

Piper J-3 Cub

KIT # K-505



Assembly Instructions

WARRANTY

Herr Engineering Corp. guarantees this kit to be free from defects in both materials and workmanship at the time of purchase. This warranty does not cover any component damaged by use or modification. In no case shall Herr Engineering Corporation's liability exceed the original cost of the purchased kit. Further Herr Engineering Corp. reserves the right to change or modify this warranty without notice.

In that Herr Engineering Corporation has no control over the assembly or use, no liability shall be assumed or accepted for any damage resulting from the use by the user during construction of the kit or the use of the final user assembled product. By the act of building this kit and/or using the final user assembled product, the user accepts all liability.

If the buyer and/or user is not prepared to accept all of the liability associated with this product, he is advised to immediately return this kit in new and unused condition to the place of purchase for a full refund.



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Notes about the laser cut parts

- ...The first thing that you need to do is to identify and mark the part numbers on the laser cut parts using the drawings on the following pages as a guide.
- ...It is possible that several of the laser cut parts may not be completely cut through. If this is the case you can free the part from the s quickly using an X-acto knife.
- ...The slight discoloration on the edges of the laser cut parts may be removed by lightly sanding the edges with 400 grit sandpaper.

Kit Contents:

Your kit contains the following parts. Please check your kit for any missing or damaged parts before starting construction.

Wood Bag:

Qty.	Name	Description
1	LC-505-01	.3/32" x 4" x 24" Laser Cut Balsa Sheet
1	LC-505-02	.3/32" x 4" x 24" Laser Cut Balsa Sheet
1	LC-505-03	.3/32" x 4" x 24" Laser Cut Balsa Sheet
1	LC-505-04	.3/32" x 4" x 24" Laser Cut Balsa Sheet
1	LC-505-05	.3/32" x 4" x 24" Laser Cut Balsa Sheet
1	LC-505-06	.3/32" x 4" x 24" Laser Cut Balsa Sheet
1	LC-505-07	.1/8" x 4" x 18" Laser Cut Balsa Sheet
1	LC-505-08	.1/8" x 4" x 18" Laser Cut Poplar Ply
1	LC-505-09	.3mm X 12" x 12" Laser Cut Poplar Ply Sheet
1	LC-505-10	.3mm X 6" x 12" Laser Cut Polar Ply Sheet
1	LC-505-11	.1/16" x 6" x 4" Laser Cut Birch Ply Sheet
1	LC-505-12	.1/16" x 2 1/2" x 4" Laser Cut Balsa Sheet
6	Leading Edge and Spars	.1/4" sq. x 24" Balsa Strip
4	Center Section Spars	.1/4" sq. x 4" Balsa Strip
4	Leading Edge Stringers	.1/8" sq. x 24" Balsa Strip
4	Trailing Edge	.1/16" x 1" x 24" Balsa Sheet
2	Center Section Trailing Edge	.1/16" x 1" x 4" Balsa Sheet
4	Center Section Sheet	.1/16" x 3" x 12" Balsa Sheet
1	Fuselage Nose Sheet	.3/32" x 3" x 9" Balsa sheet
1	Side Window Frame	.3/32" sq. x 6" Balsa Strip
1	Servo Rails	.1/4" sq. x 6" Spruce
4	Wing Struts	.3/32" x 1/4" x 18" Balsa Strip
1	Wing Strut Wire	.1/16" x 12" Mild Steel Wire

Plastic Parts Loose in Box

Qty.	Name	Description
1	Plan Sheet #1	
1	Plan Sheet #2	
1	Decal Sheet	
1	Instruction Book	
2	Main Landing Gear	
1	Molded Plastic Cowl	
1	Windshield & window plastic	.010" x 8" x 10"

