MIDWEST

Messerschmitt

Success Series®
This kit features a complete and fully illustrated step-by-step construction manual -AND- full-size plans that ASSURE SUCCESS!

Kit #171

A Low-Wing Taildragger That Flys Like a Sport-Plane

About This Construction Manual

This booklet divides the construction into sub-assemblies; wing, fuselage, etc. Read each section carefully and identify all of the parts before starting on a particular sub-assembly. There is a complete description of all kit parts under "Kit Contents" (Pages #3 - #5). Please check to be sure that your kit is complete; that it is not missing any parts. If you do find that parts are missing, or you are having trouble identifying parts, see "Customer Service" (below). The instructions give the sizes of all the parts. Refer back to the "Kit Contents" when selecting parts, to be sure that you are using the correct sizes.

The illustrations in this manual clarify and detail many of the assemblies shown on the plan, and the two should be used together during construction.

Customer Service

Should you experience a problem with this kit, we recommend you see your dealer first. If you are unable to solve the problem, feel free to call or write:

Customer Service Department
Midwest Products Co., Inc.
P.O. Box 564
Hobart, IN 46342
(219) 942-1134

MIDWEST PRODUCTS CO., INC.
400 S. Indiana St., P.O. Box 564, Hobart, IN 46342

Micro-Cut Quality Woods®

Table of Contents

Kit Contents

Note: All Wood Parts Listed are Balsa Unless Otherwise Noted

Wing

4	1/4" x 1/4" x 35-7/8"	Spruce Wing Spars
4	3/32" x 7/8" x 27"	Trailing Edge Sheeting
2	1/4" x 1/4" x 27"	Trailing Edges
2	1/4" x 1" x 27"	Leading Edges
2	1" x 1-1/4" x 7-1/2"	Wing Tips
11	3/32" x 2-7/8" x 6-1/4"	Center Section Sheeting
2	1/4" x 1-1/4" Dowels	Birch Dowels
2	1/2" x 11/16" x 1"	Bass Dowel Blocks
2	3/8" x 3/4" x 3-7/8"	Maple Landing Gear Blocks
2	3/8" x 3/4" x 7/8"	Maple Landing Gear Blocks
2	13/32" x 1-1/4" x 23-1/2"	Ailerons
2	7/16" x 1-1/4" x 3-1/2"	Tapered Trailing Edges
1	1/64" x 7/8" x 7/8"	Aircraft Plywood Trailing Edge Gauge
1	1/4" x 3/4" x 27"	Tapered Building Jig
2	3/32" x 2-7/8" x 2-3/8"	Radiator Bottom
1	3" x 25"	Glass Tape
2	5/32" dia.	Pre-Bent Landing Gear Wires
4	Molded Nylon	Flat Landing Gear Straps
4	Molded Nylon	Formed Fairing Straps
2	1/4-20 x 1"	Nylon Wing Bolt
2	3/32" x 8-3/4" Threaded	Aileron Torque Rod
2	1/8" O.D. x 2-1/2"	Brass Tube
8	#2 x 3/8" Sheet Metal Screws	Landing Gear Screws
8	2-56 x 1/2" Round Head Machine Screws	Landing Gear Fairing Screws
8	2-56 Hex Nuts	Landing Gear Fairing Nuts
2	Molded Nylon	Clevis
2	Molded Nylon	Aileron Adjustment Fittings
2	1/16" dia. x 10"	Threaded Pushrods

Fuselage

1	1/4" x 1/4" x 3-7/8"	Spacers
2	5/8" x 5/8" x 3-7/8"	Tail Fairing
2	1/4" x 11/16" x 1-3/8"	Aircraft Plywood Wing Bolt Blocks
1	3/16" x 3/16" x 11-7/8"	Stringer
19	1/8" x 1/4" x 11-7/8"	Planking
1	1/4" x 2-5/32" x 15-1/8"	Turtle Deck Cap
1	1" x 2-3/4" x 3-3/4"	Nose Extension
1	3/4" x 3-1/2" x 7-7/32"	Chin Block
1	3/32" x 3-3/8" x 2-3/4"	Oil Cooler Bottom
1	5/8" x 3/4" x 2-1/2"	Supercharger Intake
1	Molded Plastic	Canopy
1	Molded Nylon	Tailwheel Bracket
1	1/16" dia.	Pre-bent Tailwheel Wire
2	Molded Plastic	Exhaust Stacks

Stabilizer & Elevators

1	1/4" x 2-1/8" x 21"	Stabilizer Leading Edge S-1
1	1/4" x 1-7/8" x 21"	Stabilizer Trailing Edge S-2
2	1/4" x 2-3/16" x 10-5/16"	Elevators
2	3/16" x 3/8" x 4-9/16"	Bass Stabilizer Strut
1	3/32" dia.	Pre-Bent Elevator Joiner Wire
1	Molded Nylon	Control Horn
2	2-56 x 1/2" Round Head Machine Screws	Control Horn Screws

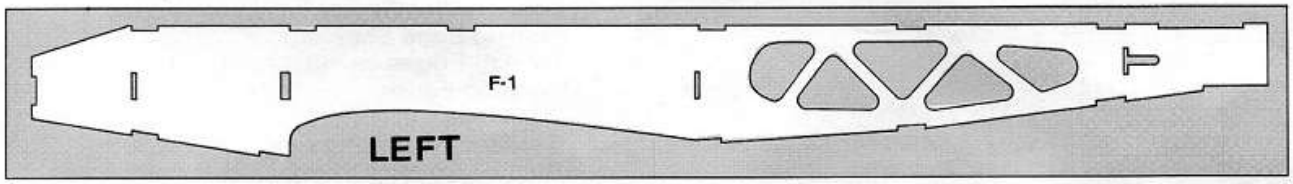
Fin & Rudder

1	1/4" x 1-11/16" x 5-3/16"	Fin Trailing Edge R-2
1	1/4" x 3-3/8" x 7-11/32"	Rudder
1	1/4" x 3-5/16" x 5-3/16"	Fin Leading Edge R-1
1	1/4" x 1-21/32" x 1-21/32"	Rudder Balance R-3
2	2-56 x 1/2" Round Head Machine Screws	Control Horn Screws
1	Molded Nylon	Control Horn

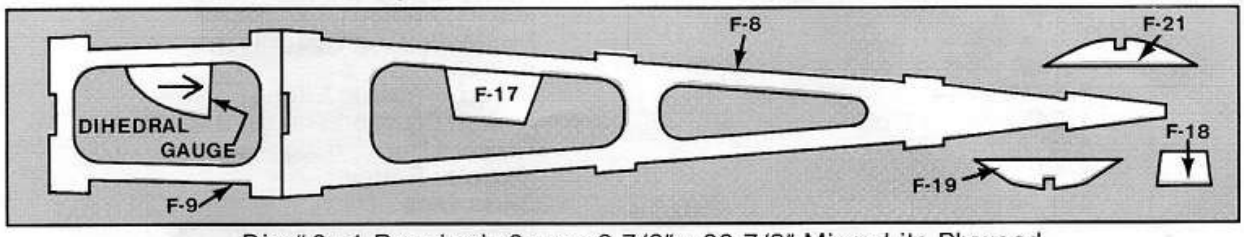
Miscellaneous

1	Printed Sheet	Plan
1	Printed Sheet	Decal, Self-Adhesive
1	Booklet	Construction Manual

Die-Cut Parts



Die #1 - 1 Required - 3mm x 4-1/4" x 37" - Micro-Lite Plywood



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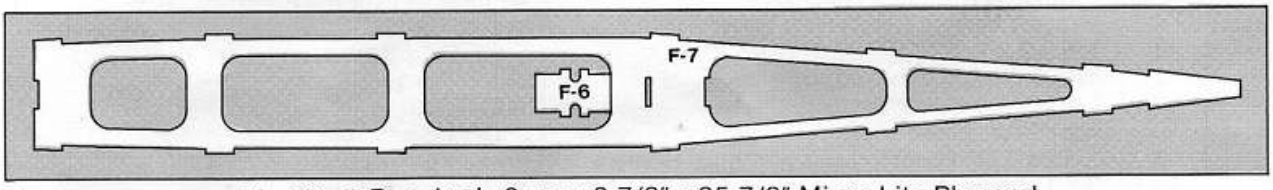
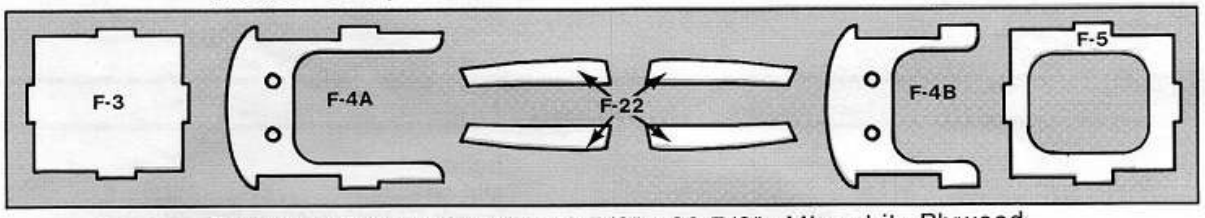
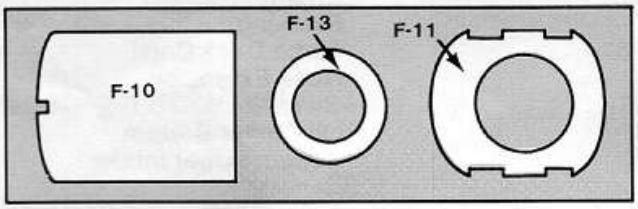


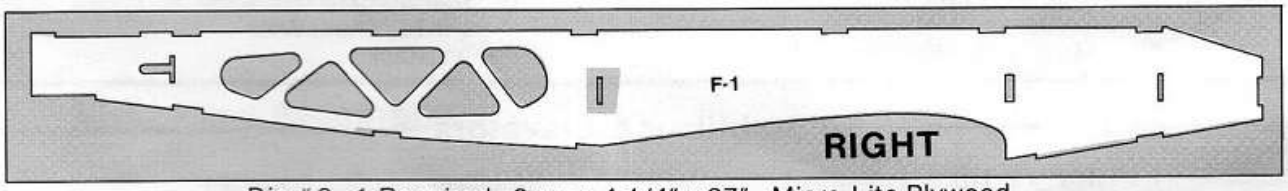
Die #3 - 1 Required - 3mm x 3-7/8" x 35-7/8" Micro-Lite Plywood



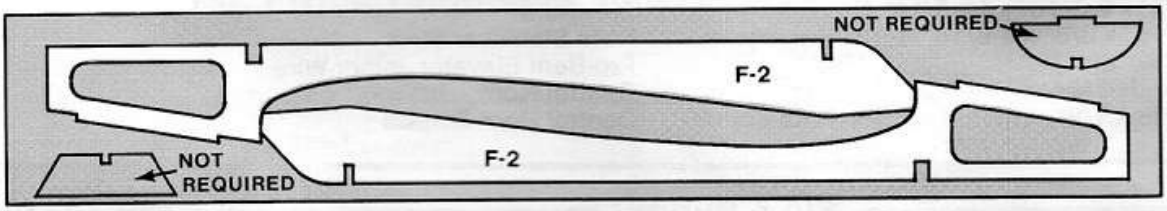
Die #4 - 1 Required - 3mm x 3-7/8" x 23-7/8" - Micro-Lite Plywood



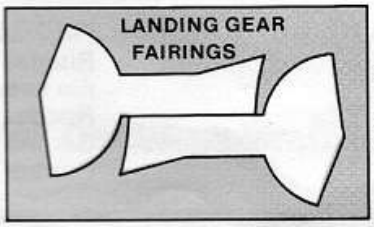
Die #5 - 1 Required
3mm x 3-7/8" x 11-7/8"
Micro-Lite Plywood



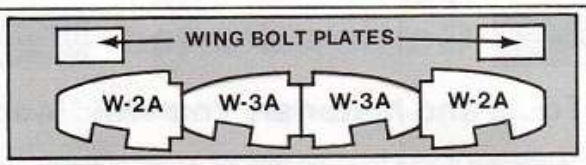
Die #6 - 1 Required - 3mm x 4-1/4" x 37" - Micro-Lite Plywood



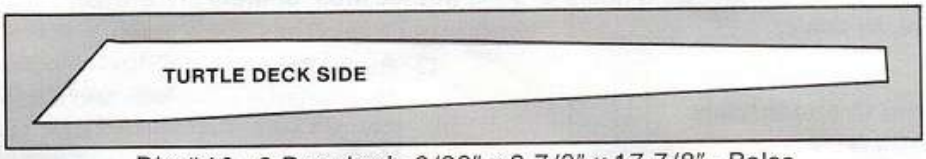
Die #7 - 1 Required
3mm x 3-7/8" x 23-7/8"
Micro-Lite Plywood



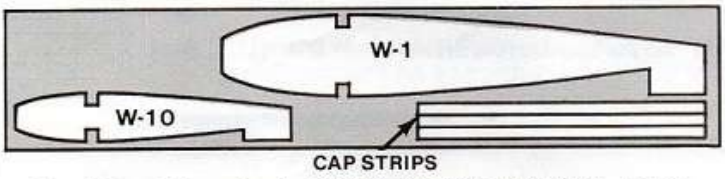
Die #8 - 1 Required
3mm x 3-7/8" x 6-7/8"
Micro-Lite Plywood



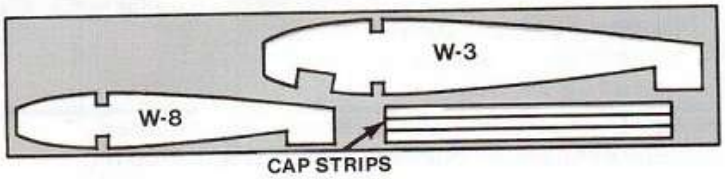
Die #9 - 1 Required
1/16" x 2-7/8" x 11-7/8"
Plywood



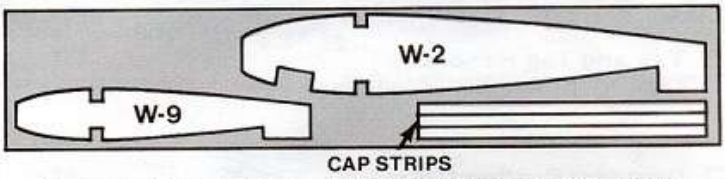
Die #10 - 2 Required - 3/32" x 2-7/8" x 17-7/8" - Balsa



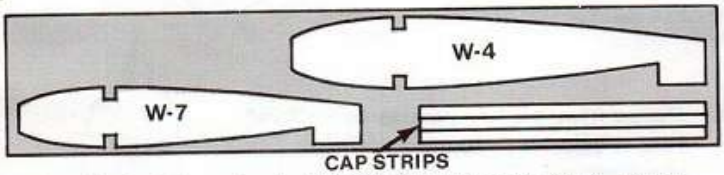
Die #11 - 2 Required - 3/32" x 2-7/8" x 14-7/8" - Balsa



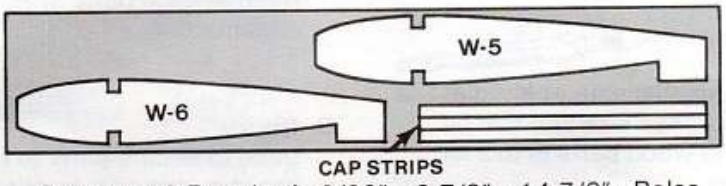
Die #12 - 2 Required - 3/32" x 2-7/8" x 14-7/8" - Balsa



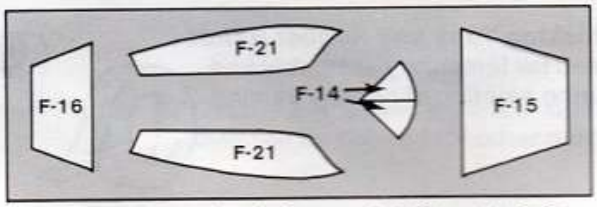
Die #13 - 2 Required - 3/32" x 2-7/8" x 14-7/8" - Balsa



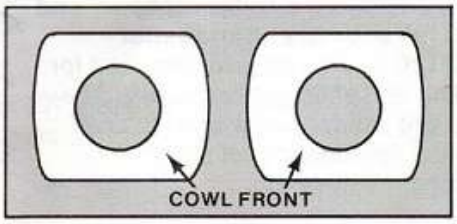
Die #14 - 2 Required - 3/32" x 2-7/8" x 14-7/8" - Balsa



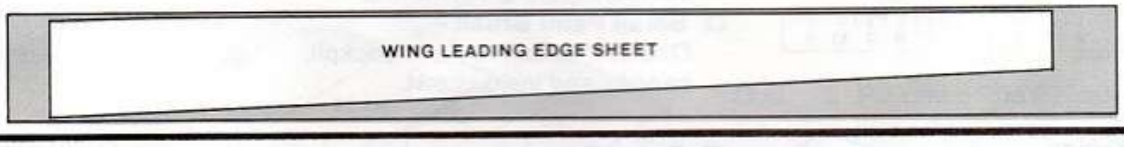
Die #15 - 2 Required - 3/32" x 2-7/8" x 14-7/8" - Balsa



Die #16 - 1 Required - 3mm x 3-7/8" x 11-7/8"
Micro-Lite Plywood



Die #17 - 3 Required - 3/32" x 2-7/8" x 7-7/8" - Balsa



Die #18 - 4 Required
3/32" x 2-7/8" x 29-7/8"
Balsa

Before You Begin

The Midwest Messerschmitt, although of simple construction, is **not** intended for the first time builder. As a result, this construction manual assumes that the builder of the Messerschmitt has had some previous building and flying experience.

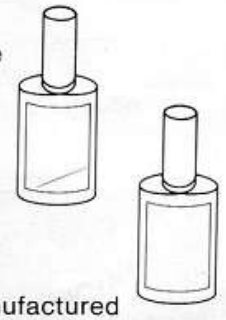
Getting Started

Tools and Materials You Will Need

You will need the following items to build this kit. Most of them are available from your local hobby dealer.

☐ **Instant Setting (thin) Cyanoacrylate (super-glue type) Adhesive -**
Used to instantly bond parts.

☐ **Slow Setting (thick) Cyanoacrylate (super-glue type) Adhesive -**
Used to glue parts that are to be moved for alignment.



Note: Cyanoacrylate adhesives are manufactured in many different formulations, some of which do not work well on models. Consult your local hobby dealer for the proper adhesive brands.

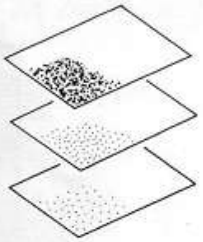
Warning: Cyanoacrylate adhesives cure (dry) very rapidly. Read all warnings and safety precautions on the label.

☐ **5 Minute Epoxy Glue -**
For special gluing applications.

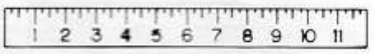
☐ **Carpenter's Glue (white or yellow) -**
This is used to attach the wing sheeting.

☐ **X-Acto® Knife and Extra Blades -**
This is a hobby knife with a small diameter handle. The #11 blades are a general purpose size and can be used to cut and trim all of the wood parts in this kit.

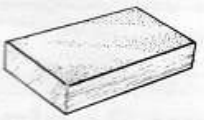
☐ **#120 and #320 Grit Sandpaper, and #400 "Wet-or-Dry" Sandpaper -**
The #120 and #320 grits are used for sanding and shaping wood parts. The #400 grit sandpaper is used to fine sand the finished model prior to applying the covering.



