BUD NOSEN TRAINER
MATERIAL AND USE LIST

Listed below are the unmarked or stock parts used in our trainer. All wood must be used as shown. You should allow for no waste. Individual parts may be purchased on request. The retail price of this kit has been figured on material as listed. All sizes are in inches unless otherwise indicated.

1 3/4 X 3 X 5 block use on nose of body
1 3/4 X 4 X 6-1/2 block use on nose of body
2 5/16 dowels use on body as wing hold downs--install after covering
2 1/16 X 4-15/16 X 12 ply use as doubler on body
2 1/16 X 6-15/16 X 12 ply use as doubler on body
2 5/8 X 36 triangle use on upper corners of body
2 7/16 X 36 triangle use on lower corners of body and as stab saddle
2 3/8 X 3/8 X 36 sticks use on fin and rudder
2 1/4 X 3/8 X 36 sticks use on fin and rudder
1 3/16 X 3 X 42 cut in half to 21" and use on cabin portion of body sides
6 3/16 X 3 X 30 use on body sides
11 3/16 X 3 X 36 use as body sides. Also for body top and bottom
2 3/8 X 3 Elevators cut to outline, but must be shaped
2 1/4 X 1/2 X 36 use for horizontal stab construction
1 3/8 X 6 dowel use for elevator joiner
2 3/8 horizontal stab tip blocks cut to outline, but must be shaped
2 1/4 X 1/4 X 36 sticks use for horizontal stab
4 3/32 X 3 X 30 use for horizontal stab sheet
2 3/32 X 7/8 X 30 use for horizontal stab sheet
2 1/2 X 1-1/8 X 48 use for wing leading edge--must be sanded to shape
8 1/4 X 1/4 X 48 spruce use for wing spars only
8 3/32 X 2 X 48 use for leading and trailing sheet on wing only
2 3/32 X 3 X 36 use for sheeting wing center section only
1 3/32 X 3 X 12 use for sheeting wing center section only
18 3/32 X 3/8 X 36 use for cap strips on wing
1 1/32 X 2-7/8 X 48 cut and use for wing webbing
1 1/32 X 2-7/8 X 24 cut and use for wing webbing
2 1/4 X 36 dowels use for pushrods in wing
2 1/4 X 1-1/16 X 18 use as caps on wing in aileron area
2 1/4 X 1-1/4 X 18 use as caps on ailerons
2 ¾ inch aileron tip blocks
4 3/16 X 12 dowels use as tail supports--see cover photo
1 1/16 X 36 wire use in making up pushrods
1 Hardware pack which should include 2 nose gear bearings with 4 6-32 nuts and bolts to mount same. 1 5/32 steering arm with a 6-32 set screw or bolt to fix to nose gear. 3 5/32 wheel collars with set screws--two to be used to mount shock struts and one to be used on nose gear. 15 or more hinges for control surfaces -fix in place with epoxy. 4 surface horns to be mounted to ply plates with 8 3/8 X #4 sheet metal screws. 2 bellcranks with hardware to be mounted in wing for aileron control. All other external hardware will have to be purchased.

IMPORTANT---PLEASE READ

THE CENTER six inches of the wing must have a coat of fiber glass cloth and resin, top and bottom. Failure to do so will result in a cracked wing. It is also a good idea to glass on out to the rubber band hold down area to prevent the bands from cutting into the wing.

As the BUD NOSEN TRAINER flys as well on rudder as it does on aileron, no ribs are cut for aileron use in the kit. To modify for aileron use, cut ribs as shown on plan.

For use on all but tar or very smooth fields, we would suggest that the conversion to taildragger or the two wheel version be used as shown on the plan. The very large size of the model will cause problems with the nose gear bending and flexing on all but the smoothest of fields.

Join one 36" sheet to one 30" sheet making sure you keep the edge in a straight line. Continue by gluing the remaining sheets on to the first two. Measure 27-1/4" from the back and glue on one of the 21" sheets to the top as shown. Mark this assembly RIGHT. At this time the right side should be cut out. Do so by placing the plan over the side sheeting. Line up the cabin area carefully. Make sure the top of the 21" sheet is even with the top of the cabin and that you have room for the angle cuts. Note that around the perimeter of the body sheet on the side view there are little circles with a diagnal line. At each one of these (17) marks push a ball point pen through the plan, marking the side sheet. Also mark the two 5/16" dowel holes at center. While the plan is over the side view it would be helpful to locate the former locations. Remove from under plan. Use a ball point pen and a straight edge to connect all dots. Cut out right side. Drill out the 5/16" dowel holes. Make up another side in the same manner and mark this one left. Use the large left over diagnal cut piece from the lower right of the first side as the lower piece in the same area on the left side. Contact cement or glue the 1/16" ply doublers in place on the sides. MAKE SURE YOU MAKE ONE RIGHT AND ONE LEFT SIDE. Make sure that the ply parts used as doublers wind up on the inside of each side. Position the ply parts carefully so that the front edge will wind up under F-1. The plywood is used to strengthen the splice areas and will cover most of them if properly done.

Refer to figure 3. Stand both sides upside down on cabin area over top view. Hold them in this position square and straight exactly aligned over top view. Use pins or nails, or what-ever works. Epoxy F-1, and F-2 in place. Keep the center of the tail over the center line of the plan, and glue in f-3 and F-4. Keeping the center line of the model true is critical to proper flying. Epoxy F-5, F-6, and F-7 in place. Note that formers are installed in numerical order.

Epoxy the FL-1, FL-2 assembly in place, using the location shown on the side view. Note that for very rough fields and heavy grass, this model may be converted to two wheel operation by moving the main gear forward to the dashed in area. In order to make this conversion, you will have to purchase a tail-wheel assembly. The very large models are very stable on the ground during a take-off run, so do not hesitate to make the conversion. Install the main landing gear. See figure 3. Place the main or axel gear in the front groove of FL-1. Place the main gear support wire in the back groove. Rotate the main gear into a vertical position and trial fit the support--make sure you have it the right way. FL-3 can at this time be screwed to FL-1, locking the gear in place. Place the end of one shock strut into a hole in FL-2, rotate into position, and make sure you have the correct one for the side you are working on. As can be seen from the plan the end of the shock strut with the right angle bend, plugs into FL-2. By installing a 5/32" keeper on the back side of FL-2 the shock strut is trapped in place. Place the remaining shock strut in place. Rotate all wires into position. Bind the ends where the wires meet with a soft copper wire. Use a good solder and solder the wire and gear together. This will complete the landing gear installation. As you can see the gear can easily be removed for repair or replacement.

At this point, your model should still be pinned down over the top view. Locate the 7/16" lower triangle on the drawing. Cut out the lower corners of F-3 and F-4 to fit the triangles. Install triangle. Save the small pieces from each triangle as they will be used later. Start adding the bottom sheet from FL-1 both ways.

BUD NOSEN TRAINER
BUILDING INSTRUCTIONS

BUILDING PREPERATIONS

In order to build a R/C model that will fly well and perform up to your expectations, a few basic tools and materials will be needed. A flat warp free building surface of material suitable for accepting pins is a must. You will need pins, clamps, masking tape, white glue such as Elmers, epoxy type glue and contact cement. Small hand tools such as a drill, sanding block, scre driver, pliers, ect. are also needed.