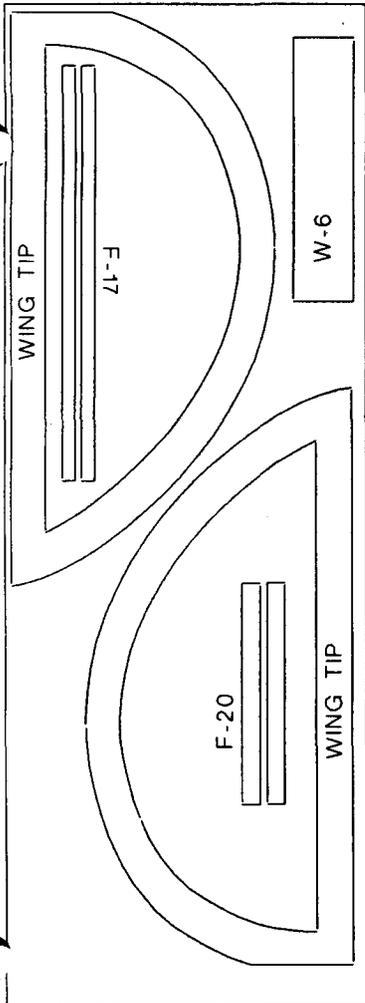
Hardware Bag

Qty.	Name	Description
2	Control Horn	Small Nylon Control Horn
4	Horn Screw	.2-56 x 3/8" Machine Screw
1	Elevator Joiner	.1/8" x 3" Birch Dowel
8	Main Landing Gear & Cowl Screw	#2 Sheet Metal Screw
4	Cowl Block	.3/8" x 3/8" x 3/8" Hardwood block
2	Nylon Wing Bolt	.10-32 x 1" Nylon Screw
2	Wing Dowels	.3/16" dia. x 1" Birch Dowel
1	Trailing Edge Filler	.1/4" x 1" x 3" Tapered Trailing Edge
1	Wing Strut Attach Tube	.1/16" dia. x 3" Clear Plastic Tube
1	Tail Wheel Wire	.1/16" dia. x 3" Music Wire

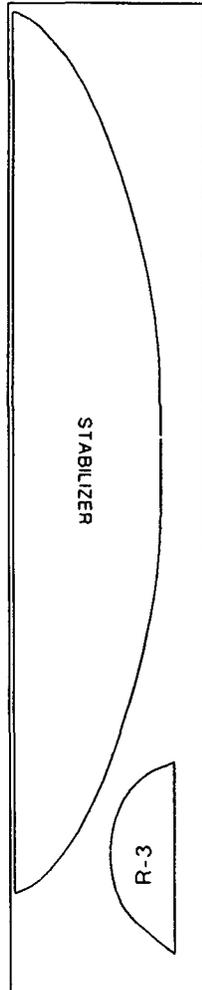
Additional Items Required (Not Included in Kit)

Note: These are parts that we have used and are familiar with. There are many other brands available and you may substitute other items that you are more comfortable with or have on hand.

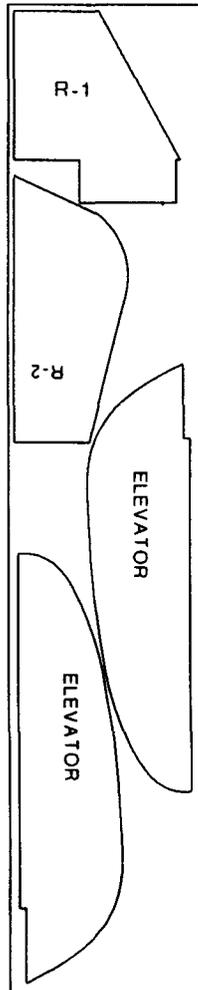
Qty.	Name	Description
1	Engine	.049 to .061 Engine with throttle
1	Radio	3 Channel Radio with standard servos (micro servos optional)
3	Hinges	Sig Easy Hinges # SH-710 or Du-Bro Kwik Hinge # 537
1	Motor Mount	Dave Brown # 0506
4	Motor Mount Screws	4-40 x 3/4" Machine Screws and Blind Nuts Sig # SH-111 or Du-Bro # 129
1	Fuel Tank	Sullivan 2oz. # SS-2
1	1/2-A Fuel Line	Sig # SH-288 or Du-Bro # 221
2	Flexible Pushrod	Du-Bro #500 Laser Rod
2	Yellow Covering Material	.2 Rolls Iron on covering material
1	Yellow Paint	To match the covering material
1	Propeller	Grish Tornado 6-3 Nylon Propeller # GRIQ1050
2	3/32" Wheel Collars	Sig # SH-585 or Du-Bro # 138
1	1/16" Wheel Collar	Sig # SH-584 or Du-Bro # 137
2	Main Wheels	.2 1/4" Du-Bro #225T
1	Tail Wheel	3/4" Sullivan # 351 T1 Tail Wheel
2	Wheel Bushings	Make from K&S Brass Tube #127
1	Throttle Pushrod Assembly	Sig # SH-559 or Du-Bro # 165