☐ **36" and 12" Steel Straight Edge -**
Used to measure parts and as a guide for cutting straight lines.

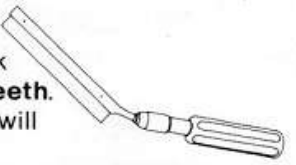


☐ **Sanding Block -**
This can be a piece of wood about 1/2" x 3" x 6". Glue a piece of #120 grit sandpaper to one side. This block will serve as an excellent tool for sanding parts.



☐ **Plastic Wrap -**
Used to cover the plans and building board so that parts are not accidently bonded to them.

☐ **Razor Saw -**
Also called a Zona saw and back saw. Be sure the saw has **fine teeth**. Medium and coarse tooth saws will tear the woods.

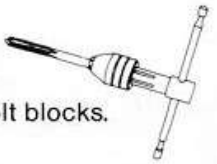


☐ **Assorted Screwdrivers -**

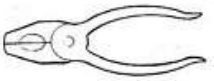
☐ **Pencil -**
#2 or softer.

☐ **1/4" Electric Drill and Drill Bits -**
1/16", 3/32", 5/32", 3/16", and 1/4"

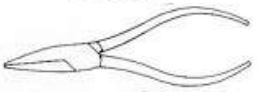
☐ **Tap and Tap Handle -**
1/4 - 20 for tapping wing bolt blocks.



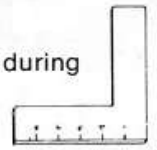
☐ **Diagonal Cutting Pliers -**
Used to cut wire.



☐ **Needle Nose Pliers -**
Used to cut and shape wire.

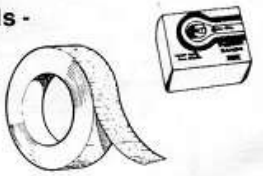


☐ **Small Square -**
Used to align parts at 90° during construction.



☐ **Pins -**
Used to secure parts to the building board during construction.

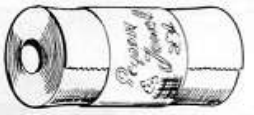
☐ **Masking Tape and Rubber Bands -**
Used for temporary assembly and during painting of canopy framing.



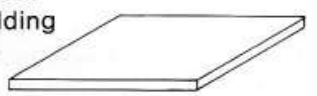
☐ **Tack Rag -**
Used to wipe dust from model before covering or painting.

☐ **Small Paint Brush -**
One 1/4" brush to paint cockpit, canopy and inside cowl.

☐ **Paper Towel -**
For wiping glue, etc.



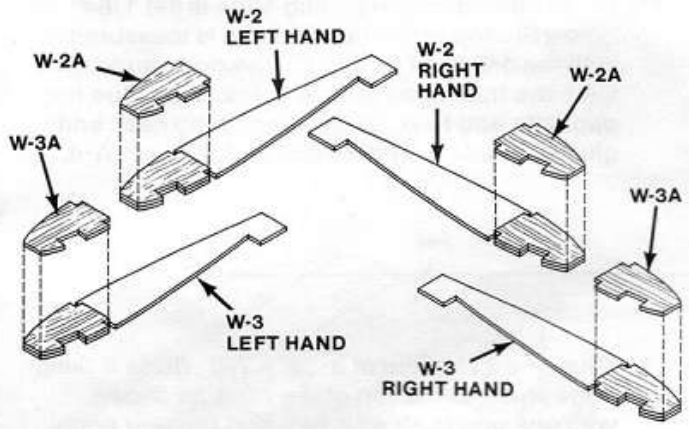
☐ **Building Board -**
This can be any **flat**, stiff material, such as a Pine board or a cork bulletin board. You will need a building board that is at least 12" x 36".



Additional Items You Will Need to Build an Operable R/C Model

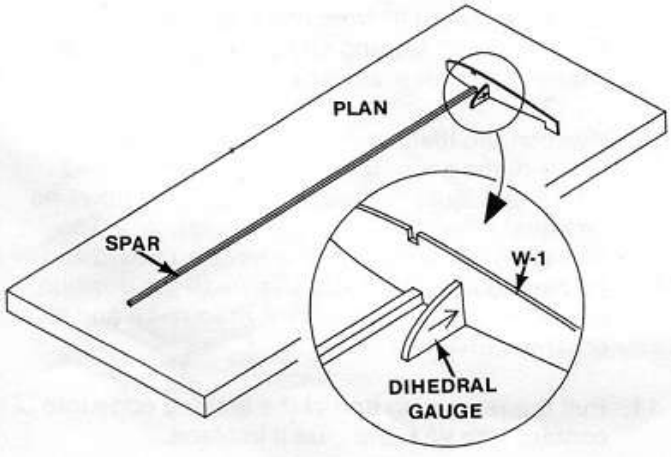
- ☐ 8 oz. Fuel tank and fuel tubing
- ☐ Radio - Minimum of four channels
- ☐ 1/16" and 5/32" wheel collars
- ☐ 15 Hinges
- ☐ Two flexible pushrods such as Du-bro Lazer Rods
- ☐ One flexible throttle cable
- ☐ 2" diameter spinner
- ☐ 2-3/4" diameter wheels
- ☐ 3/4" tailwheel
- ☐ Engine mount, screws, and blind nuts
- ☐ Engine
- ☐ Finishing Materials: Fuel Proof Dope or Polyurethane enamel. Covering film; one roll of each color will be enough to cover the model.

Wing Construction



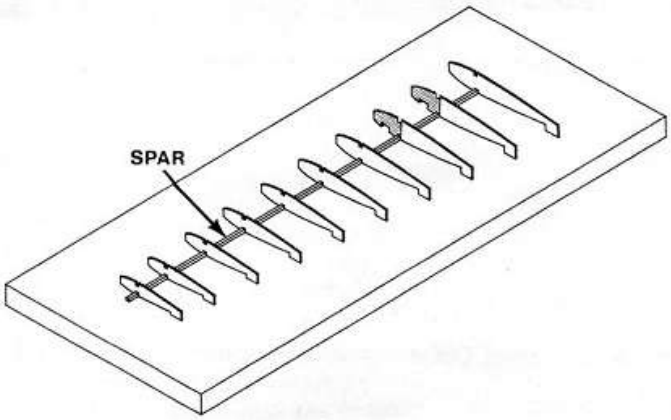
☐ 1. Glue the doublers W-2A and W-3A to one side of the ribs W-2 and W-3. Be sure to make one pair left hand and one pair right hand.

☐ 2. Cut the 1/4" x 1/4" x 35-7/8" Spruce spars to a length of 27". Save the cut off ends as they will be needed for other purposes later in construction.

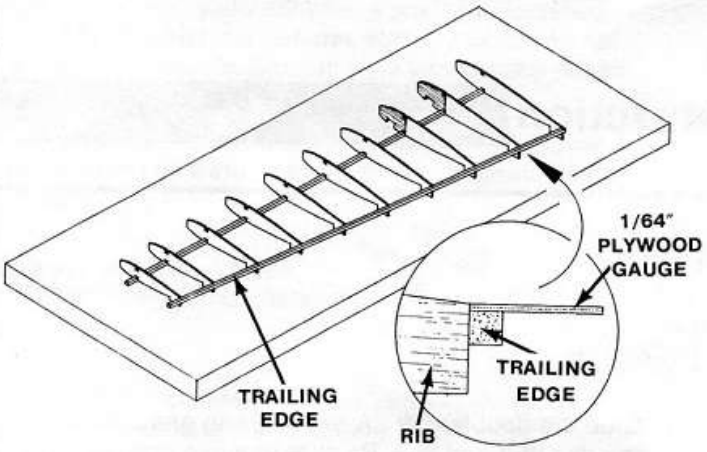


☐☐ 3. Pin one of the 27" spars to the wing plan with one end flush with the wing centerline. (**Note:** The left wing is shown here).The spar is longer than needed and will extend past the tip. The excess will be trimmed off later.

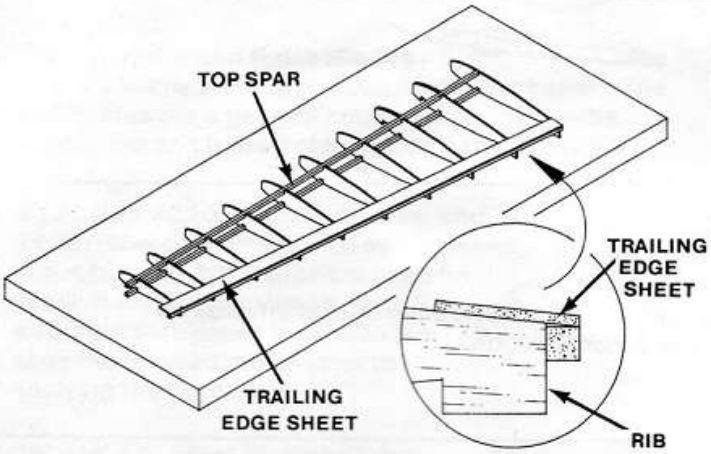
☐☐ 4. Pin rib W-1 into position on the end of the spar, over the drawing of rib W-1. Use the dihedral gauge to hold the rib at the proper angle then, glue the rib to the spar.



☐ ☐ 5. Pin ribs W-2 through W-10 in position on the spar. Set these ribs at 90° to the building board using a small square. When satisfied with the position of these ribs, glue them to the spar.

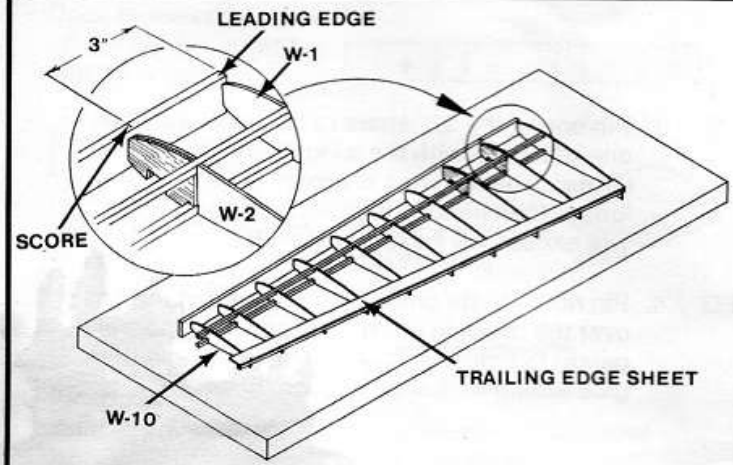


☐ ☐ 6. Glue one 27" length of 1/4" x 1/4" Balsa trailing edge to the wing as illustrated. One end is flush with W-1 and the other end extends slightly past W-10. The top of the trailing edge is set 1/64" below the top of the ribs and this is measured with the 1/64" x 7/8" x 7/8" Plywood gauge. Glue the trailing edge to W-1 first, then glue the opposite end to W-10, after which go back and glue the trailing edge to ribs W-2 through W-9.



☐ ☐ 7. Glue one 27" piece of 3/32" x 7/8" Balsa trailing edge sheet to the top of the wing, as shown, with one end flush with W-1, and the rear edge flush with the 1/4" x 1/4" Balsa trailing edge.

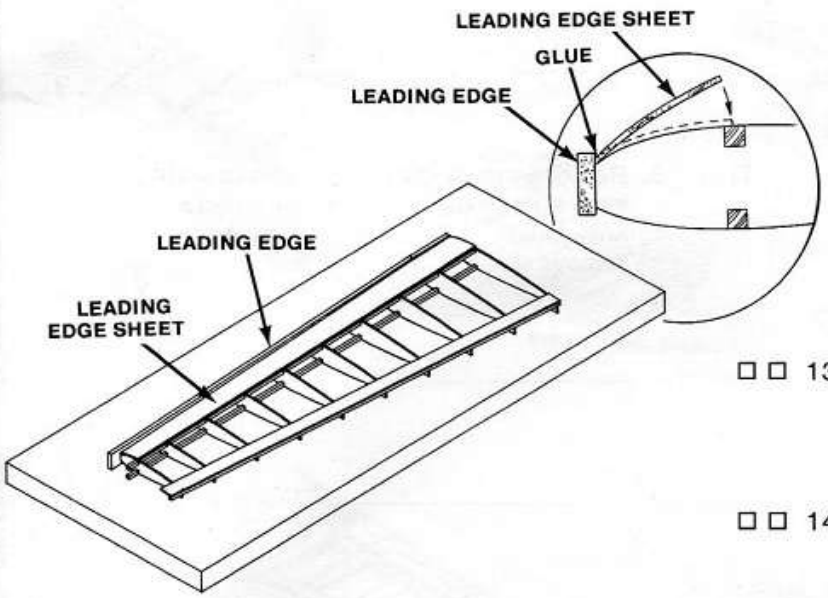
☐ ☐ 8. Glue another 1/4" x 1/4" x 27" Spruce spar into the slots in the top of the ribs. One end of the spar should be flush with W-1 like the lower spar. Check once again the angle of W-1 with the dihedral gauge before gluing the spar in place.



☐ ☐ 9. Measure inward 3" from one end of a 1/4" x 1" x 27" leading edge and score approximately 1/8" deep, as shown.

☐ ☐ 10. Position the leading edge on the front of the ribs with the score facing forward and aligned with W-2. Adjust the leading edge up or down so an equal amount is above and below W-2. The end at W-10 can rest on the building board and be pinned to it. When satisfied with the position, glue the leading edge to W-2 then W-10 and all other in between ribs.

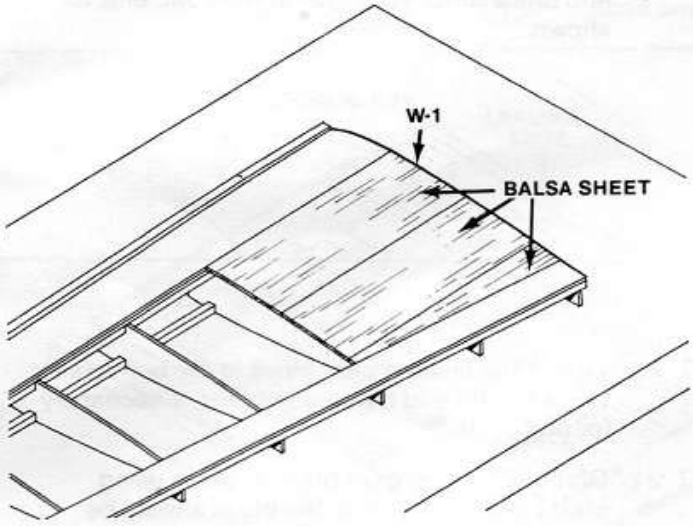
☐ ☐ 11. Pull the remaining end of the leading edge into contact with W-1 and glue it in place.



☐☐ 12. Test-fit one die cut 3/32" Balsa leading edge sheet in position. The forward edge should butt tight against the 1/4" x 1" leading edge along its entire length, while the rear edge should end on the centerline of the Spruce spar. Adjust and trim the sheeting until it fits properly.

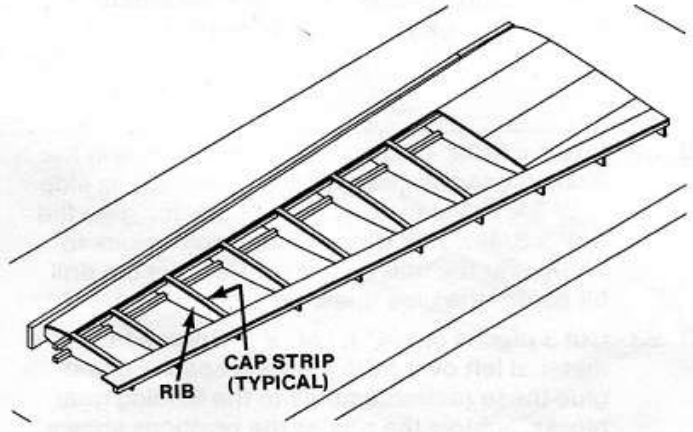
☐☐ 13. Hold the leading edge sheet in position, as shown and edge glue it to the 1/4" x 1" leading edge along its entire length. **Do not** glue the sheeting to the ribs or spar at this time.

☐☐ 14. Use a small, flat strip of scrap wood to apply white glue to the top edge of all ribs forward of the spar. Roll the leading edge sheet down, so that it contacts the ribs, then quickly glue the rear edge to the top of the spar with Thin CA, making sure the sheeting is still firmly in contact with all of the ribs.

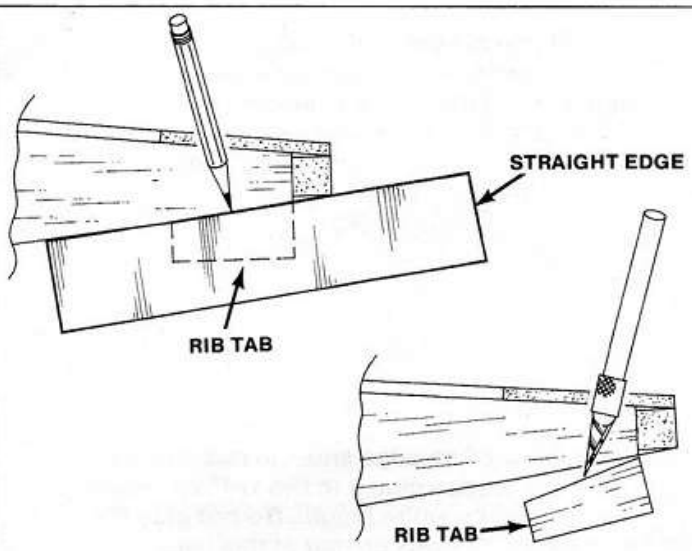


☐☐ 15. Glue two 3/32" x 2-7/8" x 6-1/4" sheets of Balsa into place on W-1, W-2, and W-3. One end of the sheets should be flush with W-1.

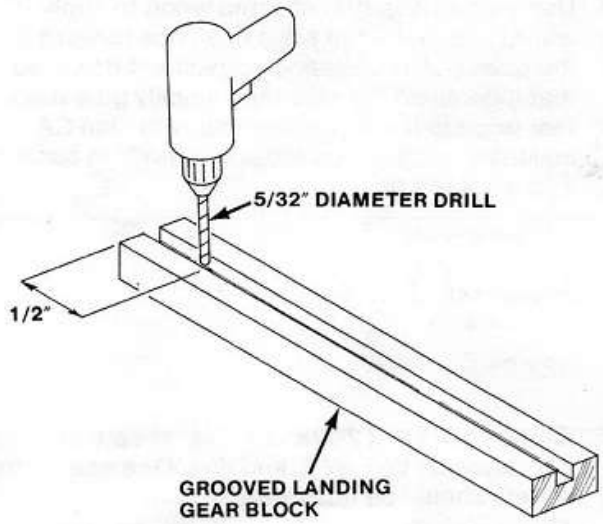
☐☐ 16. Using one 3/32" x 2-7/8" x 6-1/4" Balsa sheet, measure and cut the remaining piece of wing sheet to size, then glue it in place. Save the remaining piece for sheeting the other side of the wing.



