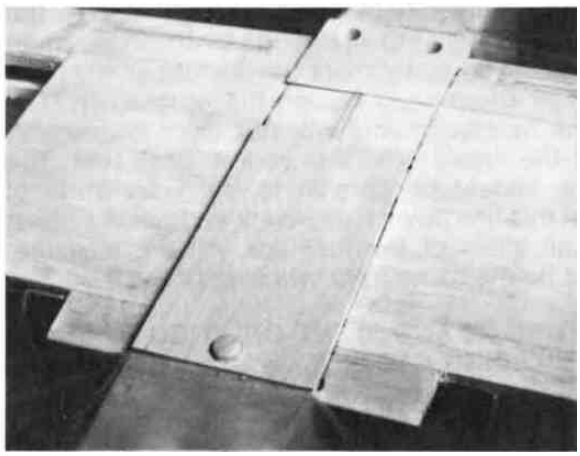
With the wing still aligned to the fuselage, drill two 13/64" pilot holes through the wing hold down plates in the leading edge of the wing. Drill a pilot hole for the rear hold down in the center of the trailing edge for the 40 size. Drill two holes for the 60 size at the rear. Drill this (these) rear hole (holes) at an angle so the bolt head(s) will rest flat on the trailing edge. For the 60 size model, glue the 1/16" Ply plates at the rear of the wing first before you drill holes for the rear wing bolts. Remove the wing and redrill and counterbore the wing holes for the 1/4-20 wing bolt clearance so the bolt heads will rest flat on the hold down plates in front and on the trailing edge or plates at the rear. Tap the wing hold down plates in the fuselage using a 1/4-20 tap.



3. D SAND THE WING FAIRINGS TO SHAPE

Prepare to install the wing fairings by drawing lines on the bottom of the wing even with the fuselage sides. Cut the fairings to width. Sand to shape by placing sandpaper on the wing and working the fairings back and forth.

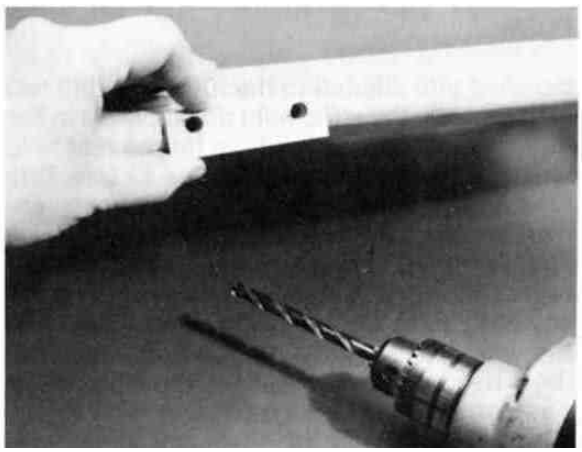
*The 60 size has three fairing blocks where the 40 size has only two. Sand the blocks to the shape of the wing and also sand them to mate squarely with each other.



4. D GLUE THE FAIRINGS IN PLACE; SAND THEM TO FUSELAGE CONTOUR

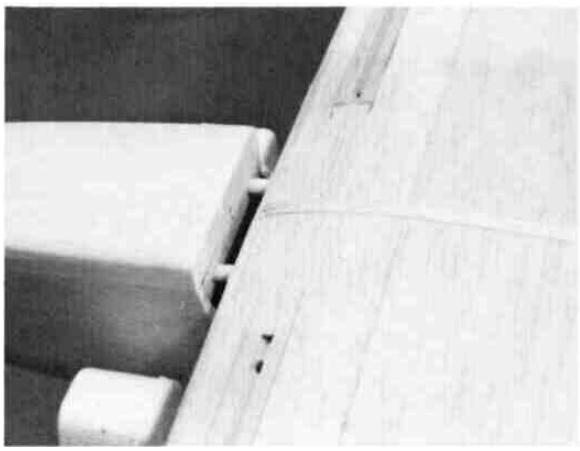
Drill holes through the fairings large enough for the wing bolt heads to pass through. Install the wing bolts and glue the fairings in place with 5 minute epoxy. Be careful not to get any epoxy on the wing bolts and not to glue the wing to the fuselage! When the glue is dry, sand the fairings to the fuselage contour.

WING MOUNTING (20 SIZE ONLY)



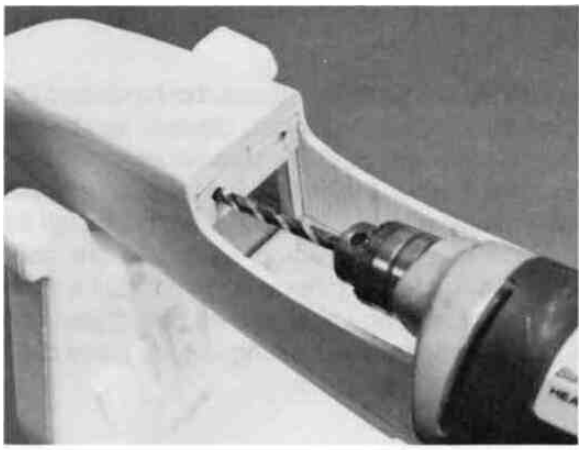
5. D USE DOWEL JIG AND DRILL HOLES IN THE WING LEADING EDGE FOR DOWELS

(The dowel jig is used to help you drill holes in the wing leading edge. The jig also gives you the location of the 1/4" holes in bulkhead #2. You drill the wing holes first, position the dowels and jig and then drill the holes in the bulkhead after the wing is in position.) Use the plan template and mark and drill 1/4" holes in the 1/8" Ply dowel jig piece. Center the dowel jig over the wing leading edge making sure the holes in the jig are centered on the wing leading edge centerline. Drill 1/4" holes into the wing leading edge and through both 1/8" dowel plates inside the wing. Be sure that the holes are drilled parallel to the rib centerlines and at 90 degrees to the wing leading edge.



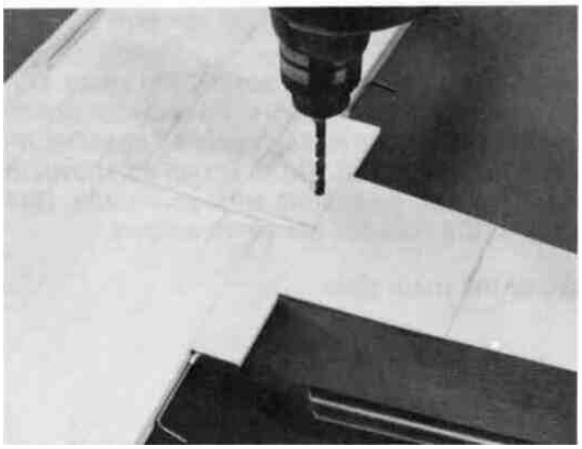
6. D REALIGN THE WING TO THE **FUSELAGE; GLUE** DOWEL JIG TO FUSELAGE

Place 1/4" dowels into the holes in the wing leading edge. Place the dowel jig on the dowels. Position the dowels so they are flush with the dowel jig when the jig is next to the wing. You may want to tack glue the dowels to the wing so they don't fall inside the wing during this step. Now place the wing, dowels and dowel Jig into the wing saddle. Realign the wing. Push the dowel jig forward against bulkhead #2 and tack glue the dowel jig to the rear of bulkhead #2. Remove the wing and dowels from the fuselage.



7. D DRILL 1/4" DOWEL HOLES THROUGH **THE** DOWEL JIG HOLES INTO BULKHEAD #2; GLUE DOWELS INTO THE WING

Use the holes in the dowel jig as a guide and drill 1/4" holes into bulkhead #2. Remove the dowel jig and now permanently install this jig with epoxy using the drilled holes to align the jig in the exact position. Glue the dowels into the wing with epoxy. A little less than 1/2" of the dowels should extend beyond the leading edge of the wing. Put the wing on the fuselage and check your work. The wing should be aligned correctly.

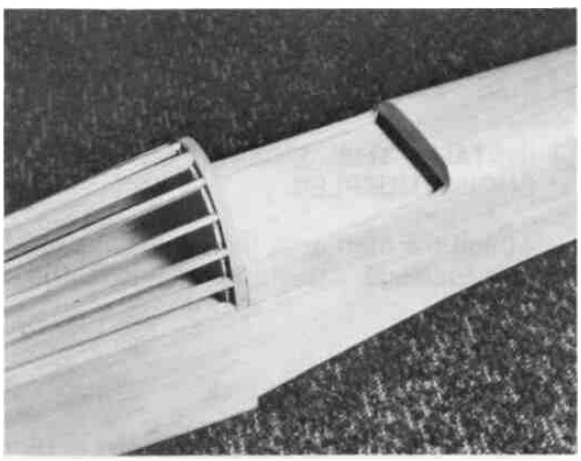


8. D INSTALL THE REAR WING BOLTS

With the wing aligned to the fuselage, drill 5/32 pilot holes (at a slight angle so the bolt head will rest flat on the center trailing edge piece) for 10-32 bolts through the center trailing edge piece and rear hold down in the fuselage. Remove the wing. Redrill the wing with a 13/64" drill for 10-32 bolt clearance. Tap the holes in the fuselage hold down for 10-32 bolts with a 10-32 tap. Bolt the wing to the fuselage to check your work.

9. D SAND THE WING FAIRINGS TO SHAPE; GLUE FAIRINGS TO WING

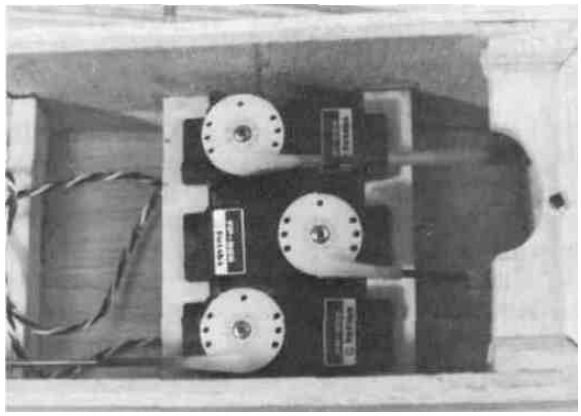
Refer to steps 3 and 4 under 40 and 60 wing mounting instructions on page 21.



10. D FINISH COCKPIT AREA; FUEL PROOF FUSE; FINAL SAND MODEL

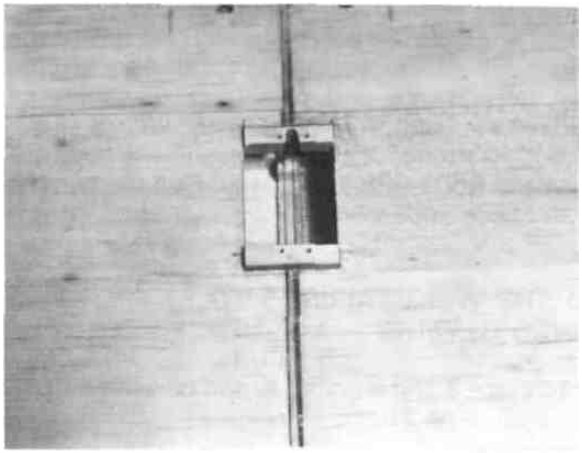
Finish the cockpit area any way you wish. You may want to add a pilot, paint the cockpit area and/or add an instrument panel. Fuelproof the engine compartment by coating all the balsa and ply parts with resin or epoxy. Now final sand the entire model.

NOTE: You can cover your Sportster now, but waiting until later after the radio and other equipment is installed will save dents and damage to your finished model. Plus you may find that additional carving, gluing or sanding is necessary before covering.



11. D INSTALL RADIO COMPONENTS IN THE FUSELAGE

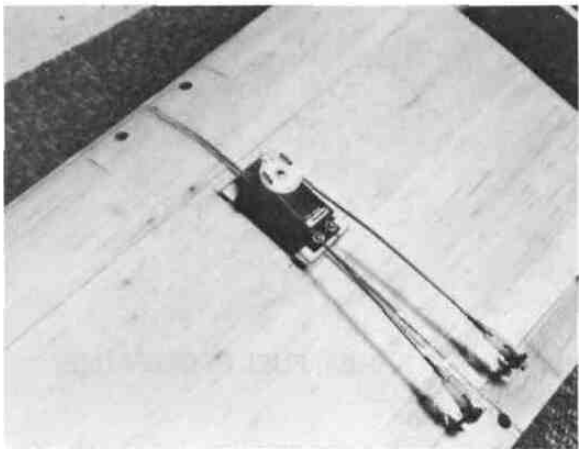
Glue servo rails made from scrap plywood or hardwood into the radio compartment. Install the rudder, elevator and throttle servo directly to the hardwood rails or install the servo tray that comes with your radio. Position the battery and receiver (wrapped in foam rubber for protection) as shown on the plan. Install the on/off switch. Install the inner pushrod wires into the outer pushrod tubes for the rudder and elevator. Also install a cable type pushrod and its outer tube for throttle linkage. *If you have trike gear, install a pushrod for steerable nose gear. Use a cable type if you need to bend the pushrod.*



12. D CUT SERVO WELL IN THE TOP OF THE WING

The well is located directly behind the spars. Cut out enough of the wing sheeting, center rib and root ribs to allow the *placement of the servo as deeply as possible into the wing.* Glue hardwood rails (from scrap) as shown in the photo or use the tray that came with your radio. Drill small pilot holes in the rails for the servo screws.

NOTE: Do not cut the main spar.



13. D INSTALL AILERON SERVO AND LINKAGE

Mount the servo as deep into the wing as you can to prevent interference with the other servos Install the threaded wire pushrods with "Z" bends at the servo. Install the nylon swivels onto the the aileron pushrods. Install the nylon swivel clevises onto the rods and attach them to the swivels. Adjust as needed so that the ailerons are equally neutral when the servo is centered.