Place a plastic wrap between the plan and the parts you are working on to protect the plan. For plywood to plywood joints you should use a epoxy type glue. For plywood to balsa and balsa to spruce use a white glue. For balsa to balsa joints that have to be sanded later use a model cement such as Du-Bro Super Model Cement, as it will sand without problems.

Before starting any construction, understand the plan fully. If you have not built a model of any kind in the past, you will need additional information. If there are any flyers in your area, try to enlist their help, and check with them if you have any questions. If no help is available locally we would suggest the R/C MODELER FLIGHT TRAINING COURSE. Cost is only $10 and it will save you that many times over as mistakes can be very costly. The book is available from R?C MODELER MAGAZINE, P.O. BOX 487, SIERRA MADRE, CALIF., 91024. You will need help on radio installation, covering and finishing as well as several other points. As we feel these points are so critical we think proper coverage is best done in a book devoted to this alone. We will therefore eliminate the usual 1 paragraph of radio installation instructions found at the end of most building instruction books.

FUSELAGE CONSTRUCTION

Fuselage or body construction of this model will require the building of several sub-assemblies. As you will note from the plan, formers F-1, F-2, F-3, and F-5 are made up from several parts. Use the FA parts to determine the width of the former. Build up F-1, by placing the Fa-1 parts down over the section view and using epoxy type glue, glue the FS-1 parts in place. KEEP THE ASSEMBLY SQUARE. Note that once the parts are completed, they are referred to as F-1, ect. DO NOT GLUE THE DOWELS IN PLACE UNTIL THE MODEL IS SANDED AND COVERED. Build F-2 in the same manner noting one FA-2 part goes right across the top. Build F-3, and F-5. Place the nose gear bearings on F-6 in the location shown. Use the nose gear wire to keep the bearings in vertical alignment. Drill 1/8" holes, and bolt the bearings in place. Remove the nose gear and set aside. Epoxy the FL-2 part on to the FL-1 part. Glue it to the side with the grooves. Locate proper position for FL-2 from side view. You will have to purchase a long type motor mount. Align the motor mount on F-6 and bolt in place. You may want to remove the mount now, or at a later time, as the entire area around the engine area should be fuel proofed with dope or epoxy to prevent fuel seepage and resulting softening of the wood.

Each side must be built up using the sizes of sheet shown on the drawing figure 1. Start by cutting a 3/16 x 3 x 42 sheet into two pieces 21" long, and set aside. If you do not have a mechanical saw of some sort with a guide, do not make the angle joints shown on the plan, as you will not get a proper fit. In that case you would just butt glue the square ends of the sheets together.

Note that the grain runs cross-wise--see figure 3. It is best not to glue the sheet to FL-1 for ease of gear removal. Do not waste any sheet--use smaller left over pieces back towards the tail as possible. Allow all glue to dry completely, then remove body from plan.

At this point it would be a good time for fuel tank installation. The Sullivan RST-12 is a good choice. Make your tank box in the suggested area, using scrap wood. Make the tank arrangement so that the tank can be removed in case of problems If you are using a engine with a fuel pump, the tank may be placed in a more convienient spot. Possibly just in front of F-1. It is a good idea to fuel proof tank areas in case of a fuel leak.

Cut out the top corners of F-3, and install the 5/8" triangle stock. Also install the 5/8" triangle stock along cabin area fron and back, as shown on plan. Install the left over pieces of 7/16" triangle stock along the stab area as shown on side view. The horizontal stab will be glued to the 7/16" triangle later in final assembly. Install formers F-8, 9, 10, and F-11. Note that F-9, and F-8 are placed on top of existing formers--see section views. F-10 and F-11 fit partway down into sides. Trim as needed to fit. Plank the angled areas on the cabin first. the 3/16" sheet on top of the nose to the cabin window runs lengthwise. Fit the top sheet first, see figure 4. Trim to rough shape, then sand the sheet on a angle as well as a bit on the sides---see figure 5. Glue a 3/16" sheet over the right half of the nose. Do the same on the left--see section at F-6. This entire section is then sanded to a somewhat rounded shape as shown in the section at F-6 and also at section F-7 drawings.

Epoxy the lower 3/4 x 4 x 6-1/2 nose block in place. Epoxy the 3/4 x 3 x 5 nose block in place. Fill the left-over gap with a piece of scrap triangle as shown on side view.

Install the 3/16" sheet on the top rear of body. Plank cross-grain as shown. Do not plank over tail surface area.

Sand the entire body smooth rounding corners as shown on section views. Be careful not to sand too deep. Cut out motor area as shown by dash lines. You will have to cut as needed for your particular engine.

WING PRE ASSEMBLY

Before starting wing assembly, seperate the wing ribs into two stacks. You will note there are two basic shapes. (See drawings.) Label the 12 W-3 ribs. Label 14 ribs from the remaining stack W-2. Label the last 8 ribs W-1 and modify to accomodate the dihedral braces by cutting notches as shown. Cut carefully as gluing is much more efiective on tight joints.

WING ASSEMBLY

The wing MUST be assembled on a good flat table or work bench. The slightest warp will affect flying performance and result in a un-wanted turn. Build the right panel first. (Lower panel on drawing.) Start assembly by pinning front 1/4" square spruce spar down over plan. The spars should be exactly four feet long. Due to plan stretch, they may appear too short, so use them as a guide for length. Move the tip rib in as needed. Pin the rear 1/4" square spruce spar down over--

plan using a rib as a spacing guide. Place the first W-1 rib in position making sure to use the template shown as a guide for proper rib angle. This is the only rib that is not placed square to bench (left panel also) because as the tips are raised in a later step it will allow for a proper joint. Glue the 3 other W-1 ribs in place as well as the 7 W-2 ribs and the 6 W-3 ribs. Do not try to build the ailerons at this time. With all ribs in place glue in the two top spruce spars and the 1/2 X 1-1/8 X 48 leading edge. Allow this assembly to dry and then remove from plan. The wing is very weak at this point and must be handled with care.

Turn wing upside down and glue 3/32 X 2 X 48 leading and trailing sheet in place on wing bottom only. The rear or trailing sheet will have to be cut at the aileron joint. Glue the 1/4 X 1-1/16 X 18 stick in place. Center this stick on the ribs so that when the cap strips are added they will be flush with the stick. All 3/32 X 3/8 X 36 cap strips may be added to wing bottom at this time. Cut the sticks to proper length and try for good joints. Glue on the 3/32 sheet over the first 3 W-1 ribs. This will complete the right wing on the bottom side only. Check for any lumps ect. on the bottom and cut off or sand flush. Make sure the cap strips are flush with the 1/4 X 1-1/16 X 18 stick.

Turn the wing right side up again and pin down very carefully over plan. Make sure the wing is flat. The final steps on this wing will lock the construction in whatever position it is placed. Cut the 1/32 X 2-7/8 ply wet material into proper lengths and install. Epoxy the two dihedral braces W-6 and W-7 in place. The free ends of these braces will extend past wing center up at a angle. Push glued in portion of braces down flush with wing spars. Glue in W-4.