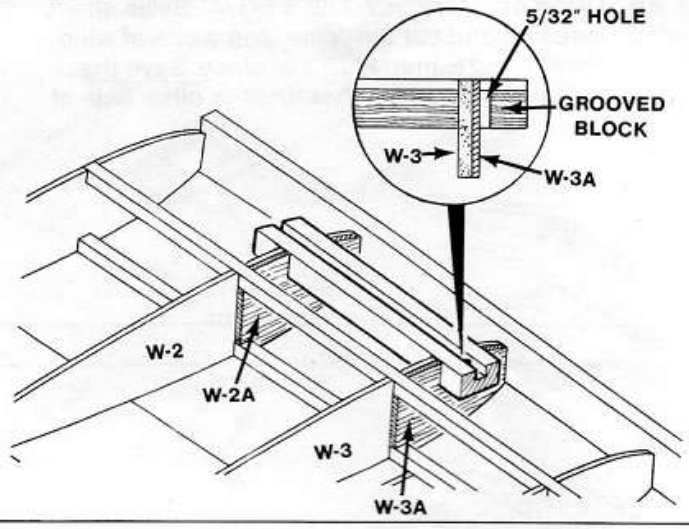
☐☐ 17. Trim seven 3/32" x 1/4" x 6" die cut cap strips to fit the remaining ribs, then glue them in place on top of each rib. The cap strip for W-10 should be flush with the outboard edge of the rib. All others are **centered** on the ribs.



☐☐ 18. Remove the wing from the plan to mark a trim line on each rib tab as shown, using a pencil and straight edge. Then, cutting on the trim line, remove the tabs from the ribs.

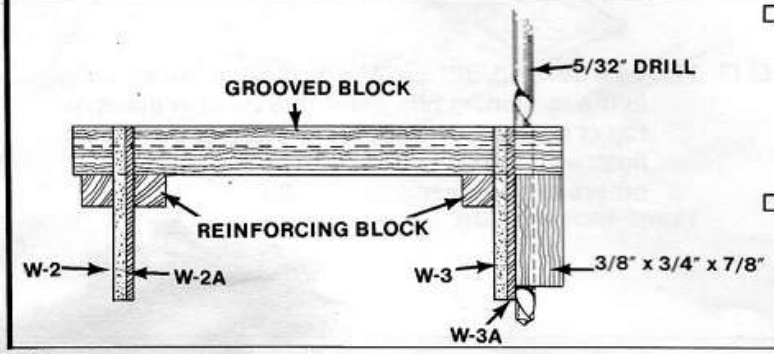


☐☐ 19. Take one 3/8" x 3/4" x 3-7/8" grooved hardwood landing gear block then measure, mark, and drill a 5/32" hole 1/2" in from one end, as shown.



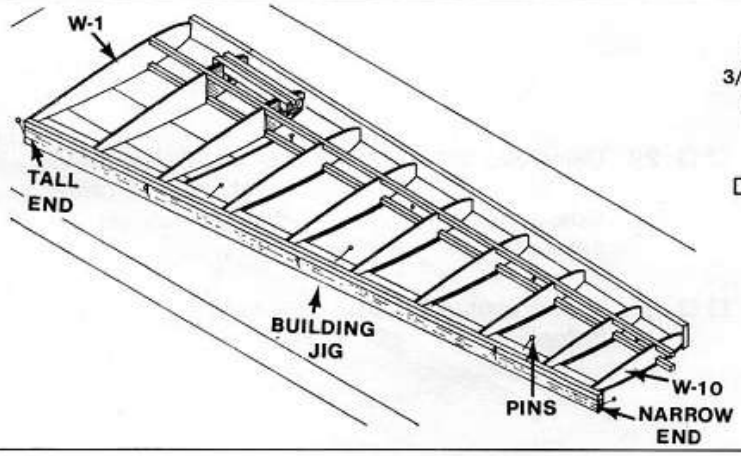
☐☐ 20. Test-fit the landing gear block in the notches in W-2 and W-3 and trim the notches, if necessary for proper fit.

☐☐ 21. Glue the landing gear block in place using epoxy glue. The hole in the block should be aligned, so that the edge is just flush with the side of W-3A as shown. The top of the block should be flush with the top edge of the ribs. Clean away all glue fillets, before glue sets, using a strip of wood. This will allow reinforcing blocks to be glued into the corners.

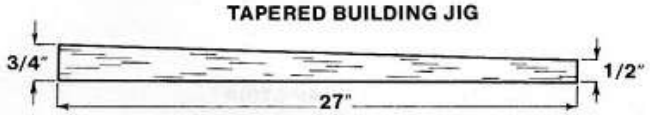


☐☐ 22. Insert a 5/32" diameter drill into the hole in the landing gear block and push it down along side of W-3A. Using the drill bit as a locator, glue the 3/8" x 3/4" x 7/8" grooved hardwood block to W-3A over the drill, as shown. Remove the drill bit before the glue dries.

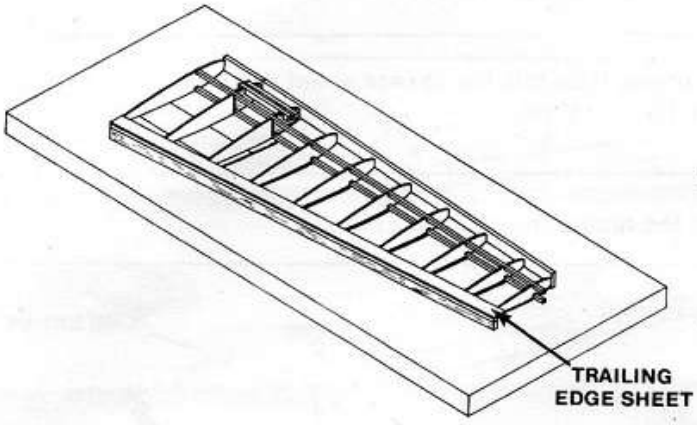
☐☐ 23. Cut 3 pieces of 1/4" x 1/4" x 1" Spruce from the material left over from the wing spars. Fit and glue these reinforcements to the landing gear blocks, against the ribs, at the positions shown on the plan.



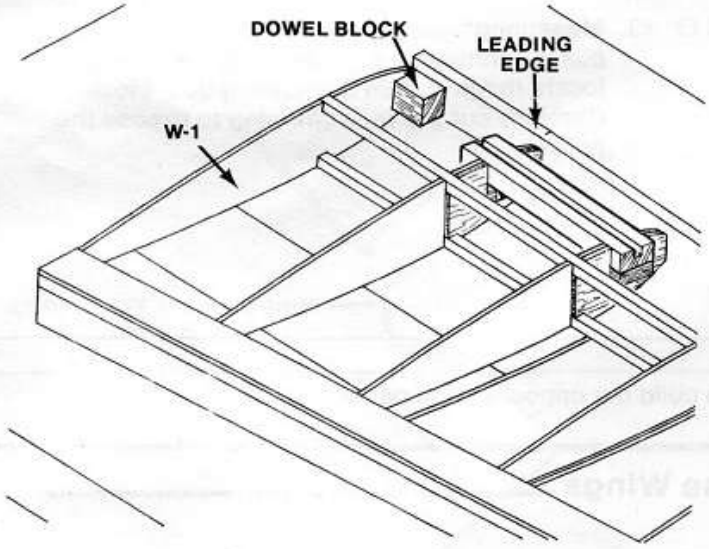
TAPERED BUILDING JIG



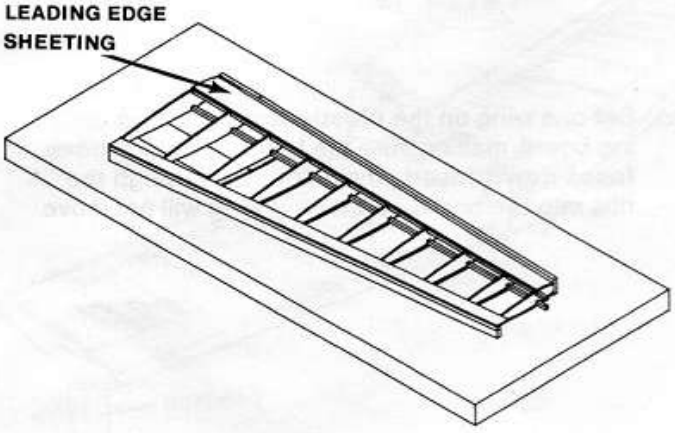
☐ ☐ 24. Invert the wing on the building board and pin it down with pins inserted just ahead of the spars. Slide the building jig under the trailing edge **with the tallest end under the trailing edge at W-1,** and the narrow end under W-10. Pin the jig to the board and also pin the trailing edge securely to the jig.



☐ ☐ 25. Glue one piece of 3/32" x 7/8" x 27" Balsa trailing edge sheet to the wing, aligning it the same way as the first one.

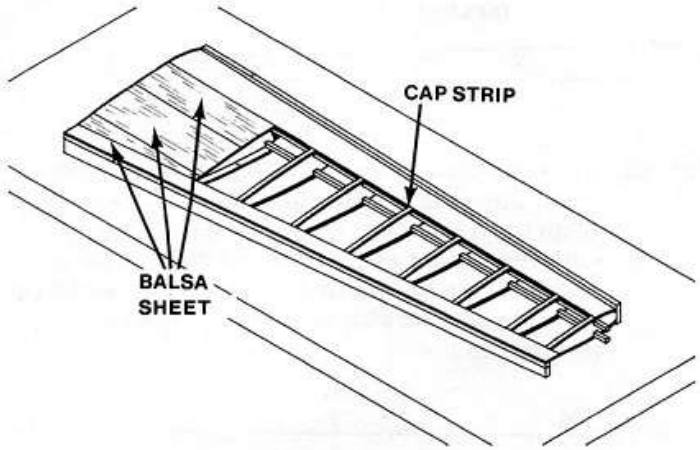


☐ ☐ 26. Glue one 1/2" x 11/16" x 1" Basswood dowel block to the rear face of the leading edge at the position shown on the plan.



☐ ☐ 27. Test-fit the die-cut Balsa leading edge sheeting to the wing as before, then edge glue it to the 1/4" x 1" leading edge.

☐ ☐ 28. Glue the sheeting down on the ribs and spar as before except, that now you will also spread white glue on the **landing gear block** in addition to the ribs.

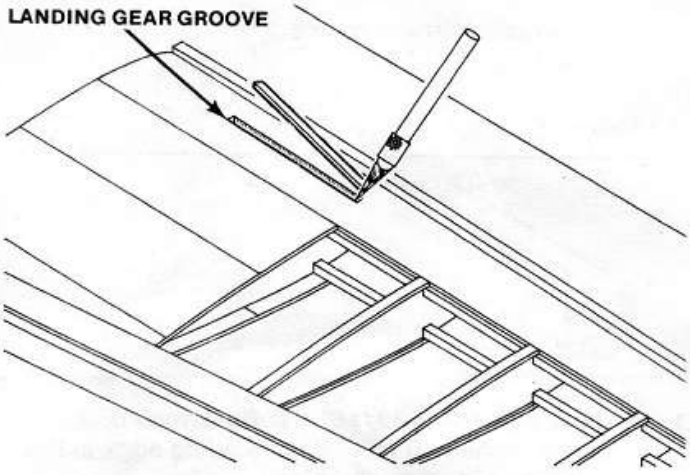


☐☐ 29. Using two 3/32" x 2-7/8" x 6-1/4" Balsa sheets and the remainder of the sheet from the other side, sheet the inboard end of the wing as before.

☐☐ 30. Trim and glue the seven die-cut cap strips as before.

☐☐ 31. Remove the wing from the building board, then trim the excess sheet and spars from the ends, flush with W-1 and W-10.

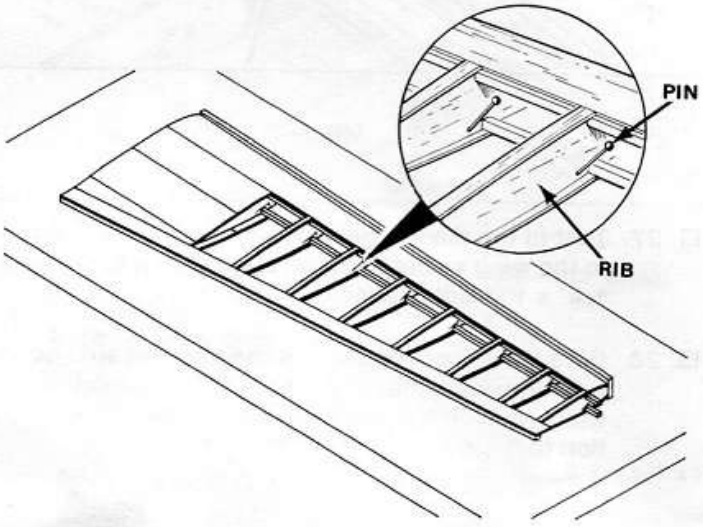
☐☐ 32. Carve and sand the leading edge to the radius shown on the plan.



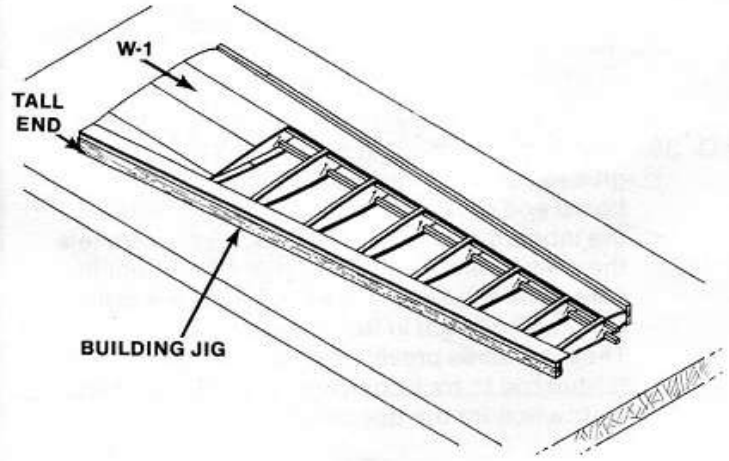
☐☐ 33. Measuring from the plan, use a straight pin, pushed through the leading edge sheeting, to locate the groove in the landing gear block. Carefully cut the wing sheeting to expose the groove.

☐ 34. Repeat Instructions #3 through #33 to build the opposite wing panel.

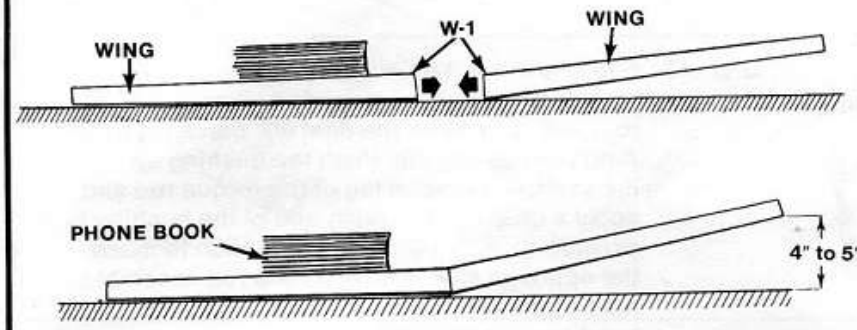
Joining the Wings



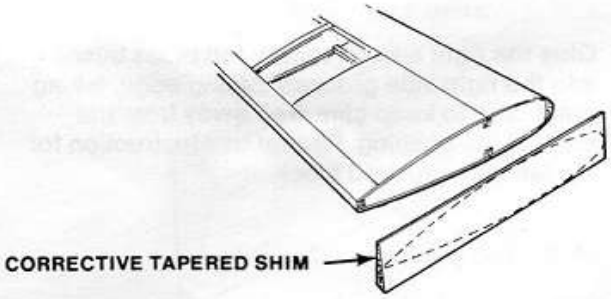
☐ 35. Set one wing on the **plastic wrap covered** building board, making sure the **landing gear groove faces down**. Insert pins diagonally through the ribs into the board, so that the wing will not move.

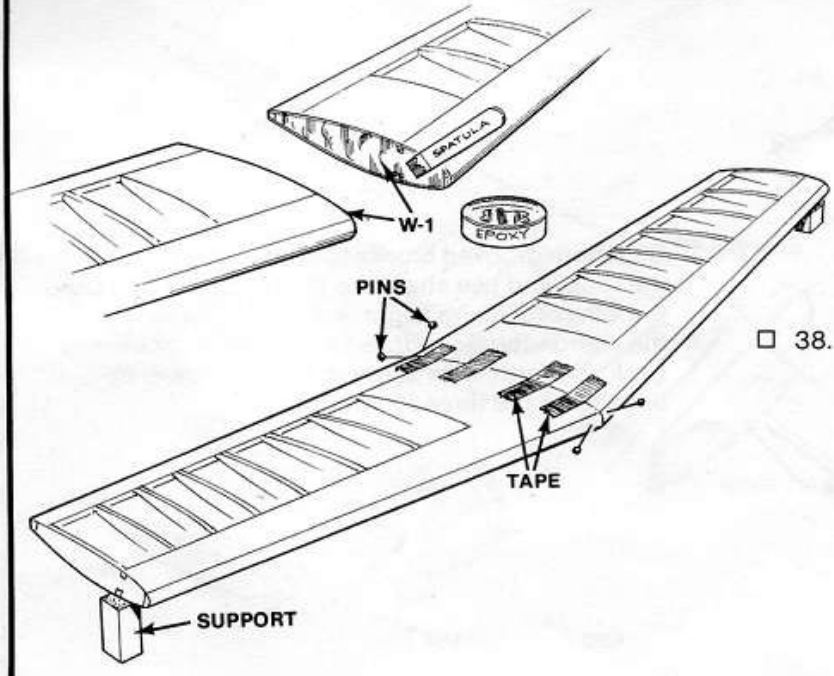


☐ 36. Insert the **building jig** under the trailing edge with the taller end under W-1, then pin the trailing edge securely to the jig, finally pinning the jig to the board. Place heavy, non-damaging weights (telephone books are ideal) on the wing to immobilize it.

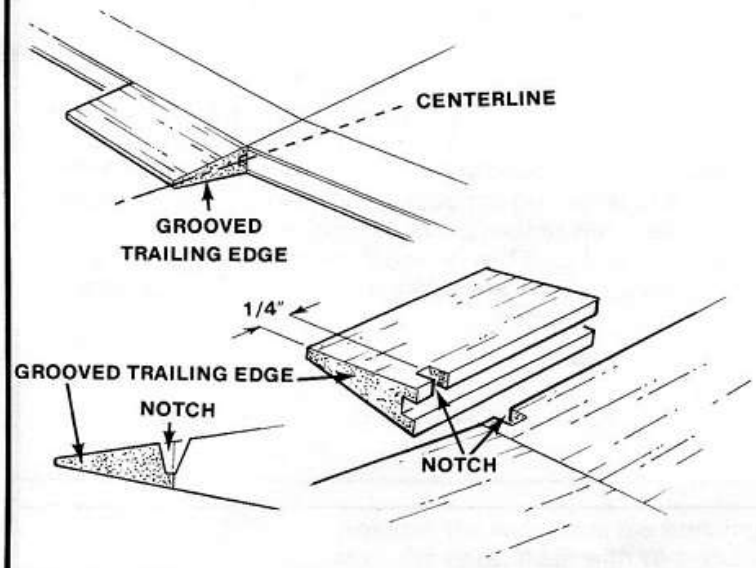


☐ 37. Test-fit the wing panels by butting the W-1 ribs together. Check the distance between the underside of the raised wing at W-10 and the building board. It should be 4" to 5". If the dihedral does not fall within this range, the wing root ribs W-1 must be beveled with a large sanding block. If necessary, a Balsa shim rib must be cut from the scrap Balsa and glued to one W-1, trimmed to the wing profile, and then resanded to a wedge shape to adjust the dihedral angle.

