

PROTÉGÉ



Instructions

The **PROTÉGÉ** is more than just another .60-size trainer. Of course, its size makes it easy to see and its unique flat-bottomed airfoil gives it great inherent stability for confidence-building early flights. But what's really exciting is that, with simple adjustments, you can transform your **PROTÉGÉ** into a gently responsive sport model capable of all the primary maneuvers, including outside loops. And all the while, you'll benefit from **PROTÉGÉ'S** arrow-like tracking, super-slow landing speed, and sure-footed ground handling. The **PROTÉGÉ** is engineered to build quick and true, and when you finish it, you'll have a versatile, flyer-friendly performer that will take you smoothly from trainer to sport level flying.

Before you start, please read through these instructions and review the plans to become familiar with the **PROTÉGÉ** methods of assembly.

WARNING

A radio-controlled model is not a toy. It is capable of causing serious bodily injury and property damage. It is the buyer's responsibility to build this kit correctly and to properly install the motor, radio, and all other equipment. The first test flights should be made only with the assistance of an experienced R/C flyer. The model must always be operated and flown in accordance with the safety standards of the Academy of Model Aeronautics.

Per the Federal Communications Commission, you are required to use only those radio frequencies specified "for Model Aircraft."

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Pt. # 2003 - 3/03

CARL GOLDBERG PRODUCTS, LTD.

P.O. Box 88 Oakwood GA 30566 Phone #678-450-0085 Fax # 770-53-63 www.carlgoldbergproducts.com

ITEMS NEEDED TO COMPLETE THIS KIT.

- ☐ 1 RADIO GUIDANCE SYSTEM (4 CHANNEL MINIMUM REQUIRED)
- ☐ 1 ENGINE (.40-.60 2-CYCLE, .65-.80 4-CYCLE)
- ☐ 1 10-12 OZ. FUEL TANK
- ☐ 1 18" FUEL LINE
- ☐ 2 2-3/4" DIAMETER WHEELS
- ☐ 1 2-1/2" DIAMETER WHEELS
- ☐ 3 ROLLS IRON ON COVERING
- ☐ 1 **CGM** 2-3/4" DIAMETER SPINNER
- ☐ 1 CA GLUE ACCELERATOR
- ☐ 1 2 OZ. BOTTLE CA GLUE
- ☐ 1 PIECE 1/2" FOAM PADDING
- ☐ 4 3/16" **CGM** WHEEL COLLARS
- ☐ 2 5/32" **CGM** WHEEL COLLARS

TOOLS AND SUPPLIES REQUIRED FOR ASSEMBLY.

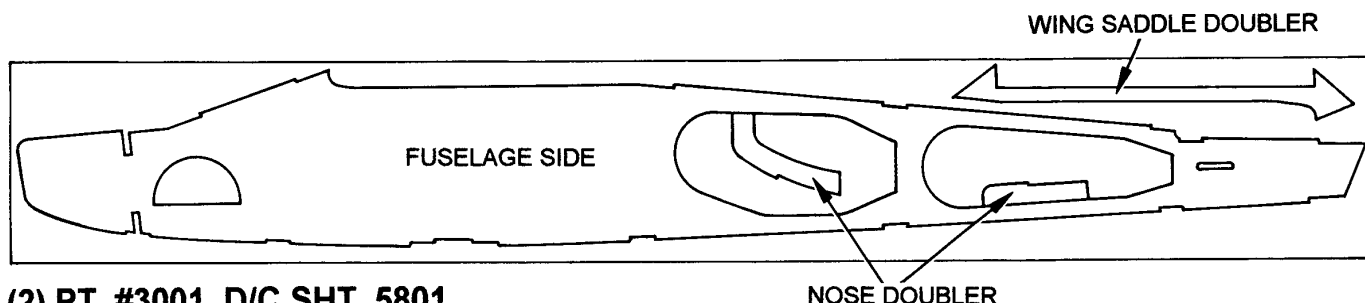
- ☐ MISCELLANEOUS RUBBER BANDS (INCLUDING #64)
- ☐ ROLL OF WAXED PAPER
- ☐ SANDPAPER (ASSORTED GRITS, INCLUDING **MEDIUM (150)** AND **FINE (220)**)
- ☐ SANDING BLOCK
- ☐ "T" PINS (at least 50)
- ☐ X-ACTO MODELLING KNIFE
- ☐ SINGLE EDGE RAZOR BLADE
- ☐ RAZOR SAW
- ☐ BUILDING BOARD (24" x70")
- ☐ ELECTRIC DRILL
- ☐ 5/16" DRILL BIT
- ☐ 1/4" DRILL BIT
- ☐ 1/8" DRILL BIT
- ☐ 1/16" DRILL BIT
- ☐ 3/32" DRILL BIT
- ☐ 5/32" DRILL BIT
- ☐ SMALL SCREWDRIVER
- ☐ COVERING IRON AND HEAT GUN
- ☐ MASKING TAPE
- ☐ PLIERS
- ☐ YARD STICK
- ☐ FLEXIBLE STRAIGHT-EDGE
- ☐ 30-60 DEGREE x 6" TRIANGLE
- ☐ PENCIL
- ☐ HAMMER

WOOD PARTS

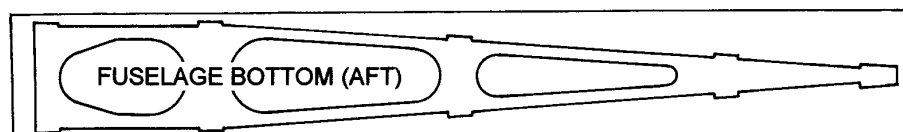
Be careful when removing parts (such as fuselage sides) from the die-cut sheets. Long parts are fragile until *Super Jeted* into a structural unit. If necessary, use a razor knife or razor saw to assist in the removal of parts from the sheet. Sometimes a little trimming and sanding can improve parts, where desired. Save scrap until the model is completed, in case a part is missing or damaged. Also, scrap is used in some building steps.

ABOUT THE WOOD IN THE KIT

We strive to supply good quality materials in your kit. Wood parts are inspected with regard to the function they will serve. If an imperfection is spotted in a scrap corner of a die-cut sheet and doesn't affect actual parts, the sheet is considered acceptable. Also, internal stresses in wood are relieved as it is cut into parts. These relieved stresses may cause some parts to bow. Bows in wood parts (such as leading edges) readily straighten out as they are *Super Jeted* into a structural unit.



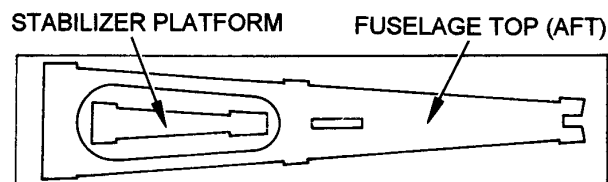
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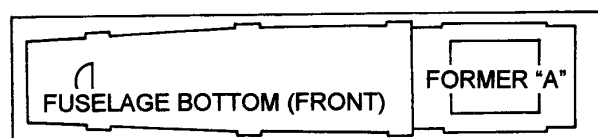
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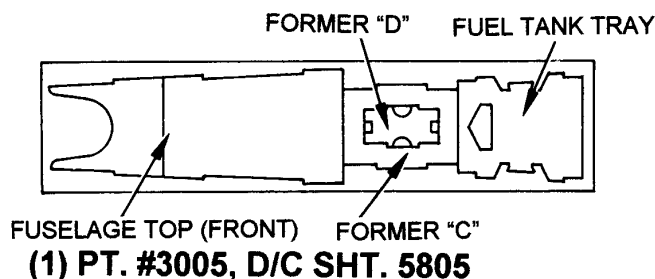
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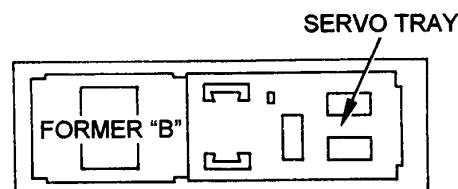
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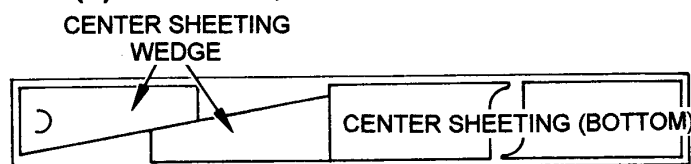
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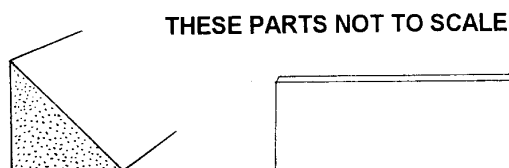
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(1) PT. #3006, D/C SHT. 5806



(2) PT. #3017, D/C SHT. 5809



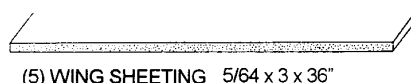
WING TIP 1-7/8" TRI x 13" BALSA

PT.#4122

REFER TO LEFT WING TIP
ON PLAN FOR ACTUAL SIZE

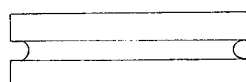
(2) DIHEDRAL BRACES 1/8 x 1-1/4 x 4" PLY

PT.#4906



(5) WING SHEETING 5/64 x 3 x 36"

PT.#4120



(1) LANDING GEAR PLATE
1/4 x 1-1/2 x 4-5/16 PLY

PT.#4904



(2) TORQUE SUPPORT
1/4 x 1 x 15/16 PLY

PT.#4905



(1) PT. #3011, D/C SHT. 5812

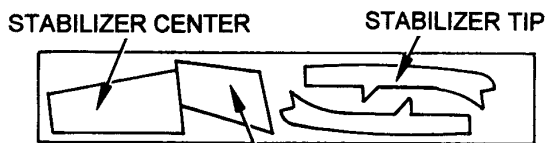


(4) PT. #3009, D/C SHT. 5810



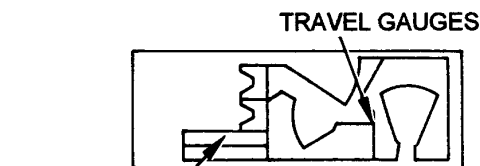
WING RIB (CENTER FRONT) WING RIB (CENTER AFT)

(2) PT. #3010, D/C SHT. 5811



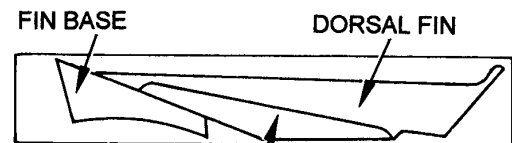
RUDDER BASE

(2) PT. #3012, D/C SHT. 5813



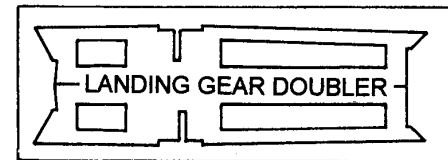
ROUNDING TOOL

(1) PT. #3015, D/C SHT. 5815

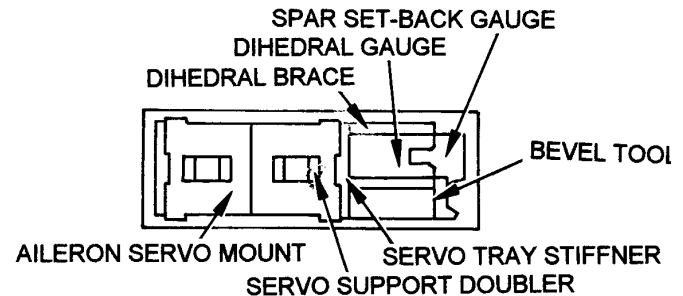


STAB DOUBLER

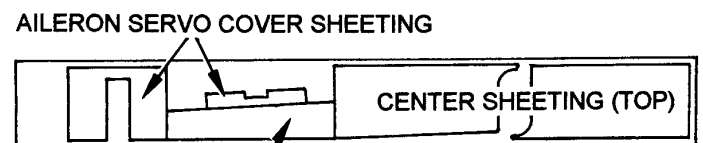
(2) PT. #3903, D/C SHT. 6808



(1) PT. #3014, D/C SHT. 5808

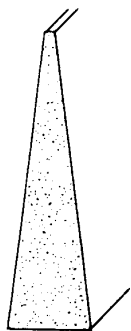


(1) PT. #3013, D/C SHT. 5814



WEDGE "A"

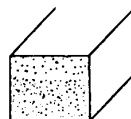
(2) PT. #3016, D/C SHT. 5816



(2) OUTBOARD TRAILING EDGE
1" LONG PT.#4907

(2) INBOARD TRAILING EDGE
7-5/8" LONG PT.#4308

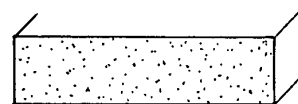
(2) AILERON
26-1/4" LONG PT.#4117



(5) 3/8 x 1/2 x 28
STAB/FIN STICKS
PT.#4309



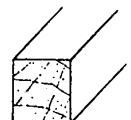
(2) 1/4 SQ. x 36
LEADING EDGE SPAR
PT.#4115



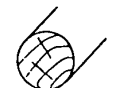
(2) 3/8" x 1-7/16" x 12" ELEVATOR
PT.#4312



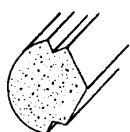
(14) 5/64 x 1/4 x 24
CAPSTRIP
PT.#4122



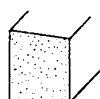
(2) 3/8 SQ. x 19 PUSHROD
PT.#3698
(4) 3/8 SQ. x 36 MAIN SPAR
PT.#3700



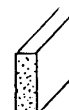
(2) 5/16 x 6 DOWEL
PT.# 1751



(2) SHAPED L.E.
PT.#3705



(2) NOTCHED T.E.
PT.#4116



(4) 1/8 x 3/8 x 24
STAB/FIN TRUSS STICKS
PT.#4310



(1) 3/8" x 3-3/8" DOWEL
PT.#1753

GLOSSARY of terms

AILERON: the control surface on the wing that rolls the plane

AIRFOIL: the shape of the wing as seen from the end

BEVEL: to sand to an angle shape

BLIND NUT: a nut, sometimes called a "T-Nut" which has teeth, so that it will mount itself to a wooden surface

CAP STRIP: a thin strip glued to the edges of the ribs to shape the wing

CENTER OF GRAVITY (CG): the point at which the airplane would remain in equilibrium if supported at a single point

CONTROL HORN: a device attached to each control surface to provide an attachment point for the pushrod

DIHEDRAL: the upward angle of the wings, as seen from the front

DOWNTHRUST: the angling of the engine downward to compensate pitching during different power settings

ELEVATOR: the moveable part of the horizontal tail, which controls pitch

FIN: the fixed vertical part of the tail

FIREWALL: the hard wooden former at the front of the fuselage, to which the engine is mounted

FORMER: a piece which shapes the fuselage; and to which the sides of the fuselage are attached

FUSELAGE: the body or "hull" of the aircraft, to which the wings, tail, and engine are attached

INCIDENCE: the angle of the wing or the tail in relation to the thrustline

JOINER: usually a piece that overlaps the ends of spars to add strength to a joint, such as at the center of the wing

LAMINATE: to glue two thin sheets of material together to form a thick sheet

LEADING EDGE (L.E.): the edge of the wing that first meets the airflow

NOSEGEAR BEARING: a molded part, usually made of nylon, which attaches the nosegear to the fuselage

NOSEGEAR: device that connects the nose wheel to the fuselage, usually made of a tempered wire

OUTPUT ARM: the piece that attaches to the servo and connects it to the pushrod

PITCH: an up and down movement of the nose of the plane, which is controlled by the elevator

PUSHROD: the long, stiff dowel or plastic piece that connects the servo with the control horn

RIB: the airfoil-shaped piece that connects the leading edge, spars and trailing edge of the wing together and holds them in shape

RIGHT THRUST: the angling of the engine to the right to compensate for engine torque

RUDDER: the moveable vertical tail of the plane, which controls yaw

SERVO: the part of the airborne radio system that moves the control surfaces

SHEAR WEB: wood sheeting that connects the top and bottom spars to stiffen the wing

SLOTTED HEAD SCREW: a common screw in which the head has a straight-line indentation to accept the screw driver

SOCKET HEAD SCREW: a screw which has a hexagonal-shaped slot, rather than straight slot

SPAR: a wooden stick running lengthwise through the wing that serves as its backbone

SPINNER: the rounded cone that fits over the propeller hub

STABILIZER (STAB): the fixed horizontal part of the tail

THROWS: the angular movement of the control surface, expressed in degrees or inches

THRUSTLINE: a line drawn from the center of the propeller hub straight through the airplane

TRAILING EDGE (T.E.): the edge of the wing that faces the rear of the plane

TRIM: small adjustments made to the control surfaces to cause the plane to fly straight and level by itself

WHEEL COLLAR: a metal ring that holds the wheel on the axle

WING SADDLE: the shaped part of the fuselage in which the wing rests

YAW: a right-to-left movement of the nose, controlled by the rudder

Z BEND: a z-shaped bend in a wire pushrod, enabling it to be hooked up to a servo arm or control horn

HORIZONTAL STABILIZER CONSTRUCTION (14 Steps)

1. Collect all of the items you will need to construct the HORIZONTAL STABILIZER.

THEY INCLUDE:

- (2) D/C SHT. 5813 (3/16" Balsa) PT #3012

Includes:

- (1) STAB CENTER
(2) STAB TIPS

- (2) D/C SHT. 6808 (3/16" BALSA) PT #3903

Includes:

- (1) STAB DOUBLER

- (1) D/C SHT. 5814 (.110 LITE PLY) PT #3013

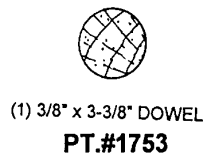
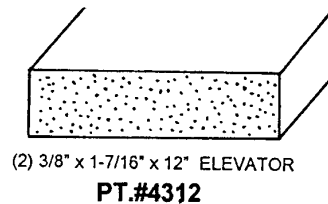
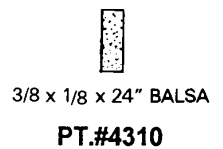
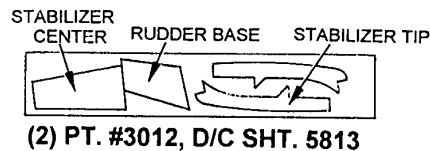
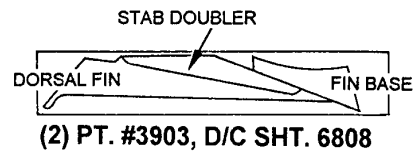
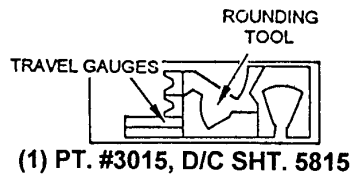
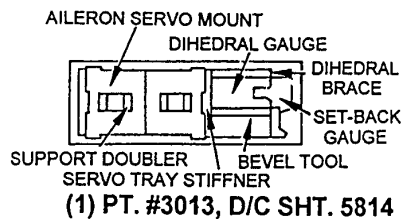
Includes: BEVEL TOOL PARTS

- (1) D/C SHT. 5815 (.110 LITE PLY) PT. #3015

Includes: ROUNDING TOOL PARTS

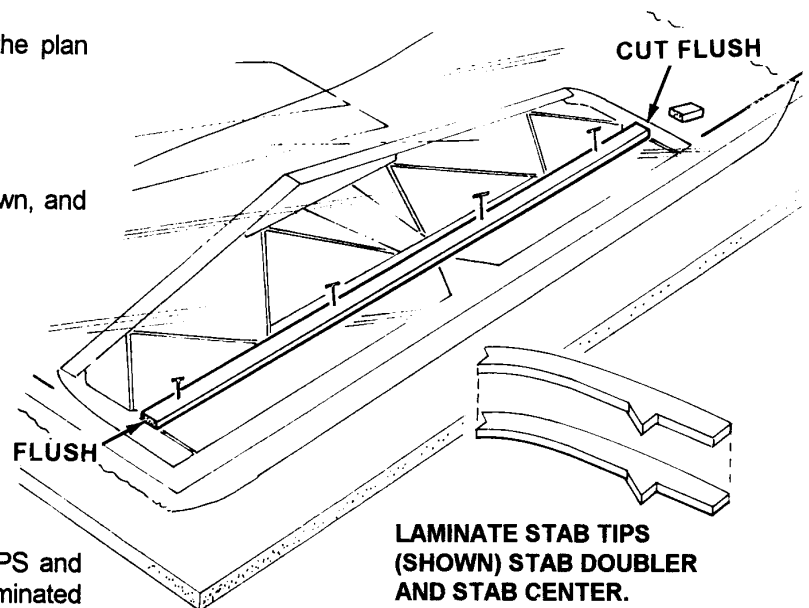
- (3) TRAILING EDGE STICKS (3/8x1/2"x28" Balsa) PT. #4309

To be used in making the TRAILING EDGE, the TRAILING EDGE DOUBLER and the LEADING EDGE



CGM JET HINGE

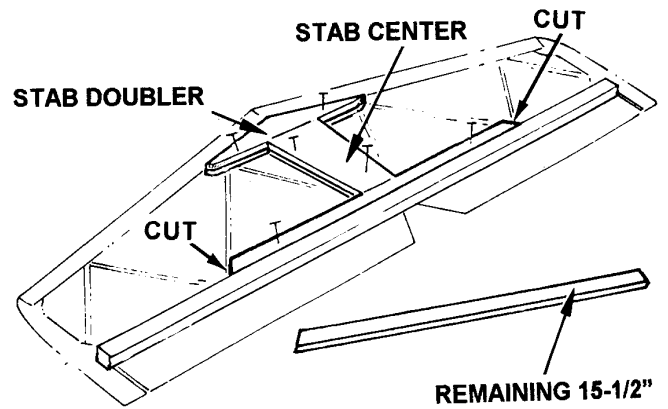
2. ☐ Lay the horizontal stabilizer portion of the plan over the building board.
- ☐ Place the waxed paper over the plan.
- ☐ Pin a 3/8 x 1/2 x 28" balsa stick, as shown, and trim flush to make a TRAILING EDGE.



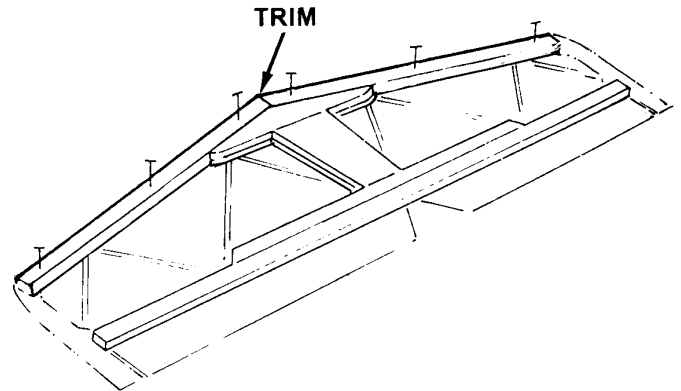
- ☐ From Die Sheets #5813 laminate the TIPS and the CENTERS. From sheets #6808, laminated the STAB DOUBLERS.