Make up a push rod for the aileron bellcrank as shown and install it and the aileron bellcrank at the same time. Bolt bellcrank down as shown, drilling a hole in W-4 for this operation. Make sure the linkage works smoothly. Add the top 3/32 X 2 X 48 sheet, all top cap strips and 3/32 X 3 center sheet over last 3 W-1 ribs. Leave this assembly pinned down for at least 24 hrs. This will eliminate the possibility of the glue drying, shrinking, and pulling in warps. Remove from plan and add tip parts T-1 and T-2 followed by die cut tip. Make up the remaining tip ribs from scrap balsa and sand to shape after gluing in position.

Construction of the left panel is done in much the same manner up to the point when the dihedral braces are to be installed. At this time make sure your push-rod is in place. Then, the right hand panel with W-6 and W-7 attached to it will be attached to the left panel while the left panel is still pinned down. Slip the braces into the proper slots and push down. The tip of the right panel should have a 4 inch support under the center of the last rib. This measurement is not too critical, but try to maintain plus or minus 1/4". Use epoxy type glue for this operation and also between the two center ribs. You will have to leave the wing in this position until completion of the left panel. You may at this time proceed as on right panel construction.

AILERON CONSTRUCTION

The easiest way to build the ailerons is to pin down the 3/32 X 2 trailing edge sheet down over plan. Pin down short cap strips and W-5, gluing all together. Add the aileron ribs from the die cut sheets and glue in place. Add the top 3/32 X 2 sheet and top cap strips. Allow to dry, then remove from plan. Sand the fron angled face flat and glue on the 1/4 X 1-1/4 X 18 stick. Glue on the aileron tip block. MAKE SURE YOU BUILD ONE RIGHT AND ONE LEFT AILERON.

Sand the wing leading edge to shape. Sand top and bottom of wing and ailerons so that all parts are flush. Start with a 100 grip sand paper and work up to at least 220 grit.

HORIZONTAL STABILIZER

Build the horizontal stabilizer on a flat surface. Start by cutting the two 1/4 X 1/2 X 36 sticks to length. (30 inches.) Pin down over plan. Take the two leftover pieces from the above operation and glue in across the ends, fitting in between as shown. Next glue in the 1/4 square sticks, starting with the center two and working out. Allow this complete assembly to dry. Remove from plan and sheet bottom as shown using 3/32 X 3, and 3/32 X 7/8 as shown. Pin back down flat and glue on top sheet. In order to insure a warp free stab it is best not to allow the bottom sheet to dry too well before pinning down flat and adding top sheet--just let the glue set up for 10 or 15 minutes or so. When top sheet is added stab should be left pinned down for at least 24 hours to dry. KEEP IT FLAT!

ELEVATORS

The two elevators are rough cut and must be sanded to the shape shown on the plan. Cut a notch for the 3/8 dowel and epoxy in place. Keep leading edge of elevators flat during this operation. Glue E-1 to the bottom of the left elevator. Shown on the plan as a hidden or dash line.

FIN AND RUDDER

Build the fin and the rudder over the plan on a flat surface, using the parts and sticks as shown. R-1 is glued on flush with the right side of the rudder. Allow to dry and remove from plan. Sand to shape. The fin and rudder are not covered with balsa sheet.

FINAL ASSEMBLY

Install the 5/16 dowels into the body, but do not glue in place until after covering. Fit the wing to the body holding in place with 6 inch rubber bands. (Not included in kit.) Place the bands over the dowels and the wing. A coating of fiberglass or epoxy over the wing in the area of the bands is a good idea to prevent there cutting into the soft balsa. MAKE SURE THE WING IS IN THE EXACT CENTER OF THE BODY. Measure out along the trailing edge of each wing half about 45 inches or so and place a mark. These marks must be identical on each tip. To square the wing to the body, measure back from these marks to a point on the center of the fuselage at the tail end. When measurements are exactly the same the wing is square to the body. Make marks for future use on wing and body.

At this point you will have to decide if you are going to hinge surfaces before or after covering. Hinge all surfaces, making sure rudder and elevator hinges are installed on center line. Aileron hinges are located at the top of the aileron--see drawing. Cut slits for insertion of hinges with a exacto or similar type knife. Epoxy hinges in place.

Place the horizontal stabilizer in place. Measure from the trailing edge of the wing back to the stab on both sides. Both measurements must be equal. From the nose of the plane eye the model to make sure the stab is parallel to the wing--adjust as needed and epoxy stab in place. In any case elevators must be installed prior to fitting of fin if rudder is attached. Install the fin into the slot cut in the top sheet of the stab, and epoxy in place--make sure it is square to the stab.

Four dowels 3/16 X 1 foot long are provided in kit. To provide additional strength for the horizontal stab and fin install one from the top side of the stab (a dot location on plan.) up to a point on the 3/8 square rear fin member. Do not cut dowel. Install one dowel from the bottom of the stab at dot location down to lower fuselage--cut as needed to fit. Do the same on the other side of the stab. These dowels are best installed after final covering of the model. Make a small hole so they go into the wood about 1/8 inch.

COVERING

This model is strong enough so that it may be covered with any of the commercial covering material available with the exception of paper. Follow the manufacturers instruction sheet for material installation.

Horns may be fastened to ply parts such as R-1 after covering. Use 2 3/8" by #4 sheet metal screws on each.

Follow the radio manufacturers advice on radio installation. Note our suggested placement on plan. After equipment installation and covering the MODEL MUST BALANCE AT THE POINT SHOWN ON THE PLAN. Add weight to nose if needed to make the model balance. In no case attempt to fly the model if it is tail heavy. (When supported at the balance point the nose should hang down.)

FLYING

If you have no experience flying a radio controlled model try to enlist the aid of a local flyer with experience. Contact your local model club or ask your hobby dealer for the names of good fliers in your area. Have your model checked out for building errors, ect. A beginner has almost no chance of flying his first model without several bad crashes.

On initial flights set the elevators for about 3/16" of down trim. Elevator movement should be 1/2" up and 1/2" down. Ailerons should move about 1-1/4" each way. Rudder movement should be 1-1/4" each way. Throttle must work smoothly and without binding.

Our model will fly at about 1/2 the speed of a normal size trainer. At full throttle it will only fly at about 40 MPH when powered by a .60 size engine. Use a 13 inch prop with a 5 or f-1/2 pitch.

Any of the popular radios with the exception of the mini-sets will work fine in this model. Because the flying speeds are so low surface loading is at a minimum and servos will have no problem handling the load imposed.

****

BUILDING UPDATES

1 PARTS W7 AND W6 ARE NOW DIE CUT OUT OF 1/16 PLY USE EPOXY GLUE FOR BOTH PARTS.

2 PLANS SHOW 1/16 PLY FOR FUSE SIDES THIS HAS BEEN CHANGED TO 1/8 LITE PLY.

3 ALL WIRE HAS BEEN CHANGED 3/16 WIRE.

****

BUD NOSEN TRAINER
MATERIAL AND USE LIST

Listed below are the unmarked or stock parts used in our trainer. All wood may be used as shown. You should allow for no waste. Individual parts may be purchased on request. The retail price of this kit has been figured on material as listed. All sizes are in inches unless otherwise indicated.