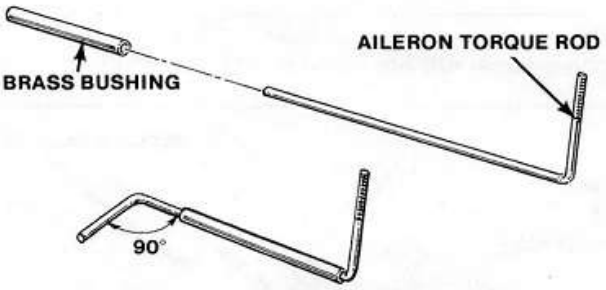




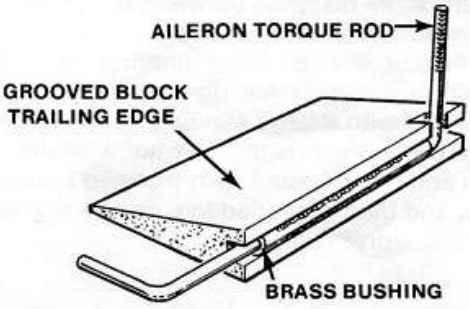
☐ 38. Smear a thin film of Epoxy glue on the mating faces of each W-1, and then join the wings, inserting pins through the leading and trailing edges to maintain the alignment. Use a suitable object to support the raised wing tip, and before the epoxy cures, wipe away excess epoxy with paper towel.



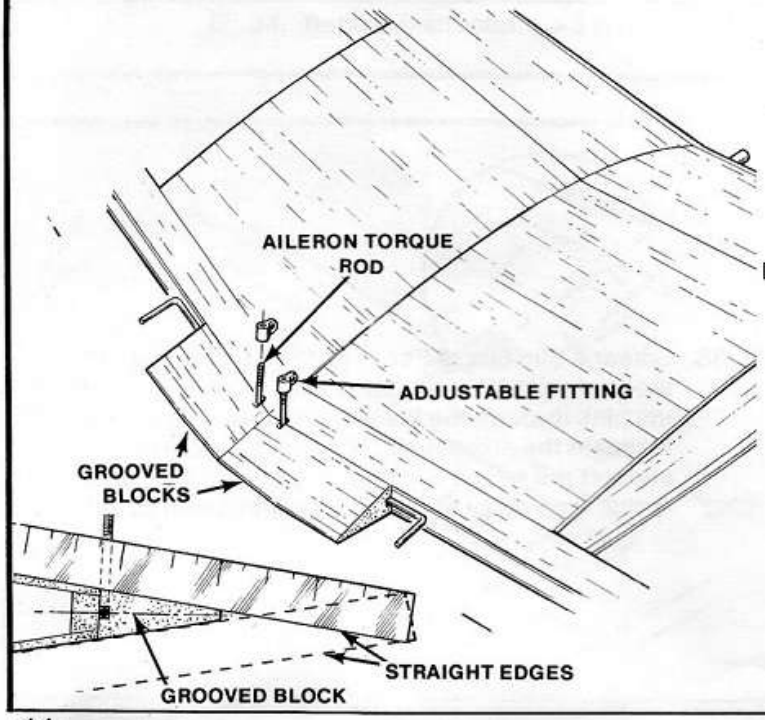
☐☐ 39. Test-fit one of the 7/16" x 1-1/4" x 3-1/2" grooved and tapered trailing edges to the inboard end of one wing trailing edge, trimming the inboard end of the piece, so that it parallels the wing centerline. Measure 1/4" out from the centerline then make a notch, as shown, cutting a matching notch in the wing trailing edge. These notches provide clearance for the aileron torque rod to rock back and forth. Repeat this Instruction for the opposite wing.



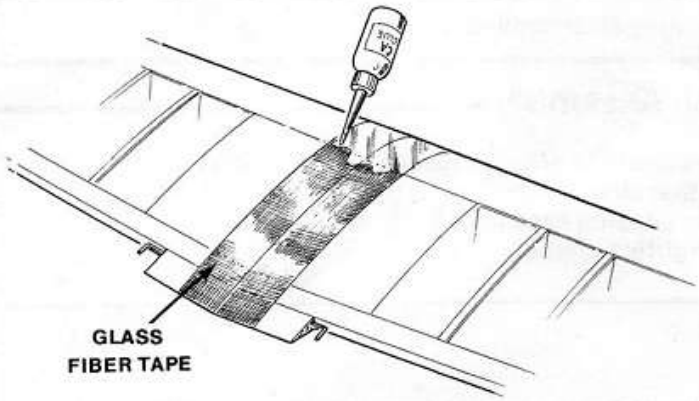
☐☐ 40. Slip one of the 1/8" x 2-1/2" long brass bushings on to a pre-bent threaded aileron torque rod, and then make the final 90° bend, using the wing plan as a guide. Push the bushing up to the vertical threaded leg of the torque rod and apply a drop of oil to each end of the bushing to exclude glue. Repeat this Instruction to make the opposite side aileron torque rod assembly, making certain you have made a **right** and a **left** hand assembly.



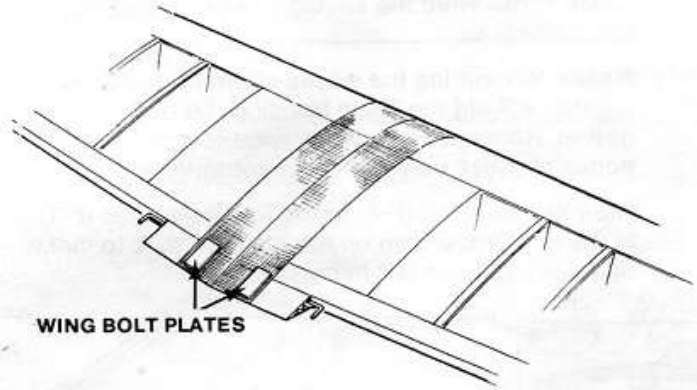
☐☐ 41. Glue the right aileron torque rod brass bushing into the right side grooved trailing edge, taking great care to keep glue **well away** from the ends of the bushing. Repeat this Instruction for the left side grooved block.



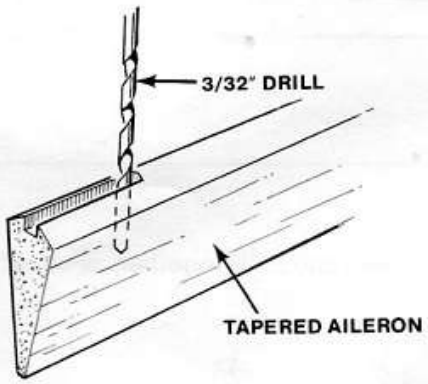
☐ 42. Glue both grooved blocks to the trailing edge of the wing, and use straight edges above and below the wings to insure alignment of the blocks. Test the aileron torque rods to see that they rock freely back and forth, then screw nylon adjustable fittings on to the threaded portions.



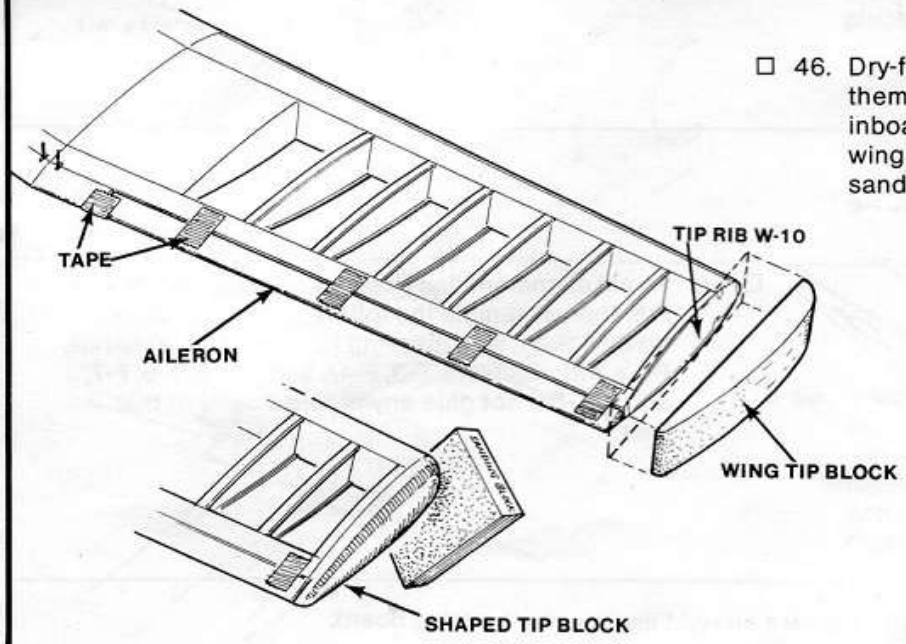
☐ 43. Invert the wing to apply the 3" wide glass fiber tape to the wing center. Tack glue one end of the tape to the trailing edge with Thin CA. Now, stretch it **tightly** around the wing (cutting holes for aileron torque rods) to tack glue it to the trailing edge on the wing upper side. Once secured, the tape can be flooded with Thin CA to stick it down.



☐ 44. Taking measurements from the plan, carefully position and glue the wing bolt plates from die-cut #9, attaching them to the wing **underside**.



☐ 45. Groove the inboard end of each 13/32" x 1-1/4" x 23-1/2" tapered aileron and drill 3/32" holes to accept the aileron torque rod wires. Refer to the plan to mark the position of the hinges and make slits for these in the wing trailing edges and the ailerons.

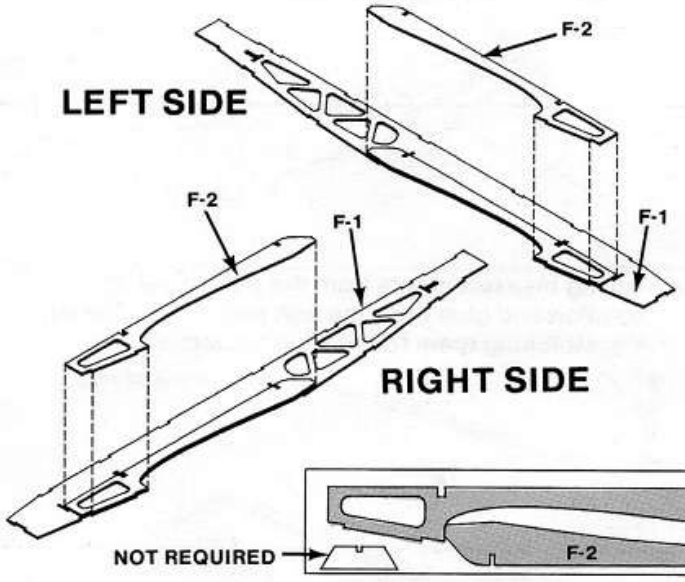


☐ 46. Dry-fit the ailerons and hinges to the wings, taping them securely to the fixed trailing edge at the inboard end. Glue the 1" x 1-1/4" x 7-1/2" Balsa wing tips to each W-10 rib, and then carve and sand them to shape.

☐ 47. Remove the ailerons and hinges, setting them aside until required for covering.

Fuselage and Tail Assembly

Note: Even though tape and rubber bands are utilized to hold the fuselage components together before gluing, it is essential to ensure that all joints are closed tight before glue application. The easiest way to achieve this is by gripping each joint firmly with your finger and thumb, and **squeezing** the adjacent parts **tightly** together.

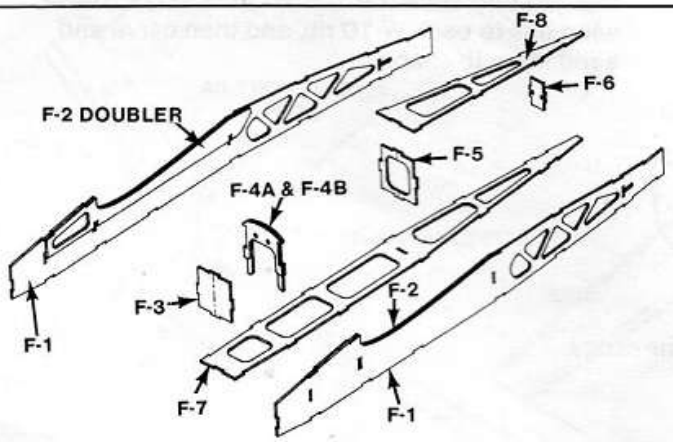


☐ 48. Using a sanding block, **very lightly** sand the edges of all of the die-cut parts to remove any burrs or rough spots. Hold the sanding block at a 90° angle while doing so.

Note: Smoothing the edges of the parts in this manner will aid the CA in bonding the parts together. Remember, you only want to **smooth** the edges of these parts, **only** removing the burrs.

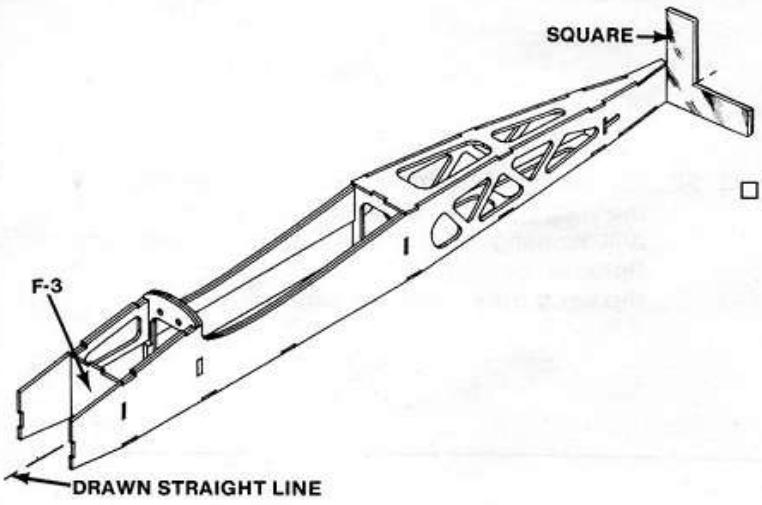
Glue the doublers (F-2) to the fuselage sides (F-1) in the position shown on the plan. Be sure to make one right and one left hand side.

☐ 49. Glue F-4A and F-4B together, as shown.



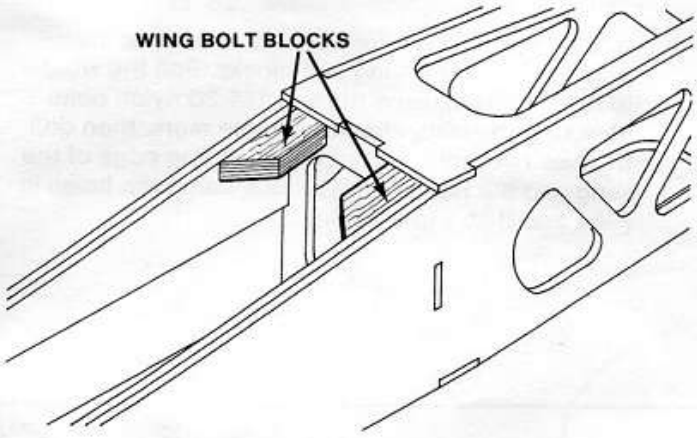
☐ 50. To aid alignment first draw centerlines on F-3 and F-5, then assemble the following parts as shown, holding them with masking tape and rubber bands, F-1's with doublers, F-3, F-4A and B, F-5, F-6, F-7, and F-8. **Do not** glue any of these parts at this time.

☐ 51. Using a 36" straight edge, draw a straight line on your building board.

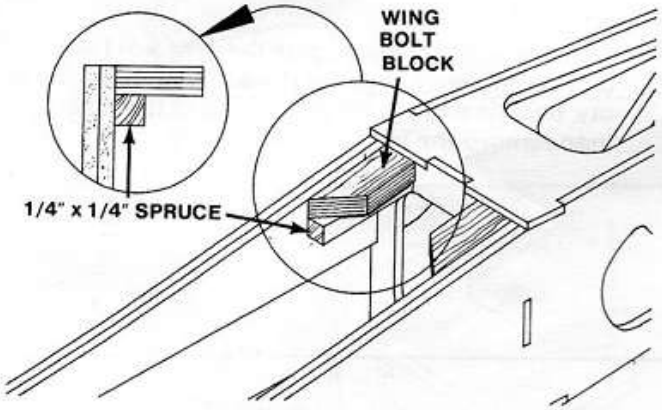


☐☐ 52. Set the fuselage upside down on the drawn line and adjust the fuselage assembly until it is straight and square. When satisfied with the alignment, run CA into all the joints making large glue fillets around the rear face of F-3. Go back and make a second glue application to all joints.

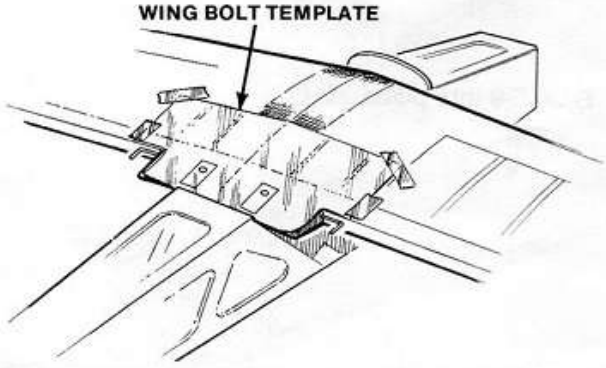
☐ 53. Sand the fuselage smooth all over.



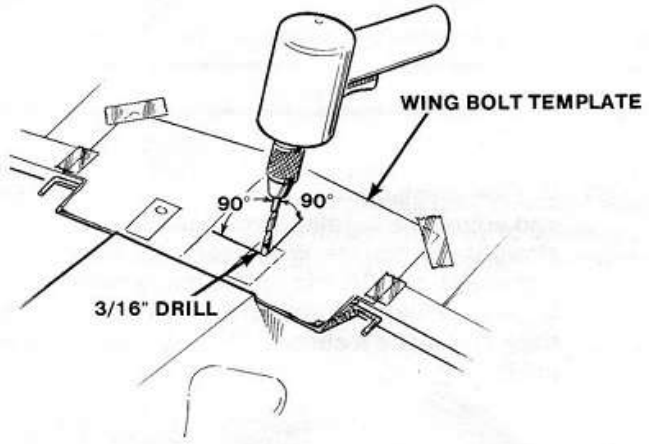
☐ 54. Glue the wing bolt blocks into the fuselage at the location shown on the plan.



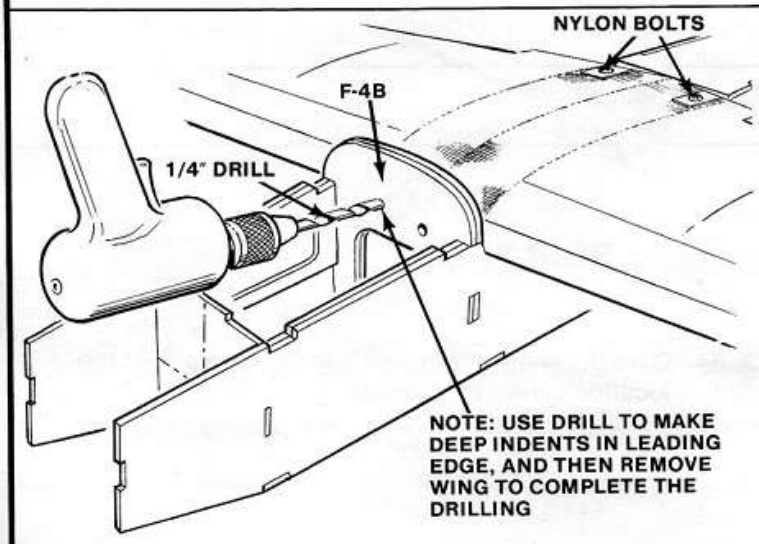
☐ 55. Cut 2 pieces of 1/4" x 1/4" Spruce (left over from the wing spars) to a length of 1". Glue these pieces to the fuselage and wing bolt blocks.