14. D INSTALL MAIN GEAR

Place the wire main gear into the landing gear blocks in the bottom of the wing. Hold the wire gear in the blocks with the metal hold down straps and sheet metal screws. Use two straps on each gear. Drill 1/16" holes in the blocks first. Then put the screws in place.

15. D INSTALL THE NOSE GEAR, STEERING ARM AND WHEEL COLLAR (TRIKE GEAR ONLY)

Shorten the steering arm to the length shown on bulkhead #1 front view on the plan.

16. D INSTALL THE ENGINE MOUNT AND ENGINE/MUFFLER

Attach the muffler to the engine. Install the mount to the fuselage. Attach the engine/muffler to the mount.

17. D INSTALL THE FUEL TANK

Install the tank now if you haven't done so already. Assemble the tank per manufacturer's directions. Feed extra long fuel lines through the front of former 1A into the tank compartment. Attach the lines to the tank and pull the tank into position. Cut the fuel lines to length and attach them to the engine.

18. D COVER THE MODEL

Remove any equipment that will be in the way while you are covering. Make sure the model is all final sanded and clean (use a tack cloth or rag to pick up any dust) Use heat shrink covering material and cover your Sportster. Follow the instructions available with the covering. When the model is completely covered, reinstall the equipment you removed.

19. D INSTALL ALL CONTROL SURFACES AND CONTROL HORNS

Flex the hinges back and forth a few times and then glue the hinges into the rudder and fin slots, at the same time gluing the tiller arm of the tail wheel into the rudder leading edge Lightly sand both surfaces of the hinges, put epoxy (or Slo-ZAP) into each hinge slot and place the hinge in place Use 2-56 screws and backplate and attach the nylon horn to the rudder over the tail wheel tiller arm position for extra support Glue the elevator joiner wire to the elevators Glue the hinges to the elevators and stabilizer in the same manner as above Attach the nylon elevator horn and backplate to the bottom of the right elevator with 2-56 screws Glue the aileron torque arms into the ailerons as you glue the hinges into the ailerons and wing trailing edge.

20. D INSTALL THE CANOPY

Cut the canopy on the cut lines scribed in the plastic You can dye the canopy using Rit dye Follow the instructions on the box. Remove the canopy from the dye when the desired tint is achieved. Glue the canopy to the fuselage with Cyanoacrylate glue. Seal the edge with striping tape.

21. D ASSEMBLE THE WHEEL PANTS

Cut and trim the wheel pant halves on their parting lines that you find on the inside of the pants You can score this line with an X-Acto knife and break on the line or simply cut on the line with a knife

Sand the edges of the wheel pants smooth An easy way to do this is to lay your sandpaper down on a flat surface and move the pants over the sandpaper. This way you are assured of a straight, flat edge when you finish

Cut a starter hole in one half of each pant in the area of the wheel opening to make it easier to cut out the opening later after the halves are glued together Cut the starter hole at the join line

Using Cyanoacrylate (instant glue), join the two halves together Note that there is a right and a left half to the wheel pant. Make sure you have a good fit before you glue the two halves together When the halves are Joined, sand lightly along the Join line on the outside of the pant to get a smooth appearance

Use your wheel and measure and mark the area to be cut out of the pant for the wheel opening Cut out this area

Find the tape locations on the inside of the pant in Figure 1 Use 60-100 coarse sandpaper and sand the areas where you will put the tape.

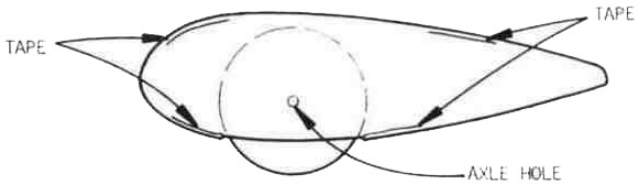


Figure 1

Reinforce the inside of the wheel pants with fiberglass tape Cut the tape into one inch squares You should have eight pieces of tape when you finish cutting Use 5 minute epoxy and a piece of tape at each of the places you sanded before Let the tape hang out of the wheel opening. Cut the excess off when the epoxy is dry.

22. D MOUNT THE WHEEL PANTS AND WHEELS

Mark the position of the axle hole on the inner side of each wheel pant Drill a clearance hole at this location for your gear wire or axle bolt See Figure 1

Mark the position of the brass plate on the gear Do this by temporarily placing the wheel pant on the gear Position the pant so it does not touch the ground and is level or in the correct position for your model Mark the position of the brass plate on the gear and the outside of the pant Remove the wheel pant' Solder the brass plate to the gear using Sta-Bnte silver solder Position and solder the other brass plate in the same manner

Position the 1/8" plywood plate on the inside of the wheel pant opposite the brass plate on the gear Temporarily put the wheel pant back on the gear to find this position The ply plate is used as a back up plate for the brass plate so do a good job of lining these two plates up When you have the correct positions for the ply plates, use 5 minute epoxy and glue them to the inside of the wheel pants. Let the ply plates dry

Drill the axle hole through the ply plates in the pants

Using the brass plate as a guide, drill two pilot holes through the wheel pants and the ply back up plate for the #2 x 3/8" screws

Trial fit the wheel pant assembly to the gear by attaching screws provided, wheels and wheel collars to hold the wheels to the gear If all is in the correct position, remove the assembly from the gear See Figure 2.

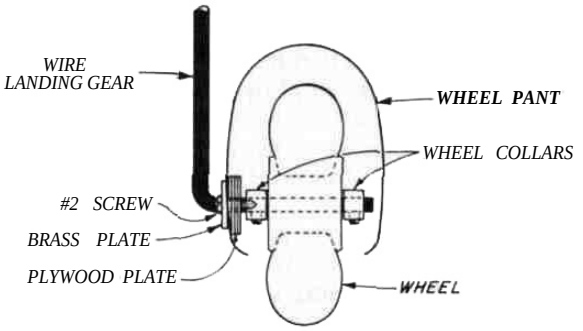


Figure 2

Paint the wheel pants First, sand lightly with wet/dry 320-400 sandpaper but use it dry Use K&B primer or automotive primer Sand the primer after it is dry You need only to sand the primer lightly Put on the final coat of paint Spraying works the best for the final coat but brushing the paint will give you good results also.

23. D EXTEND THE RADIO ANTENNA

Run the antenna out of the radio compartment of the fuselage and attach it to the front of the fin. Do NOT cut the antenna wire'

24. D CONNECT ALL LINKAGES (PUSHRODS), CONTROL SURFACES, CHECK RADIO OPERATION AND SET THE THROWS

Screw a nylon clevis onto the threaded end of each pushrod **Note: Screw them on all the way until the threads protrude inside the clevis.** Cut a short length of 1/8" diameter plastic tube into 1//4" pieces Slide half of the these onto each of the pushrod wires and space them out evenly Temporarily insert the pushrods into the tubes Adjust the spacers so they will always stay inside the tube If the spacers are not a tight fit on the pushrod wire, apply a small drop of thin CA to secure them Attach the clevises to the rudder and the elevator control surfaces Holding the surfaces at neutral, mark on the pushrods where they intersect with the servo horns Remove the pushrods and make Z-bends at the marks Cut off the excess wire Remove the servo horns and reinsert the pushrods Attach the pushrods to the servo horns and reinstall so that the surfaces are neutral when the servos are centered

Attach a clevis to the end of the throttle cable and attach it to the engine throttle arm Attach the other end of the cable to the throttle servo with a connector of your choice If your have trike gear, attach a clevis to the nose gear pushrod and then to the nosegear steering arm Attach the other end of the pushrod to the rudder servo on the opposite side of the servo horn Operation of the rudder servo on the ground will therefore turn the nose gear and steer the airplane The servos and linkages should not bind or interfere with each other Set the control surface throws as shown on the plan

25. D RANGE CHECK YOUR RADIO SYSTEM, CHECK THE CENTER OF GRAVITY, RECHECK ALL ALIGNMENTS

Your model should balance at the point shown on the plan If it doesn't, move the battery and/or receiver around until the model balances at the point shown If additional balance weight is needed, add lead weights to the nose or tail to get proper balance Range check your radio at your flying site as per your manufacturer's recommendations Recheck your wing and stab alignments Make sure the rudder is 90 degrees to the fuselage Check to see that all hardware is secure and that all equipment is in good condition.

26. D TRIM THE MODEL

Make your first flights, with the help of an experienced modeler/flyer if this is your first model The model may need some trim changes or adjustments to the control surfaces after the first flight Adjust the control surfaces at the clevises until the model flies correctly.

NOTE: See page 42 for balancing instructions.

GOOD LUCK AND GOOD FLYING!

SUPER SPORTSTER FOUR-CYCLE CONVERSION INSTRUCTIONS

Our popular Sportster series is a "natural" for 4-cycle experimentation. The unique looks of a Sportster just screams "4-Cycle" and the lightweight air-frame and symmetrical airfoil means the Sportster design will make the most of the 4-cycle fun. Whether you want to just "putter" around the sky, or loop, roll, and snap, the Sportster/4-cycle combination is unbeatable!

Four cycle engines offer many benefits — their quiet, realistic sound is pleasing to modelers and non-modelers alike. High torque allows the use of high pitch or large diameter propellers for a new style of flight characteristics. They are also very fuel efficient for economical operation.
On the other side of the coin, 4-cycles are larger and heavier than equivalent power 2-cyles. That means some special care must be taken to avoid a nose-heavy airplane, such as moving the firewall and radio farther back than normal. We'll help you with that task with these instructions.

Because of their similarity in design, we are writing these adaptation instructions for all three Sportster designs (Super Sportster 20, 40 and 60). Where dimensions or measurements differ, read the appropriate section for your Sportster.

CHOOSING YOUR ENGINE

It's difficult to say exactly what the optimum engine size is for your Sportster. The old rule of thumb was to choose a 4-cycle engine with 1-1/2 times the 2-cycle displacement for equivalent horsepower. But recent advancements by engine manufacturers have brought the power of 4-cycles way up, and the weight of the engines down. One good example is the Enya .46 Four Cycle. This engine weighs just a fraction more than most 2-Cycle .40's and it produces comparable power and thrust.

SUPER SPORTSTER 20: For this airplane a Saito .30 will give comparable power to a 2-Cycle but weighs more and is larger than a 2-Cycle. See page 33 for a drawing of the Saito .30 in a Sportster 20.

SUPER SPORTSER 40: For this plane you can choose between .40 and .60 size 4-cycle. A .40 will give docile flight performance. A .60 provides plenty of thrust, but with a significant increase in weight and size. The .60 will fit but it's going to be tight. See page 34 for a full size drawing of the Enya .46 mounted in the Super Sportster 40. The OS FS-61 is shown on page 35.

SUPER SPORTSTER 60: This model is well suited for the .60 to .90 size 4-cycles. Some of the new .60 size engines are putting out high thrust that will make a light Sportster 60 perform nicely. For maximum thrust with a small increase in weight, there are several small case .90's on the market that will fit in the Sportster 60. Pages 36 and 37 show the OS-FS 61 and the Enya .90 mounted in Super Sportster 60.

CHOOSING A MOUNT

Low weight and rigidity are important in 4-cycle mounting. Hayes and Tatone both make good mounts for 4-cycle use.

The Hayes mounts will fit 40's, 46's and 60's. The AL-40 is good for the Saito .30, The Enya .46 and Saito .45. The AL-60 will fit the Enya .60 and the OS FS-61. Currently Hayes does not make a mount for .90 use.

Tatone produces aluminum mounts that are predrilled for individual engines.

Both brands are lightweight. To improve rigidity, we recommend installing a front bulkhead. This essentially gives a beam mount system that is extremely rigid but makes removal of the mount a little more cumbersome.

BUILDING PROCEDURE

Following are steps that refer to 4-cycle installation to replace the steps in the front of this instruction book. Refer to these steps as you build your model.

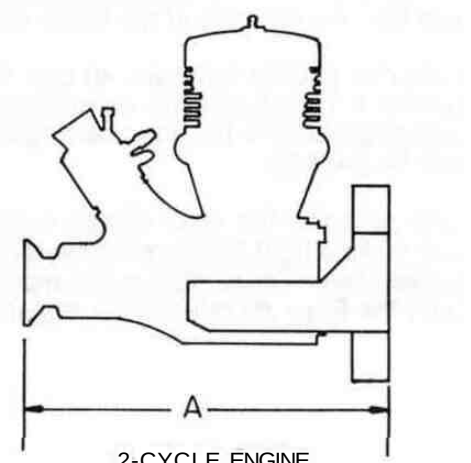
BUILDING THE FUSELAGE

Step 2

Prepare the Firewall. Mark the "top" of the Firewall. Mark the centerline of the engine on the Firewall and center the mount in position. The thrust line of the engine should be in the same position as shown on your plan. Drill holes and install blind nuts. Temporarily install the mount and trim the mount bolts that extend into the tank compartment. Drill hole for throttle pushrod to carburetor (make sure throttle pushrod does not interfere with tank).

Next bolt the engine to its mount. If you use a Hayes mount, position the engine as far back as possible leaving sufficient room for engine and/or carburetor clearance. Make sure you don't put in any right or left thrust.

Then measure the distance from the back of the mount to the prop (thrust) washer. To do this, place the engine and mount on a flat surface and put a straight edge across the thrust washer. Measure back from this straight edge to the back of the mount. This distance is "B". Refer to the drawings and the chart on the next page. We are measuring this distance so we can determine how far back to move the firewall so the engine will fit into the nose of the model.