1 3/4 X 3 X 5 block use on nose of body
1 3/4 X 4 X 6-1/2 block use on nose of body
2 5/16 dowels use on body as wing hold downs--install after covering
2 1/16 X 4-15/16 X 12 ply use as doubler on body
2 1/16 X 6-15/16 X 12 ply use as doubler on body
2 5/8 X 36 triangle use on upper corners of body
2 7/16 X 36 triangle use on lower corners of body and as stab saddle
2 3/8 X 3/8 X 36 sticks use on fin and rudder
2 1/4 X 3/8 X 36 sticks use on fin and rudder
1 3/16 X 3 X 42 cut in half to 21" and use on cabin portion of body sides
6 3/16 X 3 X 30 use on body sides
11 3/16 X 3 X 36 use as body sides. Also for body top and bottom
2 3/8 X 3 Elevators cut to outline, but must be shaped
2 1/4 X 1/2 X 36 use for horizontal stab construction
1 3/8 X 6 dowel use for elevator joiner
2 3/8 horizontal stab tip blocks cut to outline, but must be shaped
2 1/4 X 1/4 X 36 sticks use for horizontal stab
4 3/32 X 3 X 30 use for horizontal stab sheet
2 3/32 X 7/8 X 30 use for horizontal stab sheet
2 1/2 X 1-1/8 X 48 use for wing leading edge--must be sanded to shape
8 1/4 X 1/4 X 48 spruce use for wing spars only
8 3/32 X 2 X 48 use for leading and trailing sheet on wing only
2 3/32 X 3 X 36 use for sheeting wing center section only
1 3/32 X 3 X 12 use for sheeting wing center section only
18 3/32 X 3/8 X 36 use for cap strips on wing
1 1/32 X 2-7/8 X 48 cut and use for wing webbing
1 1/32 X 2-7/8 X 24 cut and use for wing webbing
2 1/4 X 36 dowels use for pushrods in wing
2 1/4 X 1-1/16 X 18 use as caps on wing in aileron area
2 1/4 X 1-1/4 X 18 use as caps on ailerons
2 ½ inch aileron tip blocks
4 3/16 X 12 dowels use as tail supports--see cover photo
1 1/16 X 36 wire use in making up pushrods
1 Hardware pack which should include 2 nose gear bearings with 4 6-32 nuts and bolts to mount same. 1 5/32 steering arm with a 6-32 set screw or bolt to fix to nose gear. 3 5/32 wheel collars with set screws--two to be used to mount shock struts and one to be used on nose gear. 15 or more hinges for control surfaces--fix in place with epoxy. 4 surface horns to be mounted to ply plates with 8 3/8 X #4 sheet metal screws. 2 bellcranks with hardware to be mounted in wing for aileron control. All other external hardware will have to be purchased.

BUILDING PREPERATIONS

In order to build a R/C model that will fly up to your expectations, a few basic tools and materials will be needed. A flat warp free building surface of material suitable for accepting pins is a must. You will need pins, clamps, masking tape, white glue such as Elmers, epoxy type glue and contact cement. Small hand tools such as a drill, sanding block, screwdriver, pliers, ect. are also needed.

Place a plastic wrap between the plan and the parts you are working on to protect the plan. For plywood to plywood joints you should use a epoxy type glue. For plywood to balsa and balsa to balsa use a white type glue. For balsa to balsa joints that have to be sanded later you should use a model cement such as Du-Bro Super Model Cement, as it will sand without problems.

Before starting any construction, understand the plan fully. If you have not built a model of any kind in the past, you will need additional information. If there are any R/C flyers in your area, try to enlist their help, and check with them if you have any questions. If no help is available locally we would suggest the R/C MODELER FLIGHT TRAINING COURSE. Cost is only $10 and it will save you that many times over as mistakes can be very costly. The book is available from R/C MODELER MAGAZINE, P.O. Box 487, Sierra Madre, Calif., 91024. You will need help on radio installation, covering and finishing as well as several other points. As we feel these points are so critical we think proper coverage is best done in a book devoted to this alone, We will therefore eliminate the usual one paragraph of radio installation instructions found at the end of most building instruction books.

FUSELAGE CONSTRUCTION

Fuselage or body construction of this model will require the building of several sub-assemblies. As you will note from the plan, formers F-1, F-2, and F-5 are made up from several parts. You should use the FA parts to determine the width of the former. Build up F-1, by placing the FA-1 parts down over the section view and using epoxy type glue, glue the FS-1 parts in place. KEEP THE ASSEMBLY SQUARE. Note that once the parts are completed, they are referred to as F-1, ect. DO NOT GLUE THE DOWELS IN PLACE UNTIL THE MODEL IS SANDED AND COVERED. Build F-2 in the same manner, noting that one FA-2 part goes right across the top. Build F-3, and F-5. Place the nose gear bearings on F-6 in the location shown. Use the nose gear wire to keep the bearings in vertical alignment. Drill 1/8" holes, and bolt the bearings in place. Remove the nose gear and set aside. Epoxy the FL-2 Part on to the FL-1 part. Glue it to the side without grooves. Locate proper position for FL-2 from side view. You will have to purchase a long type motor mount. Align the motor mount on F-6 and bolt in place. You may want to remove the mount now, or at a later time, as the entire area around the engine area should be fuel proofed with dope or epoxy to prevent fuel seepage and resulting softening of the wood.
Each side must be built up using the sizes of sheet shown on the drawing figure 1. Start by cutting a 3/16 X 3 X 42 sheet into two pieces 21" long, and set aside. If you do not have a mechanical saw of some sort with a guiede, do not make the angle joints shown on the plan, as you will not get a proper fit. In that case, you would just butt glue the square ends of the sheets together.

Join one 36" sheet to one 30" sheet making sure you keep the edge in a straight line. Continue by gluing the remaining sheets on to the first two. Measure 27-1/4" from the back and glue on one of the 21" sheets to the top as shown. Mark this assemby RIGHT. At this time the right side should be cut out. Do so by placing

the plan over the side sheeting. Line up the cabin area very carefully. Make sure the top of the 21" sheet is even with the top of the cabin and that you have room for the angle cuts. Note that aroung the perimeter of the body sheet on the side view thre are little circles with a diagnal line. At each one of these (17) marks, push a ball point pen through the plan, marking the side sheet. Also mark the two 5/16" dowel holes at center. While the plan is over the side view it would be helpful to locate the former locations. Remove from under plan. Use a ball point pen and a straight edge to connect all dots. Cut out the right side. Drill out the 5/16" dowel holes. Make up the left side in the same manner. Use the large left over diagnal cut piece from the lower right of the first side as the lower piece in the same area on the left side. Contact cement or glue the 1/16" ply doublers in place on the sides. MAKE SURE YOU MAKE ONE RIGHT AND ONE LEFT SIDE. Make sure that the ply parts used as doublers wind up on the inside of each side. Position the ply parts carefully so that the front edge will wind up under F-1. The plywood is used to strengthen the splice areas and will cover most of them if properly done.