3. ☐ From a $3/8 \times 1/2 \times 28$ " balsa stick, and using the plan as a guide, make a TRAILING EDGE DOUBLER and *Super Jet* to the TRAILING EDGE. This will use about $12-1/2$ " of the 28" stick. Keep the remaining $15-1/2$ " piece, as you will need this to build the vertical fin (page 10).

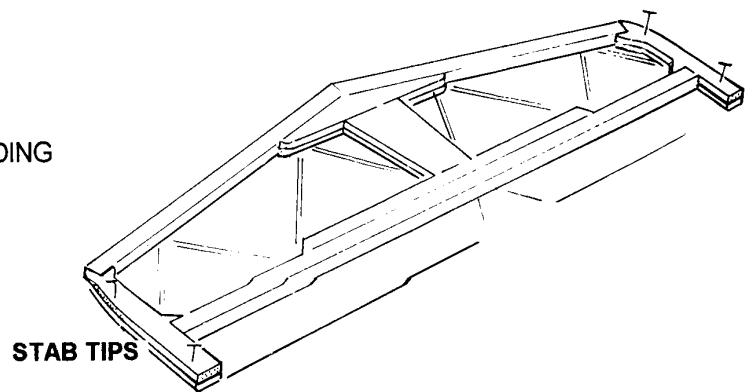
- ☐ *Super Jet* and pin the STAB CENTER to the STAB DOUBLER.
- ☐ *Super Jet* the CENTER/DOUBLER ASSEMBLY to the TRAILING EDGE DOUBLER.



4. ☐ Trim $3/8 \times 1/2 \times 28$ " balsa sticks, and using the plan as a guide, make LEADING EDGES and *Super Jet* to the LAMINATED STAB DOUBLER.

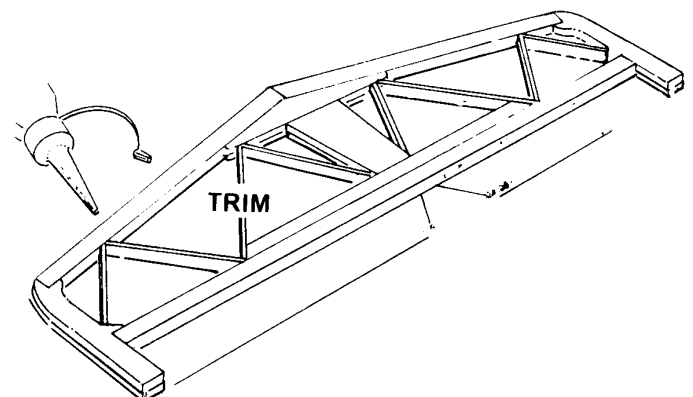


5. ☐ *Super Jet* the STAB TIPS to the LEADING EDGE and the TRAILING EDGE.

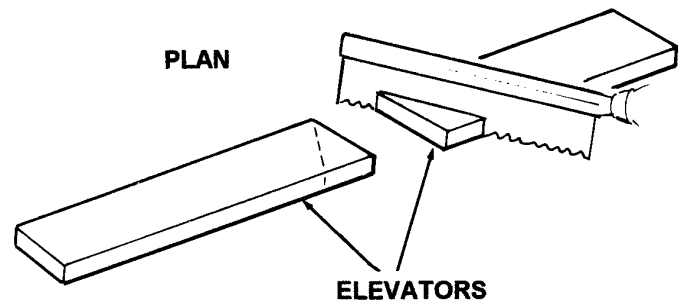


6. ☐ Using the plan as a guide, trim to fit the $1/8 \times 3/8$ " balsa TRUSSING.

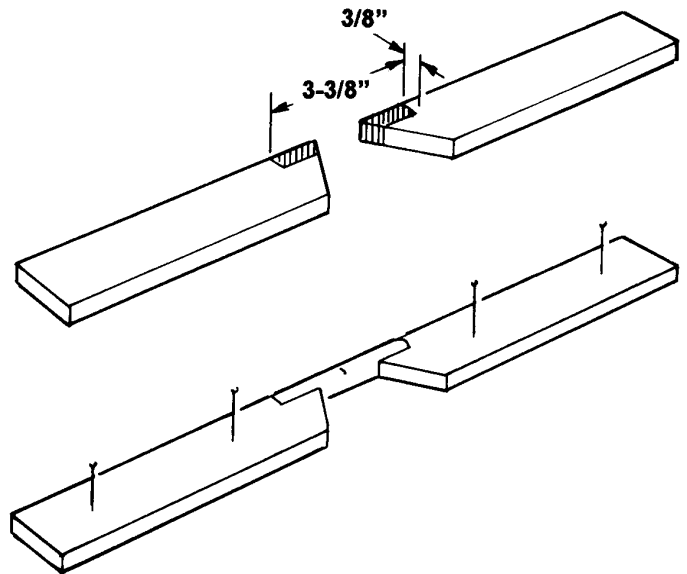
HINT: It may be easier to sand the angle in.



7. ☐ Lay the $\frac{3}{8} \times \frac{1}{16} \times 12$ " balsa over the ELEVATOR drawing and trim to get the angle shown. Repeat this process, making two pieces.



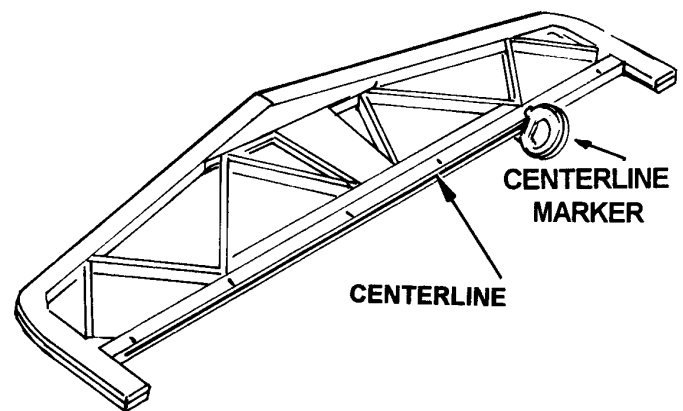
- ☐ Using the plan as a guide, trim back a notch $\frac{3}{8}$ " deep for the dowel.



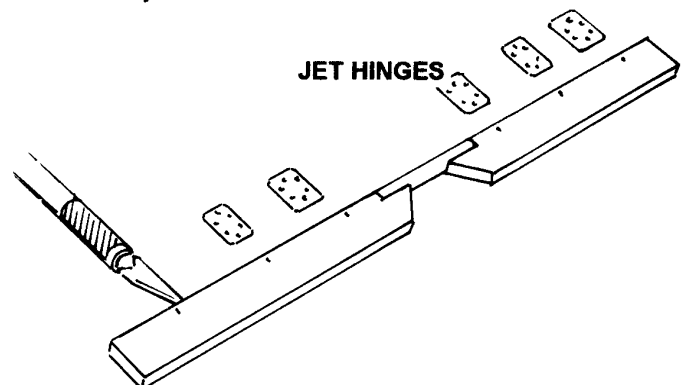
8. ☐ Pin the ELEVATOR. Referring to the plan, and to the diagram in Step 14 of this section, note that there should be a small $\frac{1}{16}$ " gap at tip. **Super Jet** the DOWEL place, making sure that the parts are flat and straight and that the $\frac{1}{16}$ " gap is maintained.

9. ☐ Transfer the six hinge locations from the plan. Use the CGM CENTERLINE MARKER to scribe a line down the center of the stab and elevator.

HINT: Use a ball point pen to highlight the scribe line.

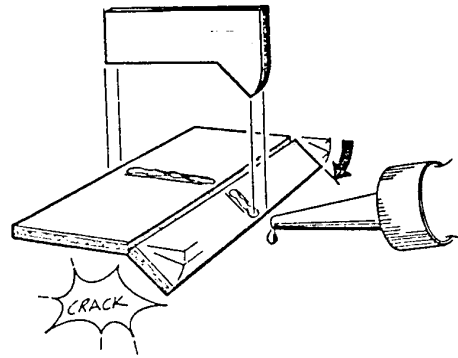


10. ☐ Use an X-acto knife to slot for JET HINGES. Test each JET HINGE location for the correct fit, as you go.

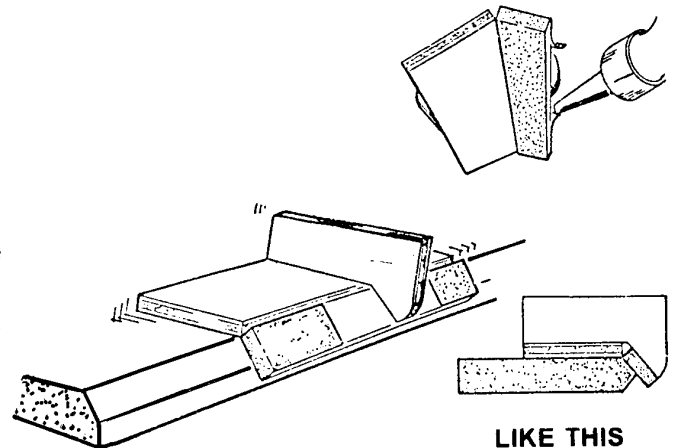


11. ☐ Temporarily install the HINGES and fit the STAB to the ELEVATOR.

12. ☐ Assemble the BEVEL TOOL (Sheet # 5814) and tack-**Super Jet** a piece of medium sandpaper onto the small board.



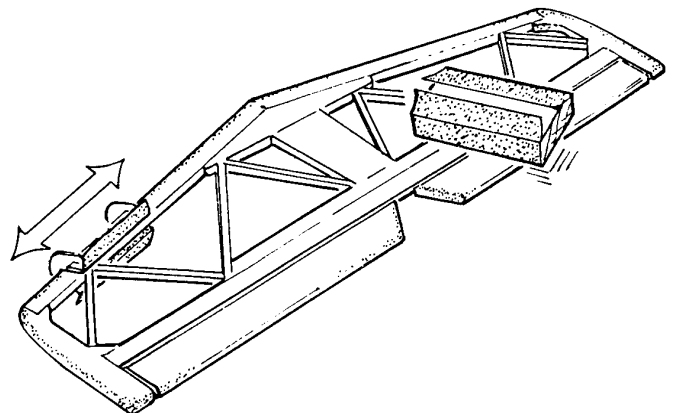
13. ☐ Use the BEVEL TOOL to sand the hinge side of the ELEVATOR. Sand both sides until a symmetrical bevel is formed along the entire length.



14. ☐ Build the ROUNDING TOOL (Sheet 5815) and insert a piece of medium sand paper. Use the tool to round the entire perimeter of the HORIZONTAL STABILIZER. Remove the medium sandpaper and insert a piece of fine sandpaper and repeat. Use a sanding block with fine sandpaper to flat-sand both sides of the assembly.



THIS COMPLETES THE HORIZONTAL STAB AND ELEVATOR. YOU MAY PUT THEM ASIDE UNTIL YOU ARE READY FOR COVERING. NOW LET'S MOVE ON TO THE FIN AND RUDDER

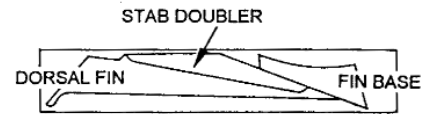


VERTICAL FIN & RUDDER CONSTRUCTION

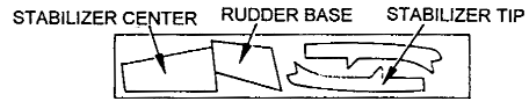
1. Collect all of the items you will need to construct the VERTICAL FIN & RUDDER.

THEY INCLUDE:

- | | |
|---|-----------|
| (2) D/C SHT. 5813 (3/16" Balsa) | PT. #3012 |
| Includes: | |
| (1) RUDDER BASE | |
| (2) D/C SHT. 6808 (3/16" Balsa) | PT. #3903 |
| Includes: | |
| (1) DORSAL FIN | |
| (1) FIN BASE | |
| (2) STICK (3/8 x 1/2 x 28" Balsa) | PT. #4309 |
| (1) REMAINDER, T.E. STICK
from Step #3 on page 7.
(3/8x1/2x28" Balsa) | PT. #4309 |
| (2) TRUSS STICK (1/8 x 3/8 x24" Balsa) | PT. #4310 |
| (3) CGM JET HINGE | PT. #1667 |
| (1) FUSELAGE PLAN | PT. #2001 |



(2) PT. #3903, D/C SHT. 6808



(2) PT. #3012, D/C SHT. 5813

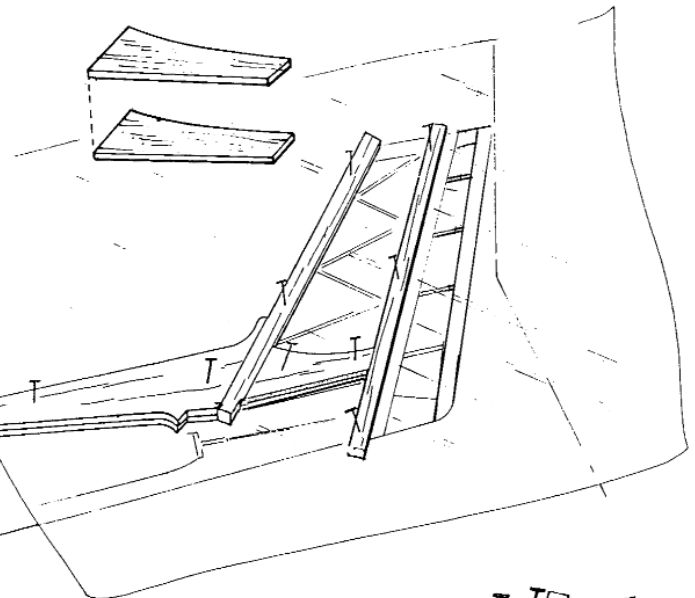


3/8 x 1/2 x 28" BALSA
PT.#4309



3/8 x 1/8 x 24" BALSA
PT.#4310

LAMINATE FIN BASE (SHOWN) DORSAL AND RUDDER BASE.

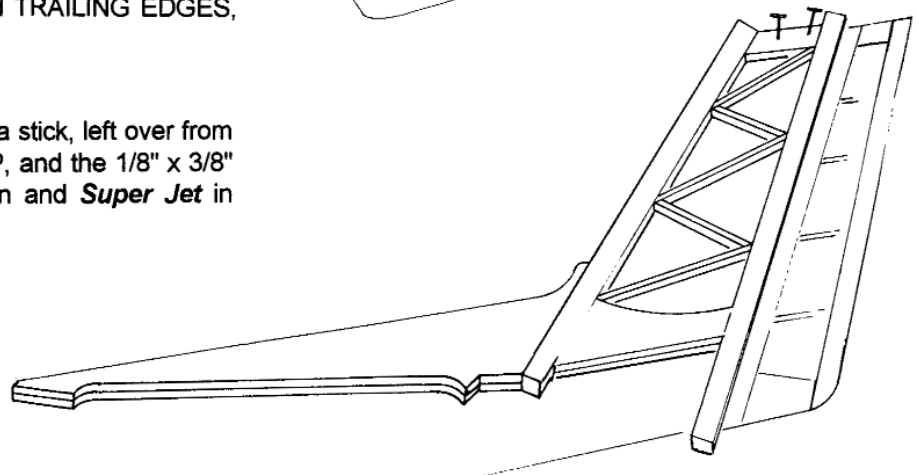


2. ☐ Lay the vertical fin portion of the plan over the building board, and cover with waxed paper.
- ☐ From the two Sheet #6808, take and laminate the DORSAL FIN and the FIN BASE. Then laminate the two RUDDER BASE pieces (Sheet #5813).

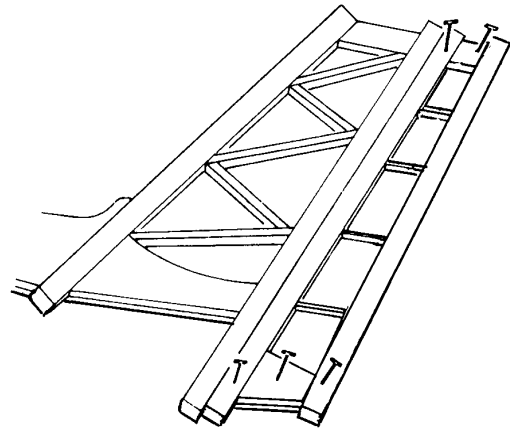
HINT: You may want to block sand the laminated parts where they contact the 3/8" sticks to improve fit.

- ☐ Using the 3/8 x 1/2 x 28" balsa stick, make the FIN LEADING EDGE AND FIN TRAILING EDGE. Then **Super Jet** the DORSAL and FIN BASE to the LEADING and TRAILING EDGES, using the plan as a guide.

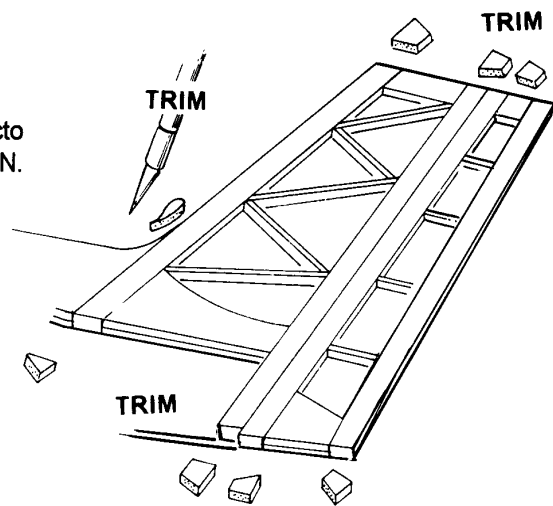
3. ☐ Trim to fit the 3/8 x 1/2" balsa stick, left over from step #3 on page 7, FIN TOP, and the 1/8" x 3/8" balsa TRUSS STICKS. Pin and **Super Jet** in place.



4. ☐ Trim, pin and *Super Jet* the RUDDER parts (3/8 x 1/2" STICKS, RUDDER BASE, and TRUSSING) together over the plan. Refer to the plan for clarification.

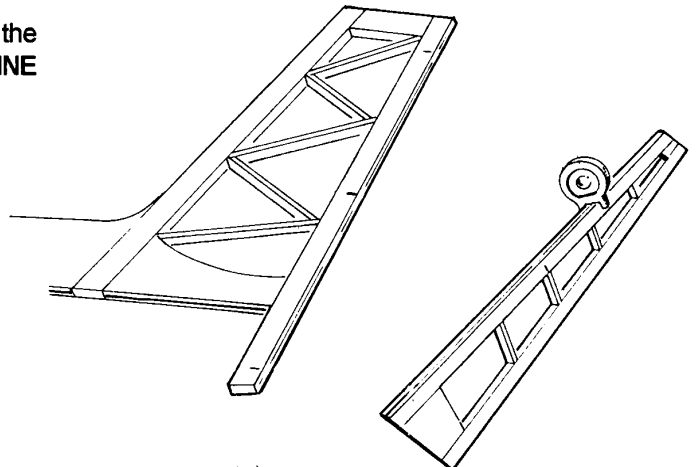


5. ☐ Use a razor saw to trim the ends. Use an X-acto knife to trim the excess from the DORSAL FIN. Refer to the plan.

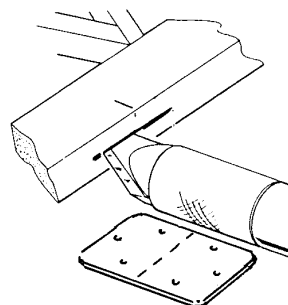


6. ☐ Transfer the hinge locations from the plans to the fin and rudder. Use the CGM CENTERLINE MARKER to scribe the centerline.

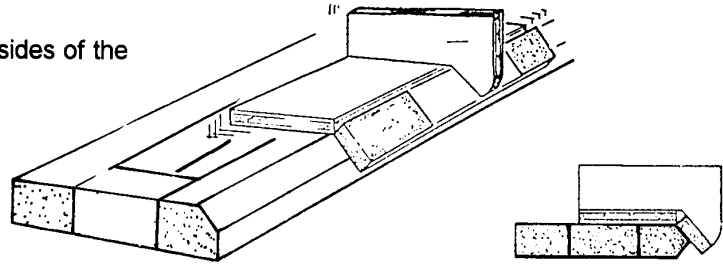
HINT: Use a ball point pen to highlight the scribe line.



- ☐ Slot three JET HINGE locations.

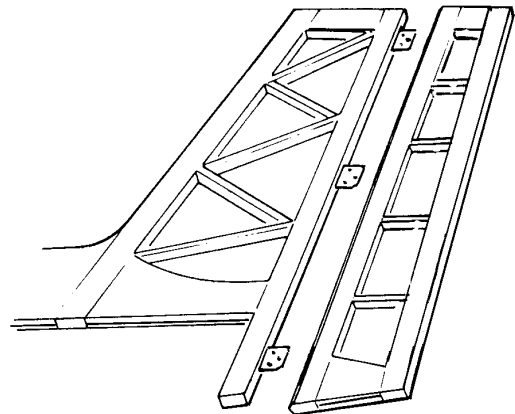


7. ☐ Use the BEVEL TOOL to bevel both sides of the hinge-side of the RUDDER.

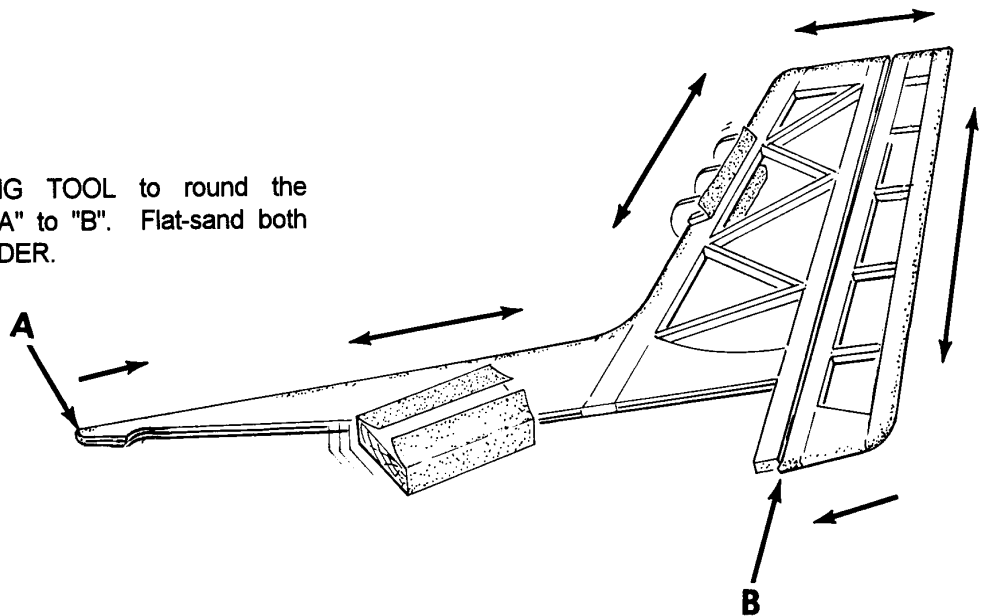


LIKE THIS

- ☐ Temporarily install the HINGES and fit the RUDDER to the FIN.