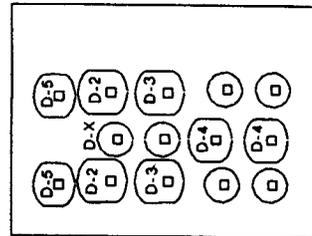
LC-505-09 3mm X 6" X 12" POPLAR PLY 1 REOD.



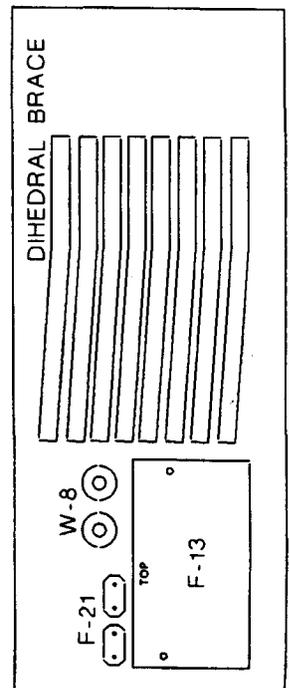
LC-505-10 1/8" X 4" X 18" Balsa 1 REOD.



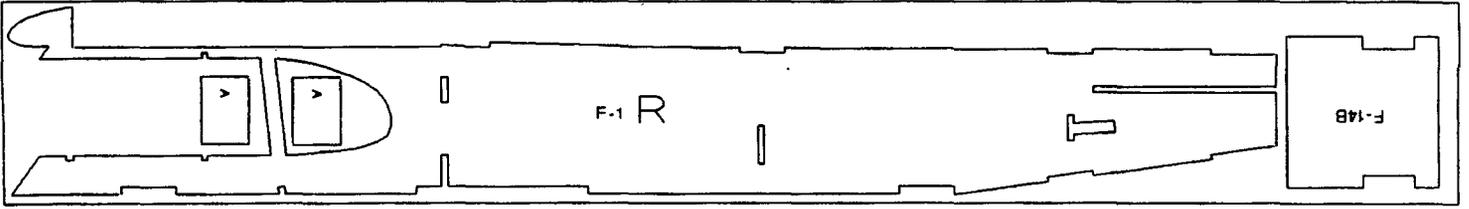
LC-505-11 1/8" X 4" X 18" Balsa 1 REOD.



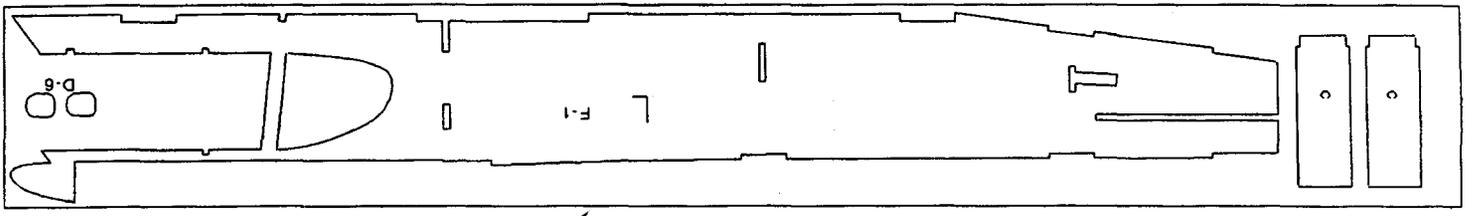
LC-505-12 1/16" X 2" X 4" BIRCH PLY 1 REOD.