2-CYCLE ENGINE
S55
GREAT PLANES MOUNT

Figure 1

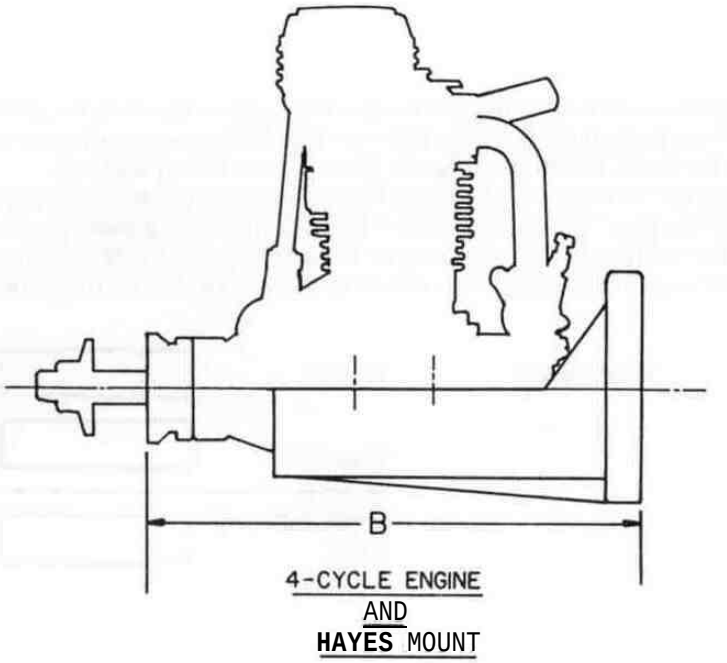


Figure 2

Now let's figure out how far back to move the firewall from the normal 2-cycle position. We have already figured out for you the "A" distance of the Sportster 20 (3-5/16"), the Sportster 40 (3-3/4") and the Sportster 60 (4-1/8"). The chart also takes the spinner used into account. If you use a different spinner than mentioned, just measure the backplate depth and add that distance to one of the above measurements, depending on which model you are building.

Distance B (length of your 4-cycle engine and mount	Minus	Distance A (length of 2-Cycle engine/mount and spinner back plate)	Equals	? (Distance to move firewall back)
SPORTSTER 20				
B		3-5/16" (CB Spinner)		?
B	—	3-5/32" (Dubro Spinner)	=	?
B	—	3-7/16" (Goldberg Spinner)	=	?
SPORTSTER 40				
B		3-3/4" (CB Spinner)		?
B	—	3-29/32" (Dubro Spinner)	=	?
B	—	3-7/8" (Goldberg Spinner)	=	?
SPORTSTER 60				
B		4-1/8" (CB Spinner)		?
B	—	4-9/32" (Dubro Spinner)	=	?
B	—	4-1/4" (Goldberg Spinner)	x	?

Chart 1

Basically all we've done here is to measure how long your new mount and engine is, allow for some spinner back plate space and subtract the distance shown on the plan (A) from the distance you measured (B). The result gives you the distance you have to move the firewall back. (See Figure 3 and 4 also.)

Let's do an example to show this. Refer to the drawings on page 35 showing the OS FS-61 in the Sportster 40. We are going to use a Goldberg Spinner. Our "B" measurement is 5-1/8" (measure from the front of the thrust washer to the rear of the mount). By looking at the information in Chart 1 on page 29, we know that we have to subtract 3-7/8" (distance A) from our distance B. The result is 1-1/4". We move the Firewall back 1-1/4".

Example:		Work Area:	
B	5-1/8	YourB	
—A	—3-7/8		
?	1-1/4	Your A	
		Move Firewall Back	

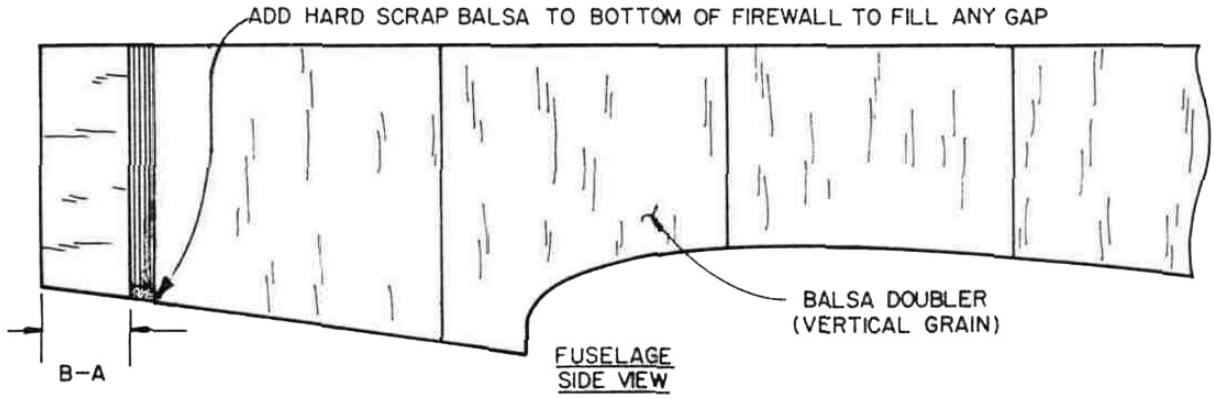


Figure 3

Step 5

Mark the new position of the Firewall on the inside of each Fuselage Side. Make sure your line is perfectly parallel to the front of the fuse sides. Using the firewall as a spacer, install the balsa doublers cross grain on the inside of the fuse side. Custom cut these pieces to fit. Do not glue the Firewall in at this time. Use epoxy glue or thick CA to glue the doublers in place. The doubler should extend past Bulkhead #3. Carefully trim the doublers to the fuse side shape.

Step 13

Draw the corrected bulkhead #1 position on the top view of the plans. Next still working over the plans, glue Bulkhead #1, the Firewall, in place. Then add 3/8" (or 1/4" depending on your mount width- see Figures 4 and 5) scrap balsa filler blocks, vertically grained, forward of Bulkhead #1. Sand the blocks flush with the fuse sides. Add 1/4" balsa filler below the Firewall later when you remove the fuselage from the building board.

Step 36

Check for adequate width clearance for your engine. If your 4 cycle and mount is over 2" wide for the Sportster 20, 2-1/4" for the 40 and over 2-5/8" for the 60 size, you'll need to relieve the 3/8" or 1/2" balsa nose blocks and the 3/8" or 1/2" filler pieces in the engine mount area. Or you can custom make 3/8" balsa nose side blocks as shown in Figure 5. Now follow step 36 in the first part of this book about gluing these side pieces to the fuselage.

Next, if desired, add a front bulkhead to the engine mount as shown on the drawings on pages 33 through 37. Make this Bulkhead from 1/8" plywood. Once the front Bulkhead is epoxied in, drill the front of this bulkhead mount for 4-40 bolts. Then tap the mount and install 4-40 bolts.

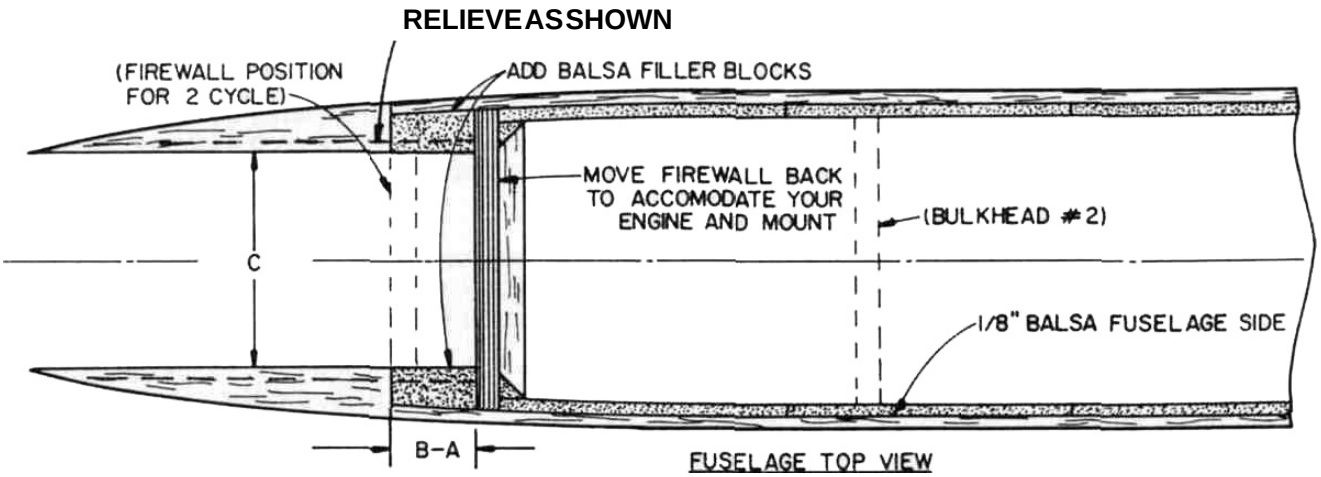


Figure 4

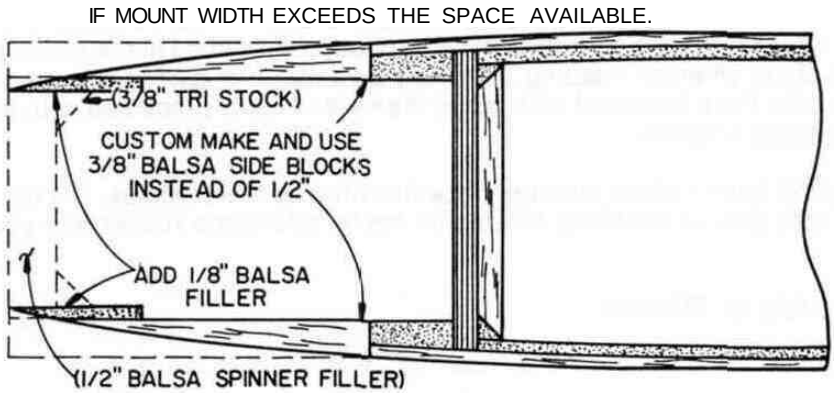


Figure 5

GENERAL INFORMATION

Center of Gravity: A nose heavy airplane can be a problem! Make sure you check the CG location during construction with the radio components installed. You may need to put the radio as far back in the compartment as possible. This will avoid having to carry tail weight.

Props: Always start with the manufacturer's instructions (especially for break in) for prop selection. Read their instructions carefully because 4 cycles use entirely different diameter and pitch propellers because they operate at a lower RPM and produce greater torgue than equivalent displacement 2-cycles.

You may find that after operating your Sportster with recommended props that you'll want to experiment with other props. It is amazing how much you can change flight characteristics of a model by changing props.

If you are looking for higher flight speeds from your Sportster than you are getting from the average recommended prop, consider reducing the diameter and/or blade area slightly and increasing the prop pitch to bring the RPM back to the normal range. For example, with our Enya .46 equipped Sportster 40, the instructions recommend 13x5,12x6,11 x 7,11 x 6,10x6,10 x 7 or 10x8 props. We started with an 11 x 6 propeller which gave us fair performance. Larger props will provide slower speeds... fine for big biplanes... but not what we wanted from our racy Sportster. For faster speed, we found that a 10-1/2 x 7-1/2 propeller added approximately 10 mph to the straight and level flight which helped make vertical maneuvers crisper due to a faster entry speed. There is a trade off, however, as the engine idle was somewhat higher due to the lower mass of the wood 10-1/2 x 7-1/2 propeller. Four-cycles like flywheel weight from large diameter props. This made the plane land a little faster than with the 11x6. The prop we used was a prop designed for .60 size pattern engines, a Max Dailey (Radio South) propeller. A similar prop is also available from DW Products. Their addresses are:

Radio South
180 E. Burgess
Pensacola, FL **32503**

DW Products
5634 Crystal Ct.
Santa Rosa, CA 95404

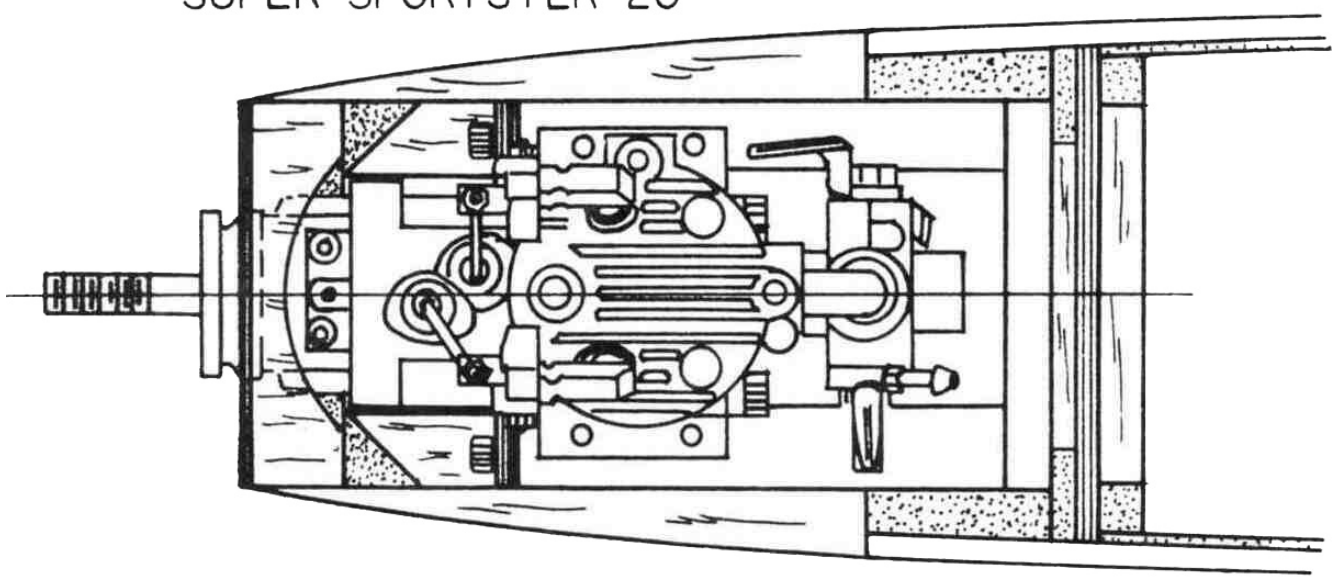
Fuel Tank: For simplicity, we recommend a 2 line tank for your Sportster. If you can't easily reach the fuel line for fueling purposes, you might consider using one of the new DuBro fueling valves. This will save extra plumbing that could leak or cause problems. Most 4 cycles have a small enough venturi that muffler pressure is unnecessary. Don't forget the crankcase drain line. A lot of excess fuel comes out of the pressure fitting. Make sure this drainage exits your fuselage. Treat it as though it were a separate exhaust.