8. ☐ Use the ROUNDING TOOL to round the perimeter segment "A" to "B". Flat-sand both sides of the FIN/RUDDER.



THIS COMPLETES THE FIN AND RUDDER. YOU WILL NOT NEED THESE PARTS UNTIL YOU ARE READY FOR THE COVERING, SO PUT THEM WITH THE HORIZONTAL STAB UNTIL THEN.

WING CONSTRUCTION (33 Steps)

1. Collect the items needed to construct the WING.

THEY INCLUDE:

- | | |
|---|-----------|
| (4) D/C SHT. 5810 (5/64" Balsa)
Includes:
(4) WING RIBS | PT. #3009 |
| (2) D/C SHT. 5811 (5/64" Balsa)
Includes:
(3) WING RIBS
(1) WING RIB (CENTER FRONT)
(1) WING RIB (CENTER AFT) | PT. #3010 |
| (1) D/C SHT. 5812 (5/64" Balsa)
Includes:
(20) SHEAR WEBS | PT. #3011 |
| (2) D/C SHT. 5816 (5/64" Balsa)
Includes:
(2) AILERON SERVO COVER SHEETING
(2) CENTER SHEETING (TOP)
(1) CENTER SHEET (WEDGE "A") | PT. #3916 |
| (2) D/C SHT. 5814 (.110" LITE PLY)
Includes:
(2) AILERON SERVO MOUNTS
(4) SERVO MOUNT DOUBLERS
(2) SERVO MOUNT STIFFNERS
(1) DIHEDRAL BRACE
(1) SPAR SET-BACK GAUGE | PT. #3013 |
| (2) SHAPED LEADING EDGE (Balsa) | PT. #3705 |
| (4) MAIN SPAR
(3/8" SQ. x 35-5/16" Basswood) | PT. #3700 |
| (2) LEADING EDGE SPAR
(1/4" SQ. x 35" Balsa) | PT. #4115 |
| (2) NOTCHED TRAILING EDGE
(Shaped Balsa) | PT. #4116 |
| (2) INBOARD TRAILING EDGE
(Shaped Balsa) | PT. #4117 |
| (2) AILERON (Shaped Balsa) | PT. #4308 |
| (2) OUTBOARD TRAILING EDGE
(Shaped Balsa) | PT. #4907 |
| (2) DIHEDRAL BRACES
(1/8 x 1-1/4 x 4" Birch Ply) | PT. #4906 |
| (5) L.E. TOP & BOT. SHEETING
(5/64 x 3 x 36" Balsa) | PT. #4120 |



(4) PT. #3009, D/C SHT. 5810

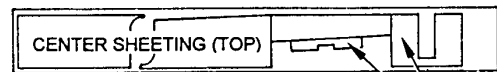
WING RIB (CENTER FRONT) WING RIB (CENTER AFT)



(2) PT. #3010, D/C SHT. 5811



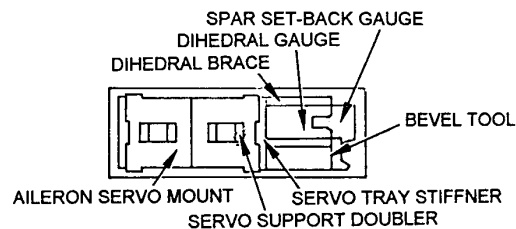
(1) PT. #3011, D/C SHT. 5812



(2) PT. #3016, D/C SHT. 5816 AILERON SERVO COVER SHEETING



(2) PT. #3017, D/C SHT. 5809



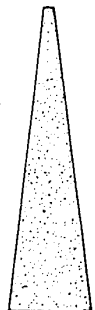
(1) PT. #3013, D/C SHT. 5814



(2) SHAPED L.E.
PT.#3705



(2) NOTCHED T.E.
PT.#4116



(2) AILERON
PT.#4308
(2) INBOARD T.E.
PT.#4117
(2) OUTBOARD T.E.
PT.#4907



(14) 5/64 x 1/4 x 24
CAPSTRIP
PT.#4122



(4) 3/8 SQ. x 36
MAIN SPAR
PT.#3700

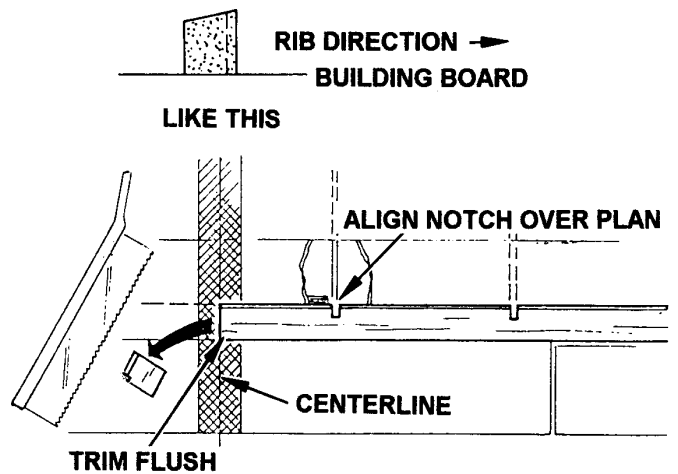


(2) 1/4 SQ. x 36
LEADING EDGE SPAR
PT.#4115

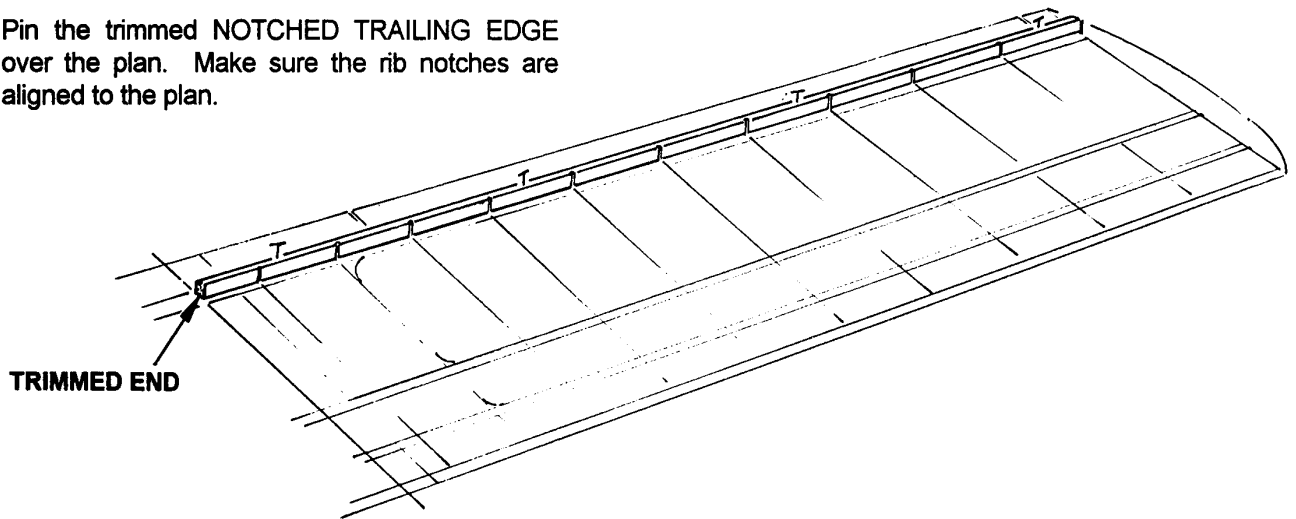
- | | |
|---|-----------|
| (2) WING TIP (1-7/8" TRI x 13" Balsa) | PT. #3923 |
| (14) CAPSTRIPS (5/64 x 1/4 x 24" Balsa) | PT. #4122 |
| (8) CGM JET HINGE | PT. #1667 |
| (1) CGM 2-1/2" NYLON FABRIC | PT. #5771 |

NOTE: YOU WILL BE BUILDING TWO WING HALVES, FIRST A LEFT, THEN A RIGHT. FOLLOW STEPS CAREFULLY TO AVOID CONFUSION.

2. ☐ Lay the left wing panel section of the plan on a flat building board into which pins can be stuck. Cover the plan drawing with wax paper.
3. ☐ Place the NOTCHED TRAILING EDGE over the plan. Align the notches to the plan and cut off along the wing centerline.



4. ☐ Pin the trimmed NOTCHED TRAILING EDGE over the plan. Make sure the rib notches are aligned to the plan.

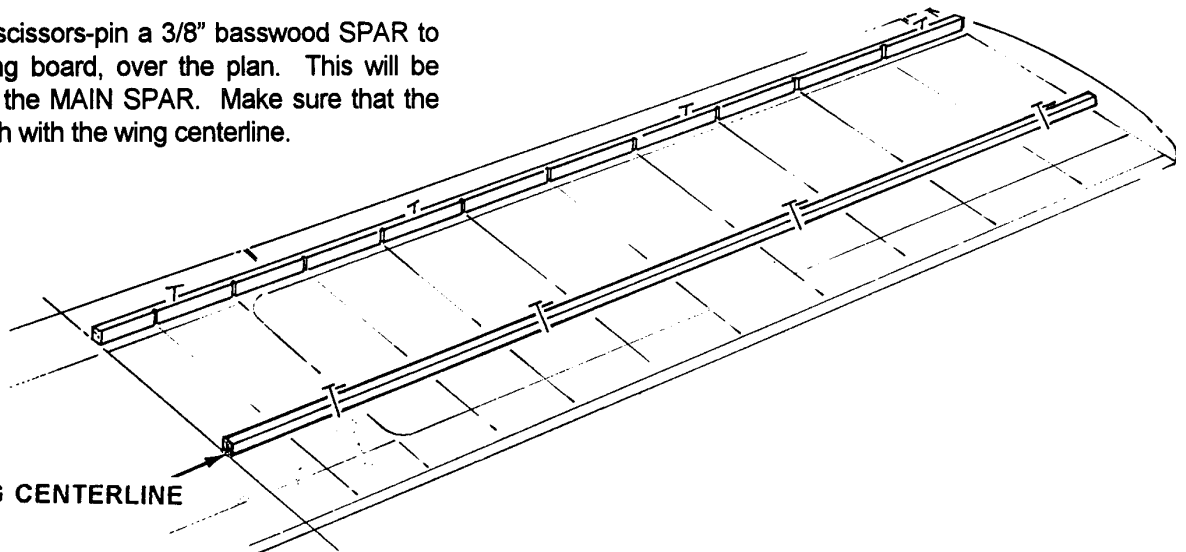


5. ☐ Trim and scissors-pin a 3/8" basswood SPAR to the building board, over the plan. This will be known as the MAIN SPAR. Make sure that the end is flush with the wing centerline.

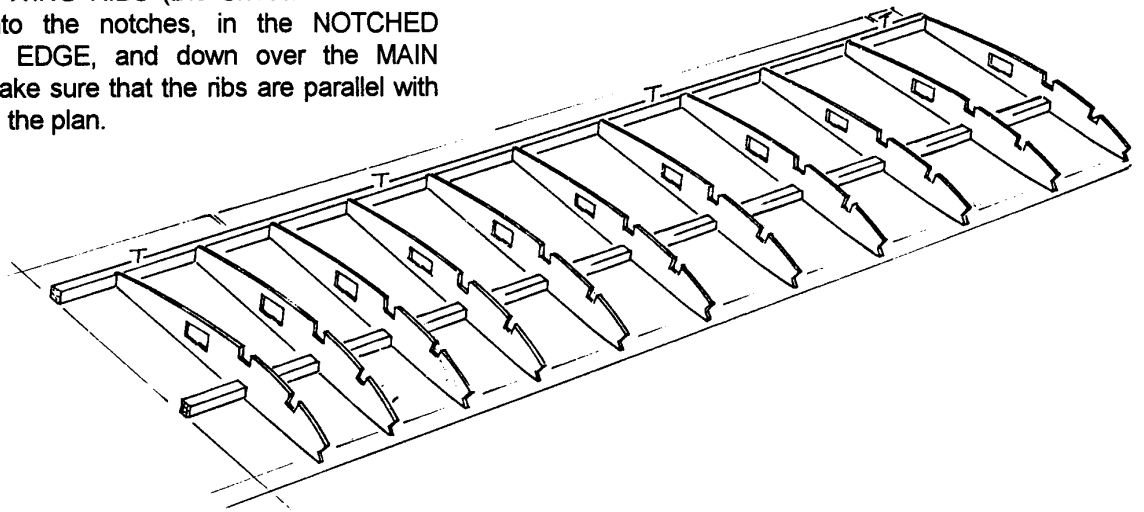
SCISSORS PIN



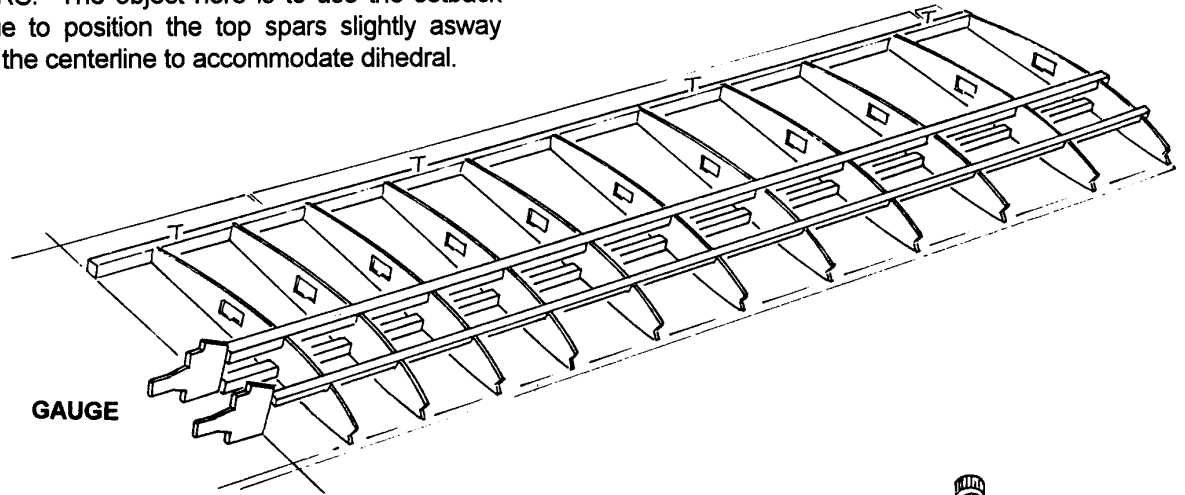
FLUSH WITH WING CENTERLINE



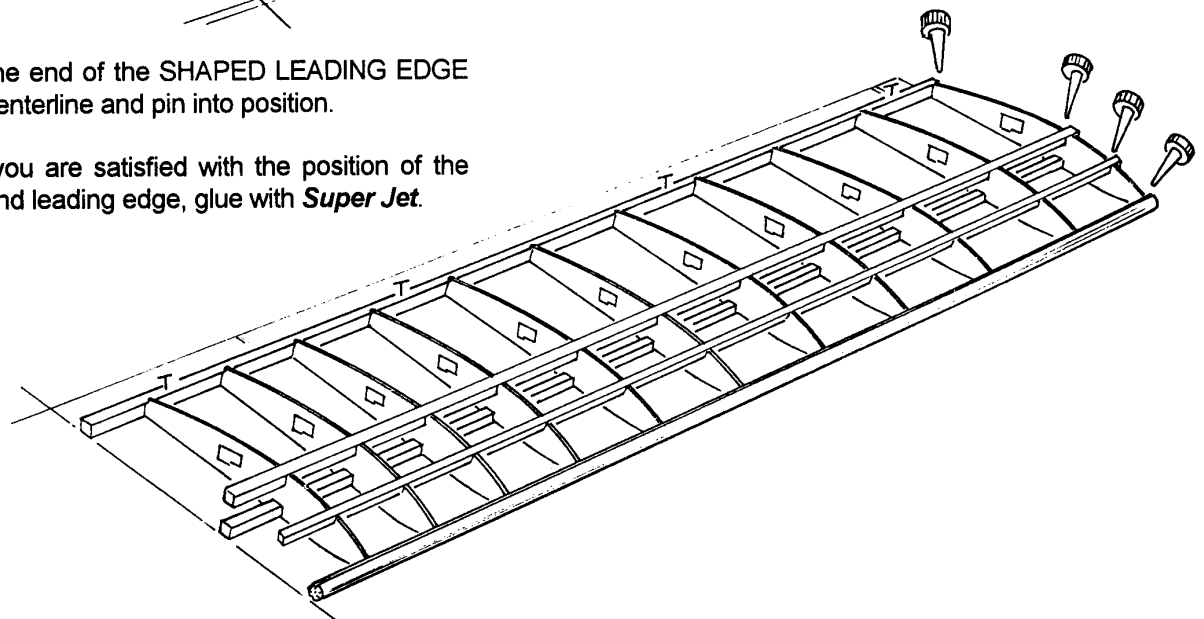
6. ☐ Install the WING RIBS (Die Sheets #5810 and #5811) into the notches, in the NOTCHED TRAILING EDGE, and down over the MAIN SPAR. Make sure that the ribs are parallel with the ribs on the plan.



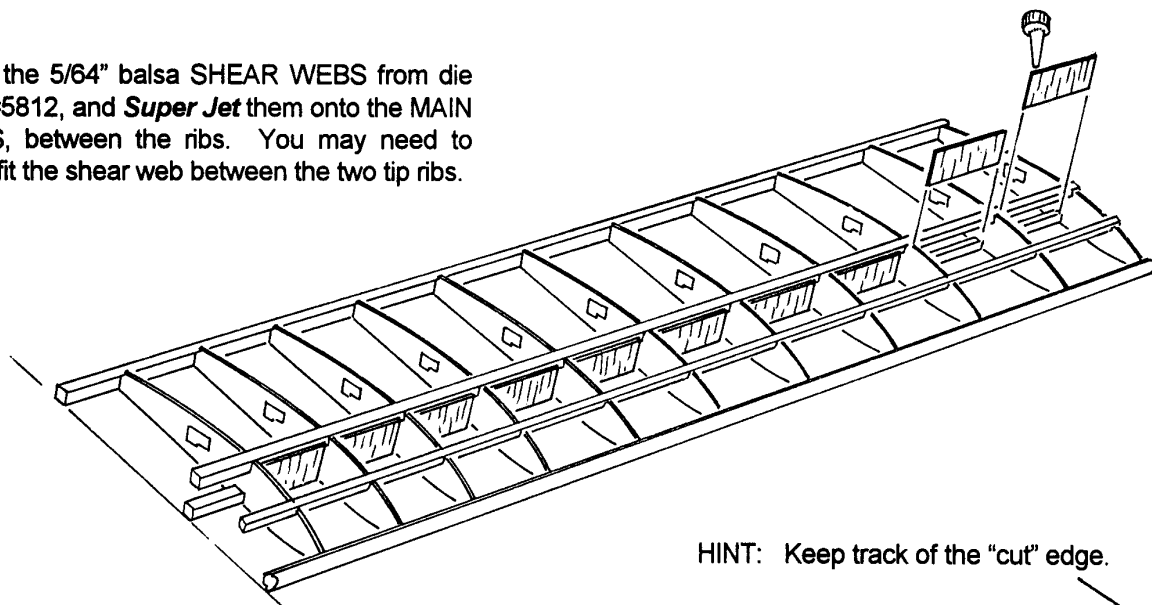
7. ☐ Use the SETBACK GAUGE (Sheet #5814), as shown, to install the 3/8 sq. x 35-1/8" basswood MAIN SPARS and the 1/4 sq. x 35" balsa SPARS. The object here is to use the setback gauge to position the top spars slightly away from the centerline to accommodate dihedral.



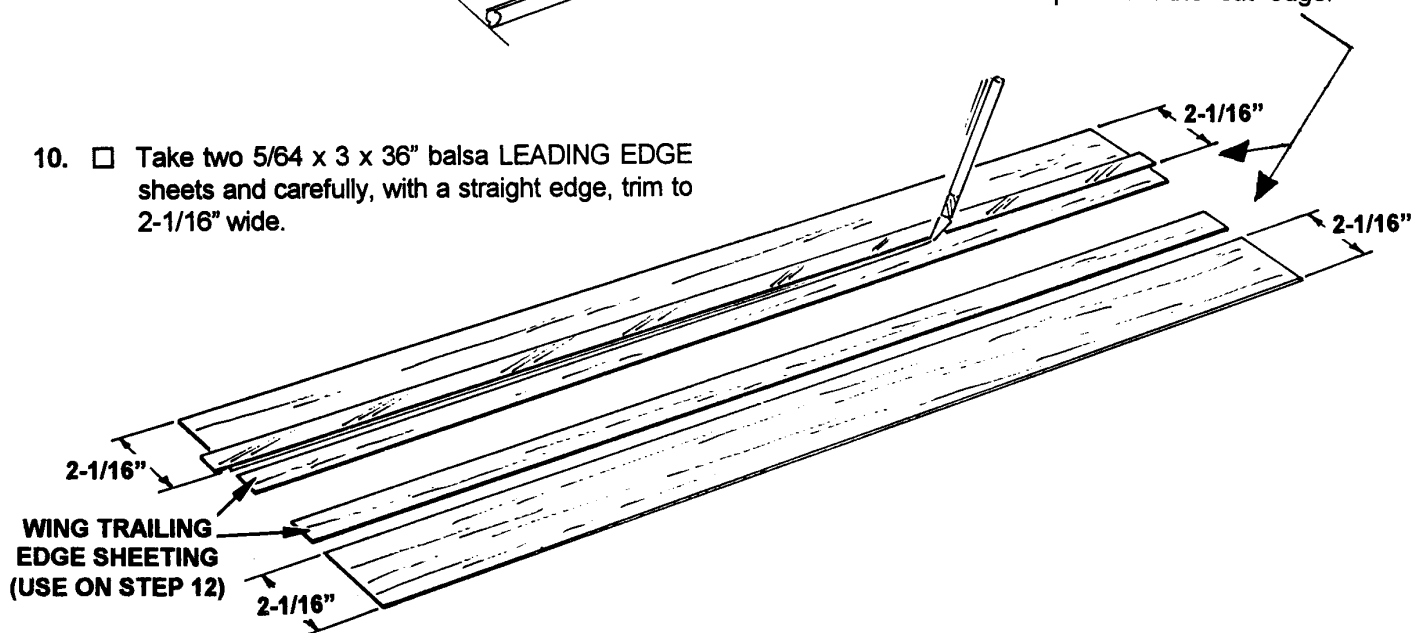
8. ☐ Align one end of the SHAPED LEADING EDGE to the centerline and pin into position.
- ☐ When you are satisfied with the position of the spars and leading edge, glue with **Super Jet**.