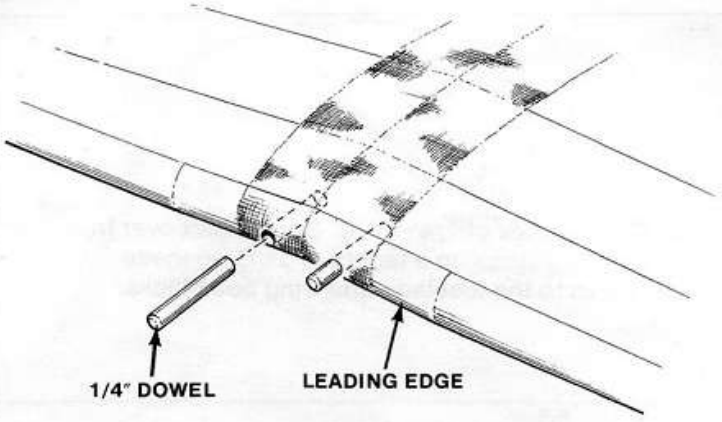
☐ 56. Invert the fuselage and place the wing on the wing saddle, making certain it is correctly centered and aligned. Hold or tape the wing securely to the fuselage. Cut the wing bolt template from the plan and tape it to the underside of the wing, as indicated.



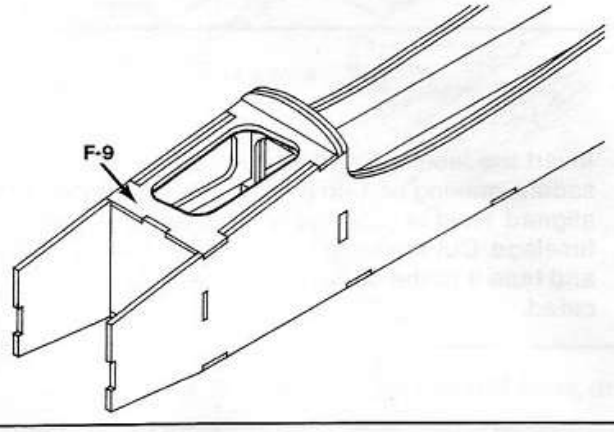
☐ 57. Carefully pierce, then drill through the wing and the wing bolt blocks in the fuselage with a 3/16" drill, keeping the drill at 90° to the wing surface. Remove the wing to open up the holes **through the wing only** with a 1/4" drill.



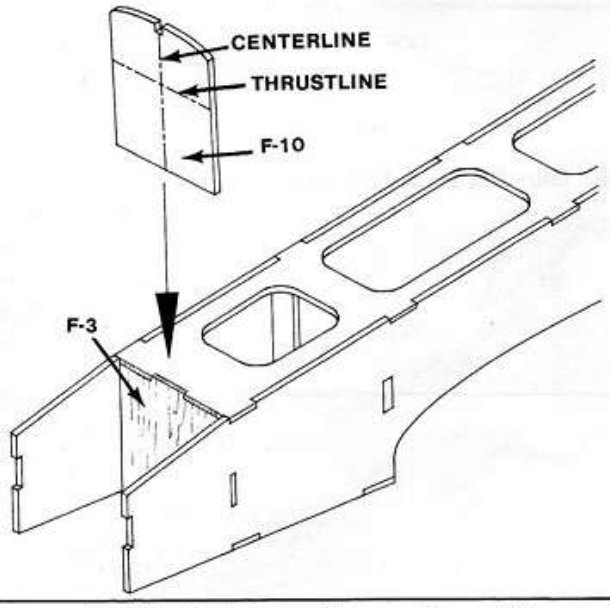
☐ 58. Use a 1/4-20 tap to cut a thread in each of the 3/16" holes in the wing bolt blocks. Bolt the wing to the fuselage, using the two 1/4-20 nylon bolts, checking the wing alignment once more, then drill the two 1/4" holes through the leading edge of the wing and the Bass dowel blocks, using the holes in F-4A and B as a drill guide.



☐ 59. With the wing removed, glue the 1/4" x 1-1/4" dowels into the holes just drilled. When the glue is dry, do a final check-fit of the wing to the fuselage, then remove the wing and set it aside.



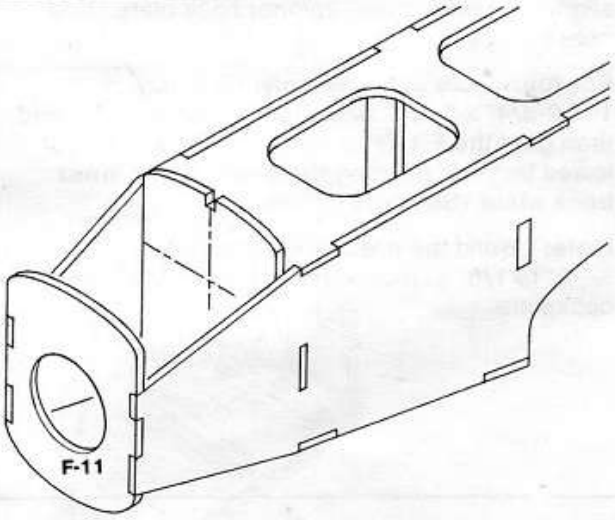
☐ 60. Glue F-9 into place.



☐ 61. Lay F-10 over the drawing of F-10 on the plan, then mark the center and thrust lines on it. Glue F-10 to the front of F-3, making sure the lines are facing forward and the bottom edge is flush with the bottom of the fuselage.

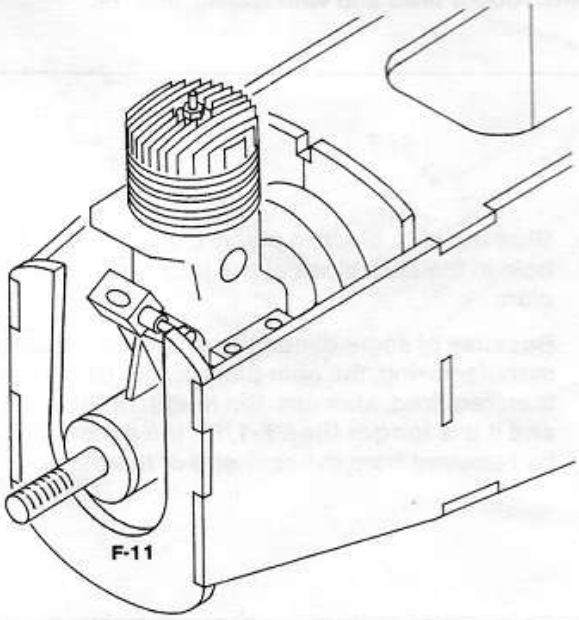
Note: F-3 and F-10 glued together now form the firewall.

☐ 62. Make sure the rear face of the engine mount is flat by sanding with the #320 sanding block, then center the mount over the lines and use it as a drill guide to drill four holes. Install four blind nuts on the rear face of the firewall.

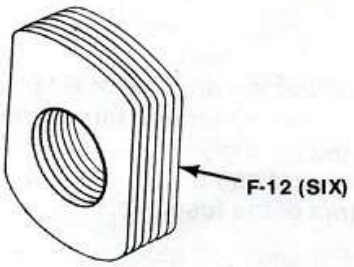


☐ 63. Glue F-11 onto the front of the fuselage in the position shown on the plan.

☐ 64. Install the engine on the mount.

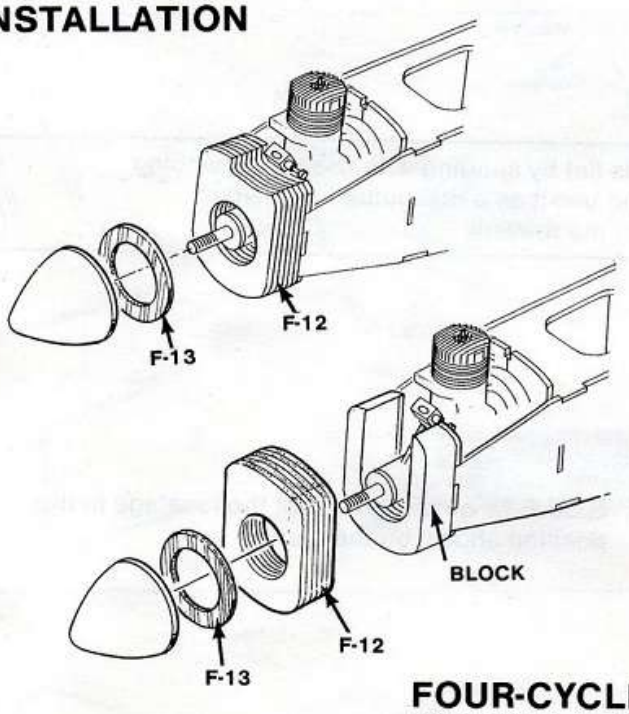


☐ 65. Install the engine and mount in the model. Cut the top of F-11 away to clear the engine and trim away the fuselage sides to clear the needle valve and muffler if needed.



☐ 66. Glue the six F-12's together.

TWO-CYCLE INSTALLATION



☐ 67. **For two-cycle engines only:** Glue the stack of F-12's to the front of F-11, cutting them to clear the carburetor. Glue the F-13 to the front of F-12, aligning them with the spinner back plate. (See note below).

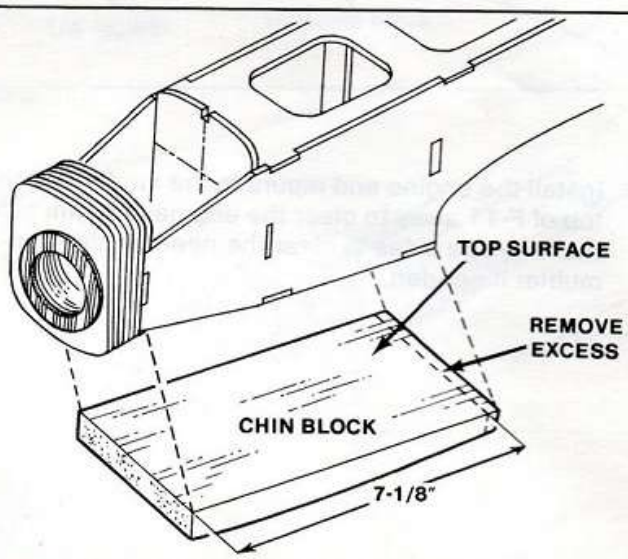
For four-cycle engines only: Glue the 1" x 2-3/4" x 3-3/4" block to the front of F-11, and then glue the F-12's to the front of the block followed by F-13, aligning them with the **spinner back plate.** (See note below).

Note: Build the nose of the model to achieve a 3/32" to 1/8" gap between F-13 and the spinner backplate.

FOUR-CYCLE INSTALLATION

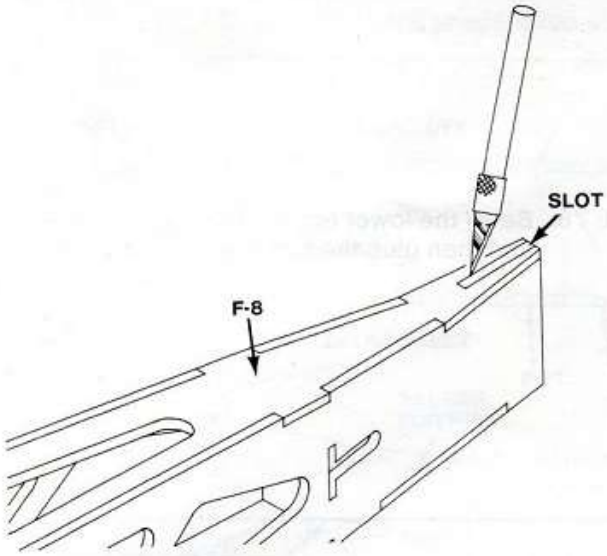
☐ 68. Mark the points on the firewall where the throttle pushrod, fuel and vent tubes will emerge. Remove the motor and drill these holes in the firewall.

☐ 69. Assemble and install the fuel tank complete with rubber feed and vent tubing, and the throttle pushrod casing.



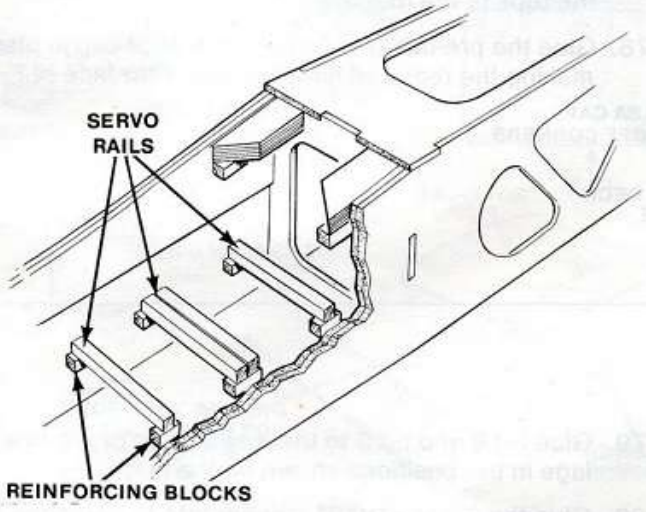
☐ 70. Glue the chin block in place. Drill a 3/16" oil drain hole in the chin block at the location shown on the plan.

Because of some dimensional variation during manufacturing, the chin block might be longer than required. Measure the length of the block, and if it is **longer than 7-1/8"**, the excess should be removed from the **rear** end of the block.

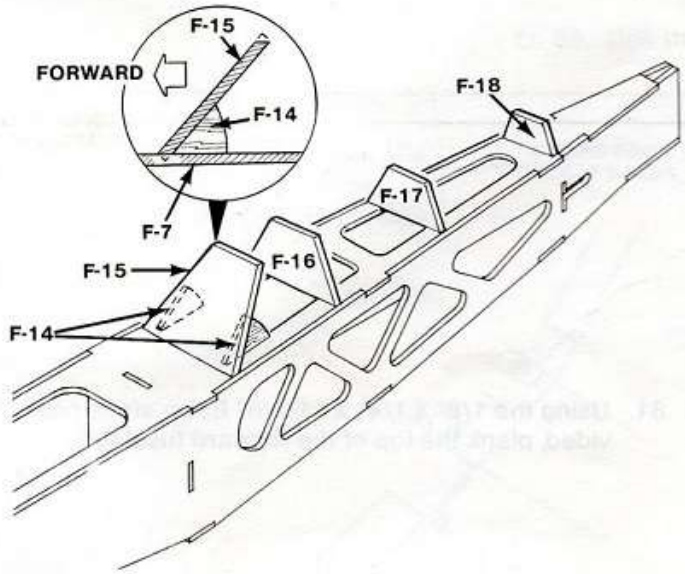


☐ 71. Cut a 1/16" x 7/8" slot in the bottom of the fuselage below the tail for the nylon tailwheel bracket. Check the fit of the bracket in the slot. The 1/16" hole should be vertically below the rudder hinge axis. **Do not** glue the bracket in place until **after covering** the fuselage.

☐ 72. Install pushrod casings for the elevator and rudder pushrods, gluing them to the fuselage sides where they exit the fuselage.

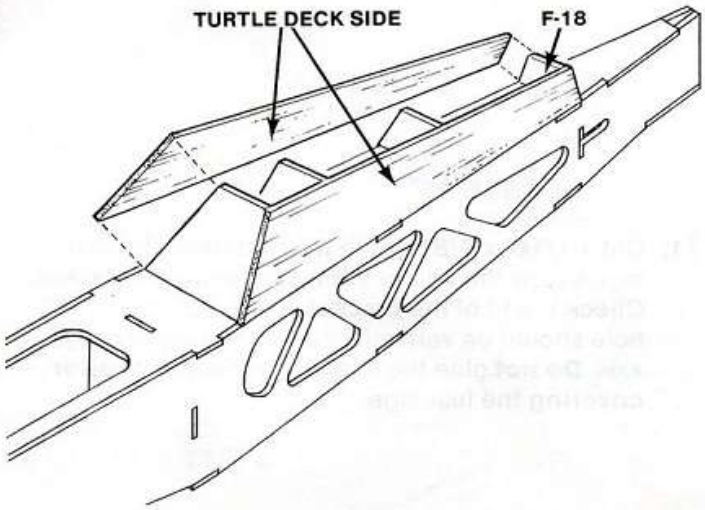


☐ 73. Using the 1/4" x 1/4" Spruce left over from the wing spars, make and install the servo rails and reinforcing blocks in the fuselage. The servo rails should be positioned according to the Plan.

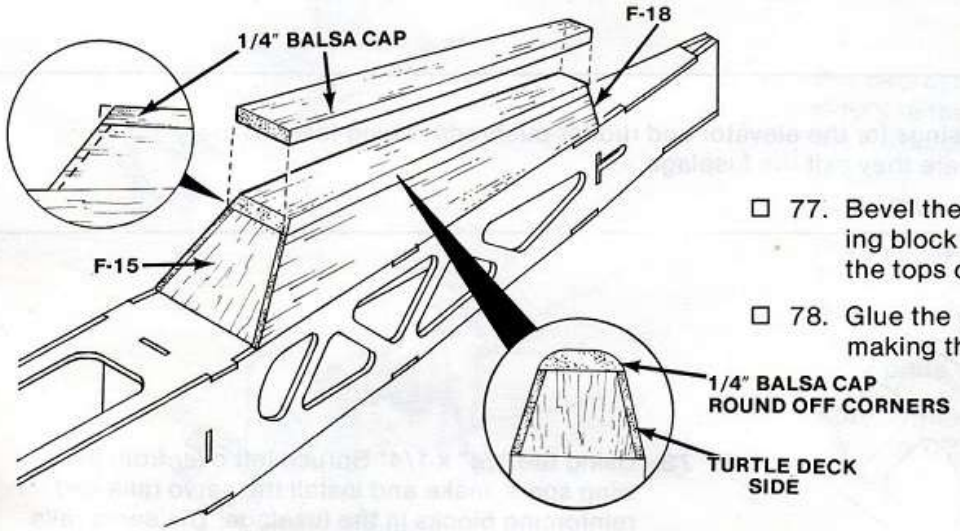


☐ 74. Bevel the lower edge of F-15 to match angle of slope shown on the Plan, and then measuring and marking its position from the Plan, glue F-15 onto F-7, gluing the two F-14's in to maintain the angle.

☐ 75. Glue turtle deck formers F-16, F-17, and F-18 to the top of the fuselage at the positions shown on the plan.

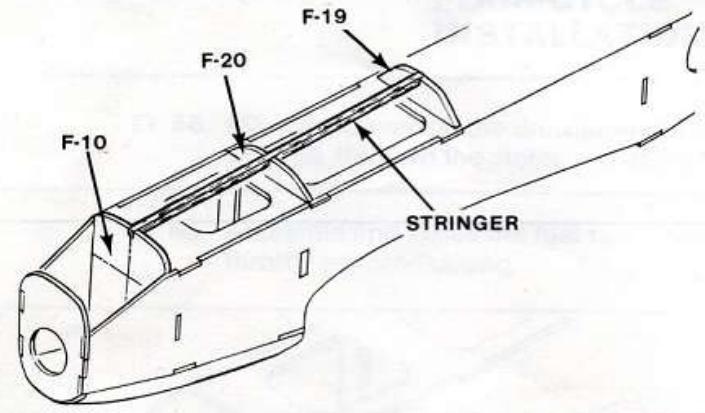


☐ 76. Bevel the lower edges of the two turtle deck sides, and then glue them in place as shown here.