Refer to figure 3. Stand both sides upside down on cabin area over top view. Hold them in this position square and straight exactly aligned over top view. Use pins, nails, or what-ever works. Epoxy F-1, and F-2 in place. Keep the center of the tail over the center line of the plan, and glue in F-3 and F-4. Keeping the center line of the model true is critical to proper flying. Epoxy F-5, F-6, and F-7 in place. Note that the formers are installed in numerical order.

Epoxy the FL-1, FL-2 assembly in place, using the location shown on the side view. Note that for very rough fields and heavy grass, this model may be converted to two wheel operation by moving the main gear forward to the dashed in area. In order to make this conversion, you should purchase a tail wheel assembly. We also have available at this time at extra cost a very heavy duty two strut nose gear, that will operate on grass or rough terain. Install the main landing gear. See figure 3. Place the main or axel gear in the front groove of FL-1. Place the main gear support wire in the back groove. Rotate the main gear into a near vertical position and trial fit the support wire--make sure you have it the right way. FL-3 can at this time be screwed to FL-1, locking the gear in place. Place the end of one shock strut into a hole in FL-2 and rotate into position. Make sure you have the correct one for the side you are working on. As can be seen from the plan, the end of the shock strut with the right angle bend, plugs into FL-2. By installing a 5/32" keeper on the back side of FL-2, the wire strut is trapped in place. Place the remaining shock strut in place. Rotate all wires into position. Bind the ends where the wires meet with a soft copper wire. Use a good solder and solder the wire and gear together. This will complete the landing gear installation. As you can see the gear can easily be removed for repair or replacement.

At this point, your model should still be pinned down over the top view. Locate the 7/16" lower triangle on the drawing. Cut out the lower corners of F-3 and F-4 to fit the triangles. Install triangles. Save the small pieces from each triangle as they will be used later. Start adding the bottom sheet from FL-1 both ways. Note that the grain runs cross-wise--see figure 3. It is best not to glue the sheet to FL-1 for ease of gear removal. Do not waste any sheet--use smaller left over pieces back towards the tail as possible. Allow all glue to dry completely, then remove from plan.

At this point it would be a good time for fuel tank installation. The Sullivan RST-12 is a good choice for .60 size engines. Make your tank box in the suggested area, using scrap wood. Make the tank arrangement so that the tank can be removed in case of problems. If you are using a engine with a fuel pump, the tank may be placed in a more convienient spot. Possibly just in front of F-1. It is a good idea to fuel proof tank areas in case of a fuel leak.

Cut out the top corners of F-3, and install the 5/8" triangle stock. Also install the left over pieces of 7/16" triangle stock along the stab area as shown on the side view. The horizontal stab will be glued to the 7/16" triangle later in final assembly. Intall the formers F-8,9,10, and F-11. Note that F-9, and F-8 are placed on top of existing formers--see section views. F-10 and F-11 fit partway down into sides. Trim as needed to fit. Plank the angled areas on the cabin first. The 3/16" sheet on top of the nose to the cabin window runs lengthwise. Fit the top sheet first, see figure 4. Trim to rough shape, then sand the sheet on a angle as well as a bit on the sides--see figure 5. Glue a 3/16" sheet over the right half of the nose. Do the same on the left--see section at F-6. This entire section is then sanded to a somewhat rounded shape as shown in the section at F-6 and also at section F-7 drawings.

Epoxy the lower 3/4 X 4 X 6-½ nose block in place. Epoxy the 3/4 X 3 X 5 nose block in place. Fill the left-over gap with a piece of scrap triangle as shown on side view.

Install the 3/16" sheet on the top rear of body. Plank cross-grain as shown. Do not plank over tail surface area.

Sand the entire body smooth rounding corners as shown on section views. Be careful not to sand too deep. Cut out motor area as shown by dash lines. You will have to cut as needed for your particular engine.

WING PRE ASSEMBLY

Before starting wing assembly, seperate the wing ribs into two stacks. You will note there are two basic shapes. (see drawings) Label the 12 W-3 ribs. Label 14 ribs from the remaining stack W-2. Label the last 8 ribs W-1 and modify to accomodate the dihedral braces by cutting notches as shown. Cut carefully as glueing is much more effective on tight joints.

WING ASSEMBLY

The wing MUST be assembled on a good flat table or work bench. The slightest warp will affect flying performance and result in a un-wanted turn. Build the right panel first. Lower panel in drawing. Start assembly by pinning front 1/4" square spruce spar down over plan. The spars should be exactly four feet long. Due to plan stretch, they may appear too short, so use them as a guide for length. Move the tip rib in as needed. Pin the rear 1/4" square spruce spar down over plan using a rib as a spacing guide. Place the first W-1 rib in position making sure to use the template shown as a guide for proper rib angle. This is the only rib that is not placed square to bench--left panel also. When the tips are raised in a later step it will allow for a proper center joint. Glue the 3 other W-1 ribs in place as well as the 7 W-2 ribs and the 6 W-3 ribs. Do not try to build the ailerons at this time. With all ribs in place glue in the two top spruce spars and the 1/2 X 1-1/8 X 48 leading edge. Allow this assembly to dry and then remove from plan. The wing is very weak at this point and must be handled with care.

Turn wing upside down and glue 3/32 X 2 X 48 leading and trailing sheet in place on wing bottom only. The rear or trailing sheet will have to be cut at the aileron joint. Glue the 1/4 X 1-1/16 X 18 stick in place. Center this stick on the ribs so that when the cap strips are added they will be flush with the stick. All 3/32 X 3/8 X 36 cap; strips may be added to wing bottom at this time. Cut the sticks to proper length and try for good joints. Glue on the 3/32 sheet over the first 3 W-1 ribs. This will complete the right wing on the bottom side only. Check for any lumps ect. on the bottom and cut off or sand flush. Make sure the cap strips are flush with the 1/4 X 1-1/16 X 18 stick.

Turn the wing right side up again and pin down very carefully over the plan. Make sure the wing is flat. The final steps on the wing will lock the construction in what-ever position it is placed. Cut the 1/32 X 3 X 48 ply web material into proper lengths and install. Epoxy the two dihedral braces W-6 and W-7 in place. The free ends of these braces will extend past wing center up at a angle. Push glued in portion of braces down flush with wing spars. Glue in W-4.

Make up a push rod for the aileron bellcrank as shown and install it and the aileron bellcrank at the same time. Bolt bellcrank down as shown, drilling a hole in W-4 for this operation. Make sure the linkage works smoothly. Add the top 3/32 X 2 X 48 sheet, all top cap strips and 3/32 X 3 center sheet over 1st 3 W-1 ribs. Leave this assembly pinned down for at least 24 hrs. This will eliminate the possibility of the glue drying, shrinking, and pulling in warps. Remove from plan and add tip parts T-1 and T-2 followed by die cut tip. Make up the remaining tip ribs from scrap balsa and sand to shape after glueing in position.

Construction of the left panel is done in much the same manner up to the point when the dihedral braces are to be installed. At this time make sure your push-rods are in place. Then, the right hand panel with W-6 and W-7 attached to it will be attached to the left panel, while the left panel is still pinned down. Slip the braces into the proper slots and push down. The tip of the right panel should have a 4 inch support under the center of the outer-most rib. This measurement is not too critical, but try to maintain plus or minus ½". Use epoxy type glue for this operation and also between the two center ribs. You will have to leave the wing in this position until completion of the left panel. You may at this time proceed as on right panel construction.