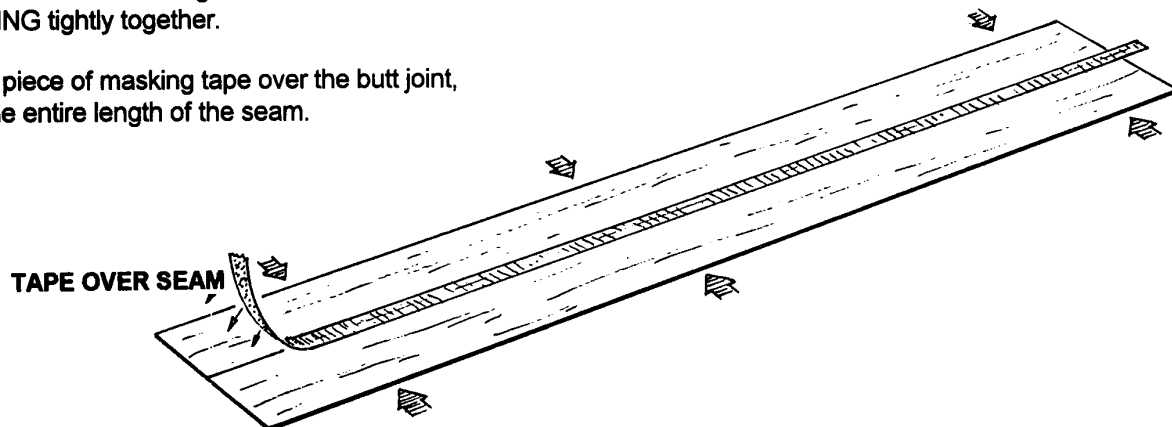
9. ☐ Cut-off the 5/64" balsa SHEAR WEBS from die sheet #5812, and *Super Jet* them onto the MAIN SPARS, between the ribs. You may need to trim-to-fit the shear web between the two tip ribs.



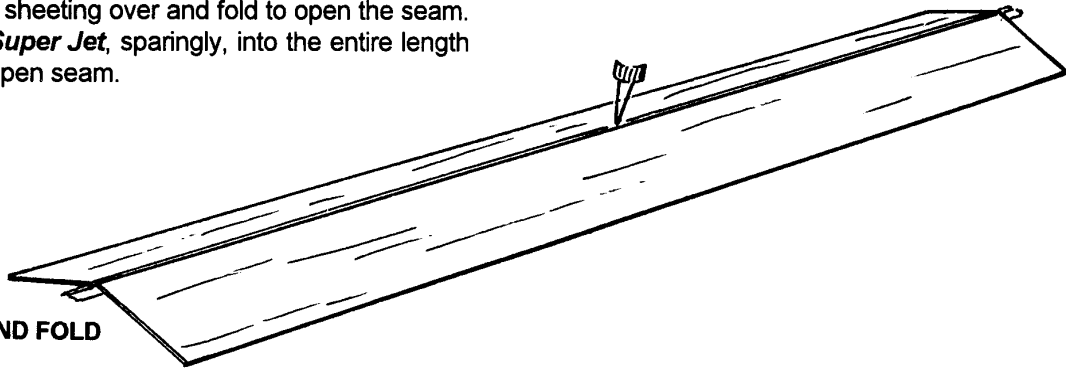
10. ☐ Take two 5/64 x 3 x 36" balsa LEADING EDGE sheets and carefully, with a straight edge, trim to 2-1/16" wide.



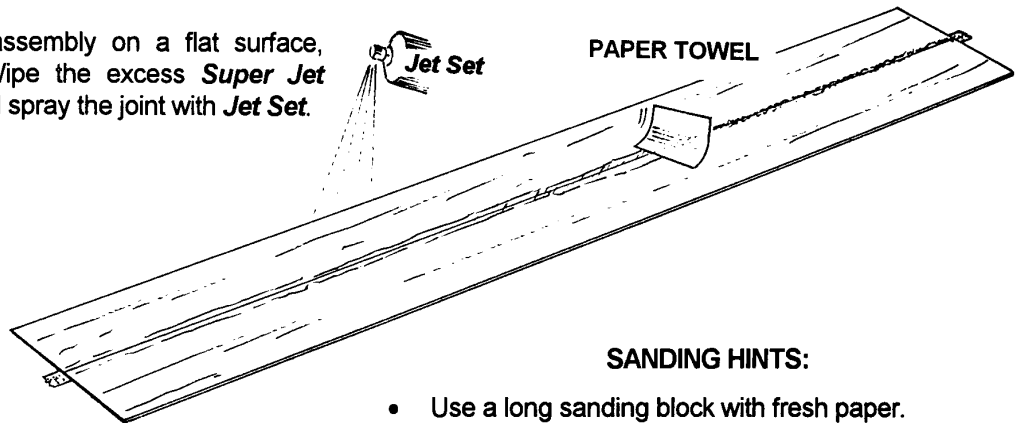
- ☐ Butt the two trimmed edges of the 5/64" WING SHEETING tightly together.
- ☐ Apply a piece of masking tape over the butt joint, along the entire length of the seam.



- Flip the sheeting over and fold to open the seam. Apply **Super Jet**, sparingly, into the entire length of the open seam.



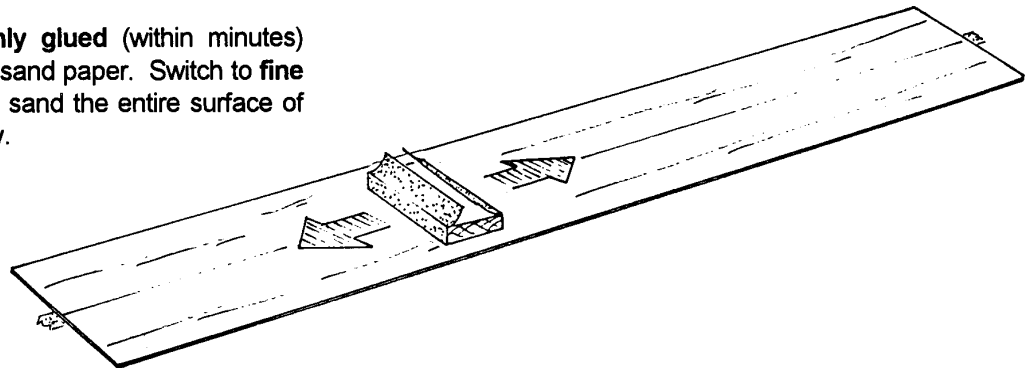
- Lay the sheeting assembly on a flat surface, closing the gap. Wipe the excess **Super Jet** along the seam, and spray the joint with **Jet Set**.



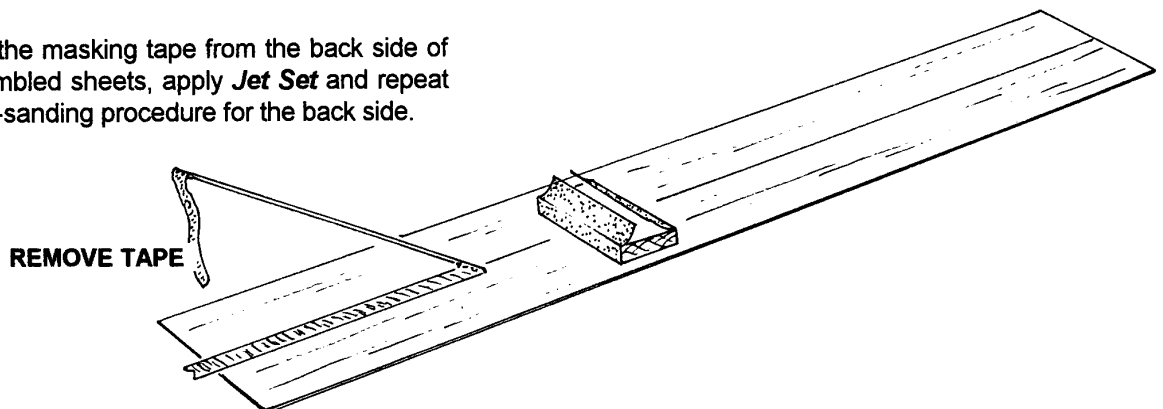
SANDING HINTS:

- Use a long sanding block with fresh paper.
- Don't push down too hard. Light pressure will let the sandpaper do the work.
- Always try to sand evenly and in the basic direction of the grain.

- Block sand the **freshly glued** (within minutes) seam, using **medium** sand paper. Switch to **fine** sandpaper, and block sand the entire surface of the sheeting assembly.



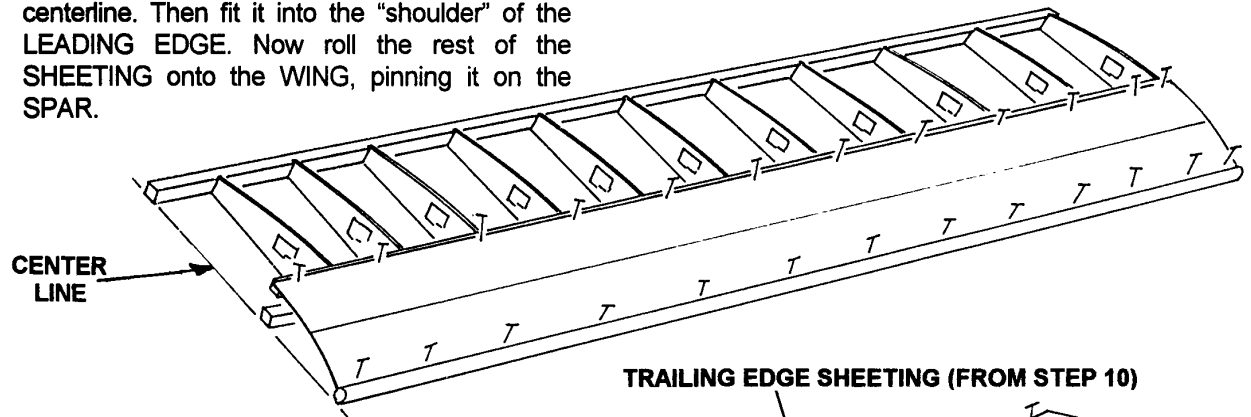
- Remove the masking tape from the back side of the assembled sheets, apply **Jet Set** and repeat the block-sanding procedure for the back side.



11. ☐ Test fit SHEETING to LEADING EDGE. The fit need not be perfect, but the sheeting should contact the leading edge along its entire length. Trim the sheeting, if necessary, and then apply **Super Jet** to the WING RIBS, SPAR and LEADING EDGE, where the sheet will contact them.

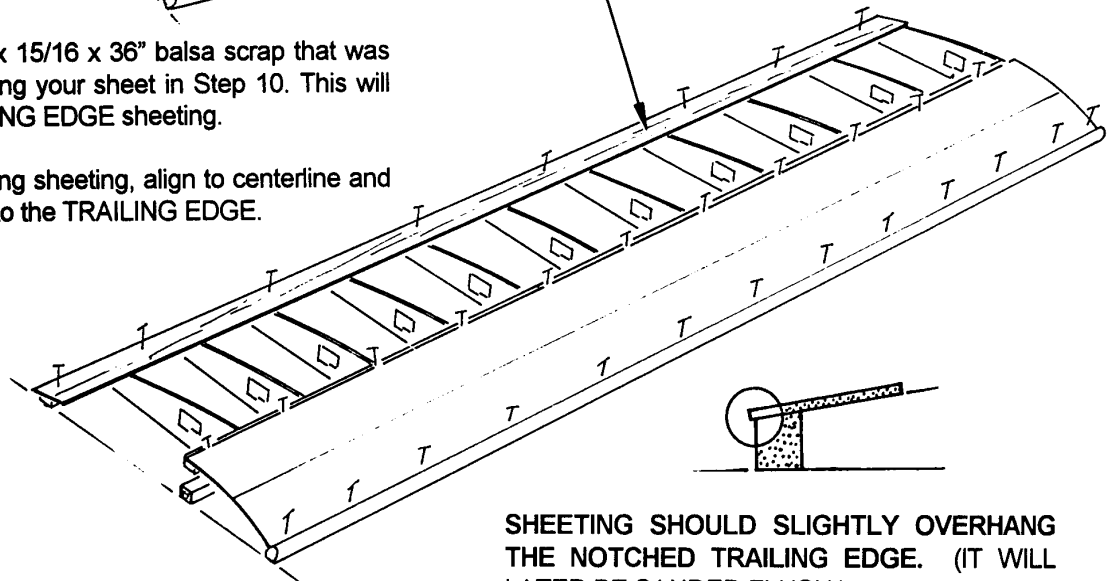
HINT: You may use masking tape, instead of "T" pins. There will be no holes to fill and some find taping easier.

- ☐ Install SHEETING by first aligning sheet with centerline. Then fit it into the "shoulder" of the LEADING EDGE. Now roll the rest of the SHEETING onto the WING, pinning it on the SPAR.



12. ☐ Get the 5/64 x 15/16 x 36" balsa scrap that was left after making your sheet in Step 10. This will be the TRAILING EDGE sheeting.

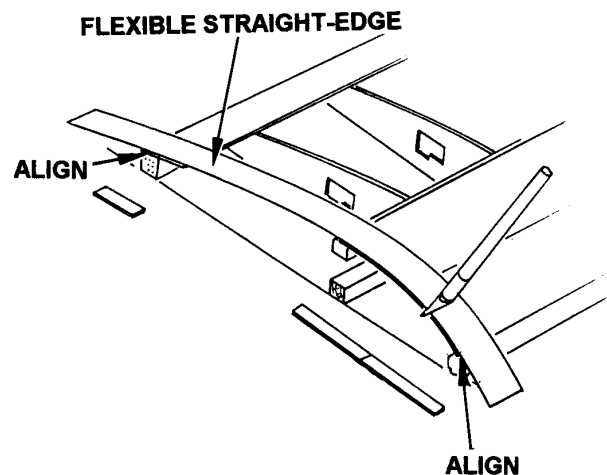
- ☐ As with the wing sheeting, align to centerline and **Super Jet** onto the TRAILING EDGE.



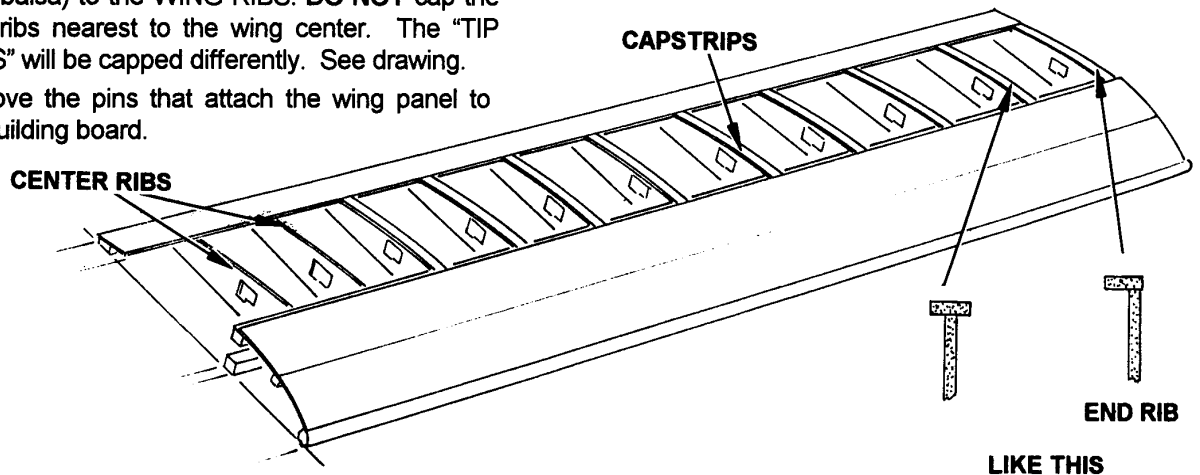
SHEETING SHOULD SLIGHTLY OVERHANG THE NOTCHED TRAILING EDGE. (IT WILL LATER BE SANDED FLUSH.)

13. ☐ Using a flexible straight-edge, draw a cutline from the end of the shaped LEADING EDGE, to the end of the NOTCHED TRAILING EDGE.

- ☐ Using an X-acto knife, cut along the line. Use a sanding block, if needed, to achieve a straight edge.

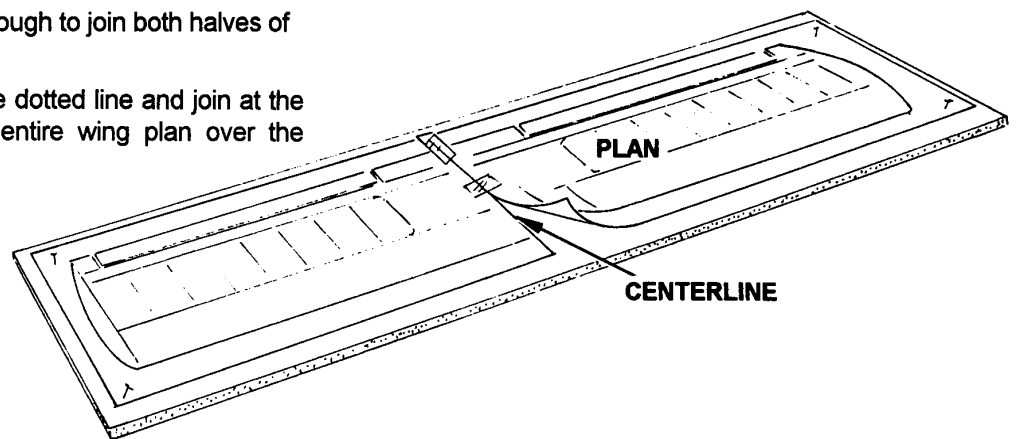


14. ☐ Trim to fit and *Super Jet* the CAPSTRIPS (5/64 x 1/4" balsa) to the WING RIBS. **DO NOT** cap the two ribs nearest to the wing center. The "TIP RIBS" will be capped differently. See drawing.
- ☐ Remove the pins that attach the wing panel to the building board.

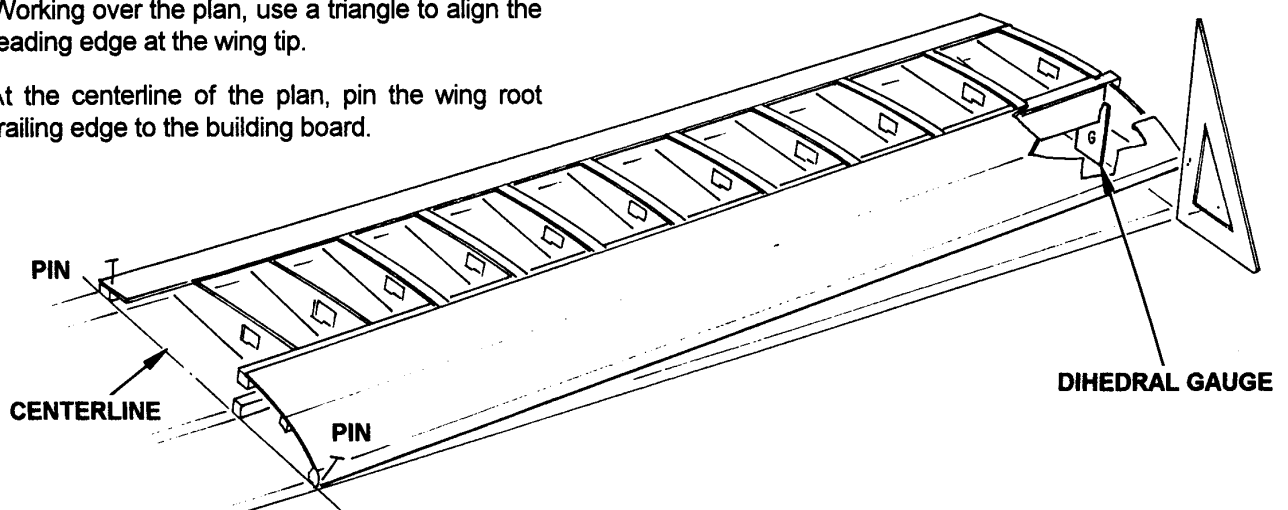


IF THIS IS YOUR FIRST (LEFT) WING GO BACK TO STEP #3 AND REPEAT THE STEPS TO MAKE A RIGHT WING. BE CAREFUL! **DO NOT MAKE TWO LEFT WINGS.** IF YOU HAVE JUST FINISHED BOTH WINGS, GO TO STEP #15.

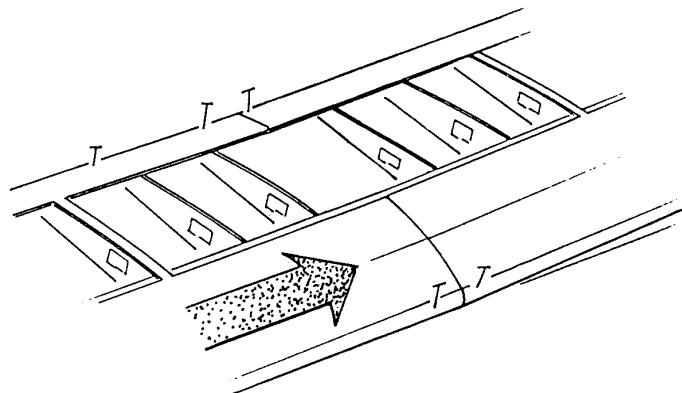
15. ☐ Find an area large enough to join both halves of the wing (6 ft 72").
- ☐ Cut the plan along the dotted line and join at the centerline. Lay the entire wing plan over the building board.



16. ☐ From Die Sheet #5814, remove the DIHEDRAL GAUGE. Lift wing tip to place dihedral gauge, as shown. You will be raising one tip while the other wing stays flush during joining.
- ☐ Working over the plan, use a triangle to align the leading edge at the wing tip.
- ☐ At the centerline of the plan, pin the wing root trailing edge to the building board.

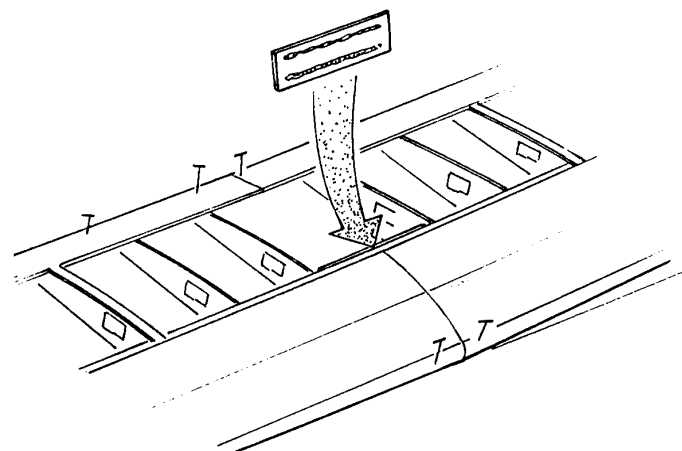


17. ☐ Slide the other wing panel against the tilted panel. Make sure the panel lies flat over the plan and pin to the building board.