Flying: Other than the obvious sound difference, you'll notice one other big difference from your first take off with a four cycle equipped Sportster: You'll need to add more right rudder than normal to counter the increased torque on acceleration during takeoff. Also, you may be surprised how big an effect the larger propeller may have on abrupt change maneuvers such as a square loop. Because there is more mass to the propeller, it has a larger gyroscopic force. When you change directions in maneuvers like a square loop, you may find that the plane changes heading. This may be a result of gyroscopic precession and/or P-factor. These factors become more prevalent with larger diameter 4 cycle props and with slower speeds generally encountered with these engines.

Also don't forget to have a slight amount of toe-in with your main wheels. Toe out and lot's of torgue can cause problems with ground handling. Use some toe-in, add some rudder and your takeoffs will be in a straight line.

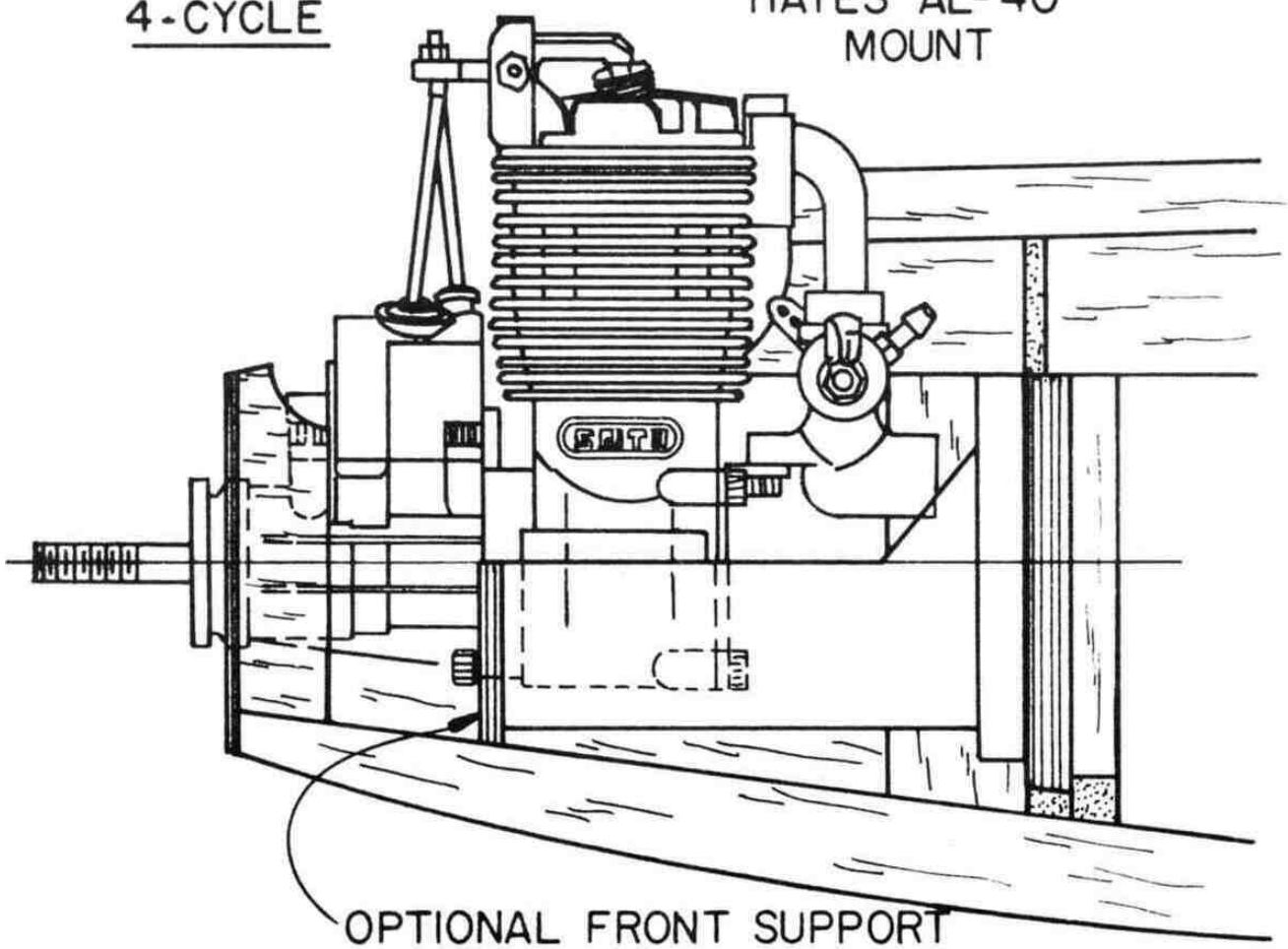
GOOD LUCK AND GREAT FLYING!