IMPORTANT*****

THE CENTER SECTION JOINT SHOULD BE GLASSED OR WING MAY BREAK AT EXACT CENTER**** Use at least one or two layers of glass cloth on center of wing at least six inches wide--top and bottom. Apply with glass resin. Fill cloth with resin and sand.

AILERON CONSTRUCTION

The ezsiest way to build the ailerons is to pin down the 3/32 X 2 trailing edge sheet down over plan. Pin down short cap strips and W-5, gluing all together. Add the aileron ribs from the die cut sheets and glue in place. Add the top 3/32 X 2 sheet and top cap strips. Allow to dry, then remove from plan. Sand the front angled face flat and glue on the 1/4 X 1-¼ X 18 stick. Glue on the aileron tip block. MAKE SURE YOU BUILD ONE RIGHT AND ONE LEFT AILERON.

Sand the wing leading edge to shape. Sand top and botton of wing and ailerons so that all parts are flush. Start with a 100 grit sand paper and work up to at least a 220 grit.

HORIZONTAL STABILIZER

Build the horizontal stabilizer on a flat surface. Start by cutting the two 1/4 X 1/2 X 36 sticks to length. (30 inches.) Pin down over plan. Take the two leftover pieces from the above operation and glue in across the ends, fitting in between as shown. Next glue in the 1/4 square sticks, starting with the center two and working out. Allow this complete assembly to dry. Remove from plan and sheet bottom as shown using 3/32 X 3, and 3/32 X 7//8 as shown. Pin back down flat and glue on top sheet. In order to insure a warp free stab, it is best not to allow the bottom sheet to dry too well before pinning down flat and adding top sheet--just let the glue set up for 10 to 15 minutes at most. When top sheet is added stab should be left pinned down for at least 24 hours to dry--KEEP IT FLAT!!

ELEVATORS

The two elevators are rough cut and must be sanded to the shape shown on the plan. Cut a notch for the 3/8" dowel and epoxy in place. Keep the elevators flat during this operation. Glue E-1 to the bottom of the left elevator. (E-1 is shown on the plan as a hidden or dash line.)

FIN AND RUDDER

Build the fin and the rudder over the plan on a flat surface, using the parts and sticks as shown. R-1 is glued on flush with the right side of the rudder. Allow to dry and remove from plan. Sand to shape. The fin and rudder are not covered with balsa sheet.

FINAL ASSEMBLY

Install the 5/16 dowels into the body, but do not glue in place until after covering Fit the wing to the body holding in place with 6 inch rubber bands. (not included in kit) Place the bands over the dowels and the wing. A coating of fibre-glass or epoxy over the wing in the area of the bands is a good idea to prevent cutting into;the soft balsa. MAKE SURE THE WING IS IN THE EXACT CENTER OF THE BODY. Measure out along the trailing edge of each wing half about 45 inches or so and place a mark. These marks must be identical on each tip. To square the wing to the body, measure back from these marks to a point on the center of the fuselage at the tail end. When measurements are exactly the same the wing is square to the body. Make marks for future use on wing and body.

At this point you will have to decide if you are going to hinge surfaces before or after covering. Hinge all surfaces, making sure rudder and elevator hinges are installed on center line. Aileron hinges are located at the top of the aileron--see drawing. Cut slits for insertion of hinges with a exacto or similar type knife. Epoxy hinges in place.

Place the horizontal stabilizer in place. Measure back from the trailing edge of the wing to the stab on both sides of the fuselage. Both measurements must be equal. From the nose of the plane eye the model to make sure the stab is paralle to the wing--adjust as needed and epoxy stab in place. In any case elevators must be installed prior to fitting of fin if rudder is attached. Install the fin into the slot cut in the top sheet of the stab, and expoxy in place--make sure it is square to the stab and on straight.

Four dowels 3/16 X 1ft. long are provided in the kit. To provide additional strength for the horizontal stab and fin install one from the top side of the stab--a dot location on plan, up to a point on the 3/8 square rear fin member. Do not cut dowel. Install one dowel from the bottom of the stab at dot location down to lower fuselage--cut as needed to fit. Do the same on the other side of the stab. These dowels are best installed after final covering of the model. Make a small hole so they go into the wood about 1/8 inch--use epoxy.

COVERING

This model is strong enough so that it may be covered with any of the commercial covering materials available with the exception of paper. Follow the manufacturers instruction sheet for material installation.

Horns may be fastened to ply parts such as R-1 after covering. Use 2 3/8" X 4 sheet screws on each horn.

Follow the radio manufacturers advice on radio installation. Use standard or heavy duty type servos only.. Use one per function. Note our suggested placement on plan. After equipment installation and covering the model MUST balance at the point shown on the plan. Add weight to nose if needed to make the model balance. IN NO CASE ATTEMPT TO FLY THE MODEL IF IT IS TAIL HEAVY. When supported at the balance point the nose should hang down about 1 inch from level.

BUD NOSEN TRAINER
BUILDING INSTRUCTIONS

BUILDING PREPARATIONS

In order to build a R/c model that will fly up to your expectations, a few basic tools and materials will be needed. A flat warp free building surface of material suitable for accepting pins is a must. You will need pins, clamps, masking tape, white glue such as Elmers, epoxy type glue and contact cement. Samll hand tools such as a drill, sanding block, screwdriver, pliers, etc. are also needed.

Place a plastic wrap between the plan and the parts you are working on to protect the plan. For plywood to plywood joints you should use a epoxy type glue. For plywood to balsa and balsa to balsa use a white type glue. For balsa to balsa joints that have to be sanded later you should use a model cement such as Du-Bro Super Model Cement, as it will sand without problems.

Before starting any construction, understand the plan fully. If you have not built a model of any kind in the past, you will need additional information. If there are any R/C flyers in your area, try to enlist their help, and chekc with them if you have any questions. If no help is available locally we would suggest the R/C MODELER FLIGHT TRAINING COURSE. Cost if only $10 and it will save you that many times over as mistakes can be very costly. The book is available from R/C MODELER MAGAZINE, PO Box 487 Sierra Madre, CA 91024. You will need help on radio installation, covering and finishing as well as several other points. As we feel these points are so critical we think proper coverage is best done in a book devoted to this alone. We will therefore elimiate the usual one paragraph of radio installation instructions found at the end of most building instruction books.