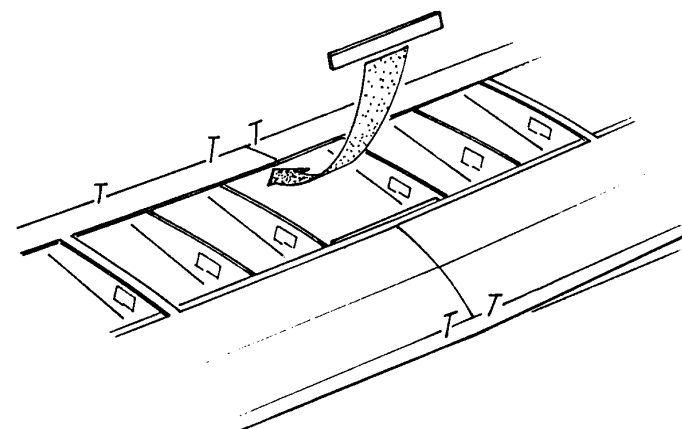
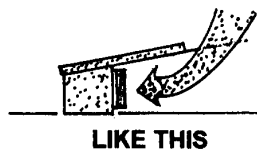


- ☐ **Super Jet** one of the 1/8 x 1-1/4 x 4" DIHEDRAL BRACES to the trailing edge side of the main spars, at the centerline of the wing. (You will find the DIHEDRAL BRACES in the wood parts bag.)

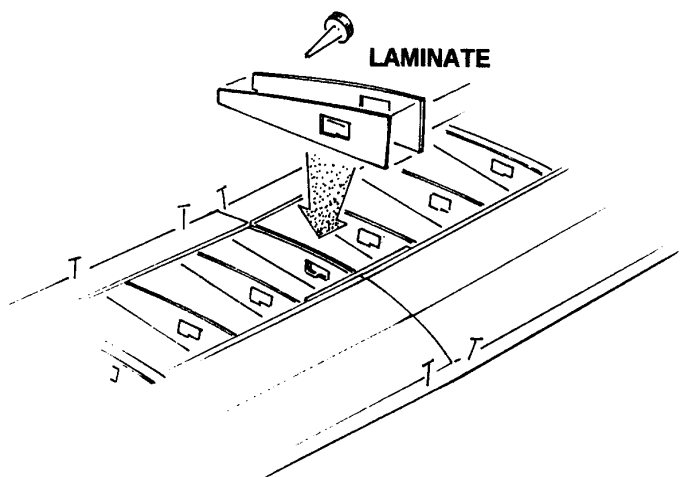
NOTE: The center of the wing is a high stress area. **Super Jet** works great, but it helps if the wood to be glued is lightly sanded and then wiped dust-free before gluing. Apply plenty of **Super Jet**.



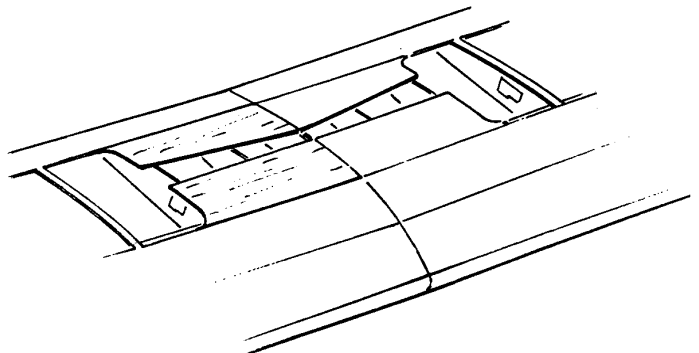
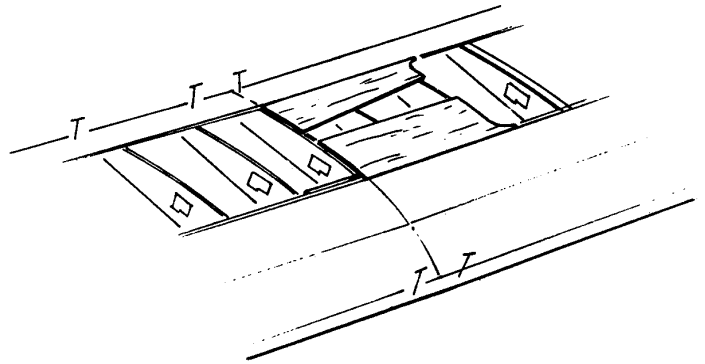
18. ☐ **Super Jet** the DIHEDRAL BRACE (Die Sheet #5814) onto the NOTCHED TRAILING EDGE, under the sheeting.



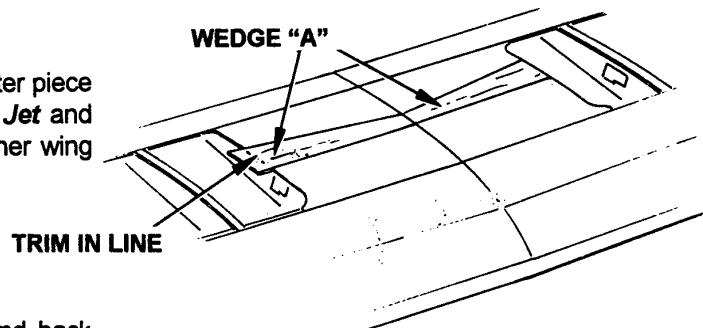
19. ☐ Find the two CENTER AFT RIBS (Die Sheet #5811) and laminate. **Super Jet** in place at the wing centerline. Trim to fit if necessary.



20. ☐ From Die Sheet #5816, fit the two edge pieces of the CENTER TOP SHEETING over the centerline of the wing. **Super Jet** the two edge pieces to the RIBS and to the LEADING EDGE and TRAILING EDGE SHEETING. Repeat for the other wing half.



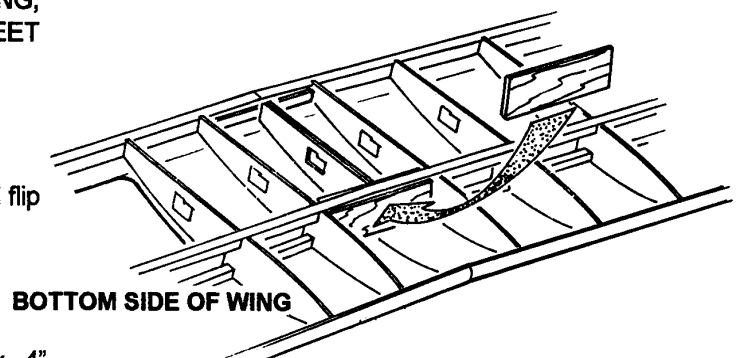
- ☐ Test fit, and trim, the wedge-shaped center piece marked "A". When it fits, apply **Super Jet** and slide it into position. Repeat for the other wing half.



- ☐ Trim the excess in line with the front and back edge pieces.

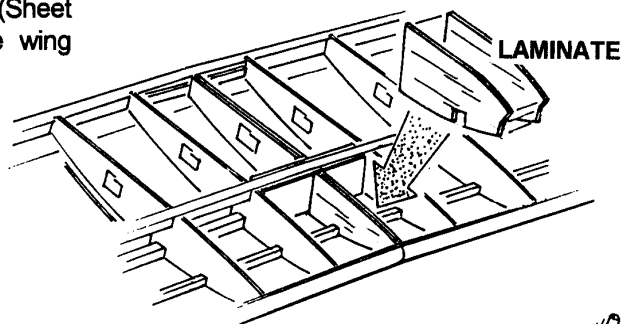
NOTE: IF YOU PLAN TO BOLT ON THE WING, REFER TO THE "BOLT ON OPTION" SHEET AT THIS TIME.

21. ☐ Remove the wing from the building board and flip the wing over so that the bottom is facing up.

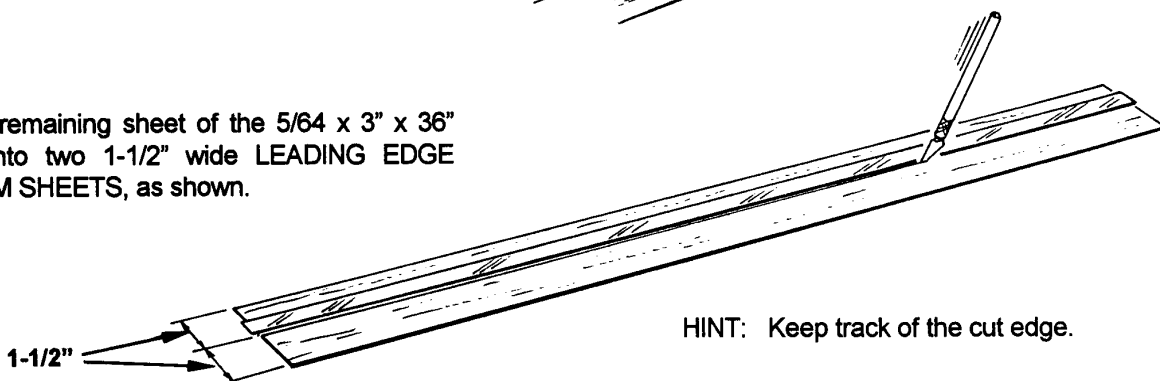


- ☐ **Super Jet** the remaining 1/8 x 1-1/4 x 4" DIHEDRAL BRACE to the MAIN SPARS.

22. ☐ Laminate the two CENTER FRONT RIBS (Sheet #5811) and *Super Jet* in place at the wing centerline. Trim to fit, if needed.

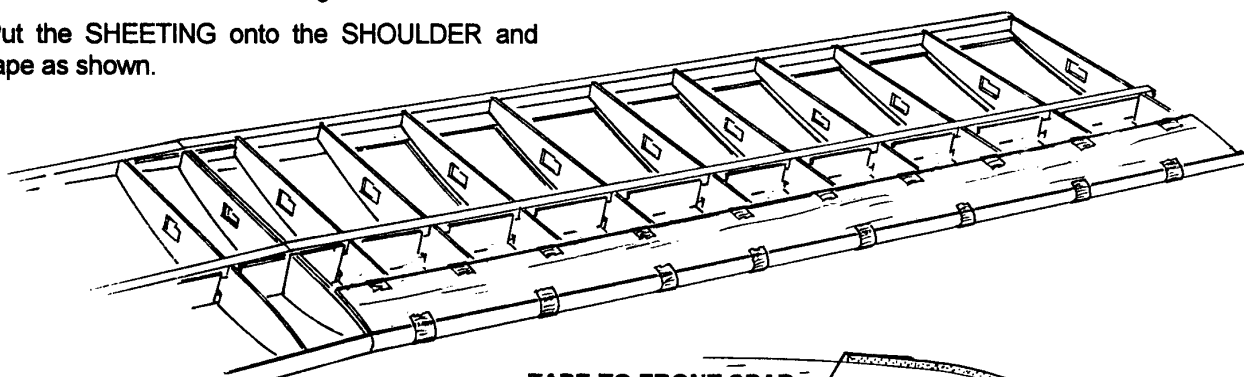


23. ☐ Cut the remaining sheet of the 5/64 x 3" x 36" balsa into two 1-1/2" wide LEADING EDGE BOTTOM SHEETS, as shown.



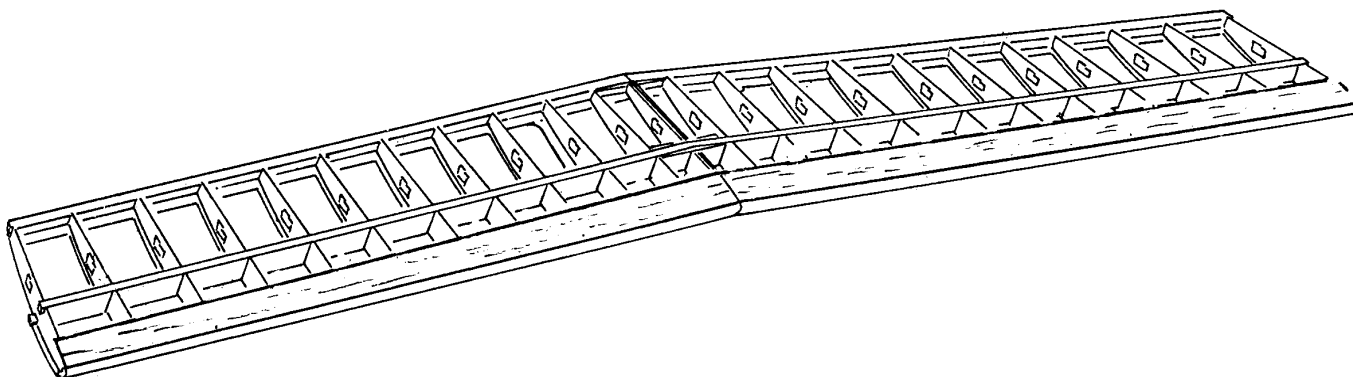
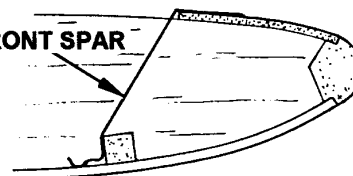
HINT: Keep track of the cut edge.

- ☐ Take the 5/64 x 1-1/2 x 36" sheet and check fit on RIBS and LEADING EDGE. You may have to lightly sand ribs. When satisfied with the fit, apply *Super Jet* onto the LEADING EDGE SHOULDER and RIBS only at the points where the 1-1/2 x 5/64 x 36" sheeting will contact them.
- ☐ Put the SHEETING onto the SHOULDER and tape as shown.

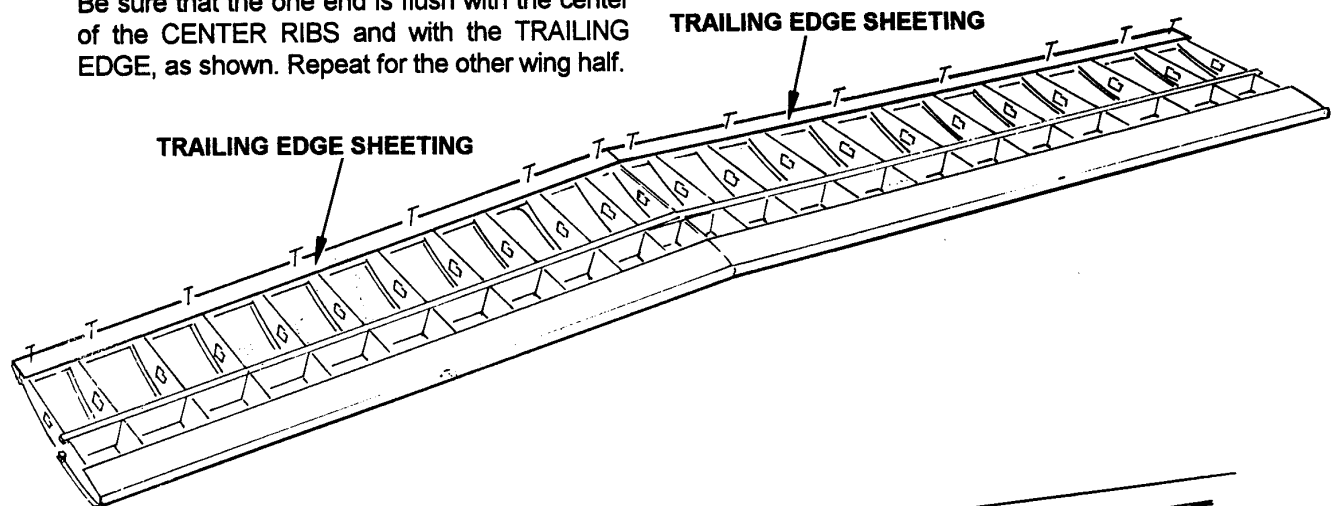


TAPE TO FRONT SPAR

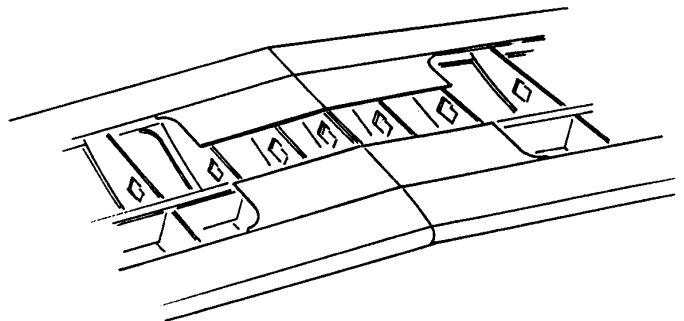
- ☐ Now "roll" the SHEETING onto the RIBS and tape it down to maintain contact with the ribs. Allow to dry and then repeat with the other wing half.



24. ☐ Find the 5/64 x 15/16 x 36" balsa SHEET and **Super Jet** to the TRAILING EDGE, as shown. Be sure that the one end is flush with the center of the CENTER RIBS and with the TRAILING EDGE, as shown. Repeat for the other wing half.



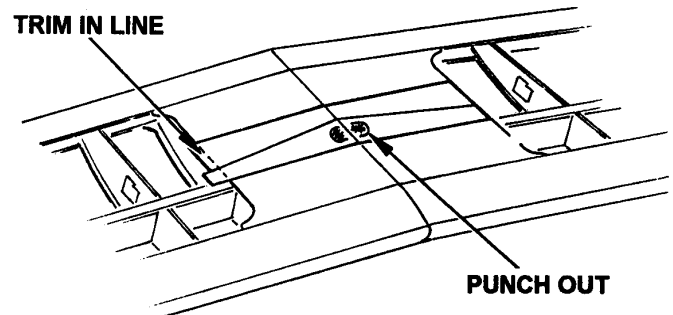
25. ☐ From D/C Sheet #5809, remove and **Super Jet** the edge pieces of the BOTTOM CENTER SHEETING in place.



- ☐ Fit and **Super Jet** the wedge-shaped pieces of the BOTTOM CENTER SHEETING between the edge pieces. Make sure the half-moon cut-outs are at the centerline of the wing. Punch out the cut-outs to allow aileron servo wire access.

- ☐ Trim the wedge-shaped center sheeting flush.

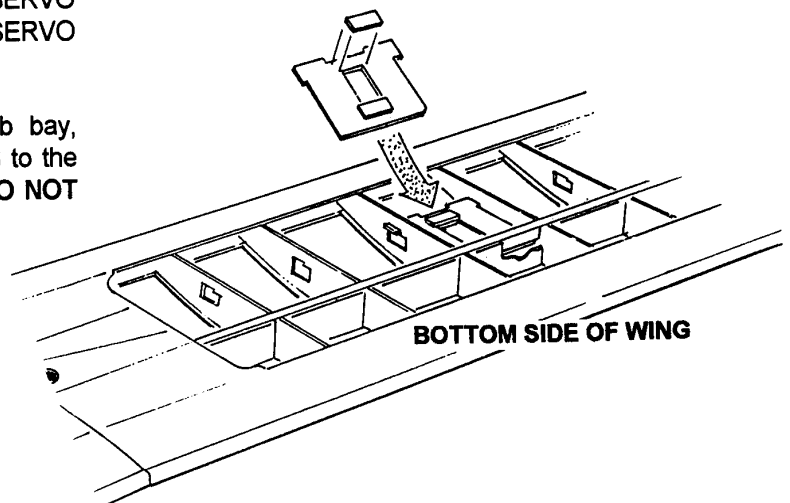
TRIM IN LINE



PUNCH OUT

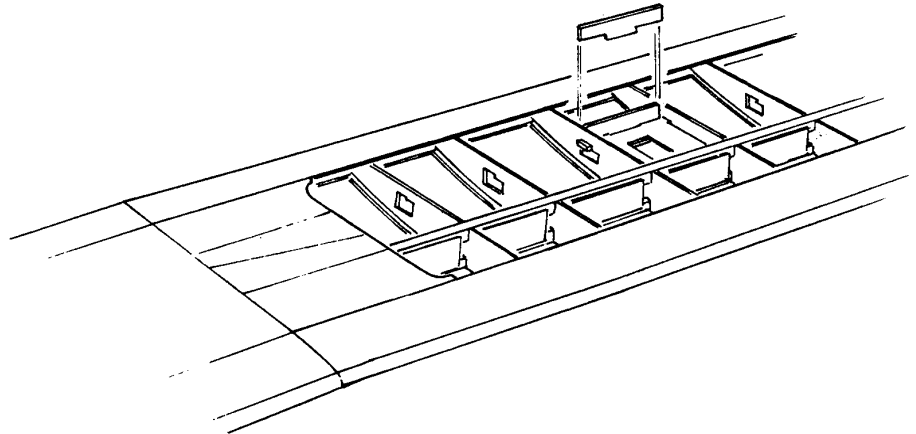
26. ☐ From D/C Sheet #5814, **Super Jet** the SERVO MOUNT DOUBLERS to the AILERON SERVO MOUNTS.

- ☐ Using the plan to locate the correct rib bay, position the AILERON SERVO MOUNTS to the MAIN SPAR and to the WING RIBS. **DO NOT GLUE YET.**

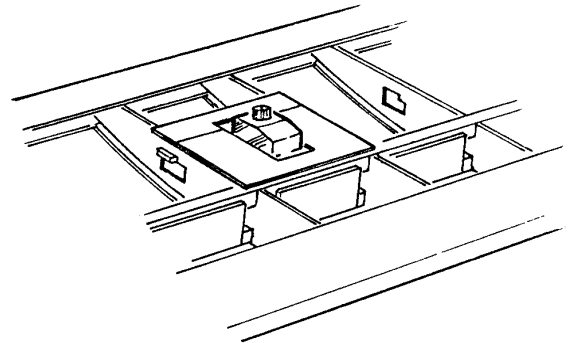


BOTTOM SIDE OF WING

- ☐ From Die Sheet #5814, **Super Jet** the AILERON MOUNT STIFFENERS to the MOUNT and to the WING RIBS. This will now center the SERVO MOUNT so that the entire assembly can be glued to the SPARS and RIBS.