SUPER SPORTSTER 20

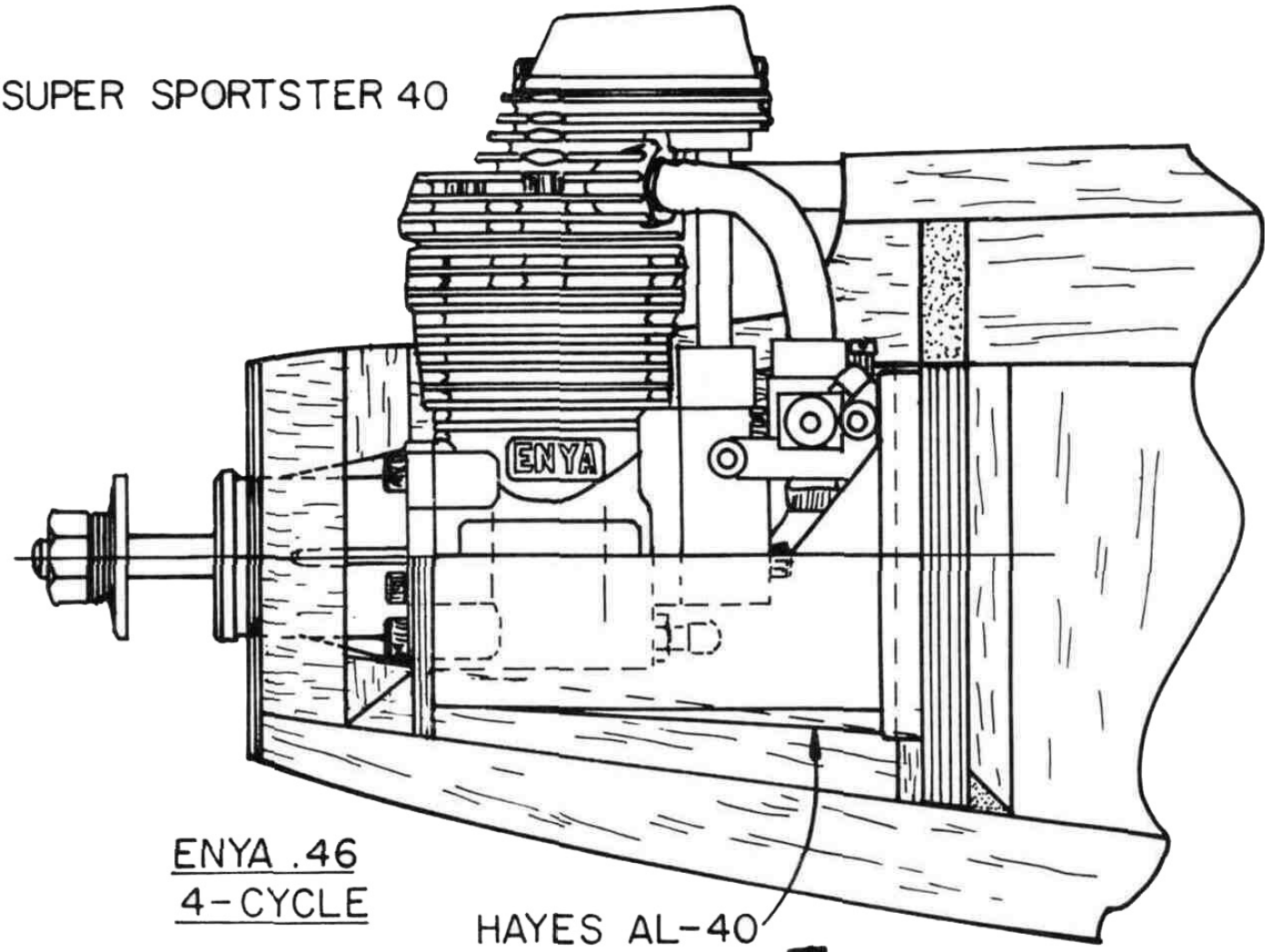


SAITO .30
4-CYCLE

HAYES AL-40
MOUNT

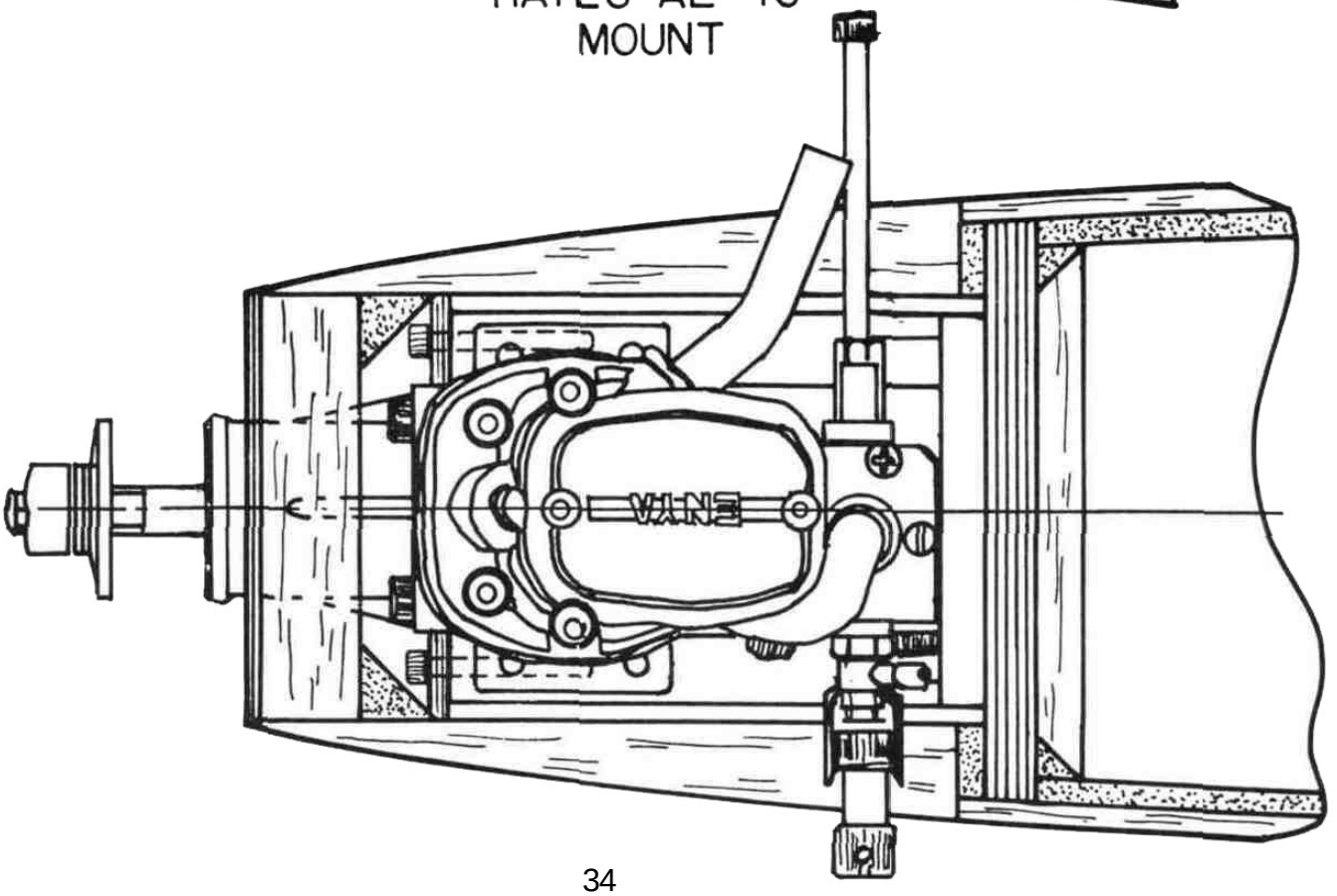


SUPER SPORTSTER 40

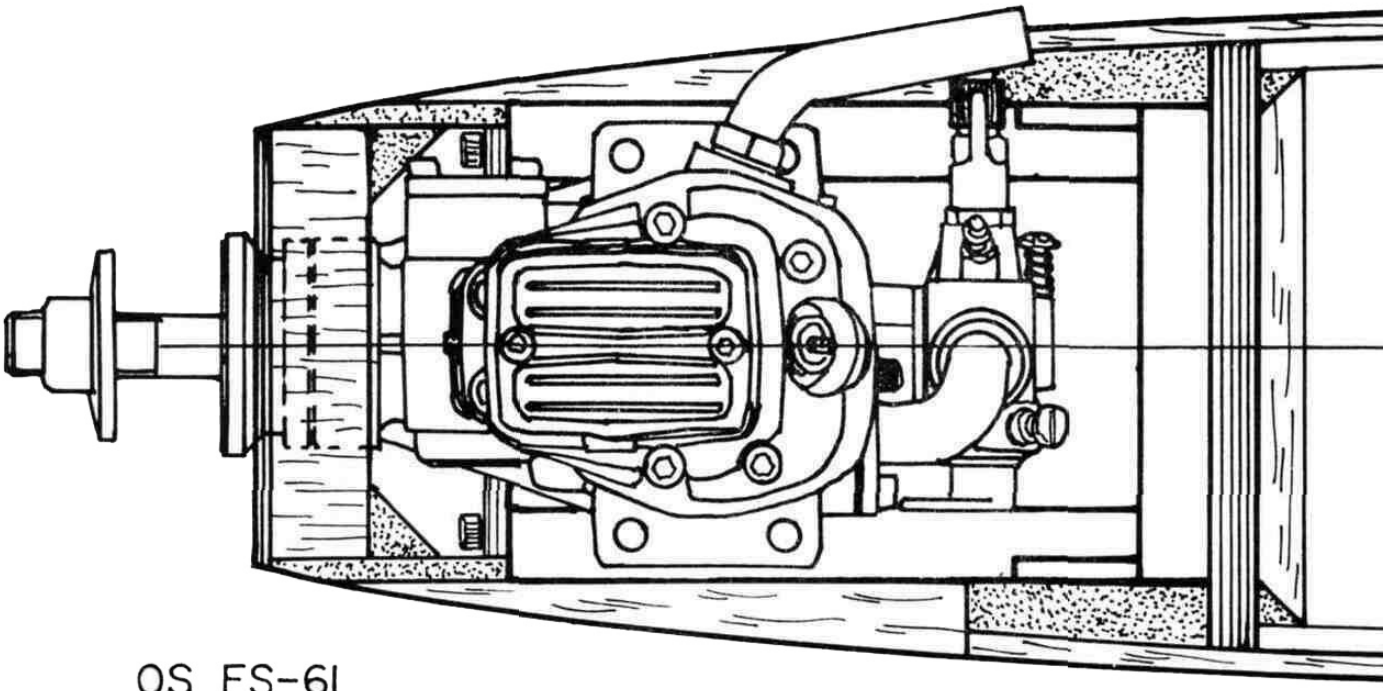


ENYA .46
4-CYCLE

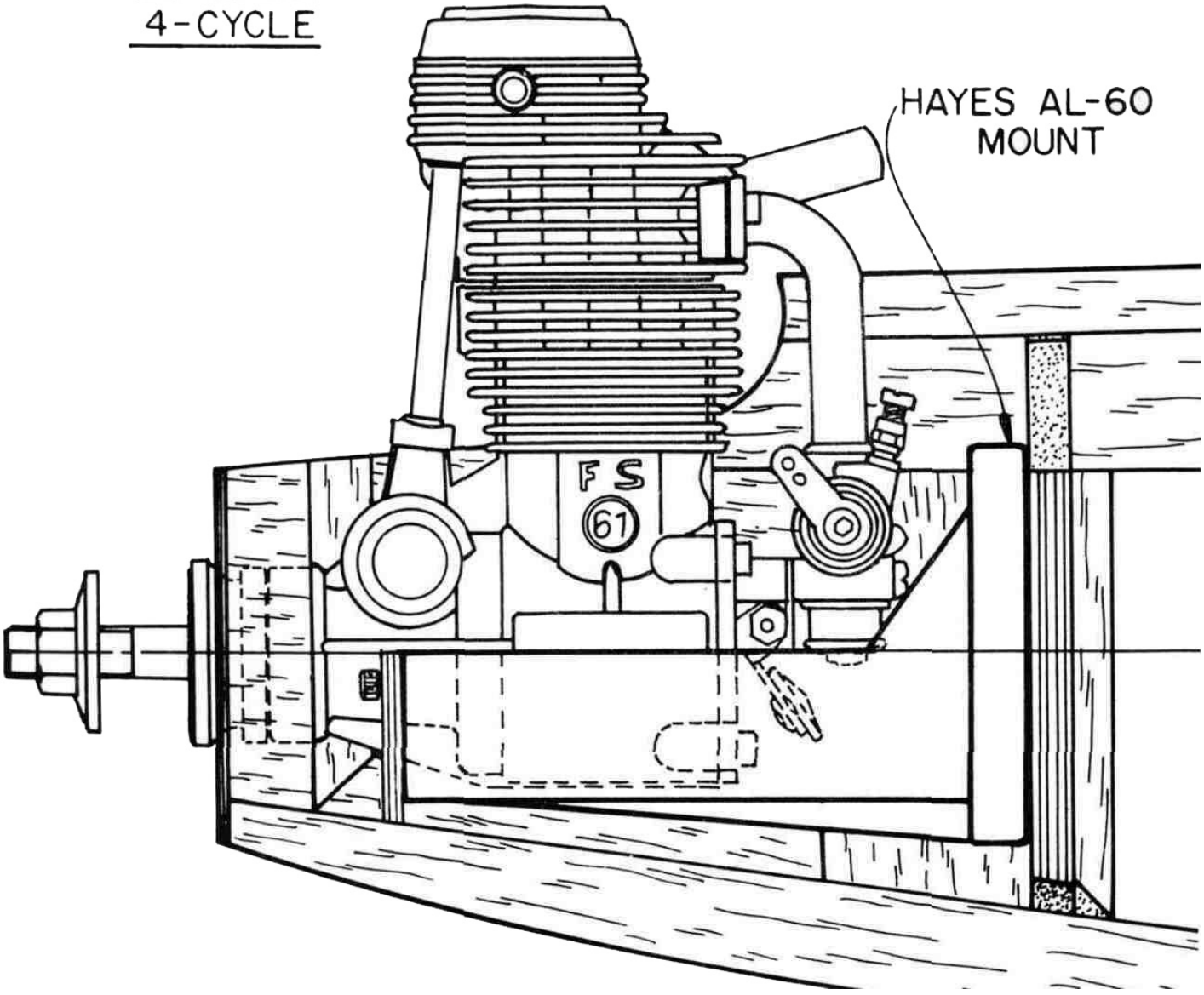
HAYES AL-40
MOUNT



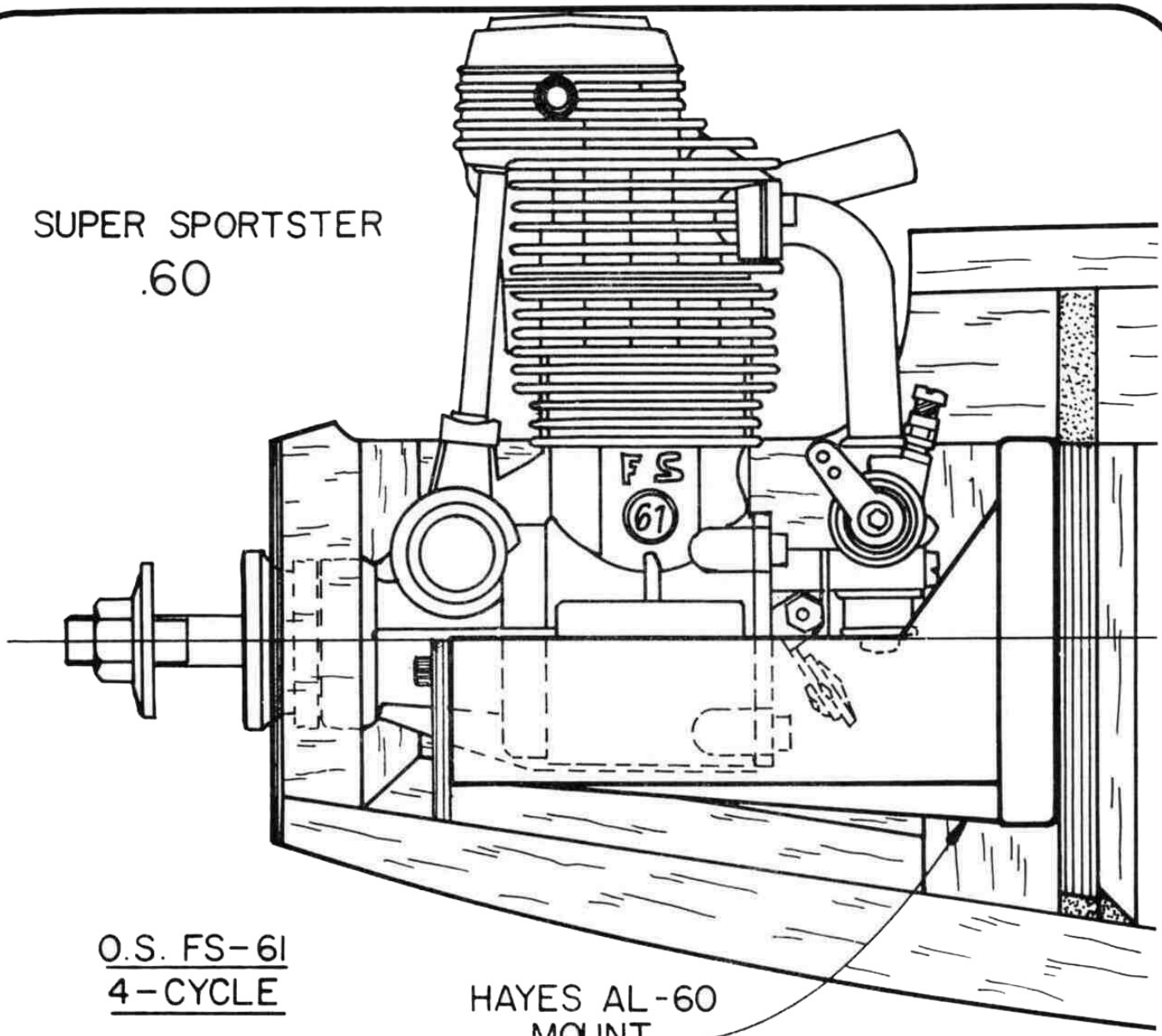
SUPER SPORTSTER 40



O.S. FS-61
4-CYCLE

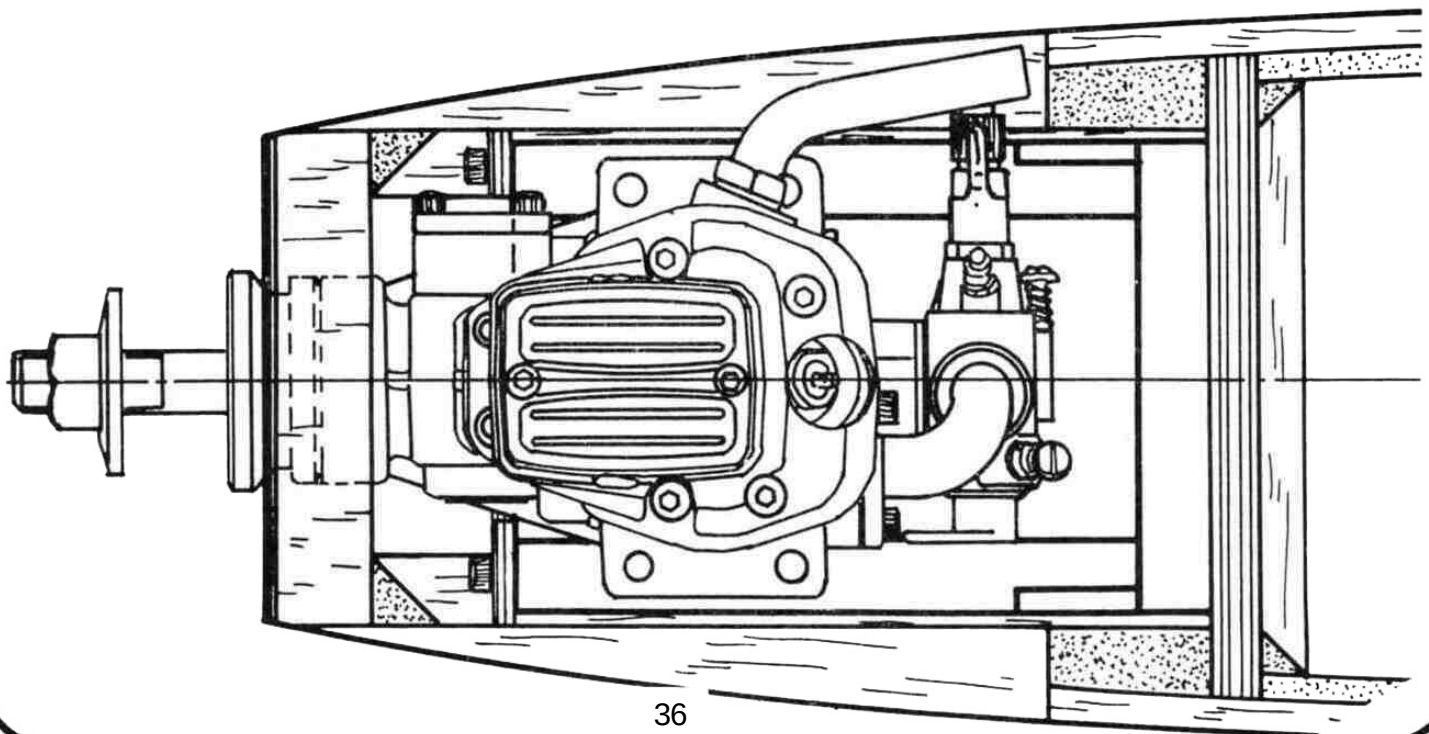


SUPER SPORTSTER
.60

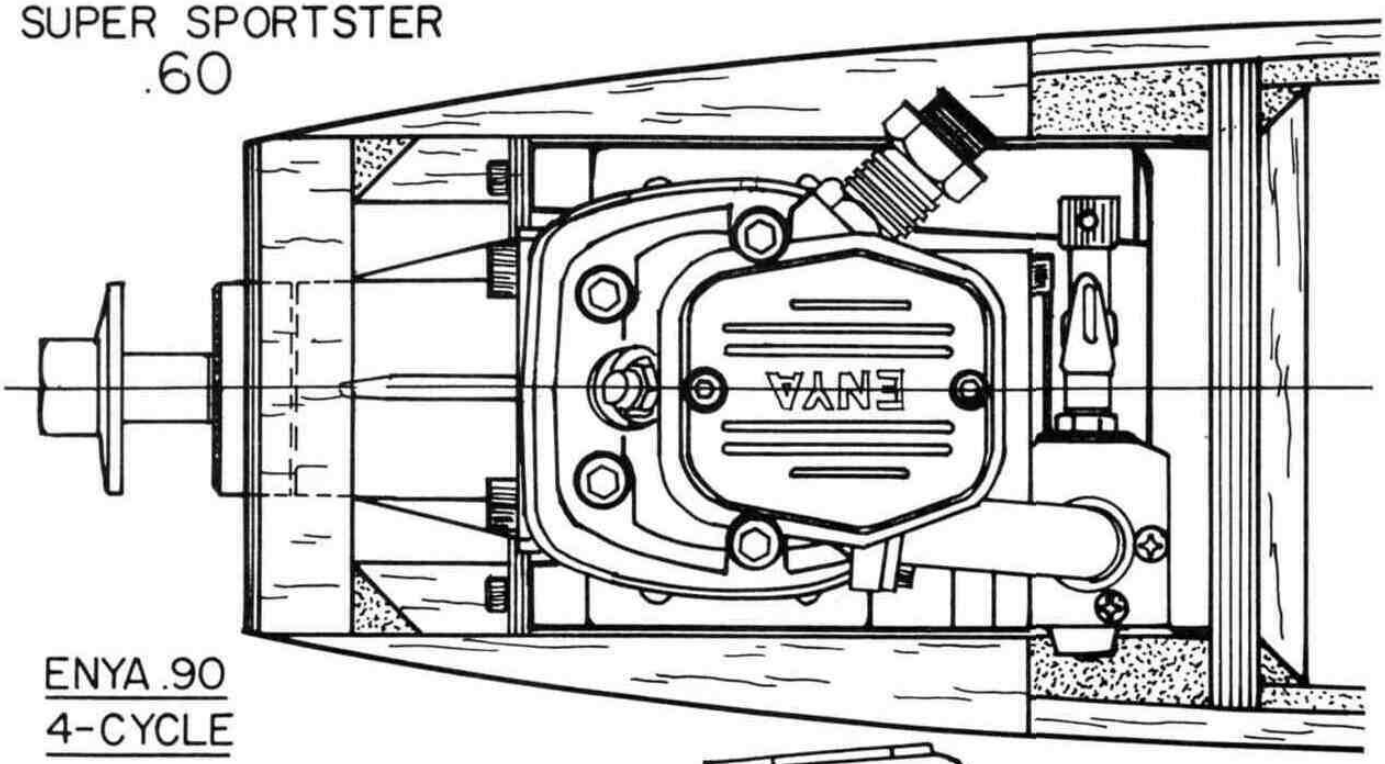


O.S. FS-61
4-CYCLE

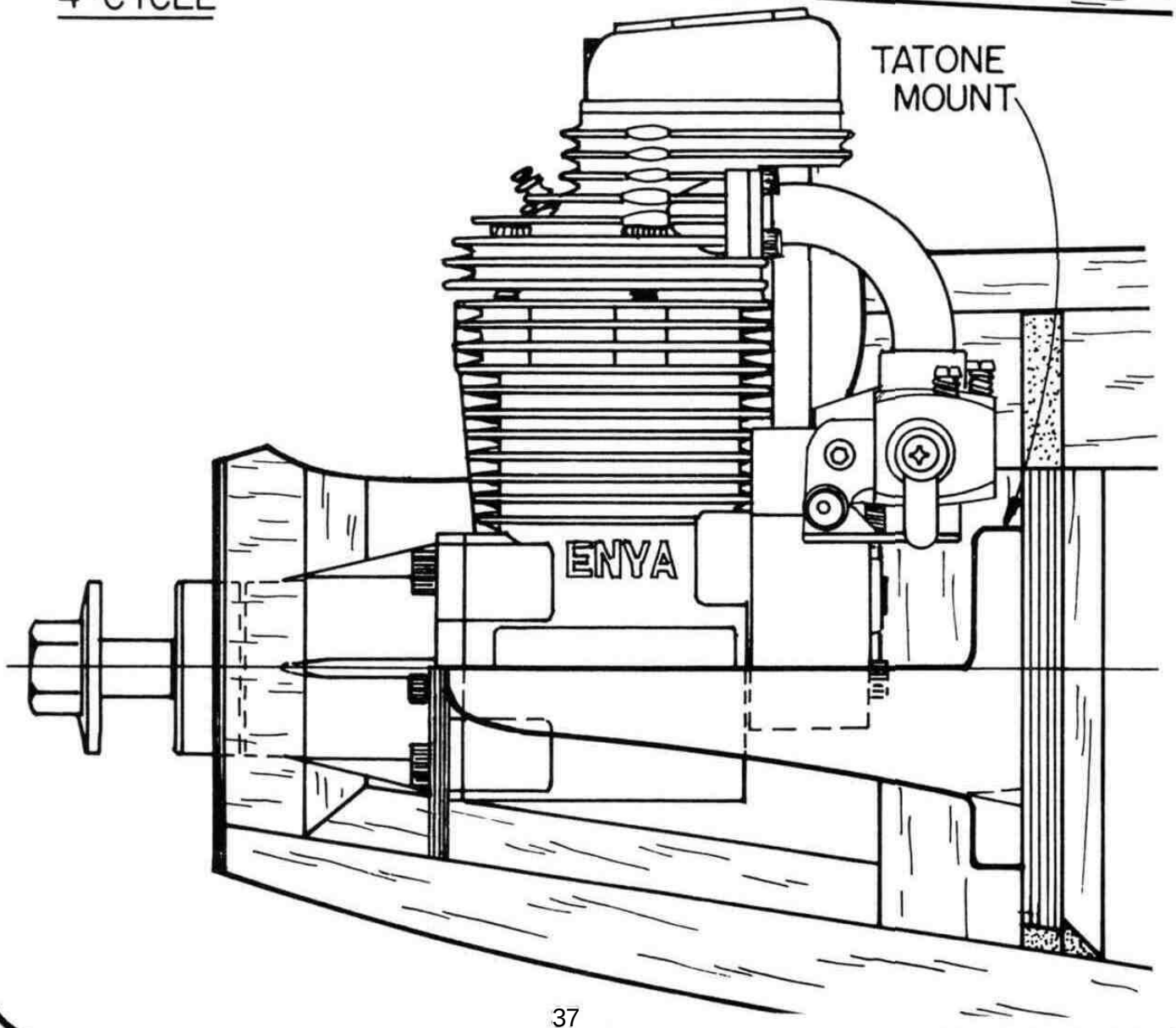
HAYES AL-60
MOUNT



SUPER SPORTSTER
.60



ENYA .90
4-CYCLE



SUPER SPORTSTER 20 PARTS LIST

PART#	QTY	DESCRIPTION
BAL046	2	Balsa 1/4 x 1/4 x 36 Fuselage Brace
BAL047	1	Balsa 1/8 x 1/4 x 36 Former Stock
BAL126	5	Balsa 1/16 x 1/4 x 36 Cap **Strip**
CANPY035	1	Plastic Canopy
EM2048L	1	Adjustable Engine Mount Left
EM2048R	1	Adjustable Engine Mount Right
NYLON87	1	CA Hinge Strip 2 x 9
SS20F01	2	Balsa Shaped 1/8 Fuselage Sides
SS20F02	1	Balsa Shaped 5/8 Chin Block
SS20F03	1	Ply Shaped 1/4 x 2-1/2 x 2-1/4 Bulkhead #1
SS20F05	1	Balsa 3/16 x 2-5/8 x 22-3/4 Bulkhead #3
SS20F07	1	Balsa 3/8 x 3 x 9-3/8 Hood Top
SS20F08	1	Balsa 3/16 x 1-1/4 x 14-7/8 Nose Filler Block
SS20F09	2	Balsa 3/16 x 1-1/4 x 14-7/8 Hood Side
SS20F10	2	Balsa Shaped 3/8 Side Block
SS20F16	2	Balsa Shaped 3/4 Stab Filler
SS20F17	1	Balsa 1/8 x 2-5/8 x 4-3/4 Cockpit **Floor**
SS20F20	1	Balsa 1/16 x 3 x 36 Fuselage Doubler
SS20F21	1	Balsa 3/32 x 3 x 24 Top Sheeting
SS20P01	1	Plan Sheet
SS20P02	1	Instruction Book
SS20R01	1	Balsa Shaped 3/16 **Fin**
SS20R02	1	Balsa Shaped 3/16 Rudder
SS20S01	1	Balsa Shaped 3/16 Stabilizer
SS20S02	2	Balsa Shaped 3/16 Elevator
SS20W07	1	Balsa Shaped 21/32 Wing Fairing
SS20W08	1	Balsa 3/8 x 3 x 4-1/2 Wing Fairing
SS20W09	1	Balsa Shaped 1/4 Center Rib
SS40F29	1	Balsa 3/8x12 Triangle Stock
WPNT001	1	Plastic ABS Wheel Pant Set
SS20A01	1	**SUB PACK - FUSE & WING**
DOWEL018	2	Hardwood 1/4 x 2-3/4 Wing Dowel
HRDWD005	2	Hardwood Shaped 5/8 x 5/8 LG Gusset