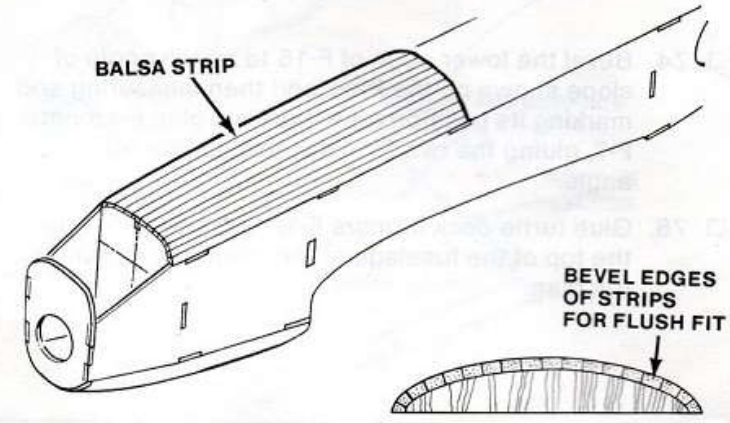
☐ 77. Bevel the top edge of F-15, and then use a sanding block to sand the turtle deck edges level with the tops of the formers.

☐ 78. Glue the pre-cut 1/4" Balsa turtle deck cap in place, making the rear end flush with the rear face of F-18.



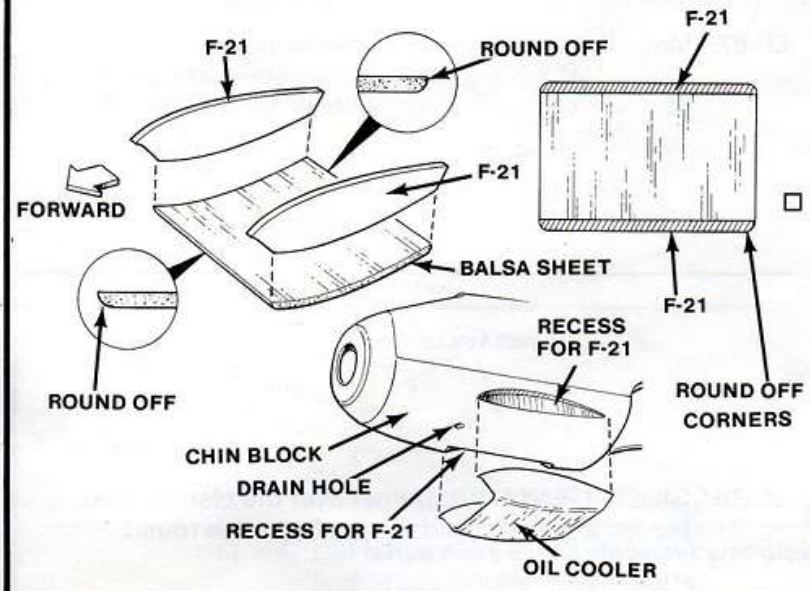
☐ 79. Glue F-19 and F-20 to the forward top of the fuselage in the positions shown on the plan.

☐ 80. Glue the 3/16" x 3/16" stringer into the notches in F-10, F-19, and F-20, and then trim flush at both ends.

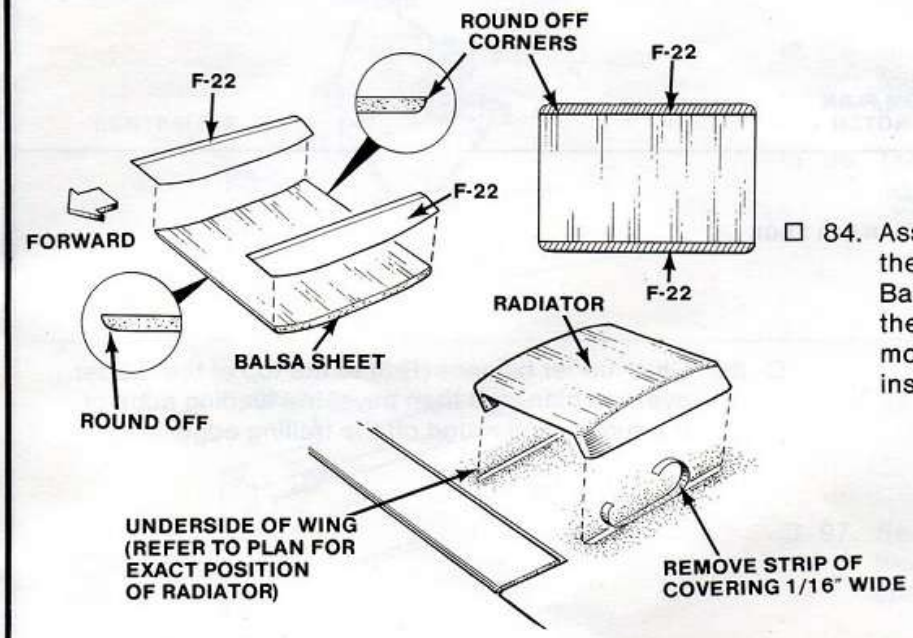


☐ 81. Using the 1/8" x 1/4" x 11-7/8" Balsa strips provided, plank the top of the **forward** fuselage.

☐ 82. Sand and shape turtle deck, forward fuselage, and nose block.

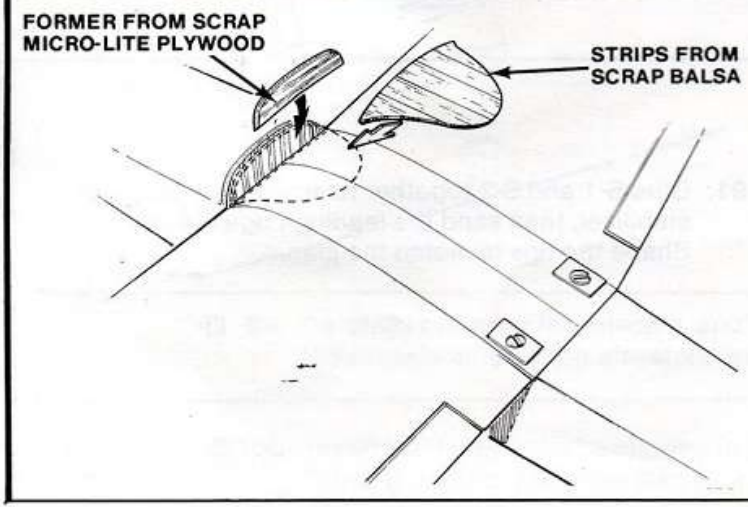


☐ 83. Assemble the oil cooler duct from the two F-21's and one piece of 3/32" x 3-3/8 " x 2-3/4" Balsa. Test-fit the duct to the chin block, but **do not** glue in place until **after** the model has been covered, and the duct has been covered inside and out.

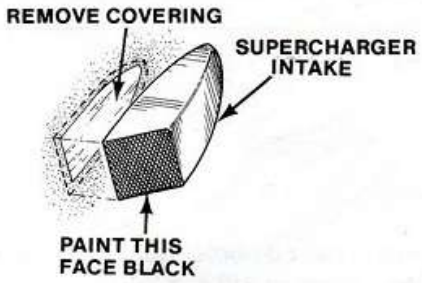


☐ 84. Assemble the two underwing radiator ducts from the four F-22's, and the two 3/32" x 2-7/8" x 2-3/8" Balsa sheets. Test-fit the ducts to the bottom of the wing, but **do not** glue in place until **after** the model has been covered, and the ducts covered inside and out.

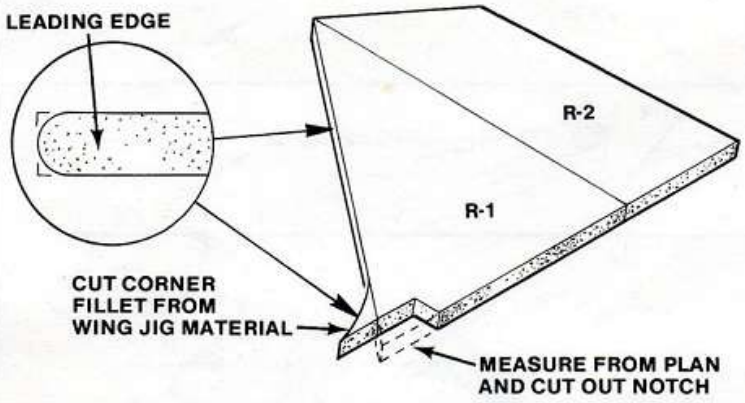
☐ 85. Bolt the wing to the fuselage.



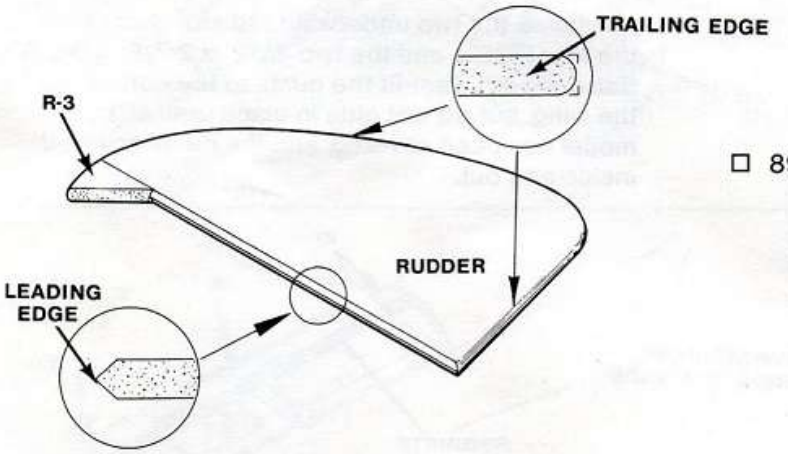
☐ 86. Use the remaining 3/32" x 2-7/8" x 6-1/4" Balsa sheet to build up the forward wing fairing, as shown. Small amounts of wood filler such as Goldberg's Model Magic® (see your hobby dealer) can be used around the edges to blend the fairing into the wing, after which remove the wing.



☐ 87. Make the supercharger intake from the 5/8" x 3/4" x 2-1/2" Balsa block, cover and paint as desired, and then set aside until required later.

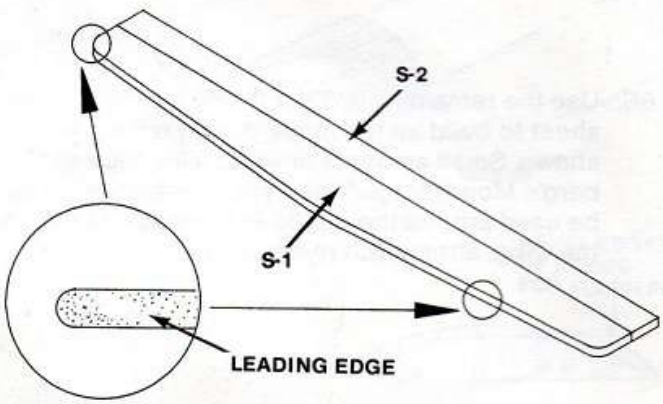


☐ 88. Glue R-1, and R-2, together over the plan to make the fin, and then sand the leading edge round.

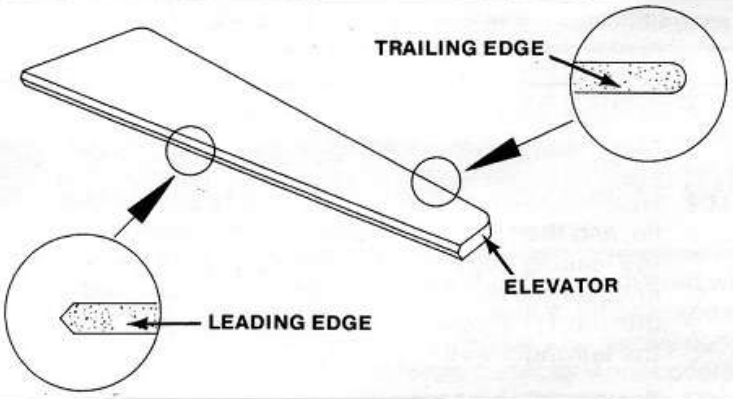


☐ 89. Glue rudder balance (R-3) to the top of the rudder over the plan, and then bevel the leading edge of the rudder and round off the trailing edge.

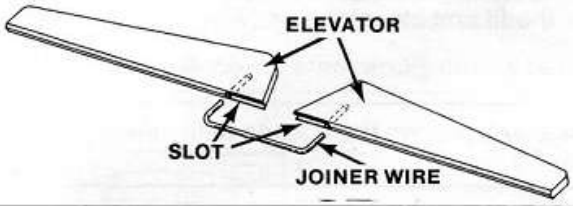
☐ 90. Cut hinge slots in the rudder and fin at the locations shown on the plan, and then test-fit the hinges in both parts.



☐ 91. Glue S-1 and S-2 together to make the horizontal stabilizer, then sand the leading edge round. Shape the tips to match the plan.

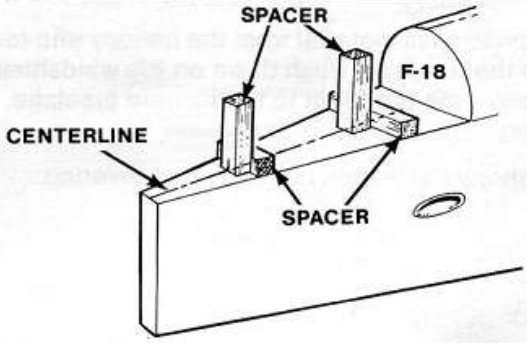


☐ 92. Bevel the leading edges and round off the trailing edges on both elevators, shaping the tips to match the Plan.



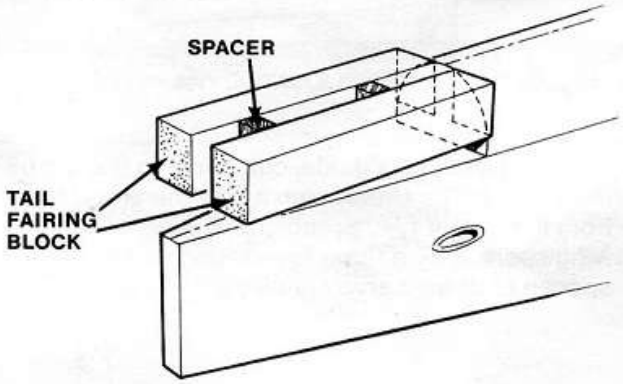
☐ 93. Mark, drill, and slot the elevators for the 3/32" pre-bent joiner wire, and then join the elevator assembly temporarily.

☐ 94. Cut hinge slots in the stabilizer and elevators at the locations shown on the plan and test-fit the hinges in both parts.

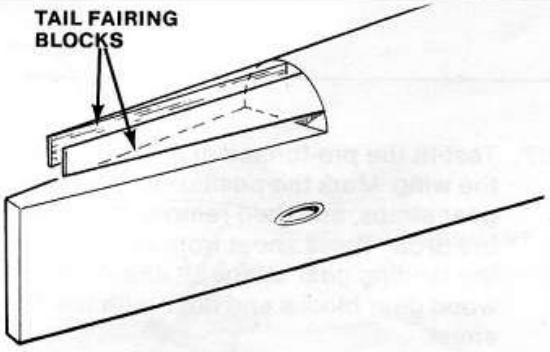


☐ 95. Using the 1/4" x 1/4" x 3-7/8" Balsa provided, cut four short lengths to form spacers for the tail fairing blocks.

☐ 96. Tack glue the spacers to the stabilizer platform, making sure that the spacers for the fin are aligned with the fuselage centerline.



☐ 97. Securely glue the 5/8" x 5/8" x 3-7/8" tail fairing blocks to F-18, only **tack gluing them** to the spacers.

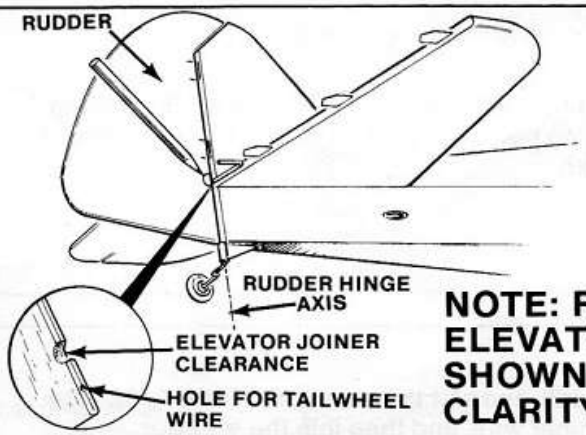


☐ 98. Carve and sand the fairings to shape.

☐ 99. Carefully cut away the spacers, and then test-fit the stabilizer and fin to the fuselage, temporarily hinging the elevators and joiner to the stabilizer.

☐100. Insert the tailwheel wire into the molded tailwheel bracket, and then make the 90° bend at the top, using the plan as a pattern.

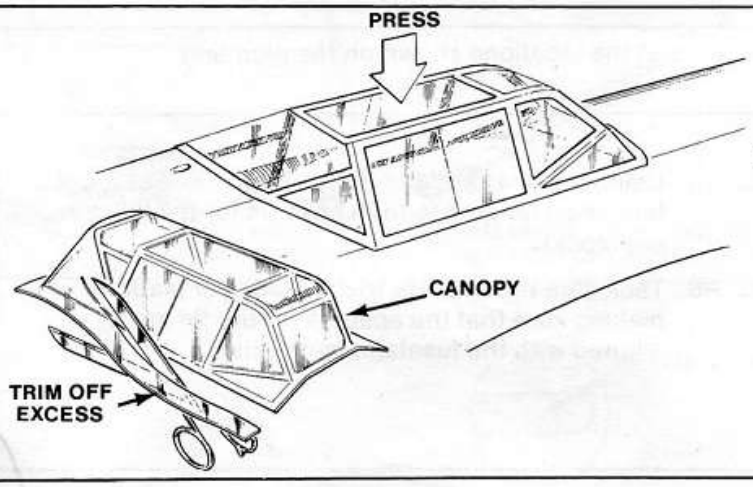
☐101. Slide the tailwheel bracket and wire assembly into the slot in the bottom of the fuselage.



☐102. Hold the rudder in its proper position against the fin, and then mark and remove a semi-circle from the leading edge of the rudder to provide clearance for the elevator joiner wire. Also mark and drill the 1/16" hole in the rudder leading edge for the tailwheel wire.

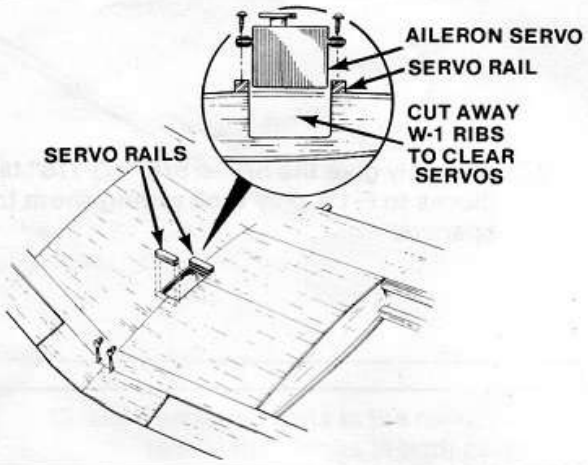
☐103. Temporarily hinge the rudder to the fin to check the fit and clearance.

☐104. Remove all the tail surfaces and tailwheel bracket, putting them aside until needed for covering.