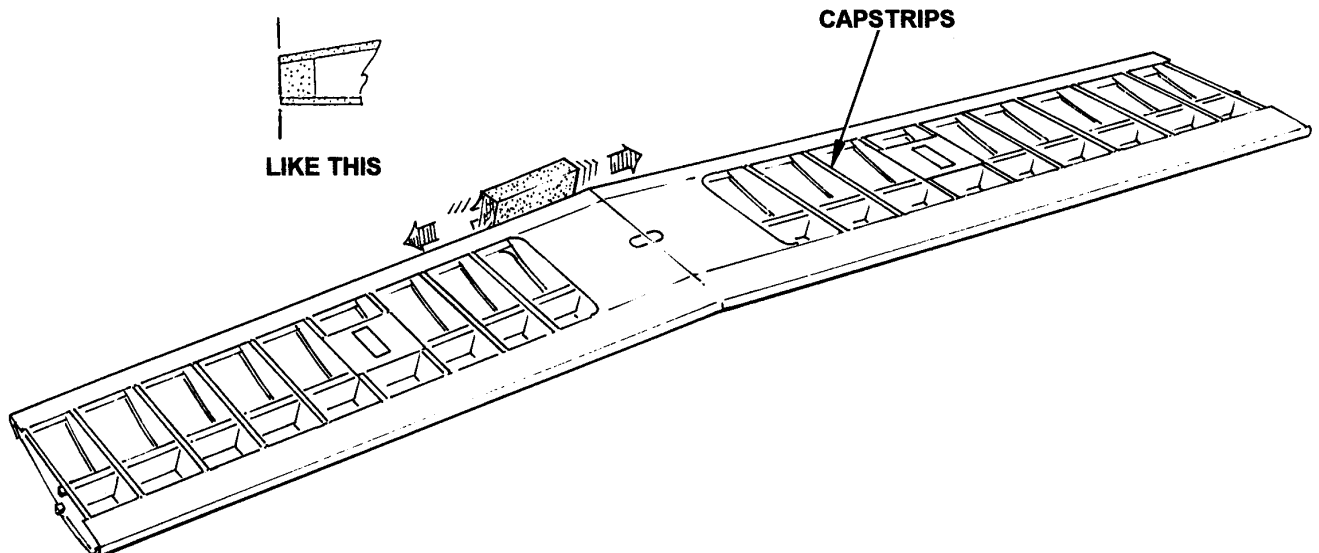


- 27. ☐ Install the AILERON SERVOS and fit the 5/64" balsa AILERON COVER SHEETING (Sheet #5816) to the WING RIBS. Trim the sheeting to fit, if needed, being certain that the AILERON COVER SHEETING is about 1/8" oversize. Then **Super Jet** the sheeting in place. If the bottom of the servo protrudes through the top of the wing, you may need to shim the SERVO higher. Use 1/8 x 3/8 x 1" scrap ply.
- ☐ Now remove the SERVO. You will permanently install it after you cover the bottom of the wing.

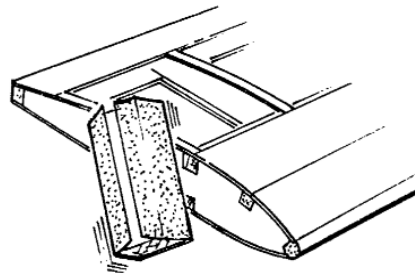


- 28. ☐ Trim and **Super Jet** the 5/64 x 1/4 x 24" CAPSTRIPS to each WING RIB.

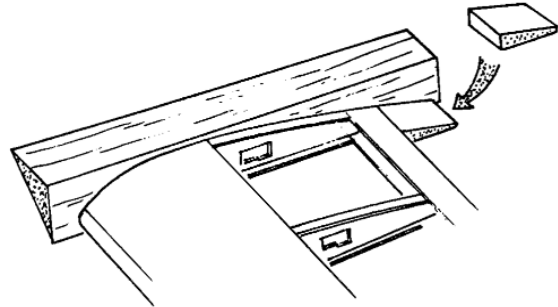
- ☐ Sand the TRAILING EDGE square, as shown.



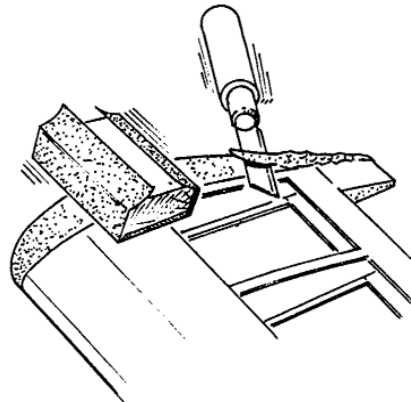
29. ☐ Trim off SHEETING and SPARS and then flat-sand the end ribs, as shown.



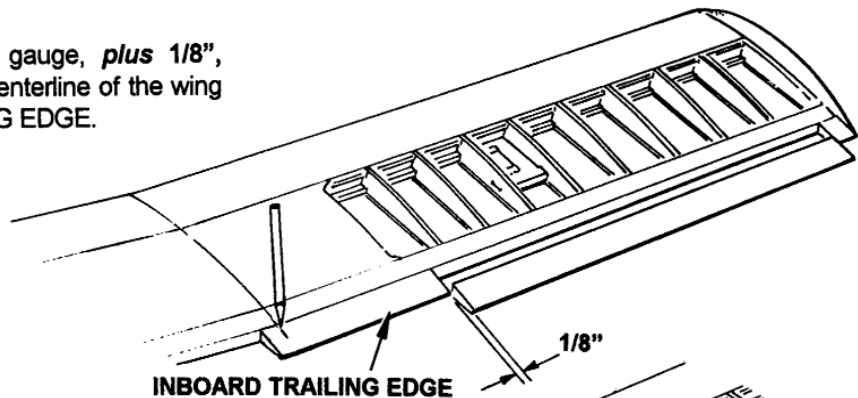
- ☐ **Super Jet** the balsa triangle WING TIP onto the END RIB.
- ☐ **Super Jet** the OUTBOARD TRAILING EDGE to the WING TIP and TRAILING EDGE of the wing.



30. ☐ Rough carve the WING TIPS to shape. With the top of the wing as a guide, sand to the final shape, using medium and then switching to fine sandpaper.



31. ☐ Using the AILERON as a gauge, *plus 1/8"*, locate the trim mark at the centerline of the wing onto the INBOARD TRAILING EDGE.



- ☐ Cut the INBOARD TRAILING EDGE at the mark and **Super Jet** it to the wing.

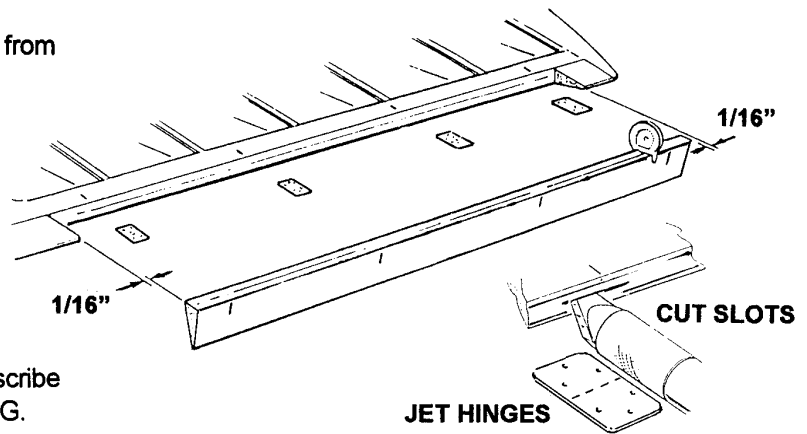


LIKE THIS



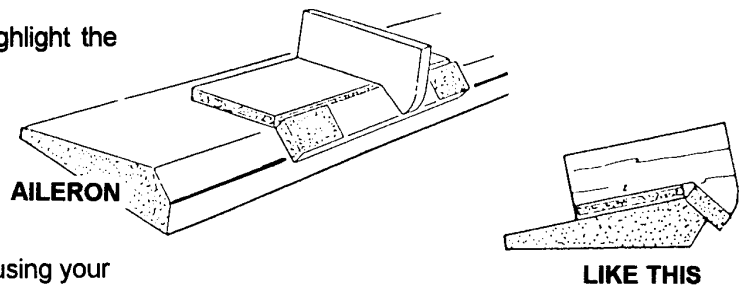
NOT

32. ☐ Check that the AILERON has at least 1/16" clearance on each end. Trim, if needed.
- ☐ Transfer the four locations for JET HINGES from the plan.



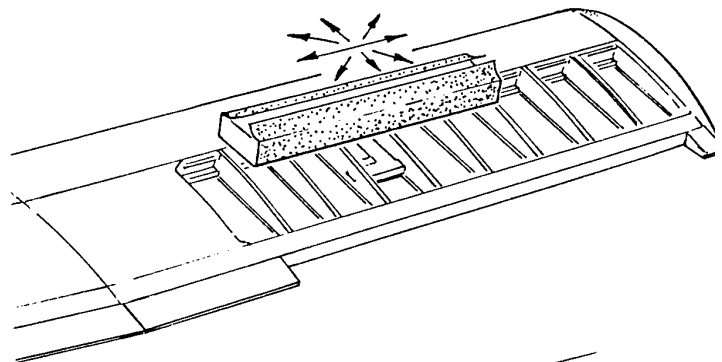
- ☐ Use the CGM CENTERLINE MARKER to scribe a centerline on the AILERONS and the WING.

HELPFUL HINT: Use a ball point pen to highlight the scribe line.

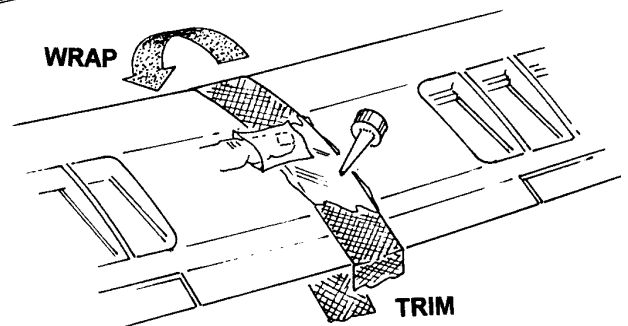


- ☐ Slot the CGM JET HINGE locations, using your X-acto knife. Do not *Super Jet* at this time.
- ☐ Bevel both sides of the AILERONS.
- ☐ Test for proper fit.

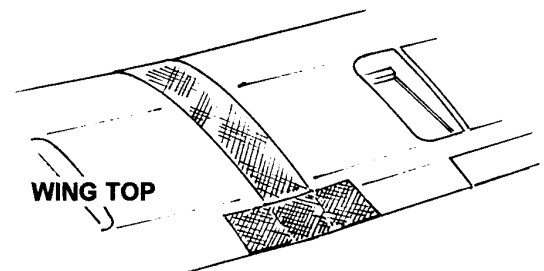
33. ☐ Finish sand the entire wing. Sand with a long sanding block (20" or more) and always keep the sanding block parallel to the wing. Start with **medium** grit and then go to a **fine** grit. You can sand in both a diagonal and a fore and aft motion. Go slowly, and take your time; this can make a big difference in the finish of your model.



- ☐ Wrap the center of the WING, top and bottom, using C.G.M. 2-1/2" NYLON FABRIC.
- ☐ Use a small plastic bag over your finger to smooth *Super Jet* over the nylon tape.
- ☐ *Super Jet* a piece of nylon fabric across the TRAILING EDGE, as shown on the wing plan.



This completes the wing construction. Put the wing aside for now; you will not need it until Step #16 of the fuselage construction.



CONSTRUCTING THE FUSELAGE (19 Steps)

1. Collect all the items that you will need to construct the FUSELAGE.

THEY INCLUDE:

- (2) D/C SHT. 5801 (.110" Lite Ply) PT. #3001

Includes:

- (2) FUSELAGE SIDE
(2) NOSE DOUBLER
(2) WING SADDLE DOUBLER

- (1) D/C SHT. 5802 (.110" Lite Ply) PT. #3002

Includes:

- (1) FUSELAGE BOTTOM AFT

- (1) D/C SHT. 5803 (.110" Lite Ply) PT. #3003

Includes:

- (1) FUSELAGE TOP (AFT)
(1) STABILIZER PLATFORM

- (1) D/C SHT. 5804 (.110" Lite Ply) PT. #3004

Includes:

- (1) FUSELAGE BOTTOM (FRONT)
(1) FORMER "A"

- (1) D/C SHT. 5805 (.110" Lite Ply) PT. #3005

Includes:

- (1) FUSELAGE TOP (FRONT)
(1) FORMER "C"
(1) FORMER "D"
(1) TANK TRAY

- (1) D/C SHT. 5806 (.110" Lite Ply) PT. #3006

Includes:

- (1) SERVO TRAY
(1) FORMER "B"

- (1) D/C SHT. 5807 (1/8" Birch Ply) PT. #3007

Includes:

- (1) FIREWALL (FRONT)
(1) FIREWALL (AFT)

- (1) D/C SHT. 5808 (.110" Lite Ply) PT. #3014

Includes:

- (2) LANDING GEAR DOUBLERS

- (1) LANDING GEAR BLOCK PT. #4904
(1/4" Birch Ply)

- (2) SLOTTED TORQUE SUPPORTS PT. #4905
(1/4" Birch Ply)

- (2) WING DOWELS (5/16" DIA. BIRCH) PT. #1751

- (2) ENGINE MOUNT PT. #1466

- (1) NYLON STEERING BEARING PT. #1413

- (4) 4-40 BLIND MOUNTING NUT PT. #1125

- (4) #4 FLAT M.S. WASHER PT. #1139

- (4) 6-32 x 3/4" SOCKET HEAD SCREW PT. #1022

- (4) 4-40 x 1/2" SOCKET HEAD SCREW PT. #1006

- (4) 6-32 BLIND NUT PT. #1124

- (4) #6 FLAT M.S. WASHER PT. #1140

- (4) #6 x 3/4" SHEET METAL SCREWS PT. #1082

- (1) STEERING ARM PT. #1414

- (1) 5/32" WHEEL COLLAR PT. #1168

- (1) 6-32 x 3/16" SOCKET HEAD SCREW PT. #1019

- (1) NOSE STRUT PT. #6021

- (2) MAIN LANDING GEAR PT. #1327

- (2) LARGE LANDING GEAR STRAP PT. #1418

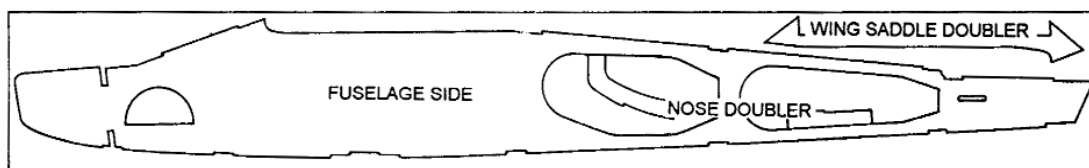
- (4) #2 x 3/8" PAN HEAD SCREW PT. #1087

- (2) CONNECTOR BODY PT. #1375

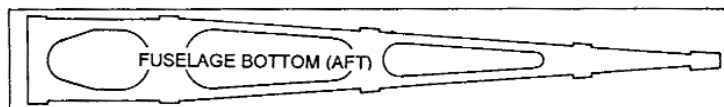
- (1) NYLON SNAP-NUT PT. #1461

- (2) NYLON GUIDE TUBE PT. #1652

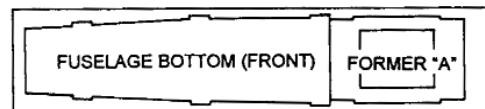
- (1) GENERAL INFORMATION BOOKLET PT. #2026



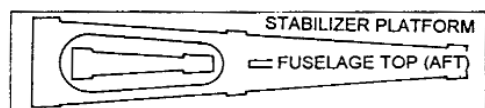
(2) PT. #3001, D/C SHT. 5801



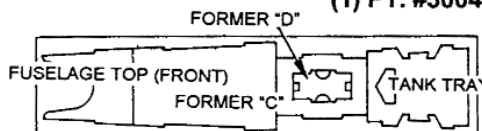
(1) PT. #3002, D/C SHT. 5802



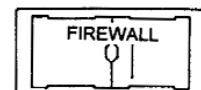
(1) PT. #3004, D/C SHT. 5804



(1) PT. #3003, D/C SHT. 5803



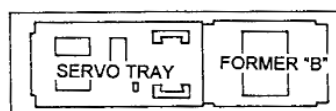
(1) PT. #3005, D/C SHT. 5805



(1) PT. #3007, D/C SHT. 5807



(1) PT. #3014, D/C SHT. 5808

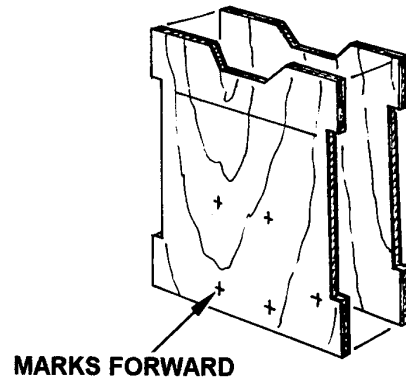


(1) PT. #3006, D/C SHT. 5806



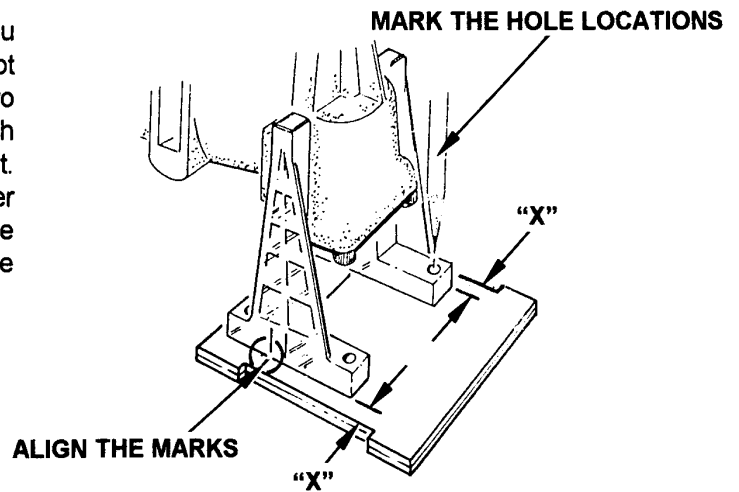
(2) 5/16 x 6 DOWEL
PT. #1751

2. ☐ **Super Jet** the two 1/8" ply FIREWALL parts together. Keep the center points and centerline facing out. Make sure that all of the edges are in line. Tape them together and place them under a weight until they are dry.

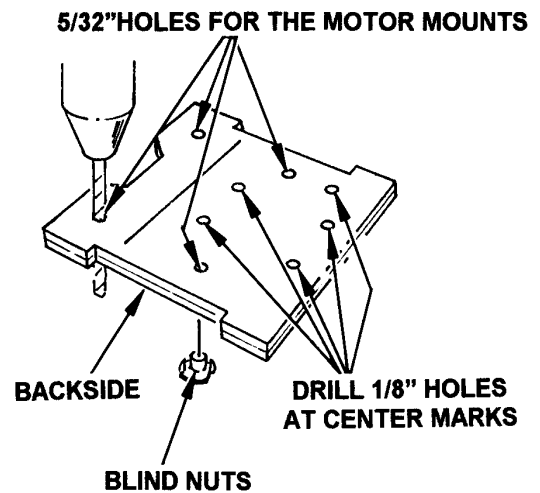


3. ☐ With **Super Jet**, tack-glue the motor that you intend to use to the MOTOR MOUNTS. Do not position the engine tight between the two mounts. Leave a gap of about 1/16" on each side to allow engine right thrust adjustment. 5/64" scrap balsa can be used as a shim. Center the assembly on the FIREWALL and align the mark on the mount to the centerline on the firewall.

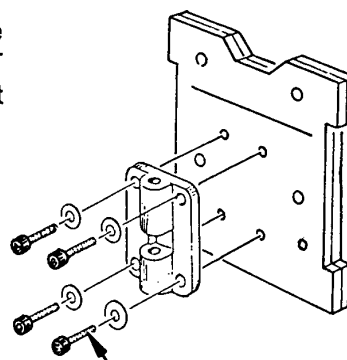
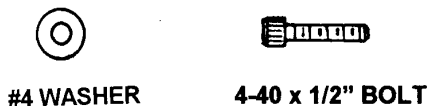
- ☐ Mark the hole locations onto the FIREWALL.



4. ☐ Drill 5/32" diameter holes at the four motor mount locations.
- ☐ Drill 1/8" diameter holes at the 4 STEERING BEARING locations, and also at the STEERING PUSHROD GUIDE TUBE location. (Center marks on the FRONT side of the FIREWALL.)
- ☐ Insert the four 4-40 BLIND NUTS for the steering bearing and the four 6-32 BLIND NUTS for the motor mounts into the **back side** (side opposite the centerline) of the firewall assembly.
- ☐ Generously coat the edges of each nut with **Super Jet**.

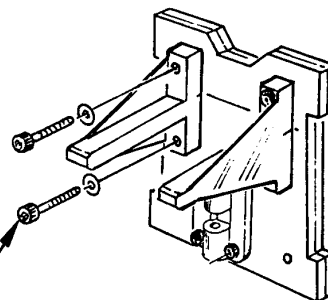
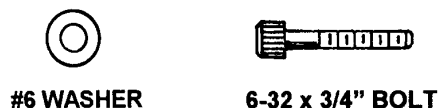


5. ☐ Bolt the STEERING BEARING to the FIREWALL, using four 4-40 x 1/2" SOCKET HEAD SCREWS with #4 WASHERS. Note that the short bearing is to the bottom.



(4) 4-40 x 1/2" SOCKET HEAD BOLTS W/ #4 WASHERS

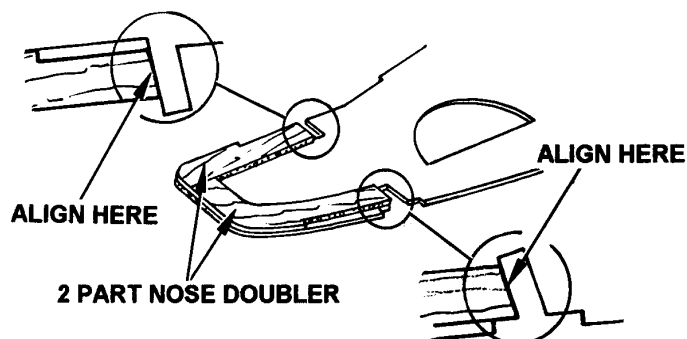
- ☐ Permanently install the MOTOR MOUNTS using four 6-32 x 3/4" SOCKET HEAD SCREWS with #6 WASHERS.