HRDWD012	2	Hardwood Grooved 5/8 x 5/8 LG Block
HRDWD022	2	Hardwood Grooved 5/8 x 4 LG Block
PLY3004	4	Plywood Shaped 1/16 LG Brace
SS20F13	1	Plywood Shaped 1/16 Spinner Ring
SS20F14	1	Plywood 1/4 x 3/4 x 2-5/8 Hold Down
SS20F18	1	Plywood 1/8 x 3/4 x 2-5/8 Dowel Jig
SS20W11	2	Hardwood Shaped 5/16x3 Center TE
SS20A02	1	**SUB PACK - FUSE STRINGERS**
SS20F11	1	Balsa 1/4 x 1/4 x 14 Stringer
SS20F12	8	Balsa 1/8 x 1/4 x 14 Stringer
SS20A03	1	**SUB PACK - DIE-CUT SHEETS**
SS20F04	1	Plywood 1/8 x 3-1/4 x 6 Bulkhead #2
SS20F06	1	Balsa 1/8 Fuselage Formers
SS20F19	1	Balsa 3/32 Deck Base
SS20W10	1	Balsa 1/8 Wing Tip
SS20W13	5	Balsa 3/32 Ribs
SS20A04	1	**SUB PACK - WING SHEETING**
SS20W12	8	Balsa 1/16 x 2-5/8 x 6-1/2 Center Wing Sheeting

PART#	QTY	DESCRIPTION
SS20M01	1	**SUB PACK - HARDWARE**
GLPT001	1	Fiberglass Tape 1 x 8
METAL007	2	Brass Shaped 1/16 **Plate**
NUTS001	4	4-40 Blind Nuts
NYLON03	2	Nylon Small Control Horn
NYLON16	1	Nylon 5/32 Nosegear Steering Arm
NYLON17	2	Nylon Clevis
NYLON20	2	Nylon Swivel
NYLON21	2	Nylon Swivel Clevis
NYLON23	2	Nylon 10-24 Wing Bolt
NYLON36	1	Nylon Gear Hold Down **Straps**
PLY3013	2	Plywood 1/8x1/2x1 Plate
PLTB002	3	Plastic 36 Outer Pushrod Tube
SCRW002	4	2-56 x 5/8 Screw
SCRW003	4	4-40 x 1 Round Head Screw
SCRW005	1	**6-32 x** 1/8 Screw
SCRW020	1	**6-32 x** 1/4 Screw
SCRW024	12	#2 x 3/8 Screw
WBNT002	1	Wire 3/32 Aileron **Torque Rod Set**
WBNT009	1	Wire Tailgear Assembly
WBNT070	1	Wire Elevator Tie
WHCL005	1	5/32" Wheel Collar
WIRES16	2	Threaded Pushrod Wire - 16"
WIRES17	2	Threaded Pushrod Wire - 34"
SS20M02	1	**SUB PACK - LANDING GEAR**
WBNT103	2	Wire Main Gear
WBNT104	1	Wire Nose Gear
SS20W01	1	**SUB PACK - WING PARTS**
BAL080	2	Balsa 3/16 x 1/4 x 24 Trailing Edge
BAL091	4	Balsa 1/4X3/8X24 Spar
SB40W04	4	Balsa 1/16 X 2-1/8 X 24 LE Sheeting
SS20W02	2	Balsa 1/4X7/8X24 LE
SS20W03	4	Balsa 1/16 X 3/4 X 24 TE Sheeting
SS20W05	2	Balsa 5/16 X 19 Aileron
SS20W06	1	Balsa 1/4 x 5/8 x 24 Building **Shim**