FUSELAGE CONSTRUCTION

Fuselage or body construction of this model will require the building of several subassemblies. As you will note from the plan, formers F-1, F-2, and F-5 are made up from several parts. You should use FA parts to determine the width of the former. Build up F-1, by placing the FA-1 parts down over the section view and using epoxy type glue, glue the FS-1 parts in place. KEEP THE ASSEMBLY SQUARE. Note that once the parts are completed, they are referred to as F-1, etc. DO NOT GLUE THE DOWELS IN PLACE UNTIL THE MODEL IS SANDED AND COVERED. Build F-2 in the same manner, noting that one FA-2 part goes right across the top. Build F-3, and F-5. Place the nose gear bearings on F-6 in the location shown. Use the nose gear wire to keep the bearings in vertical alignment. Drill 1/8" holes, and bolt the bearings in place. Glue it to the side without grooves. Locate proper position for FL-2 from side view. You will have to purchase a long type motor mount. Align the motor mount on F-6 and bolt in place. You may want to remove the mount now. or at a later time, as the entire area around the engine area should be fuel proofed with dope or epoxy to prevent fuel seepage and resulting softening of the wood. Start by cutting a 3/16 x 3 x 42 sheet into two pieces 21" long, and set aside. If you do not have a mechanical saw of some sort witha guide, do not make the angle joints shown on the plan, as you will not get a proper fit. In that case, you would just butt glue the square ends of the sheets together.

Join one 36" sheet to one 30" sheet making sure you keep the edge in a straight line. Continue by gluing the remaining sheets on to the first two. Measure 27¼" from the back and glue on one of the 21' sheets to the top as shown. Mark this assembly RIGHT At this time the right side should be cut out. Do so by placing the plan over the side showing. Line up the cabin area very carefully. Make sure the top of the 21" sheet is even with the top of the cabin and that you have room for the angle cuts.

Note that around the perimeter of the body sheet on the side view there are little circles with a diagonal line. At each one of these (17) marks, push a ball point pen through the plan, marking the side sheet. Also mark the two 5/16" dowel holes at center. While the plan is over the side view it would be helpful to locate the locations. Remove from under plan. Use a ball point pen and straight edge to connect all dots. Cut out the right side. Drill out the 5/16" dowel holes. Make up the left side in the same manner. Use the large left over diagonal cut piece from the lower right of the first side as the lower piece in the same area on the left side. Contact cement or glue the 1/16" ply piece in the same area on the left side. MAKE SURE YOU MAKE ONE RIGHT AND ONE LEFT SIDE. Make sure that the ply parts used as doublers wind up on the inside of each side. Position the ply parts carefully so that the front edge will wind up under F-1. The plywood is used to strengthen the splice areas and will cover most of them if properly done.

Refer to figure 3. Stand both sides upside down on cabin area over top view. Hold them in this position square and straight exactly aligned over top view. Use pins, nails, or what-ever works. Epoxy F-1 and F-2 in place. Keep the center of the tail over the center line of the plan, and glue in F-3 and F-4. Keeping the center in place. Note that the formers are installed in numerical order.

Epoxy the FL-1, FL-2 assembly in place, using the location shown on the side view. Note that for very rough fields and heavy grass, this model may be converted to two wheel operation by moving the main gear forward to the dashed in area. In order to make this conversion, you should purchase a tail wheel assembly. We also have available at this time at extra cost a very heavy duty two strut nose gear, that will operate on grass or rough terain. Install the main landing gear. See figure 3. Place the main or axel gear in the front groove of FL-1. Place the main gear support wire in the back groove. Rotate the amin gear into a near vertical position and trai fit the support wire--make sure you have it the right way. FL-3 can at this time be screwed to FL-1, locking the gear in place. Place the end of one shock strut into a hole in FL-2 and rotate into position. Make sure you have the correct one for the side you are working on. As can be seen from the plan, the end of the shock strut with the right angle bend, plugs into FL-2. By installing a 5/32" keeper on the back side of FL-2, the wire strut is trapped in place. Place the remaining shock strut in place. Rotate all wires into position. Bind the ends where the wires meet with a saoft copper wire. Use a good solder and solder the wire and gear together. This will complete the landing gear installation. As you can see the gear can easily be removed fro repair or replacement.

At this point, your model should still be pinned down over the top view. Locate the 7/16" lower triangle on the drawing. Cut out the lower corners of F-3 and F-4 to fit the triangles. Install triangles. Save the small pieces from each triangle as they will be used later. Start adding the bottom sheet from FL-1 both ways. Note that the grain runs cross-wise--see figure 3. It is best not to glue the sheet to FL-1 for ease of gear removal. Do not waste any shee-- use smaller feft over pieces back towards the tail as possible. Allow all glue to dry completely, then remove from plan.

At this point it would be good time for fuel tank installation. The Sullivan RST-12 is a good choice for .60 size engines. Make your tank box in the suggested area, using scrap wood. Make the tank arrangement so that the tank can be removed in case of problems. If you are using an engine with a fuel pump, the tank may be placed in a more convienient spot. Possibly just in front of F-1. It is a good idea to fuel proof tank areas in case of fuel leak.

Cut out the top corners of F-3, and install the 5/8" triangle stock. Also install the left over pieces of 7/16" triangle stock along the stab area as shown on the side view. The horizontal stab will be glued to the 7/16" triangle later in final assembly. Install the formers F-8, 9, 10, and F-11. Note that F-9, and F-8 are placed on top of existing formers--see section views. F-10 and F-11 fit partway down into sides. Trim as needed to fit. Plank the angled areas on the cabin first. The 3/16" sheet on top of the nose to the cabin window runs lengthwise. Fit the top sheet first, see figure 4. Trim to rough shape, then send the sheet on an angle as well as a bit on the sides--see figure 5. Glue a 3/16" sheet over the right half of the nose. Do the same on the left--see section at F-6. This entire section is then sanded to a somewhat rounded sahpe as shown in the section at F-6 and also at section F-7 drawings.

Epoxy the lower 3/4 x 4 x 6½ nose block in place. Epoxy the 3/4 x 3 x 5 nose block in place. Fill the left-over gap with a piece of scrap triangle as shown on side view.

Install the 3/16" sheet on the top rear of body. Plank cross-grain as shown. Do not plank over tail surface area.

Sand entire body smooth rounding corners as shown on section views. Be careful not to sand too deep. Cut out notor area as shown by dash lines. You will have to cut as needed for your particular engine.

WING PRE ASSEMBLY

Before starting wing assembly, separate the wing ribs into two stacks. You will note there are two basic shapes. (see drawings) Label the 12 W-3 ribs. Label 14 ribs from the remaining stack W-2. Label the last 8 ribs W-1 and modify to accomodate the dihedral braces by cutting notches as shown. Cut carefully as glueing is much more effective on tight joints.

WING ASSEMBLEY

The wing MUST be assembled on a good flat table or work bench. The slightest warp will affect flying performance and result in an un-wanted turn. Build the right panel first. Lower panel in drawing. Start assembly by pinning front 1/4" square spruce spar down over plan. The spars should be exactly four feet long. Due to plan stretch, they may appear too short, so use them as a guide for length. Move the tip rib in as needed. Pin the rear 1/4" square spruce apar down over plan using a rib as a spacing guide. Place the first W-1 rib in position making sure to use the template shown as a guide for proper rib angle. This is the only rib that is not placed square to bench--left panel also. When the tips are raised in a later step it will allow for a proper center joint. Glue the 3 other W-1 ribs in place as well as the 7 W-2 ribs and the 6 W-3 ribs. Do not try to build the ailerons at this time. With all ribs in place glue in the two top spruce spars and the 1/2 x 1 1/8 x 48 leading edge. Allow this assembly to dry and then remove from plan. The wing is very weak at this point and must be handled with care.