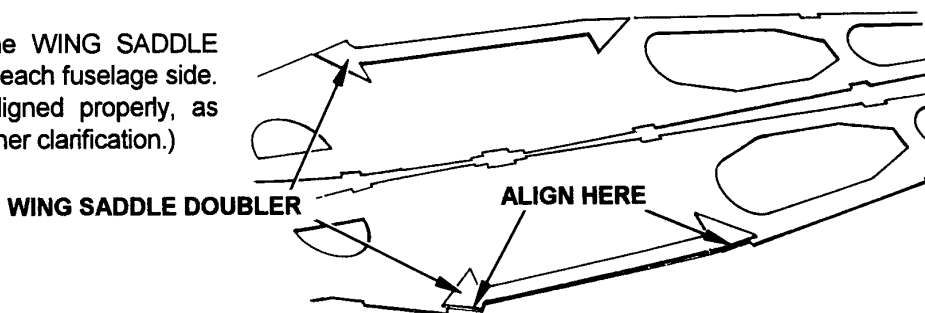
(4) 6-32 x 3/4" SOCKET HEAD BOLTS W/ #6 WASHERS

6. ☐ Lay the FUSELAGE SIDES on a flat surface, side-by-side, so they are mirror images. This will insure that you build a left and right fuselage side.

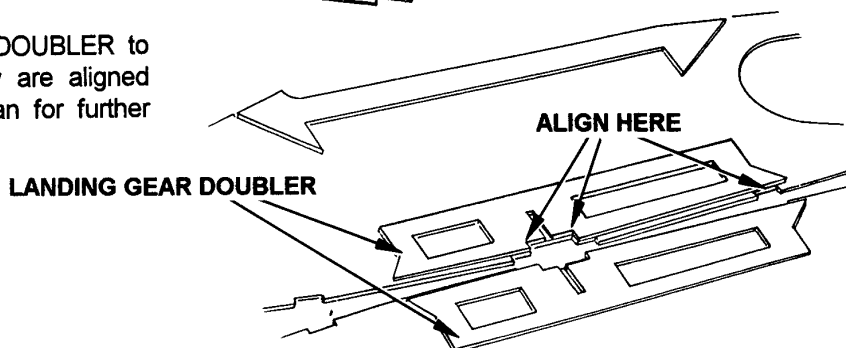
- ☐ From Die Sheet #5808, take the two-piece NOSE DOUBLER and *Super Jet* to each fuselage side. Use the front edge of the firewall slots to correctly locate, as shown.



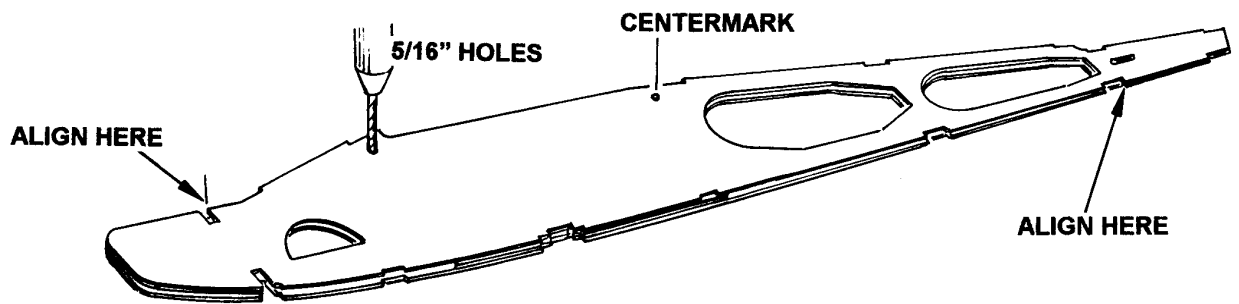
- ☐ From Sheet #5801, take the WING SADDLE DOUBLER and *Super Jet* to each fuselage side. Make sure that they are aligned properly, as shown. (See the plan for further clarification.)



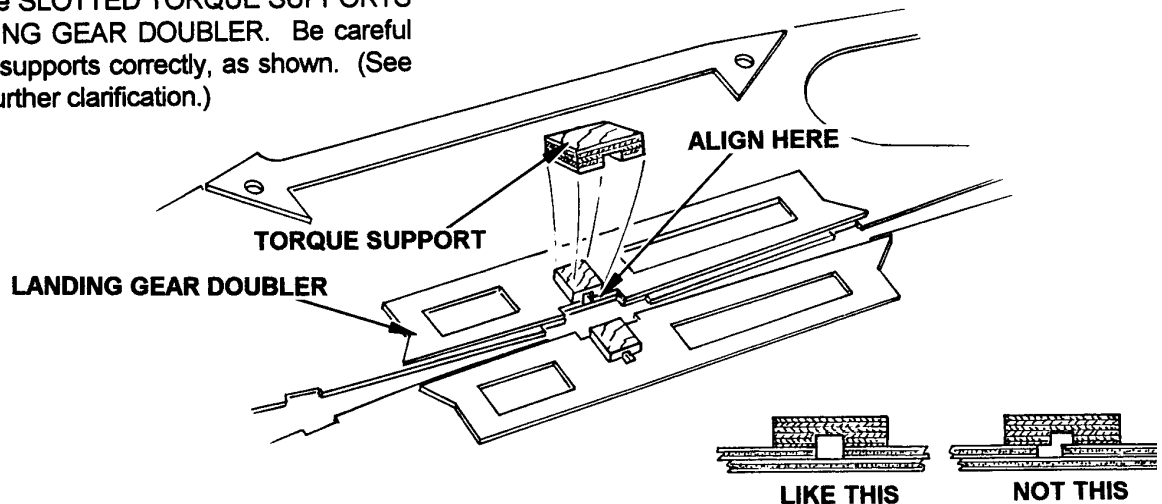
- ☐ *Super Jet* the LANDING GEAR DOUBLER to each side. Make sure that they are aligned properly, as shown (See the plan for further clarification.)



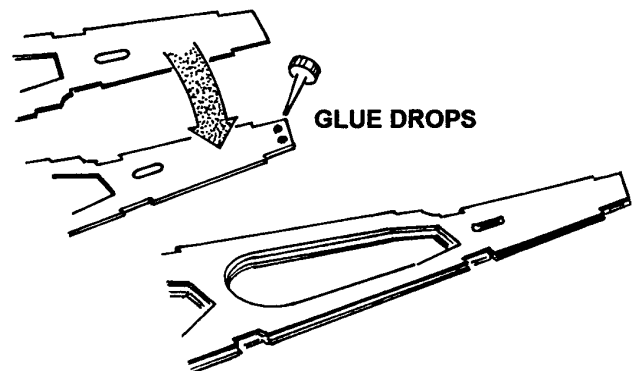
7. ☐ Flip each FUSELAGE SIDE side over and find the one that has the wing dowel center marks. "Sandwich" the sides together, with the doublers together, and drill a 5/16" diameter hole through both sides at each of the centermarks, as shown.



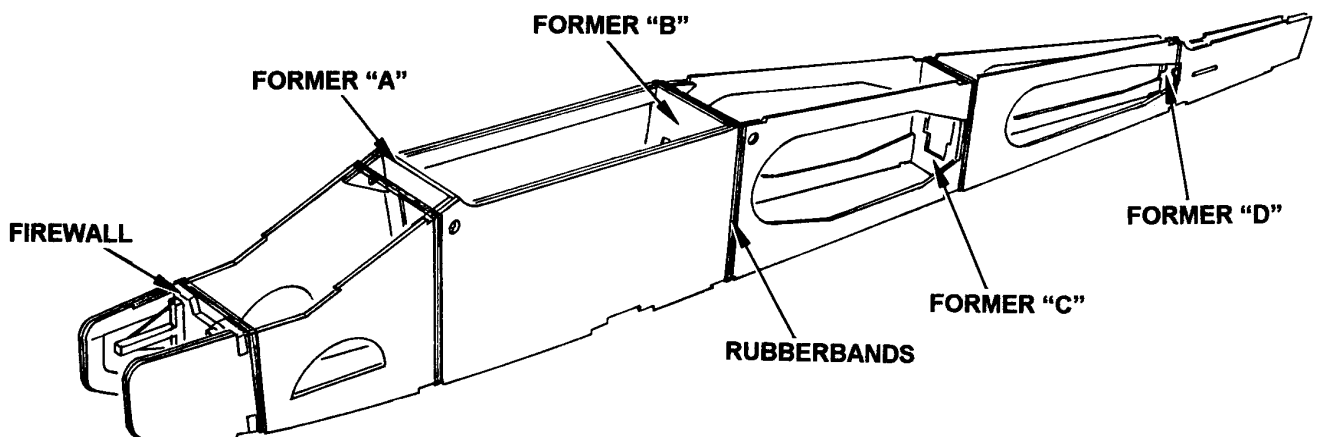
8. ☐ **Super Jet** the SLOTTED TORQUE SUPPORTS to the LANDING GEAR DOUBLER. Be careful to locate the supports correctly, as shown. (See the plan for further clarification.)



9. ☐ Using 3 small drops of **Super Jet**, tack the tail together. Make sure that the doublers are to the inside and that the fuselage side edges are aligned. This step will help while you install the formers. When you install the fuselage bottom-aft, the tack glue joint will break away.



- ☐ Use rubber bands to hold the parts together. Assemble the FUSELAGE SIDES, FIREWALL (steering bearing forward), and all of the FORMERS. DO NOT **SUPER JET** ANYTHING YET.



10. ☐ Slide the FUSELAGE TOP AFT, from Sheet #5803, under the rubberbands and into the alignment notches. **DO NOT SUPER JET.**

- ☐ From Sheet #5805, crack, but do not separate, the FUSELAGE TOP FRONT and slide it under the rubber bands into the alignment notches. **DO NOT SUPER JET.**

FUSELAGE TOP-FRONT

(CRACK-ONLY)

FUSELAGE TOP-AFT

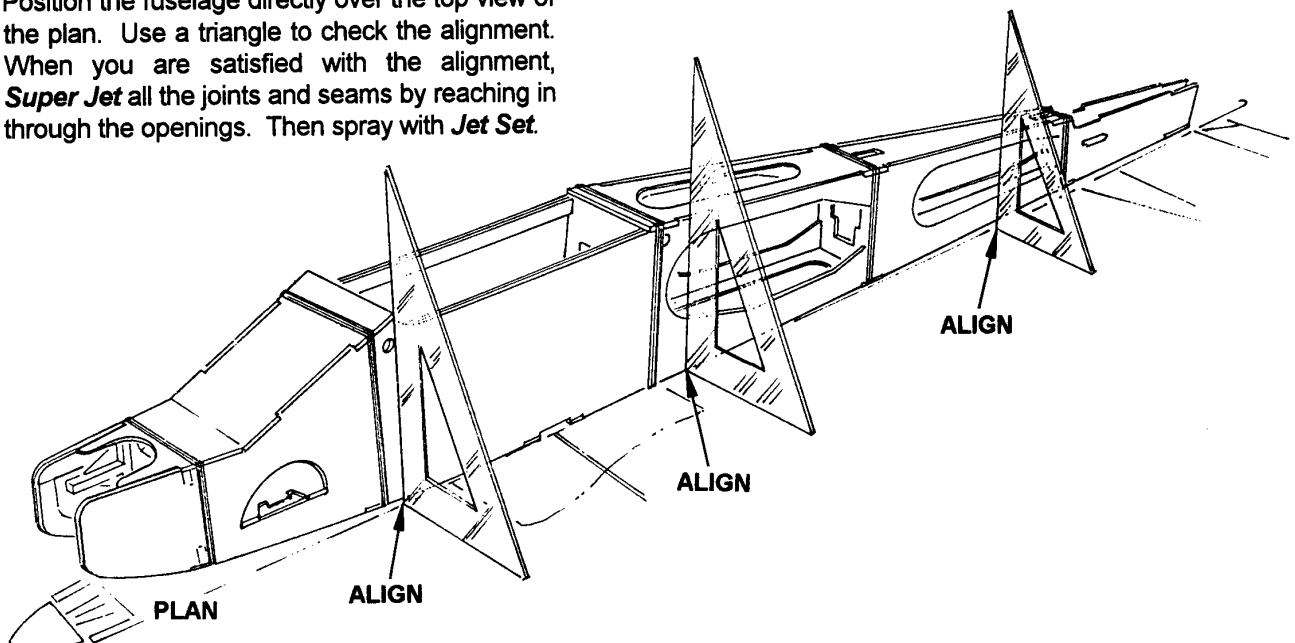
11. ☐ Flip the fuselage over and slide in the FUSELAGE BOTTOM FRONT, from Sheet #5804. Slide the FUSELAGE BOTTOM AFT, from Sheet #5802, under the rubberbands, into the alignment notches. **DO NOT SUPER JET.**

FUSELAGE TOP-FRONT

FUSELAGE TOP-AFT

CRACK

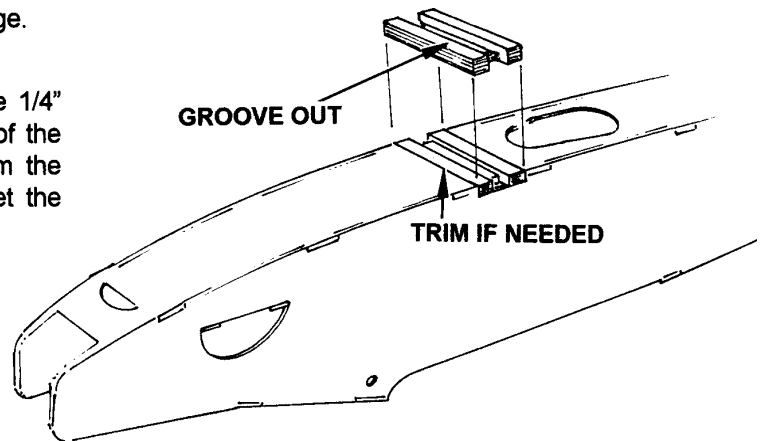
12. ☐ Position the fuselage directly over the top view of the plan. Use a triangle to check the alignment. When you are satisfied with the alignment, **Super Jet** all the joints and seams by reaching in through the openings. Then spray with **Jet Set**.



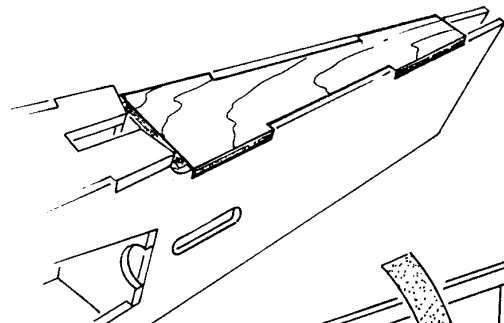
- ☐ Double check the entire fuselage to make sure all the seams are securely glued. The object here is to get a bead of **Super Jet** on all the joints and intersections of wood.

HINT: You may find it easier to drip glue into difficult areas, such as inside the nose of the fuselage.

13. ☐ With the groove facing out, **Super Jet** the 1/4" LANDING GEAR PLATE into the bottom of the FUSELAGE. It may be necessary to trim the front and aft FUSELAGE BOTTOM to get the proper fit.

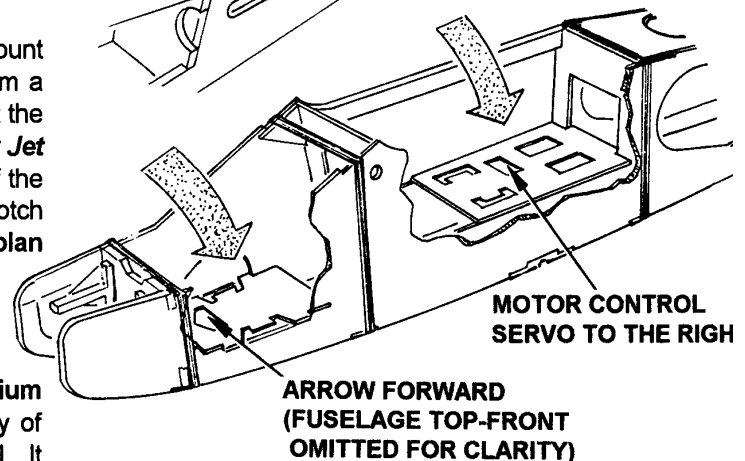


14. ☐ **Super Jet** the STAB PLATFORM into the locating notches. You will find this part on Sheet #5803.

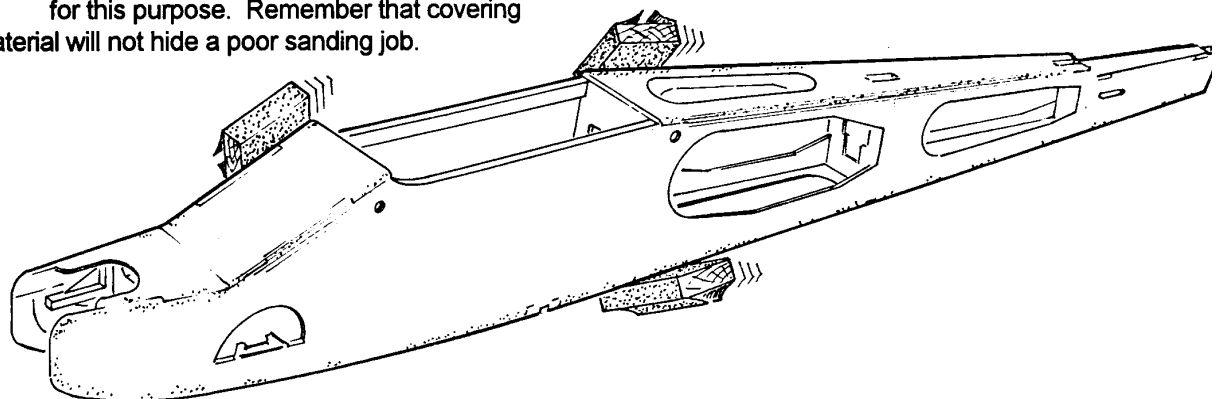


15. ☐ With the arrow pointing forward, **Super Jet** the FUEL TANK TRAY (Sheet #5805) into the FUSELAGE SIDES.

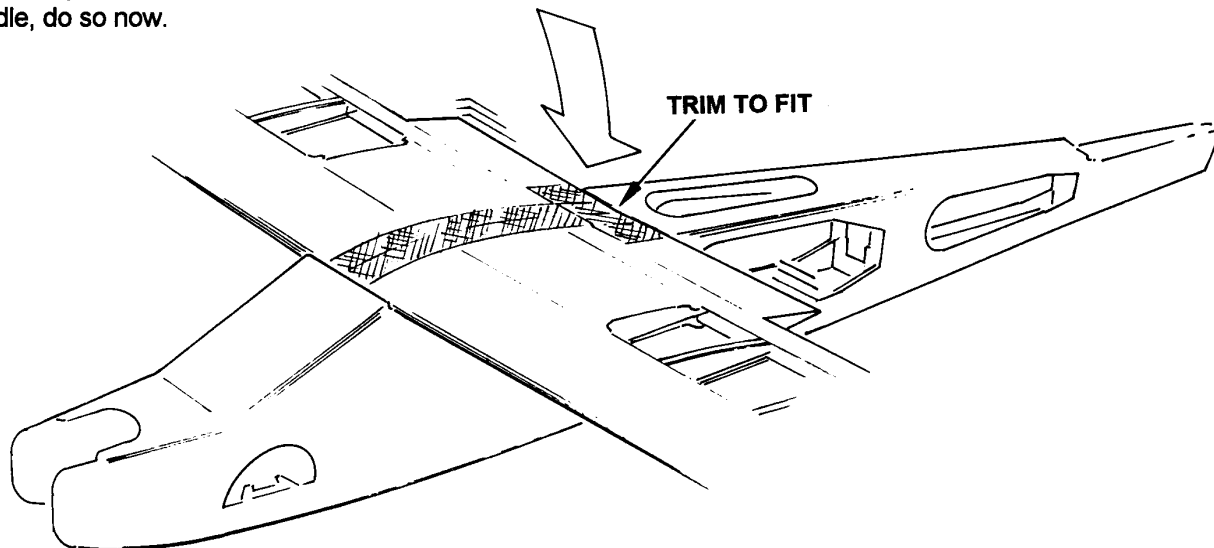
- ☐ Add doublers to the tray where the screws mount the servos by cutting six 1/2 x 1" pieces from a scrap of lite ply and gluing them to the tray at the screw mounting point. Refer to plan. **Super Jet** the SERVO TRAY (Sheet 5806) to the top of the LANDING GEAR DOUBLERS and into the notch on FORMER "B" (Sheet 5806). Refer to plan again for orientation of the SERVO TRAY.



16. ☐ Sand the entire FUSELAGE, first using medium sandpaper, then using fine grit. Take plenty of time to do a good job of sanding your model. It will be necessary to fill any nicks and irregularities at this time. Use a wood filler for this purpose. Remember that covering material will not hide a poor sanding job.

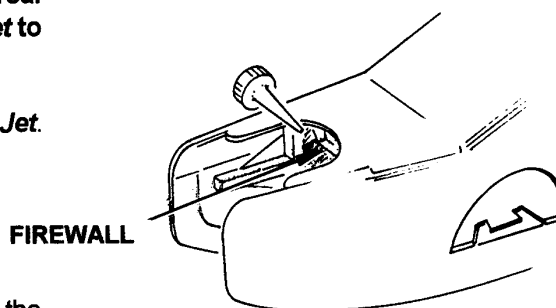


17. ☐ Test fit the WING onto the FUSELAGE at this time. If you need to trim fit the wing to the saddle, do so now.



WARNING: Do the next step in a well-ventilated area. You will be dispensing a large amount of *Super Jet* to coat the firewall.

18. ☐ Coat the entire FIREWALL area with *Super Jet*. This is to fuel proof the area.

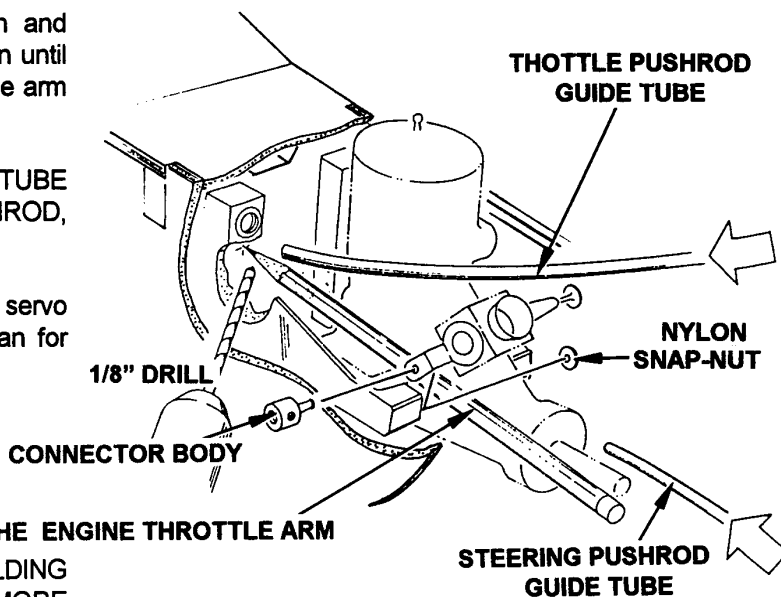


19. ☐ Install the CONNECTOR BODY onto the THROTTLE ARM of the engine that you will be using. Temporarily position the engine on the mounts, and mark the THROTTLE CABLE EXIT on the firewall.