SUPER SPORTSTER 40 PARTS LIST

PART#	QTY	DESCRIPTION
BAL009	5	Balsa 3/32x1MX 36 Cap Strip
BAL015	8	Balsa 3/32 x 3 x 7 Center Sheet
BAL019	2	Balsa 1/4 Triangle Fuselage Brace
BAL041	1	Balsa Shaped 5/8 Chin Block
BAL047	1	Balsa 1/8 x 1/4x36 Former Stock
BAL072	1	1/8x3x36 Fuselage Doubler
CANPY017	1	Plastic Canopy
EM4070L	1	Adjustable Engine Mount Left
EM4070R	1	Adjustable Engine Mount Right
SS246P02	1	Instructions
NYLON87	1	CA Hinge Strip 2x9
SS40F01	2	Balsa Shaped 1/8 Fuselage Sides
SS40F02	1	Balsa Shaped 1/8 Deck Base
SS40F03	1	Ply Shaped 1/4 x 3 x 2-9/16 Bulkhead #1
SS40F04	1	Ply Shaped 1/4 Bulkhead #2
SS40F05	1	Balsa 1/4 x 3 x 3-3/16 Bulkhead #3
SS40F07	1	Balsa 3/8 x 3-1/2x 11 Hood Top
SS40F09	2	Balsa 1/4 x 1-3/8 x 17-1/2 Nose Side
SS40F10	2	Balsa Shaped 1/2 Nose Side Block
SS40F29	1	Balsa 3/8 x 12 Triangle Stock
SS40F30	1	Balsa 1/8x3x5-1/2 Cockpit Floor
SS40F32	1	Balsa 3/32 x 3 x 24 Bottom Sheeting
SS40P01	1	Plan Sheet
SS40R01	1	Balsa Shaped 1/4 Fin Front
SS40R02	1	Balsa Shaped 1/4 Fin Rear
SS40R03	1	Balsa Shaped 1/4 Rudder
SS40S01	1	Balsa Shaped 1/4 Stabilizer Front
SS40S02	1	Balsa Shaped 1/4 Stabilizer Rear
SS40S03	2	Balsa Shaped 1/4 Elevator
SS40W07	1	Balsa Shaped 5/8 Wing Fairing
SS40W08	1	Balsa 3/8x3-1/2x5-1/2 Wing Fairing
SS40W09	1	Balsa Shaped Center Rib
SS40W10	2	Balsa Shaped 3/16 Wing Tip
SS40W14	1	Balsa 1/4 x 3 x 10 Wing Filler
WPNT002	1	Plastic ABS Wheel Pant Set
SS40A01	1	SUB PACK - FUSE & WING
HRDWD005	2	Hardwood Shaped 5/8 x 5/8 LG Gusset
HRDWD010	2	Hardwood Grooved 5/8 x 4-1/2LG Block
HRDWD013	2	Hardwood Grooved 5/8 x 3/4 LG Block
PLY3001	1	Plywood 1/16 Spinner Ring
PLY3004	4	Plywood Shaped 1/16 LG Brace
SS40F17	2	Plywood 1/4x7/8 x 3 Hold Down Plate
SS40W11	2	Hardwood Shaped 3-1/2 Center TE
SS40W12	2	Hardwood 1/2x5/8 x 3-1/16 Hold Down
SS40A02	1	SUB PACK - BALSA PARTS
SS40F16	1	Balsa 2-1/4 x 2-1/4 x 1/2 Nose Filler Block
SS40F18	1	Balsa Shaped 1/4 Former 1A
SS40F19	1	Balsa Shaped 1/4 Former 2A
SS40F20	1	Balsa Shaped 1/4 Former 3A
SS40F21	1	Balsa Shaped 1/4 Former Dash
SS40F24	1	Balsa Shaped 1/4 Former 6A
SS40F28	2	Balsa Shaped 5/8 Fin Filler Block
SS40W1^	4	Balsa 1/4x5/8x3 Leading Edge Filler
SS40A03	1	PARTS PACKAGE (DIE-CUT)
SS40F33	1	Balsa 1/8 Former 3B, 4A, 5A, 6B
SS40W04	6	Balsa 3/32 Wing Ribs

PART#	QTY	DESCRIPTION
SS40F31	1	SUB PACK - FUSE STRINGER
SS40F11	1	Balsa 1/4x1/4x16 Stringer
SS40F12	8	Balsa 1/8 x 1/4 x 16 Stringer
SS40M01	1	SUB PACK - HARDWARE
GLTP001	1	Fiberglass Tape 1 x 8
METAL007	2	Brass Shaped 1/16 Plate
NUTS003	4	6-32 Blind Nuts
NYLON03	2	Nylon Control Horns
NYLON 13	3	Nylon 1/4 - 20 Wing Bolt
NYLON 16	1	Nylon 5/32 Nosegear Steering Arm
NYLON17	2	Nylon Clevis
NYLON20	2	Nylon Swivel
NYLON21	2	Nylon Swivel Clevis
NYLON36	1	Nylon Gear Hold Down Straps
PLY3013	2	Plywood 1/8x1/2x1 Plate
PLTB002	3	Plastic 36" Outer Pushrod Tube
SCRW002	4	2-56 x 5/8 Screw
SCRW005	1	6-32 x 1/8 Screw
SCRW008	4	6-32 x 1 Screw
SCRW020	1	6-32 x 1/4 Screw
SCRW024	12	#2 x 3/8 Screw
WBNT002	1	Wire 3/32 Aileron Torque Rod Set
WBNT009	1	Wire Tailgear Assembly
WBNT101	1	Wire Elevator Tie
WHCL005	1	5/32" Wheel Collar
WIRES16	2	Threaded Pushrod Wire -16"
WIRES17	2	Threaded Pushrod Wire - 34"
SS40M02	1	SUB PACK - LANDING GEAR
WBNT014	2	Wire Main Gear
WBNT046	1	Wire Nose Gear
SS40W01	1	SUB PACK - WING PARTS
BAL020	4	Balsa 3/8 x 26-1/2 Spar
BAL060	5	Balsa 3/32 x 7/8 x 30 TE Sheeting
BAL090	2	Balsa 1/4 x 1/4 x 30 TE
SS40W02	2	Balsa 7/16 Aileron
SS40W03	4	Balsa 3/32 x 2-1/2 x 26 LE Sheeting
SS40W05	2	Balsa 1/4 x 7/8 x 28 LE Sheeting

SUPER SPORTSTER 60 PARTS LIST

PART#	QTY	DESCRIPTION
BAL009	5	Balsa 3/32 x 1/4 x 36 Cap Strip
BAL015	8	Balsa 3/32 x 3 x 7 Center Sheet
BAL019	3	Balsa 1/4 Triangle Fuselage Brace
BAL047	1	Balsa 1/8 x 1/4 x 36 Former Stock
BAL084	2	Balsa 3/32 x 3 x 24 Bottom Fuse Sheeting
BAL116	1	Balsa Shaped 5/8 Chin Block
BAL120	1	Balsa Shaped 1/4 Center rib
CANPY025	1	Plastic Canopy
EM4070L	1	Adjustable Engine Mount **Left**
EM4070R	1	Adjustable Engine Mount Right
SS246P02	1	Instructions
NYLON87	1	CA Hinge Strip **2 x 9**
SS60F01	2	Balsa Shaped 3/16 Fuselage Sides
SS60F02	1	Balsa Shaped 1/8 Deck Base
SS60F03	1	Ply 1/4 x 3-1/4 x 2-15/16 Bulkhead #1
SS60F04	1	Ply Shaped 1/4 Bulkhead #2
SS60F05	1	Balsa 1/4 x-3-5/16 x 3-9/16 Bulkhead **#3**
SS60F07	1	Balsa 3/8 x 4 x 11-3/4 Hood Top
SS60F09	2	Balsa 1/4 x 1-3/8 x 18 Nose Side
SS60F10	2	Balsa Shaped 1/2 Nose Side Block
SS40F29	1	Balsa 3/8x12 Triangle Stock
SS40W14	1	Basia 1/4x3x10 Wing Filler
SS60F30	1	Balsa 1/8 x 3-1/4 x 6-1/8 Cockpit **Floor**
SS60P01	1	Plan Sheet
SS60R01	1	Balsa Shaped 1/4 Fin Front
SS60R02	1	Balsa Shaped 1/4 Fin Rear
SS60R03	1	Balsa Shaped 1/4 Rudder Front
SS60R04	1	Balsa Shaped 1/4 Rudder Rear
SS60S01	1	Balsa Shaped 3/8 Stabilizer Front
SS60S02	1	Balsa Shaped 3/8 Stabilizer Rear
SS60S03	2	Balsa Shaped 3/8 Elevator
SS60W07	1	Balsa Shaped 7/8 Wing Fairing
SS60W08	2	Balsa 1/2x2x6 Wing Fairing
SS60W10	2	Balsa Shaped 3/16 Wing Tip
WPNT003	1	Plastic ABS Wheel Pant Set
SS60A01	1	**SUB PACK - FUSE & WING**
HRDWD005	2	Hardwood Shaped 5/8 LG Gusset
HRDWD010	2	Hardwood Grooved 5/8 x 4-1/2 LG Block
HRDWD013	2	Hardwood Grooved 5/8 x 3/4 LG Block
HRDWD017	2	Hardwood 1/2x1 x 3 Wing Hold Down
PLY3004	4	Plywood Shaped 1/16 LG Brace
PLY3016	1	Plywood 1/16 Spinner Ring
PLY3017	1	Plywood 1/16 x 2-5/8 x 3-1/2 Wing Plate
SS60F17	2	Plywood 1/2 x 5/8 x 3-5/16 Hold Down
SS60A02	1	**SUB PACK - BALSA PARTS**
BAL103	4	Balsa Shaped 7/16 Filler (LE)
SS60F16	1	Balsa 2-1/2x 2-5/8 x 1/2 Filler
SS60F18	1	Balsa Shaped 1/4 Former 1A
SS60F19	1	Balsa Shaped 1/4 Former **2A**
SS60F20	1	Balsa Shaped 1/4 Former 3A
SS60F21	1	Balsa Shaped 1/4 Former Dash
SS60F24	1	Balsa Shaped 1/4 Former 6A
SS60F28	2	Balsa Shaped 3/4 Fin Filler Block
SS60W11	2	Balsa Shaped 1/2 Center Trailing Edge

PART#	QTY	DESCRIPTION
SS60A04	1	**SUB PACK - RIBS AND FORMERS**
SS60F33	1	Balsa 1/8 Former 3B, 4A, 5A, 6B (Die-Cut)
SS60W12	5	Balsa 3/32 Wing Ribs (Die-Cut)
SS60F35	2	Ply 1/8 Fuse Doubler (Die-Cut)
SS60F31	1	**SUB PACK - FUSE STRINGER**
SS60F11	1	Balsa 1/4 x 1/4 x 17-1/2 Stringer
SS60F12	8	Balsa 1/8 x 1/4 x 17-1/2 Stringer
SS60M01	1	**SUB PACK - HARDWARE**
GLTP001	1	Fiberglass Tape 1 x 8
METAL007	2	Brass Shaped 1/16 **Plate**
NUTS003	4	6-32 Blind Nuts
NYLON03	2	Nylon Control Horns
NYLON13	4	Nylon 1/4 - 20 Wing **Bolt**
NYLON16	1	Nylon 5/32 Nosegear Steering **Arm**
NYLON17	2	Nylon Clevis
NYLON20	2	Nylon Swivel
NYLON21	2	Nylon Swivel Clevis
NYLON36	1	Nylon Gear Hold Down **Straps**
PLY3013	2	Plywood 1/8x1/2x1 Plate
PLTB002	2	Plastic 36" Outer **Pushrod Tube**
SCRW002	4	2-56 x 5/8 Screw
SCRW005	1	6-32 x 1/8 Screw
SCRW008	4	6-32 x 1 Screw
SCRW020	1	6-32 x 1/4 Screw
SCRW024	12	#2 x 3/8 Screw
WBNT002	1	Wire 3/32 Aileron Torque Rod Set
WBNT009	1	Wire Tailgear Assembly
WBNT101	1	Wire Elevator Tie
WHCL005	2	5/32" Wheel Collar
WIRES16	2	Threaded Pushrod Wire - **16"**
WIRES17	2	Threaded Pushrod Wire - 34"
SS60M02	1	**SUB PACK - LANDING GEAR**
WBNT085	2	Wire Main Gear
WBNT086	1	Wire Nose Gear
SS60W01	1	**SUB PACK - WING PARTS**
BAL025	4	Balsa 3/8 x 1/2 x 29-1/2 Spar
BAL060	4	Balsa 3/32 x 7/8 x 30 TE Sheeting
BAL063	3	Balsa 1/4x3/4x30 LE
BAL118	2	Balsa Shaped 1/2 x 30 Aileron
SS60W03	4	Balsa 3/32 x 3-1/4 x 30 LE Sheeting
SS60W04	2	Balsa 1/4x5/16x30 TE

SPORTSTER

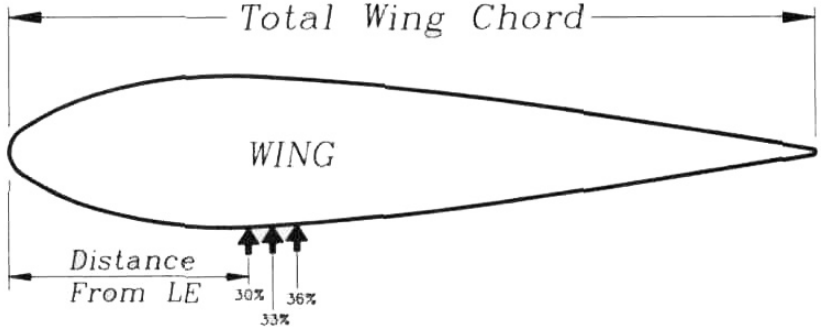
Sportster

Sportster

Use trim MonoKote and these letters to create your trim scheme on your Sportster.