Turn wing upside down and glue 3/32 x 2 x 48 leading and trailing sheet in place on wing bottom only. The rear of trailing sheet will have to be cut at the aileron joint. Glue the 1/4 x 1 1/16 x 18 stick in place. Center this stick on the ribs so that when the cap strips are added they will be flush with the stick. All 3/32 x 3/8 x 36 cap; strips may be added to wing bottom at this time. Cut the sticks to proper length and try for good joints. Glue on the 3/32 sheet over the first 3 W-1 ribs. This will conplete the right wing on the bottom side only. Check for any lumps ect. on the bottom and cut off or san flush. Make sure the cap strips are flush with 1/4 x 1 1/16 x 18 stick.

Turn the wing right side up again and pin down very carefully over the plan. Make sure the wing is flat. The final steps on the wing will lock the construction in what-ever position is it placed. Cut the 1/32 x 3 x 48 ply web material into proper lenghts and install. Epoxy the two dihedral braces W-6 and W-7 in place. The free ends of these braces will extend past wing center up at an angle. Push glued in portion of braces down flush with wing spars. Glue in W-4.

Make up a push rod for the aileron bellcrank as shown and install it and the aileron bellcrank at the same time. Bolt bellcrank down as shown, drilling a hole in W-4 for this operation. Make sure the linkage works smoothly. Add the top 3/32 x 2 x 48 sheet, all top cap strips and 3/32 x 3 center sheet over 1st 3 W-1 ribs. Leave this assembly pinned down for at least 24 hours. This will eliminate the possibility of the glue drying, shiriking, and pulling in warps. Remove from plan and add tip parts T-1 and T-2 followed by die cut tip. Make up the remaining tip ribs from scrap balsa and sand to shape after glueing in position.

Construction of the left panel is done in much the same manner up to the point when the dihedral braces are to be installed. At this time make sure your push-rods are in place. Then, the right hand panel with W-6 and W-7 attached to it will be attached to the left panel, while the left panel is still pinned down. Slip the braces into the proper slots and push down. The tip of the right panel should have a 4 inch support under the center of the outer-most rib. This measurement is not too critical, but try to maintain plus or minus ¼". Use epoxy type glue for this operation and also between the two center ribs. You will have to leave the wing in this position until completion of the left panel. You may at this time proceed as on right panel construction.

IMPORTANT****

THE CENTER SECTION JOINT SHOULD BE GLASSED OR WING MAY BREAK AT EXACT CENTER*** Use at least one or two layers of glass cloth on center of wing at least six inches wide--top and bottom. Apply with glass resin. Fill cloth with resin and san.

AILERON CONSTRUCTION

The easiest way to build the ailerons is to pin down the 3/32 x 2 trailing edge sheet down over plan. Pin down short cap strips and W-5, glueing all together. Add the aileron ribs from the die cut sheets and glue in place. Add the top 3/32 x 2 sheet and top cap strips. Allow to dry, then remove from plan. Sand the front angled face flat and glue on the 1/4 x 1¼ x 18 stick. Glue on the aileron tip block. MAKE SURE YOU BUILD ONE RIGHT AND ONE LEFT AILERON.

Sand the wing leading edge to shape. Sand top and bottom of wing and ailerons so that all parts are flush. Start with a 100 grit sand paper and work up to at least a 220 grit.

HORIZONTAL STABILIZER

Build the horizontal stabilizer on a flat surface. Start by cutting the two 1/4 x 1/2 x 36 sticks to length. (30 inches) Pin down over plan. Take the two leftover pieces from the above operation and glue in across the ends fitting in between as shown. Next glue in the 1/4 square sticks, starting with the center two and working out. Allow this complete assembly to dry. Remove from plan and sheet bottom as shown using 3/32 x 3, and 3/32 x 7/8 as shown. Pin back down flat and glue on top sheet. In order to insure a warp free stab, it is best not to allow the bottom sheet to dry too well before pinning down flat

and adding top sheet--just let the glue set up for 10 to 15 minutes at most. When top sheet is added stab should be left pinned down for at least 24 hours to dry--KEEP IT FLAT!

ELEVATORS

The two elevators are rough cut and must be sanded to the shape shown on the plan. Cut a notch for the 3/8" dowel and epoxy in place. Keep the elevators flat during this operation. Gleu E-1 to the bottom of the left elevator. (E-1 is shown on the plan as a hidden or dash line.)

FIN AND RUDDER

Build the fin and the rudder over the plan on a flat surface, using the parts and sticks as shown. R-1 is glued on flush with the right side of the rudder. Allow to dry and remove from plan. Sand to shape. The fin and rudder are not covered with balsa sheet.

FINAL ASSEMBLY

Install the 5/16 dowels into the body, but do not glue in place until after coverings. Fit the wing to the body holding in place with 6 inch rubber bands. (not inclued in kit) Place the bands over the dowels and the wing. A coating of fibre-glass or epoxy over the wing in the area of the bands is a good idea to prevent cutting into the soft balsa. MAKE SURE THE WING IS IN THE EXACT CENTER OF THE BODY. Measure cut along the trailing edge of each wing half about 45 inches or so and place a mark. These marks must be identical on each tip. To square the wing to the body, measure back from these marks to a point on the center of the fuselage at the tail end. When measurements are exactly the same the wing is quare to the body. Make marks for future use on wing and body.

At this point you will have to decide if you are going to hinge surfaces before or after covering. Hinge all surfaces, making sure rudder and elevator hinges are installed on center line. Aileron hinges are located at the top of the aileron see drawing. Cut slits fro insertion of hinges with an exacto or similar type knife. Epoxy hinges in place.

Place the horizontal stabilizer in place. Measure back from the trailing edge of the wing to the stab on both sides of the fuselage. Both measurements must be equal. From the nose of the plane eye the model to make sure the stab is paralled to the wing--adjust as needed and epoxy stab in place. In any case elevators must be installed prior to fitting of fin if rudder is attached. Install the fin into the slot cut in the top sheet of the stab, and epoxy in place--make sure it is quare to the stab and on straight.

Four dowels 3/16 x 1 ft long are provided in the kit. To provide additonal strength for the horizontal stab and fin install one from the top side of the stab--a dot location on plan, up to point on the 3/8 square rear fin member. Do not cut dowel. Install one dowel from the bottom of the stab at dot location. down to lower fuselage--cut as needed to fit. Do the same on the other side of the stab. These dowels are best installed after final covering of the model. Make a small hole so they go into the wood about 1/8 inch--use epoxy.

COVERING

This model is strong enough so that it may be covered with any of the commercial covering materials available with the exception of paper. Follow the manufacturers instruction sheet for materil installation.

Horns may be fastened to ply parts such as R-1 after covering. Use 2 3/8" x 4 sheet screws on each horn.

THANK YOU

FOR YOUR PURCHASE

BUILDING UPDATES

1. DO NOT INSTALL WING WEBBING 1/32 PLY ,TEST SHOW THERE ARE MORE HARMFUL UNDER STRESS .
2. IF FLYING WITH MORE THAN A 60 2CLY ,YOU SHOULD PUT ON SET OF STRUTS

PLEASE HAVE FUN

A A INDUSTRIES
PO BOX 244
SIBLEY IA 51249