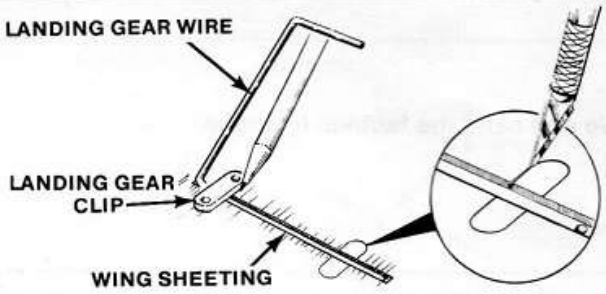


☐105. Trim the excess material from the canopy and test-fit it to the fuselage. Push down on the windshield to achieve the proper fit to the forward fuselage decking.

Put canopy aside until needed after covering.



☐106. Using the plan as a guide, cut a hole in the top of the wing for the aileron servo. Cut the servo rails from the 1/4" x 1/4" Spruce remaining from the wing spars, gluing them to the wing correctly spaced to fit the servo mounting flanges.



☐107. Test-fit the pre-formed main landing gear wires to the wing. Mark the positions of the nylon landing gear straps, and then remove the wires and trim the 3/32" Balsa sheet from these locations, so that the landing gear straps sit directly on the hard-wood gear blocks and flush with the Balsa wing sheet.

☐108. A cockpit floor can be added if desired. This can be made from thin cardboard or Balsa sheet.

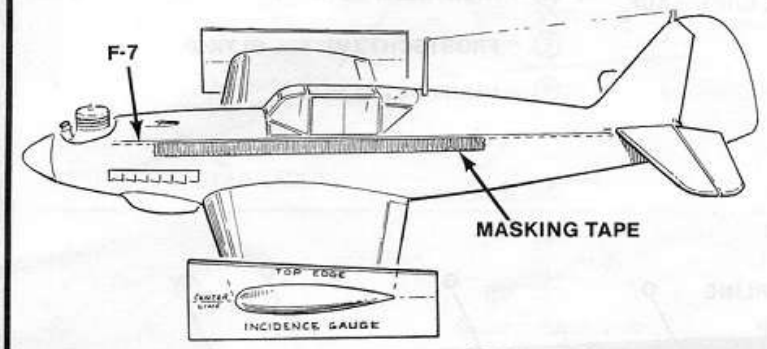
☐109. Paint the interior of the engine compartment and cockpit with fuel proof black butyrate dope or urethane paint. Mask off and paint the canopy frame to match the picture on the box.

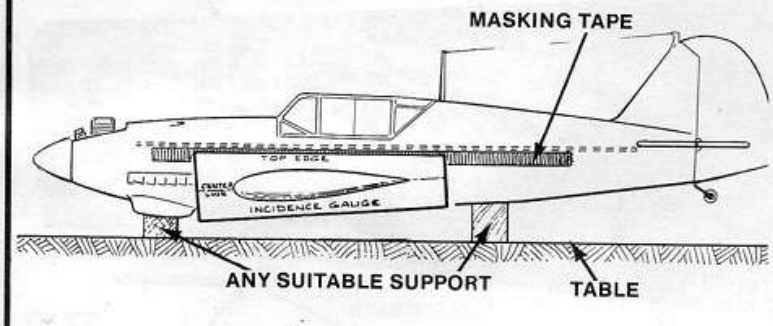
☐110. Sand the model smooth all over in preparation for covering.

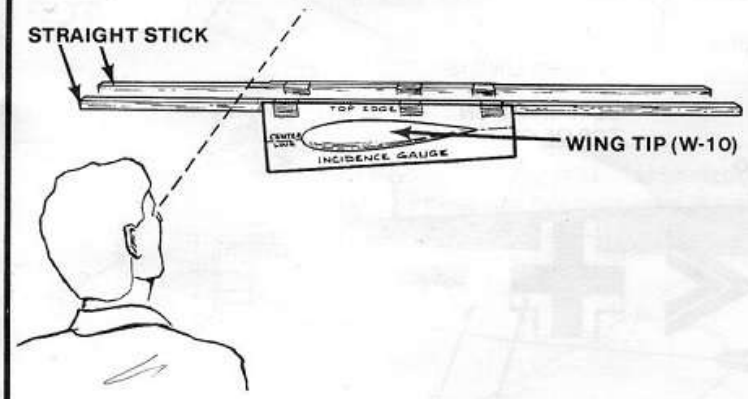
Finishing

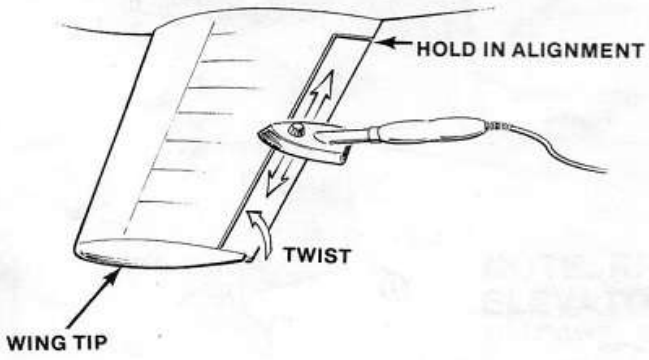
☐111. The prototype model was covered with olive, green, blue mist, and yellow Monokote covering film. However, other brands of covering film will work equally well, and you should be guided by your hobby dealer. One six foot roll of each color was adequate, provided **large** surfaces were covered first, using the remaining material to cover the smaller components. Follow the film manufacturer's instructions when covering. For the layout of the color scheme and marking, see Page #28.

Note: Do not apply decals until after Instruction #112.









☐112. **Note:** After covering the wing be sure to twist "washout" equally into each wing.

First cut the two incidence gauges from the plan, and then glue them to pieces of cardboard cut from the kit box. Carefully cut out the rib shape and use a straight edge when making the straight cuts.

Bolt the wing to the fuselage, and then slip an incidence gauge over each W-10 and secure with masking tape if necessary.

Carefully determine the top line of F-7 on the fuselage side and apply 18" of masking tape along this line as a reference. Set the model at the edge of the bench and have a helper **firmly** hold the fuselage down.

Apply gentle heat to the top and bottom of the wing, at the same time twisting the wing until the top edge of the incidence gauge is parallel with the top edge of the tape. Allow the wing to cool before releasing it. Repeat these steps to put washout in the opposite wing, and then remove the wing with gauges still attached.

Check that the incidence on both wings is identical by taping two straight sticks (each approximately 24" long) to the top edge of each gauge. Sight across the wing from tip to tip, checking to see that the sticks are parallel. If they are not, then correct by applying more twist to whichever wing requires it.

Note: The **amount** of washout is not critical but — it **is** important to have the **same amount** in **each** wing. If it is preferred, a Robart Incidence Meter (see your hobby dealer) can be used instead of the printed gauge provided on the plan. If the meter is used, then the amount of washout should be -2° to -3°. That is — if the wing root rests at 0°, then the leading edge of the wing tip should point downward -2° to -3° **and must be the same at each tip.**

Because of the washout twisted into the wing, the ailerons will no longer align with the wing trailing edge at the root and tip of the wing, so we recommend the following remedy:

Hold the root end of the aileron firmly in alignment with the trailing edge. Heat the top and bottom of the aileron, with the iron or heat gun, while twisting the tip of the aileron into alignment with the wing tip. When the aileron is aligned, allow it to cool before releasing.

ecals provided are of the peel-and-stick type and we strongly recommend the lowing method of application:

1 - Put 4 or 5 drops of dish washing liquid into a small cereal bowl, and then half-fill with warm water, mixing thoroughly.

2 - Cut closely around each decal with a new #11 hobby knife blade, and then peel it from the backing sheet as needed.

3 - Liberally swab the area to which the decal is to be applied with the soapy solution before placing the decal in position. The mixture will allow the decal to be slid into its final position.

4 - Hold the decal firmly in place and use a piece of flexible plastic (can be cut from a polyethylene coffee can or butter tub lid) to squeegee the water out from underneath, blotting with paper towel as required. Allow the decal to dry in a warm place for at least 48 hours.

COLOR LEGEND

G = GREEN

O = OLIVE

B = BLUE MIST

Y = YELLOW

TYPE LEGEND

① = VORSICHT BEIM OFFINEN KÜHLER IST IM HOUBENTETL EINGEBAUF

② = RED CROSS EMBLEM

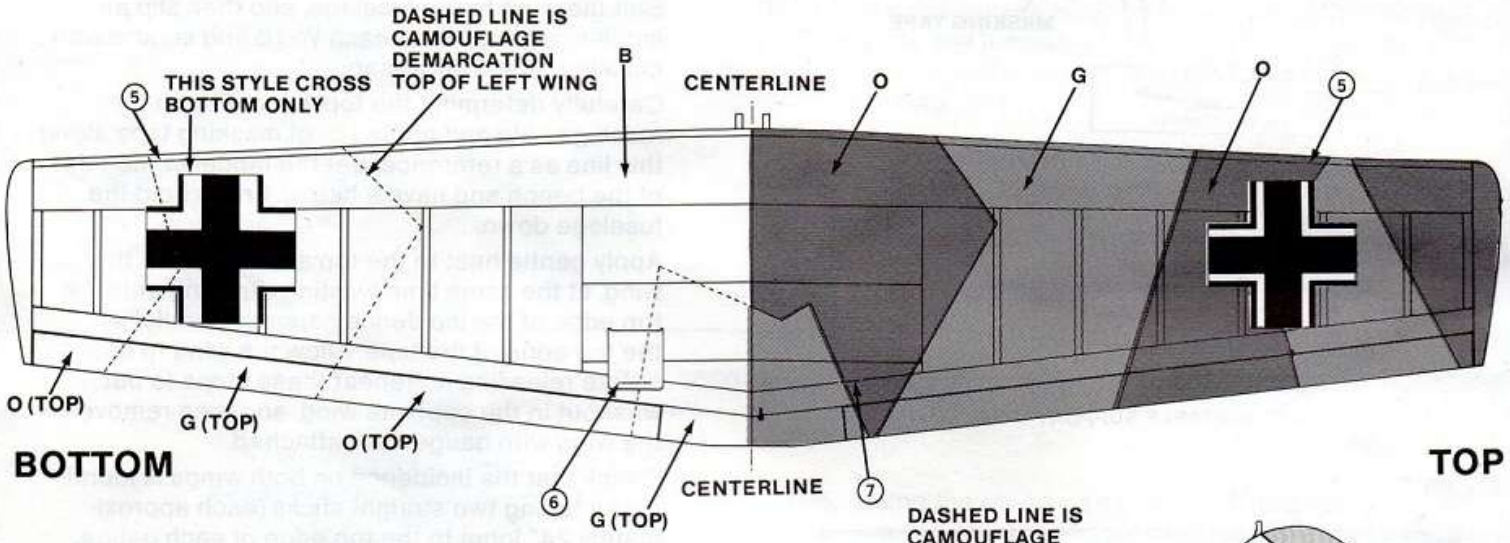
③ = REIFENDRUCK 4.5 ATU

④ = NICHT ANFASSEN

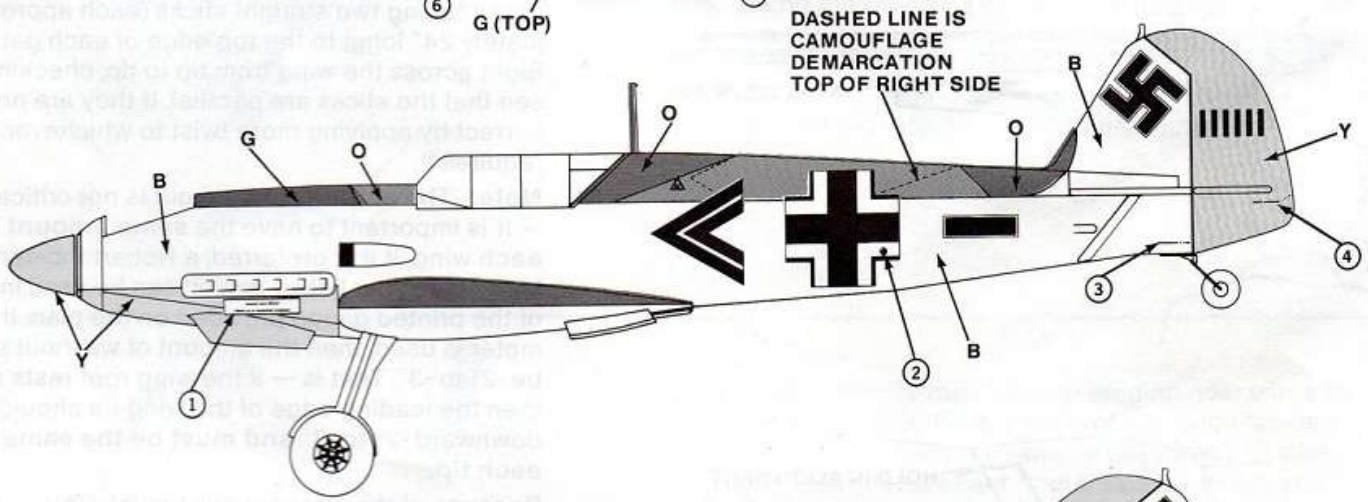
⑤ = HIER NICHT SCHIEBEN

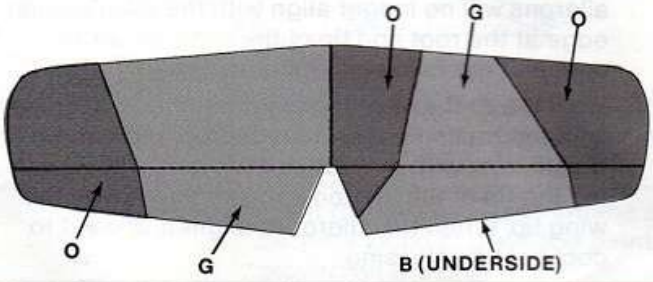
⑥ = FROSTSCHTZMITTEL GLYKOL

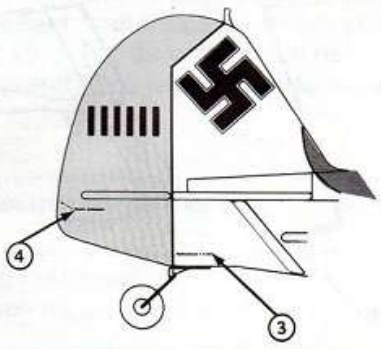
⑦ = NICHT BETRETEN



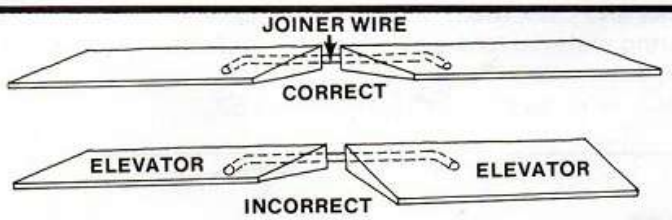
BOTTOM **TOP**



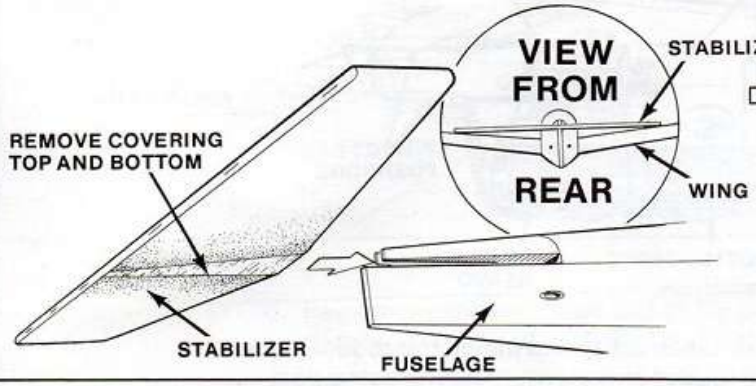




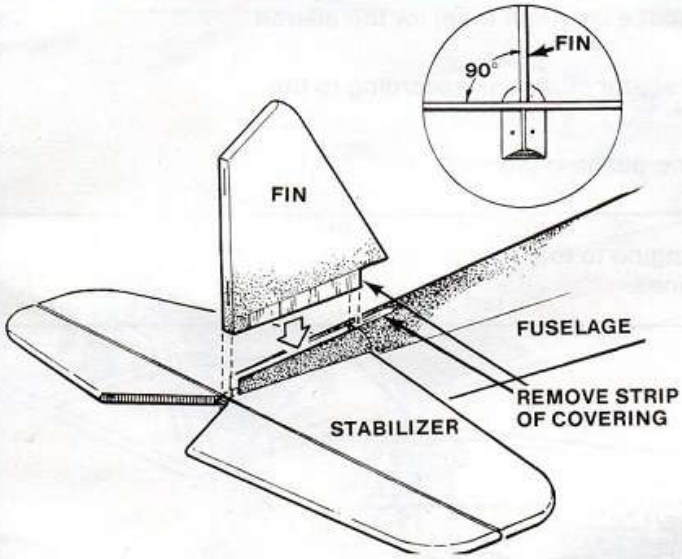
Final Assembly



☐114. On a flat surface glue the joiner wire into the elevators, aligning them as shown, and then hinge the elevators to the stabilizer.

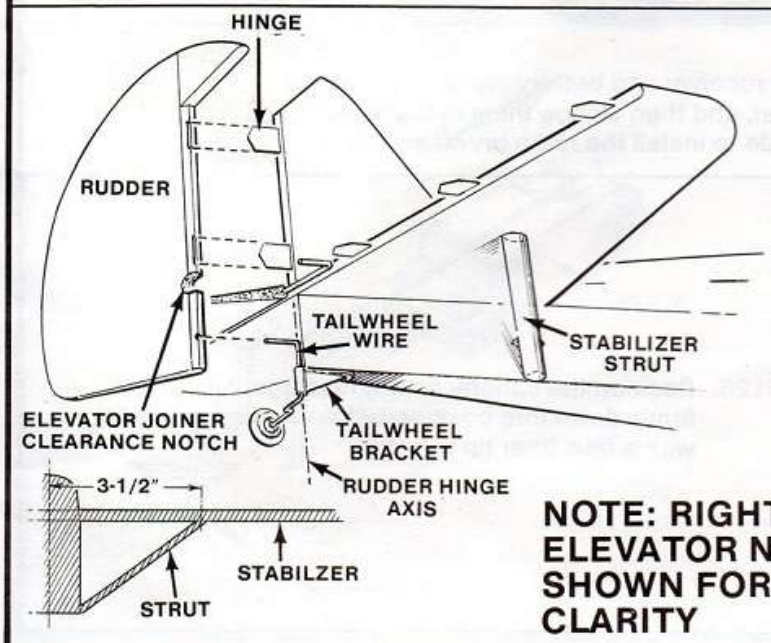


☐115. Attach the wing to the fuselage, and then carefully remove covering material from the center of the stabilizer to expose the wood, before gluing the stabilizer to the fuselage. Before the glue dries, carefully sight across stabilizer, from the rear, to align stabilizer with the wing.



☐116. Trim away covering material to expose the wood, and then glue the fin to the fuselage. Before the glue dries, check to see that it is vertical (90° to the stabilizer). When the glue has set, remove the wing.

☐117. Trim away covering material to expose the wood around the tailwheel bracket slot, and then glue the bracket into the slot using epoxy glue.