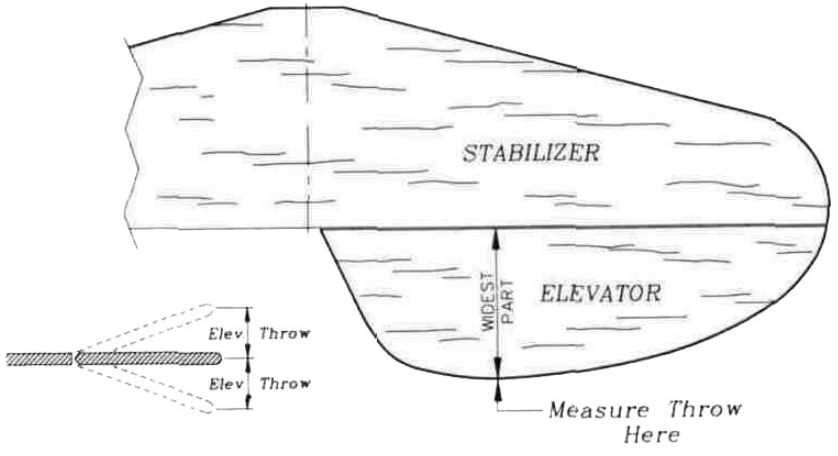
INSTRUCTIONS FOR BALANCING YOUR SUPER SPORTSTER

The recommended balance point for the Super Sportsters is shown on the plan, and is located approximately 29% back from the leading edge. However, all Sportsters have been thoroughly test flown as far back as 36%, and found to be completely stable throughout the entire range from 29% to 36% (These numbers represent a percentage of the total wing chord, as shown in the sketch).

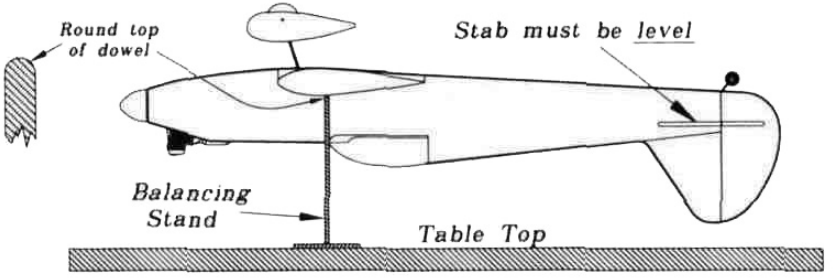


Balance Points

If, when balancing your Super Sportster, you find it necessary to add several ounces of nose weight to balance it at the location shown on the plan, it is preferable to balance farther aft, up to 36% (the aft limit), rather than adding a lot of weight As you balance farther aft, however, the airplane will become more responsive to elevator control; therefore, you should reduce the maximum elevator throw in accordance with the table of "Recommended Maximum Elevator Throws." The elevator throw is measured at the widest part of the elevator, as shown in the sketch.



The best way to balance your Super Sportster is to make a Balancing Stand from a square of 1/4" plywood and two 3/8" dowels. Mark the fore and aft limits of the balance range on the top of the wing (on both sides of the fuselage), and place the airplane upside down on the balancing stand as shown in the sketch (empty fuel tank). Move the airplane forward or aft on the stand until it balances with the stab level. If it balances outside the 29% to 36% range, you must either shift the location of radio components or add weight to the nose or tail until it balances within the range.



Take note of where the airplane balances. If it balances near the front of the recommended range, then adjust the linkages to your elevator to provide the maximum throw listed in the 29% - 30% column in the table below If it balances near the middle of the range, set your elevator for the maximum throw listed in the 33% column. If it balances near the aft limit of the range, set your elevator for the maximum throw listed in the 36% column.

RECOMMENDED MAXIMUM ELEVATOR THROWS FOR VARIOUS BALANCE POINTS

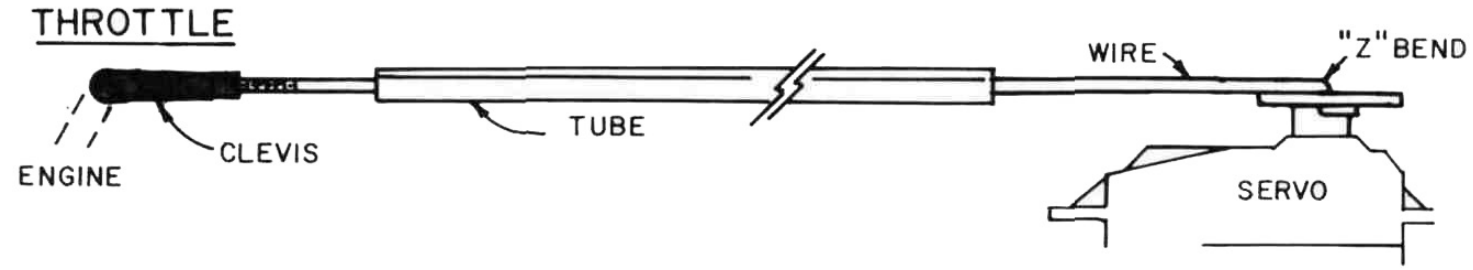
MODEL	(29-30%) LE to CG	MAX ELEV	(337.) LE to CG	MAX ELEV	(367.) LE to CG	MAX ELEV
SPORTSTER 20	2-11/16"	[5/16"]	2-15/16"	[9/32"]	3-3/16"	[1/4"]
SPORTSTER 40	3"	[3/8"]	3-3/8"	[11/32"]	3-5/8"	[5/16"]
SPORTSTER 60	3-5/16"	[7/16"]	3-3/4-	[13/32"]	4-1/16"	[3/8"]
SPORTSTER 90	3-15/16"	[3/4 "]	4-3/8"	[11/16"]	4-13/16"	[5/8"]
SPORTSTER BIPE	1-1/2"	[3/8"]	1-7/8 "	[11/32"]	2-1/16".	[5/16"]

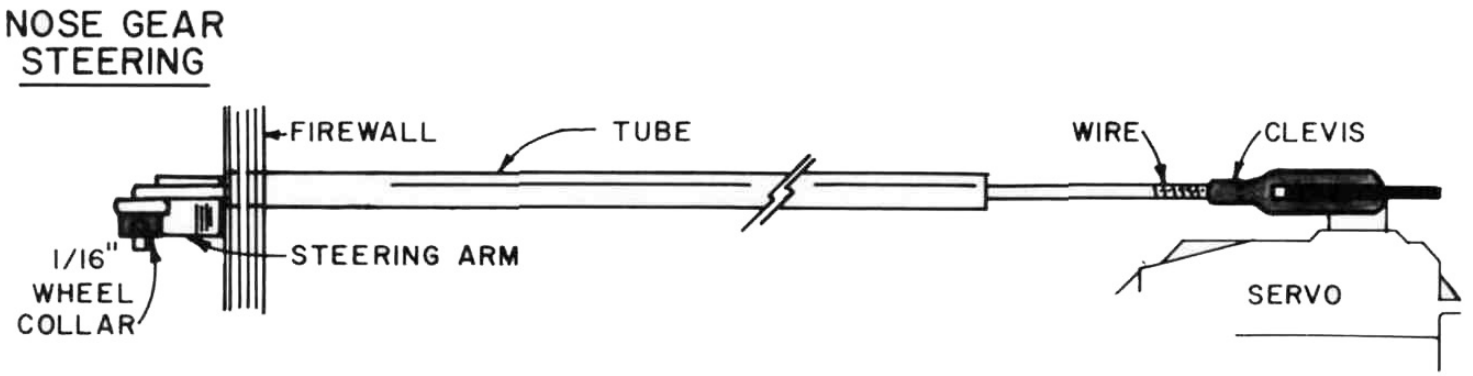
•MEASURED BACK FROU LE Of BOTTOM WING

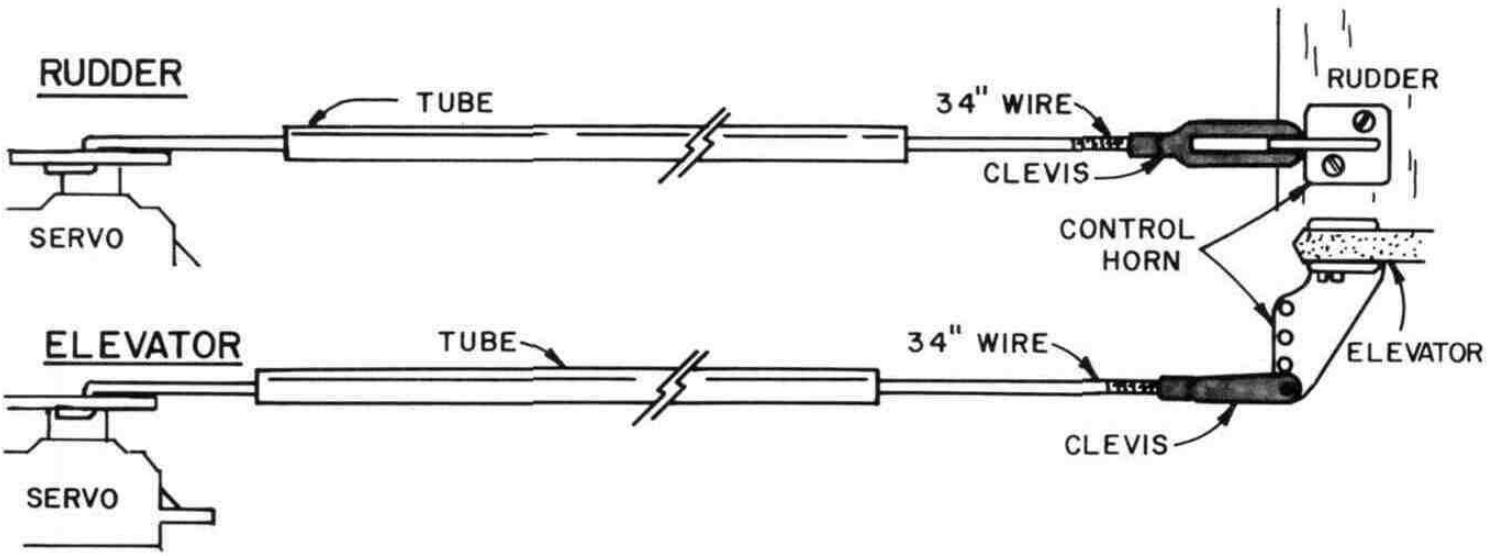
WARNING! If you balance your Super Sportster aft of the plan location but fail to reduce the maximum elevator throw, the elevator may over control the pitch of the airplane, and may result in unwanted stalls and "snap rolls"!

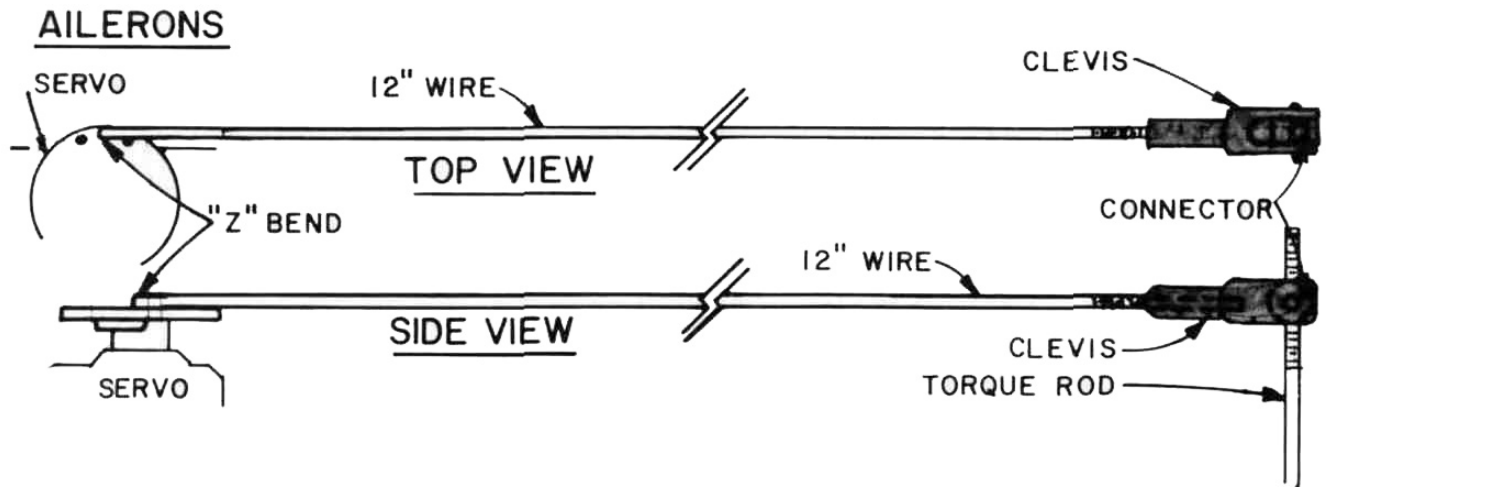
SSADDOI

PUSHROD LINKAGES









WARNING! THIS IS NOT A TOY!
THIS IS NOT A BEGINNER'S AIRPLANE!

This R/C kit and the model you will build is not a toy! It is capable of serious bodily harm and property damage. **IT IS YOUR RESPONSIBILITY AND YOURS ALONE --** to build this kit correctly, properly install all R/C components and flying gear (engine, tank, pushrods, etc.) and to test the model and fly it only with experienced, competent help, using common sense and in accordance with all safety standards as set down in the Academy of Model Aeronautics Safety Code. It is suggested that you join the AMA and become properly insured before you attempt to fly this model. IF YOU ARE JUST STARTING R/C MODELING, CONSULT YOUR LOCAL HOBBY SHOP OR WRITE TO THE ACADEMY OF MODEL AERONAUTICS TO FIND AN EXPERIENCED INSTRUCTOR IN YOUR AREA.

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