- ☐ Drill a 1/8" diameter hole at the location and insert the NYLON GUIDE TUBE. Slide it in until the end is about 1" from the "closed" throttle arm location. *Super Jet* the tube to the firewall.

- ☐ Slide the remaining 1/8" NYLON GUIDE TUBE into the hole for the STEERING PUSHROD, flush with the firewall.

- ☐ Cut the tubes to the proper length, at the servo end, when you install the radio. (See plan for clarification.)



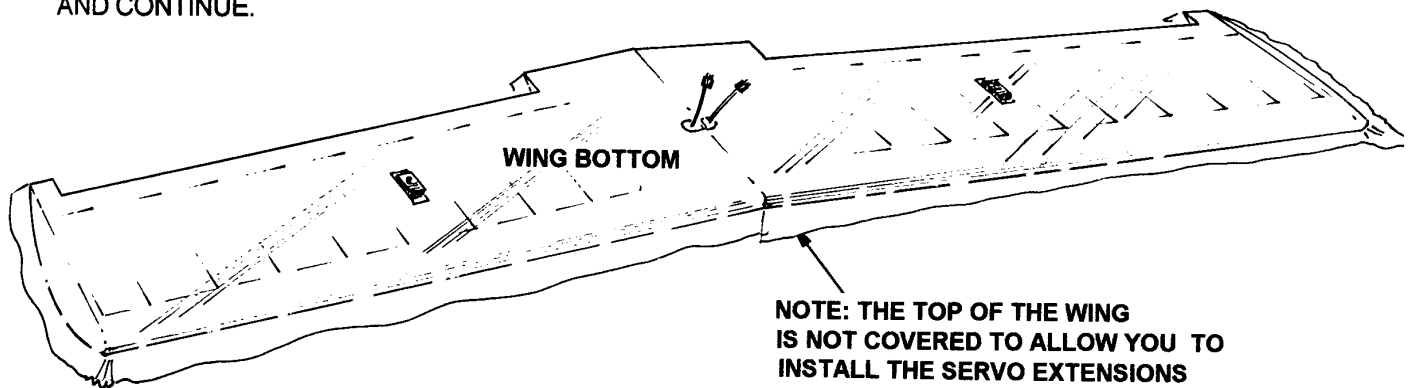
YOU HAVE NOW COMPLETED THE BUILDING PORTION. GO TO NEXT PAGE FOR MORE INFORMATION.

Again, make sure that all of the parts are sanded and that all of the nicks are filled. Remember that the covering material will not hide a rough surface.

NOW GO TO THE "COVERING" SECTION IN THE GENERAL INFORMATION BOOKLET (Book 2).

AFTER THE MODEL IS COVERED, RETURN TO THE "FINISHING THE MODEL" SECTION IN THIS BOOLET AND CONTINUE.

IMPORTANT COVERING NOTE: After you cover the **BOTTOM** of the wing, cut away the covering at the aileron servo openings and the centerline access holes. Permanently install the aileron servos and thread the connector leads and the extensions through the wing from the top.

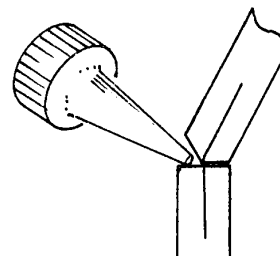
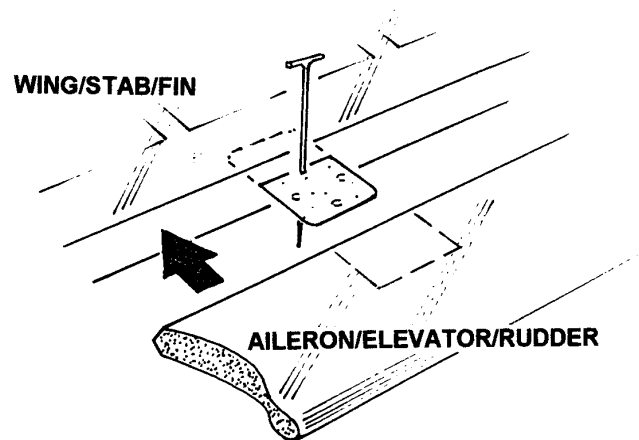


FINISHING THE MODEL (13 Steps)

1. ☐ Cut through the covering at each hinge slot location on the STAB and ELEVATOR, FIN and RUDDER, WING and AILERONS.

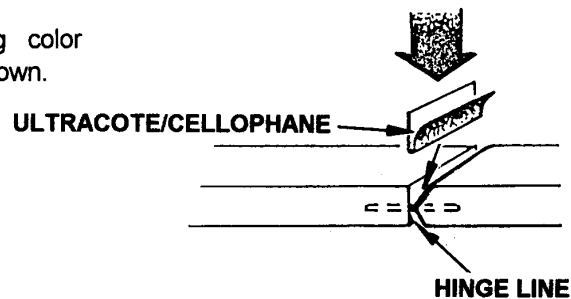
WARNING: BE VERY CAREFUL NOT TO CUT INTO THE WOOD STRUCTURE WHILE TRIMMING THE COVERING.

- ☐ Pin the center of the CGM JET HINGE and insert the hinge into the slot to the pin-stop. **DO NOT SUPER JET.**
- ☐ Slide the mating surface onto the JET HINGE. **DO NOT SUPER JET.**
- ☐ Make sure the surfaces are aligned and that the JET HINGE gap is as narrow as possible, still allowing full control surface deflection.
2. ☐ When you are satisfied with the hinge fit and alignment, remove the pins, and push in for a tight fit. Apply 3 to 4 drops of **INSTANT JET** (thin CA) to the exposed hinges. Repeat this procedure for the mating surface at each hinge. Allow 10 minutes for the *Instant Jet* to cure before flexing the surface.



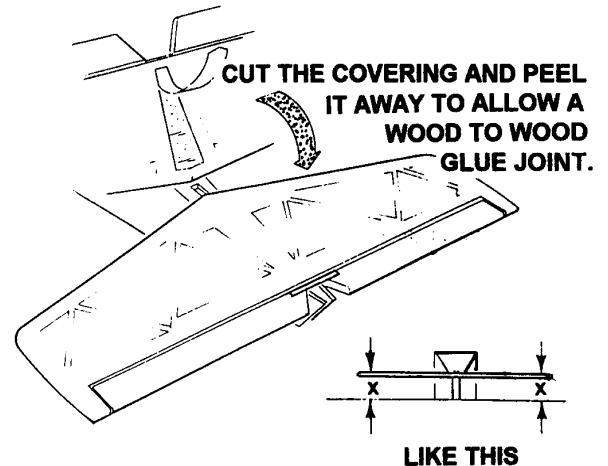
DEFLECT THE SURFACE AND GLUE THE HINGES ON THE OPPOSITE SIDE.

3. ☐ Cover the hinge gaps with matching color **UltraCote** or clear cellophane tape, as shown.

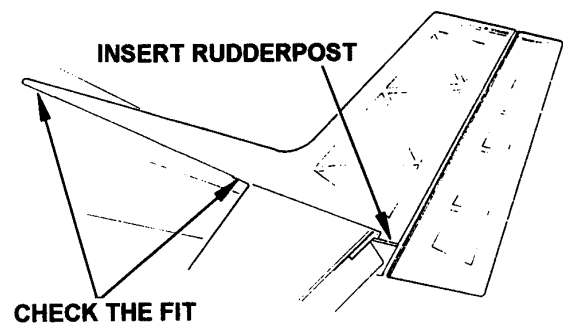


4. ☐ Carefully cut out the **UltraCote** area that will contact the fuselage when installed on the stab platform. Remove that portion of the covering on the stab and **Jet Epoxy** the STAB to the FUSELAGE. Make sure to check that the stab is properly aligned in both the top and rear views.

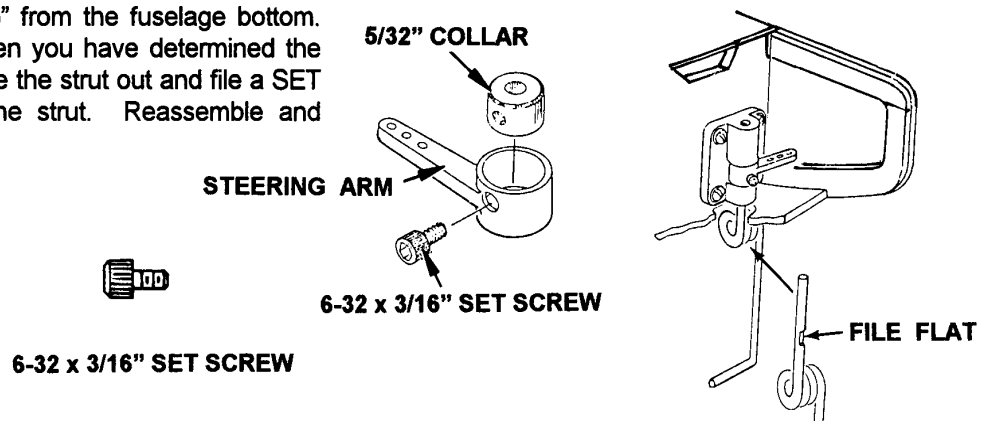
WARNING: BE VERY CAREFUL NOT TO CUT INTO THE WOOD STRUCTURE WHILE TRIMMING THE COVERING.



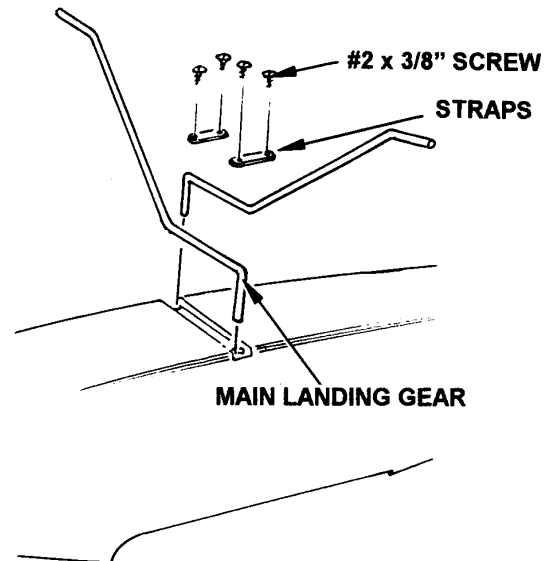
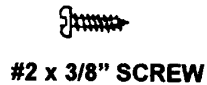
5. ☐ Glue the FIN into the FUSELAGE. Check the fit along the entire mating surface. Make sure that the ELEVATOR TRAVEL does not interfere with the RUDDER POST. Trim if necessary.



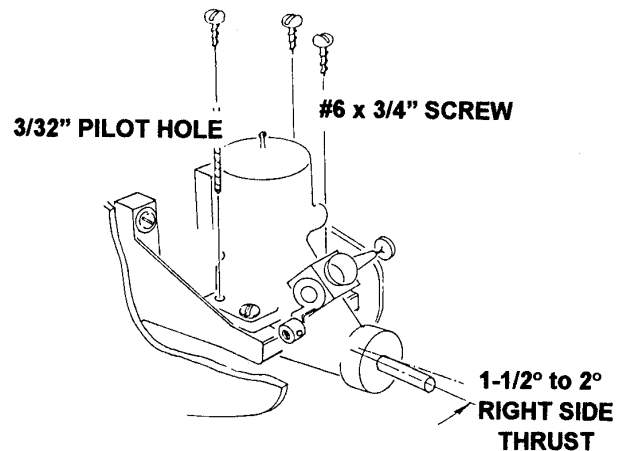
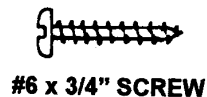
6. ☐ Assemble the parts to create the STEERING ARM. Insert the STEERING ARM ASSEMBLY into the BEARING, mounted on the FIREWALL. Slide the GEAR STRUT into the the BEARING and STEERING ARM. Position the spring coil so that it is about 1/16" from the fuselage bottom. (see the plan) When you have determined the correct position, slide the strut out and file a SET SCREW flat into the strut. Reassemble and secure.



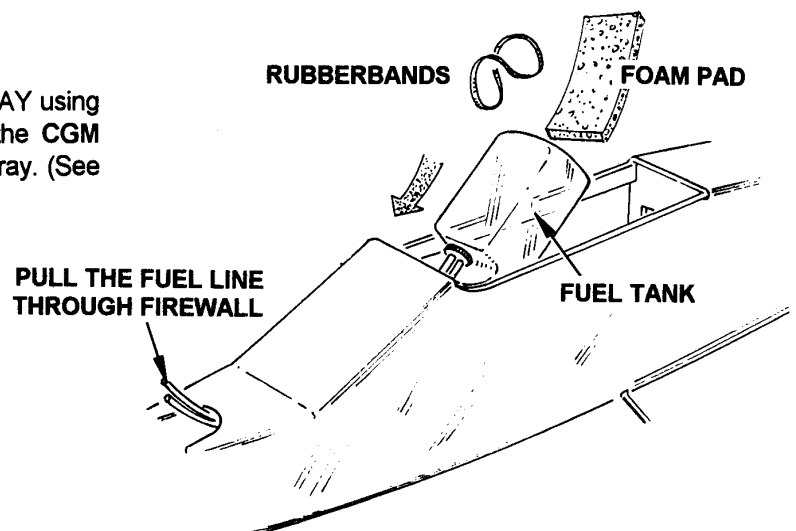
7. ☐ Install the two MAIN LANDING GEAR into the TORQUE SUPPORTS. You may need to run a 3/16" drill into the torque supports to allow the landing gear to fit.
- ☐ Secure the LANDING GEAR with the two LANDING GEAR STRAPS and the four #2 x 3/8" SCREWS.



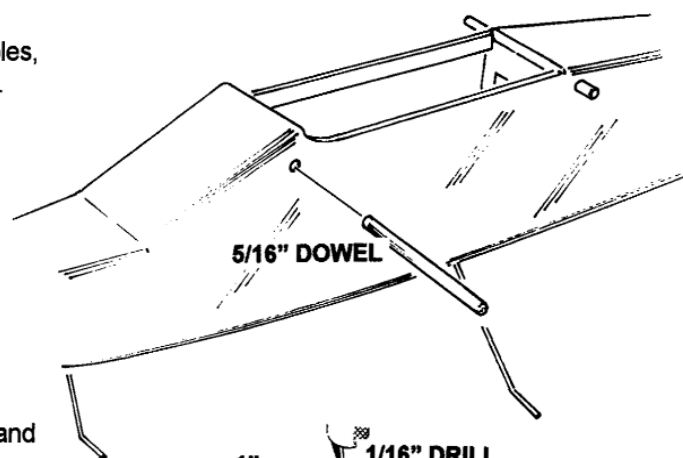
8. ☐ Position the engine on the mounts with the proper right thrust allowance. See the plan for the proper angle.
- ☐ Mark the four screw locations and drill a 3/32" hole at each location.



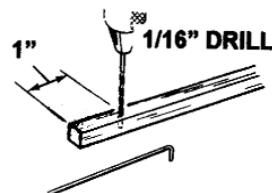
9. ☐ Install the FUEL TANK to the TANK TRAY using a #64 RUBBERBAND. Don't forget the CGM FOAM PAD between the tank and the tray. (See the plan for clarification.)



10. ☐ Cut the covering away at the wing dowel holes, and insert the two 5/16 x 6" BIRCH DOWELS.

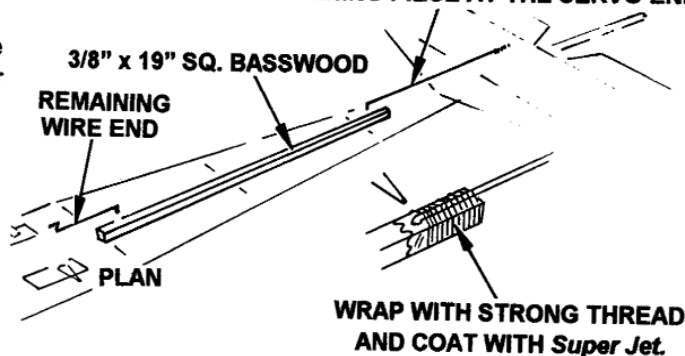


11. ☐ From the two 3/8" sq. x 19" basswood sticks and the two .072 dia. x 15" threaded wires, make up the rudder and elevator pushrods over the top view of the plan. Cut the wire, as per the plan, and bend 1/4" at the cut end 90°. Drill a 1/16" hole in each end of the basswood and insert the wire. Wrap the wire to the wood and coat with *Super Jet*.



.072 x 15" WIRE
(CUT & USE THE REMAINING PIECE AT THE SERVO END)

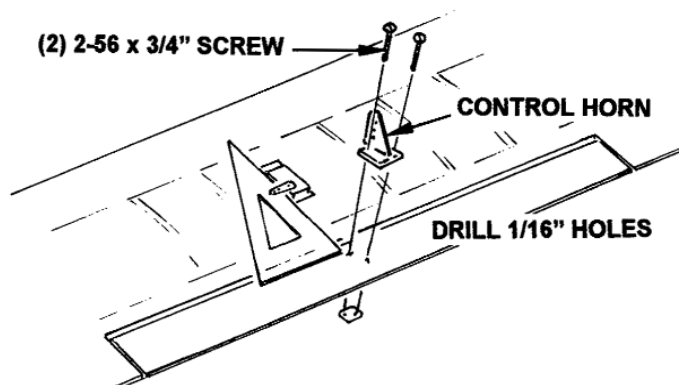
- ☐ Install the CONTROL HORNS on the ELEVATOR and RUDDER. See the plan for clarity.



- ☐ Cut away the covering at the pushrod exits and *Super Jet* the PUSHROD EXIT GUIDES in place.

- ☐ Snake the PUSHRODS through the EXIT GUIDES and thread on the SNAP LINKS. Attach the SNAP LINKS to the CONTROL HORNS and the "Z" bends to the SERVOS.

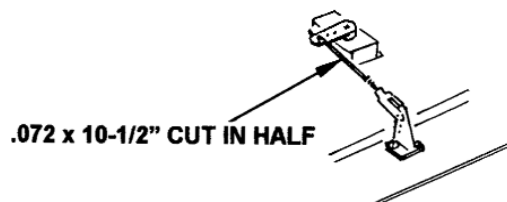
(2) 2-56 x 3/4" SCREW



12. ☐ Use a triangle to locate the CONTROL HORNS onto the AILERONS, as shown. Drill two 1/16" holes, using the CONTROL HORN as a template. Mount the CONTROL HORNS, using two 2-56 x 3/4" SCREWS and tapping them into the back plate on the opposite side of the AILERON.

- ☐ Temporarily tape the AILERONS in the plane of the wing. This will keep the aileron in the neutral position.

- ☐ Thread the SNAP LINK onto ends of the THREADED ROD, and cut the rod in half. Fit each pushrod to the NEUTRAL servos and the aileron control horn.



CONTROL SURFACE TRAVELS

Use the CONTROL SURFACE TRAVEL GAUGES to correctly set up the surface deflections. The gauges provide you with two settings, a gentle response setting and a more aerobatic setting. We encourage you to start out using the gentle marks and to move to the aerobatic mode as you progress. If you are using a computer radio, set the transmitter to 100% and adjust the travel settings at the servo arm.

AILERON TRAVEL GAUGE

- ☐ Place the gauge anywhere along the wing. Align the center of the aileron to the mark in the neutral position.
 - ☐ With the control stick full left and right, match the center of the aileron to the mark.
- ☐ Adjust the horn bracket as high as possible on the torque rod and position the pushrod in the hole on the servo arm to achieve the desired surface travel.

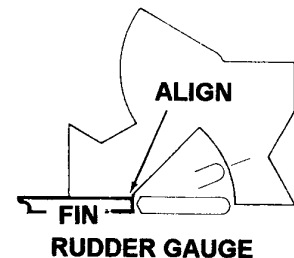
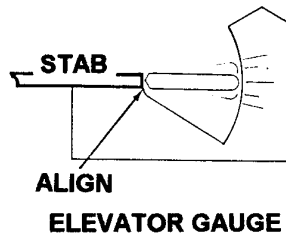
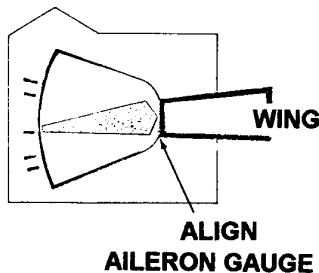
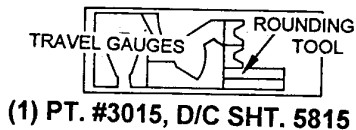
ELEVATOR TRAVEL GAUGE

- ☐ Place the elevator gauge anywhere along the elevator hinge line.
- ☐ Attach the elevator pushrod Snap-link to the end hole on the control arm.
 - ☐ Position the servo end of the pushrod in the hole on the servo arm to achieve the desired surface travel.

RUDDER TRAVEL GAUGE

- ☐ Position the rudder gauge at the top of the fin at the hinge line. Follow the same procedure used for the elevator to realize your desired travel.
 - ☐ Connect the steering pushrod to the servo. Check the plan for proper orientation.

Note: This is a good time to check and make sure the control surfaces go the correct way. You wouldn't want to correct a left bank with more left, so check it now!



SPECIAL FLYING INSTRUCTIONS

One of the more interesting features of the new **Protégé** is its special airfoil, which allows you to dramatically change its flight characteristics. It can be transformed from a very easy to fly trainer to a great, mildly aerobatic, sport plane which can be appreciated by all R/C flyers.

The transformation is simple, and is based on changes in balance and throws. Therefore, careful set-up is very important to getting the most out of your **Protégé**. This is not difficult to do, and it is well worth the little extra time it takes.

For your first flights and training, you will want to start with a more forward center of gravity, i.e. a balance that is closer to the front of the plane. You will also want less surface throws for training. As you become more comfortable with your **Protégé**, simply increase the throws and move the C.G. (balance point) further back to the rear position, as shown on the plan. The **Protégé's** excellent stability makes ground handling very easy and transition from ground to air is almost automatic. Landings also are a breeze, easily becoming "main gear only" touchdowns.

You will find the **Protégé** is a great trainer, when using only a .40 size two-stroke engine. Using a .60 two-stroke and with the plane set up for more advanced fliers, we're sure that the **Protégé** will be a real favorite for learning aerobatics.

YOU HAVE COMPLETED THE CONSTRUCTION OF YOUR **PROTÉGÉ**. NOW GO TO THE **GENERAL INFORMATION BOOK** AND READ THE "FLYING" SECTION.

For your next model, try the

TIGER 60



This low-wing sport plane is a perfect second aircraft. It will build virtually identically to your Protégé and can use the same .60-size engine, yet its more advanced aerodynamics will enable you to widen your aerobatic skills.