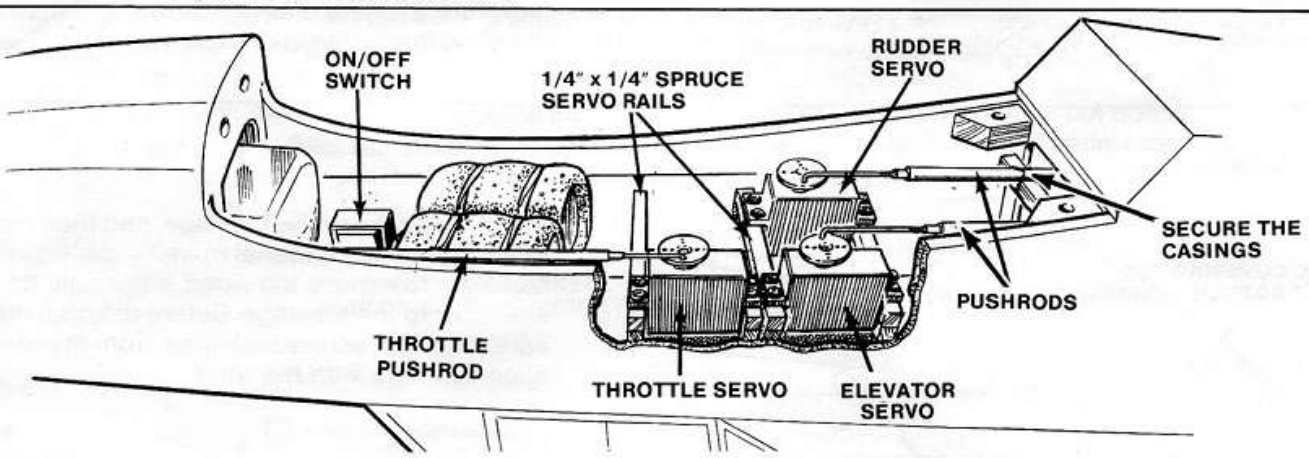
NOTE: RIGHT ELEVATOR NOT SHOWN FOR CLARITY

☐118. Hinge the rudder to the fin, at the same time gluing the tailwheel wire into the rudder. Be sure the wire lines up with the rudder hinge axis.

☐119. Make the stabilizer struts from the two 3/16" x 3/8" x 4-9/16" Basswood provided, and then cover them. Refer to the Plan and the picture at left for position and remove small pieces of covering to expose wood before gluing them in place.

☐120. Refer to the plan for the positions of the rudder and elevator nylon control horns, and then install them.

☐121. Trim the excess plastic from the exhaust stacks and paint them with butyrate black dope or polyurethane enamel. Cut away covering material to expose the wood before gluing the stacks to the nose with Thick CA, and then glue the oil cooler duct, supercharger intake and both radiators in place, refering back to Instructions #83, #84, and #87 for the method.

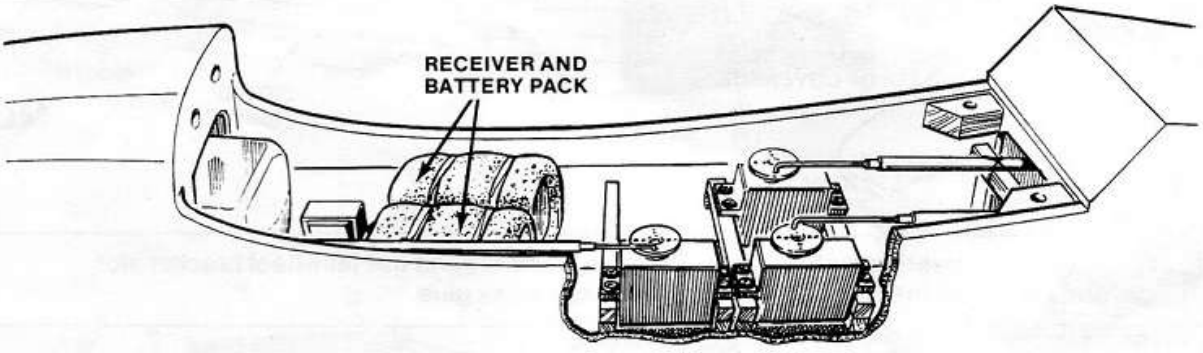


☐122. Work according to the radio manufacturer's instructions to install the rudder, elevator and throttle servos on the servo rails, the rudder and elevator servos being positioned close to the fuselage sides to provide space between them for the aileron pushrods as illustrated.

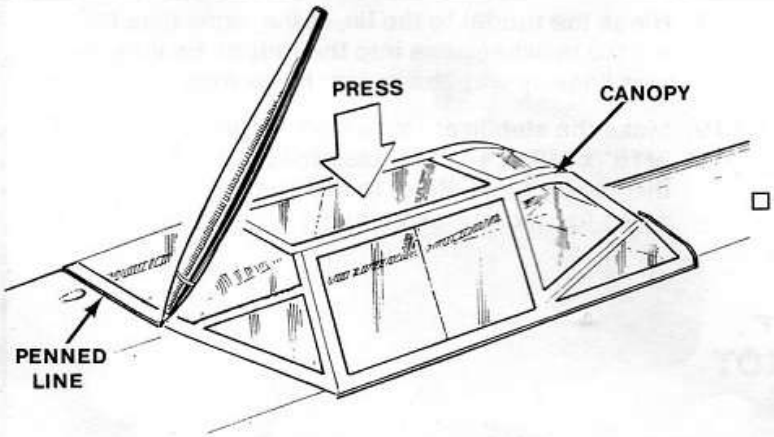
☐123. Make up and install the throttle, rudder, and elevator pushrods according to the manufacturer's instructions.

Note: Be sure to secure the forward end of the pushrod casings.

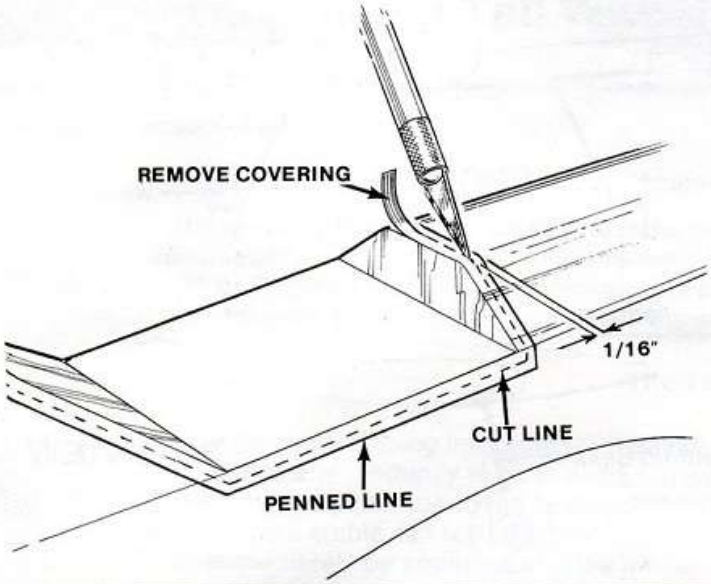
☐124. Install the engine mount, and then bolt the engine to the mount, connecting up the throttle pushrod and the fuel feed and vent lines.



☐125. Refer to the plan for positioning the radio receiver and battery pack. Wrap the receiver and battery pack in soft foam rubber, and then wedge them in the fuselage as per the plan. Cut a hole in the fuselage side to install the radio on/off switch.

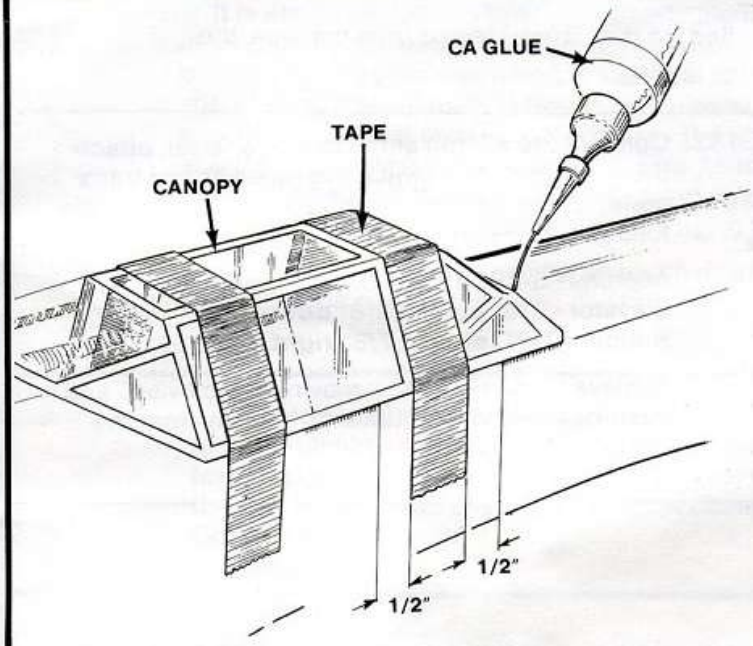


☐126. Position the canopy on the fuselage, pressing it firmly down into position before tracing around it with a fine, fiber tip pen.

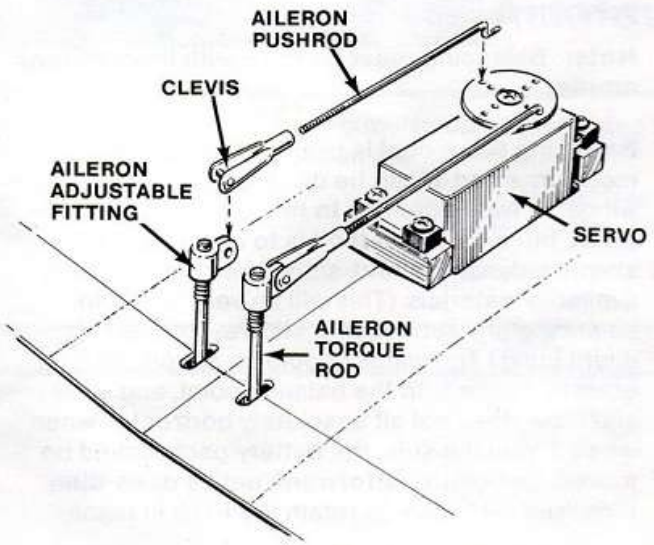


☐127. Remove the canopy and cut away all the covering material from within the cockpit area, starting 1/16" inside the penned line.

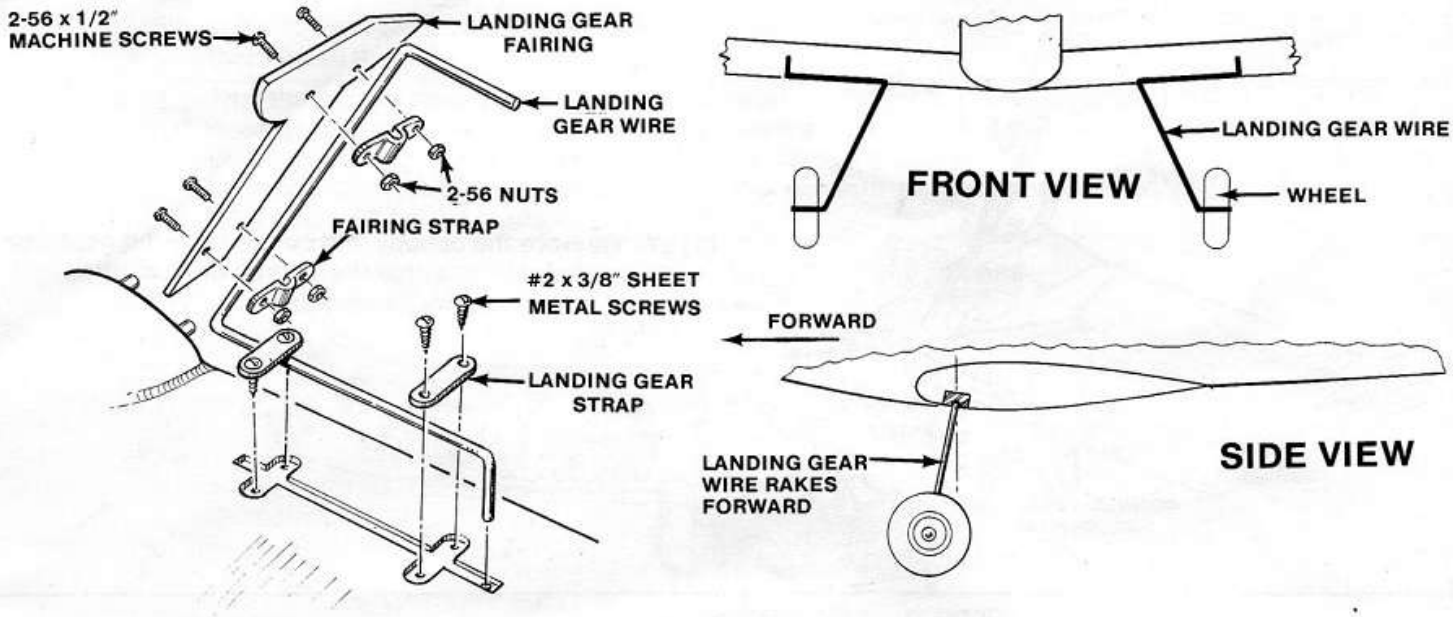
☐128. Paint any exposed wood within the cockpit, and then apply the instrument panel decal to the rear of F-19. Plastic pilot busts are available from your hobby dealer.



☐129. Reposition the canopy on the fuselage, taping it in place, and then using Thin CA glue **applied sparingly**, glue the canopy in place, keeping the glue at least 1/2" away from any tape. Remove the tape as soon as the glue has set, and then apply glue to the remaining areas.

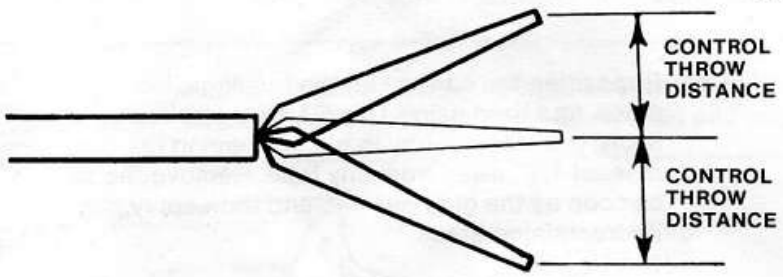


☐130. Fit the aileron servo into the recess cut in the wing center. Attach the threaded pushrods and clevises, snapping the clevises on to the nylon fittings.



☐131. Attach the landing gear wires to each wing, as shown, then attach the landing gear fairings to each gear leg using the clips and screws provided. Carefully align the fairings front to rear, in line with the air flow, and then apply a Thick CA fillet between the leg and the fairing to **keep** it aligned. Lightly oil the axles, and then attach the wheels using 5/32" wheel collars.

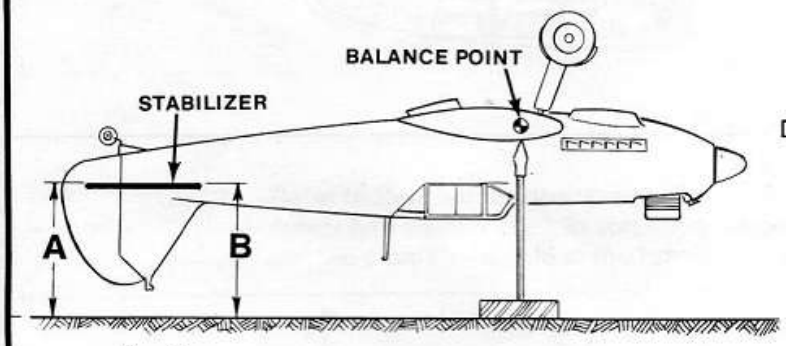
Note: Landing gear wires must be installed, so that, when viewed from the side, the wires rake forward.

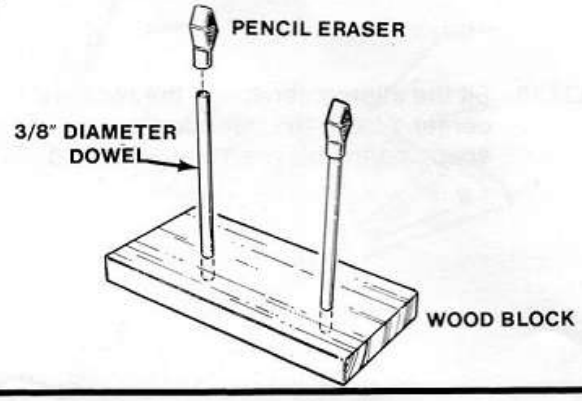


☐132. Connect the aileron servo to the receiver, attach the wing, and then switch the receiver and transmitter 'on' to set the control throws to achieve the following measurements:

Ailerons - 3/16" **up** and 3/16" **down**
Elevator - 3/8" **up** and 3/8" **down**
Rudder - 7/8" **left** and 7/8" **right**

Achieve these figures by moving the clevises and pushrod connections towards or away from the centers of rotation.





☐133. When the model is complete and in a ready-to-fly condition, it is ready for balancing at the balance point shown on the plan.

Note: Balancing **must** be done with the **fuel tank empty**.

Balancing this model is best carried out with the model inverted. It can be done by resting the wings on two finger tips **in line with the balance point**, but a better method is to make up the simple balancing stand, shown here, from readily available materials. (This will be very useful for balancing any subsequent Midwest model you might build.) The wings should be set on the erasers, in line with the balance point, and if the stabilizer does not sit absolutely horizontal, when viewed from the side, the battery pack should be moved, **backward** or **forward**, until it does, then repacked with foam to retain the pack in place.

Flying Tail Wheel Equipped Models

Introduction

There is very little difference between the handling of a tail wheel equipped model, (or "Taildragger", as they are colloquially termed), and one equipped with a nosewheel, ("Tricycle Gear" or "Trike"). Both configurations require a degree of finess with the rudder control stick during take-off, and a take-off facing **into** the wind is certainly simpler than one across it.

The Take-Off

With the model facing into wind for the take-off, first apply a **small** amount of "up"elevator (to minimize any tendency to nose over), then, **smoothly** advance the throttle to full power. As the airplane gains speed the "up" elevator can be relaxed because, at speed, the model will assume a stable, tail high attitude until it is flown off. In addition, as full power is applied, it will immediately be apparent that the model trys to make a slight left turn, so **gently** feed in the amount of **right** rudder necessary to check the turn, then **hold** the stick in that position to **keep** the airplane tracking straight. Once the model leaves the ground the right rudder input can be released.

The Landing

It is assumed that the flyer has already made a number of landings with a tricycle geared model, so the technique of approach to landing and the flare have already been learned, so with the Taildragger everything is identical to this point. Once the model has flared, the speed should be allowed to fall and the elevator stick brought **slowly** back to lower the tail with the model just skimming the grass - the object being to touch down on all three wheels at once, in the classic three point landing. As the model touches down, the elevator stick should be **kept all the way back** (to guard against noseovers), and the model should immediately be kept running straight by using the rudder control.

Note: If a slight bounce occurs on touch down, the elevator stick **must** be kept firmly back to discourage nosing over.

The staff here at Midwest Products hope you have enjoyed building your Midwest Messerschmitt and sincerely wish you the best of times flying it. We would appreciate you taking a few minutes to fill out and return the Postage-Paid Evaluation/Catalog Offer Card in this kit. We welcome any suggestions or comments you may have for improving our kits and Construction Manuals.

Thank you.

Acknowledgements

The following individuals contributed to the development of this kit and the production of this construction manual:

Model Designed By: Tom Herr
Illustrations By: Tom Herr and Jim Newman
Typesetting and Layout By: Phyllis Kilgore

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