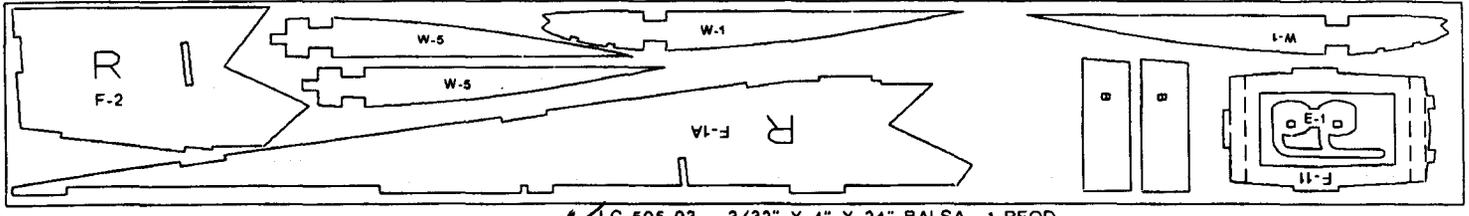
LC-505-12 1/16" X 2" X 4" BIRCH PLY 1 REOD.



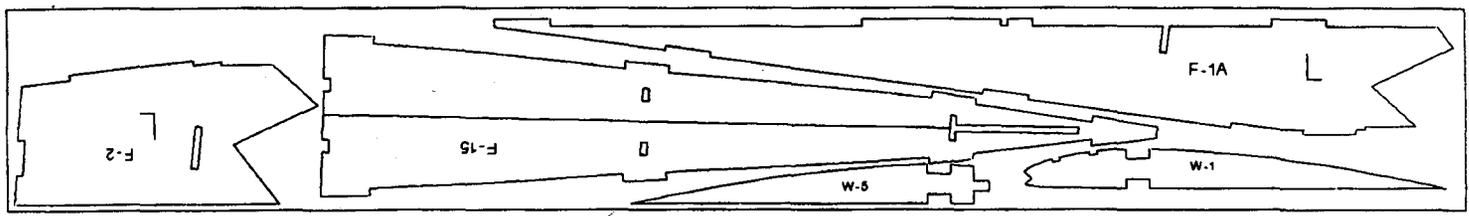
✓ LC-505-01 3/32" X 4" X 24" BALSA 1 REQD.



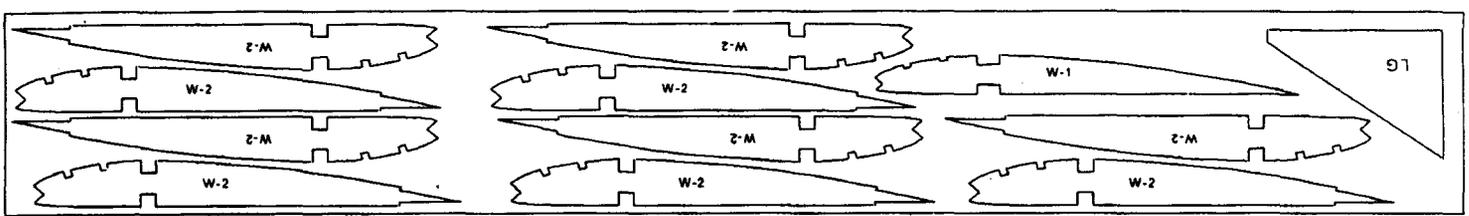
✓ LC-505-02 3/32" X 4" X 24" BALSA 1 REQD.



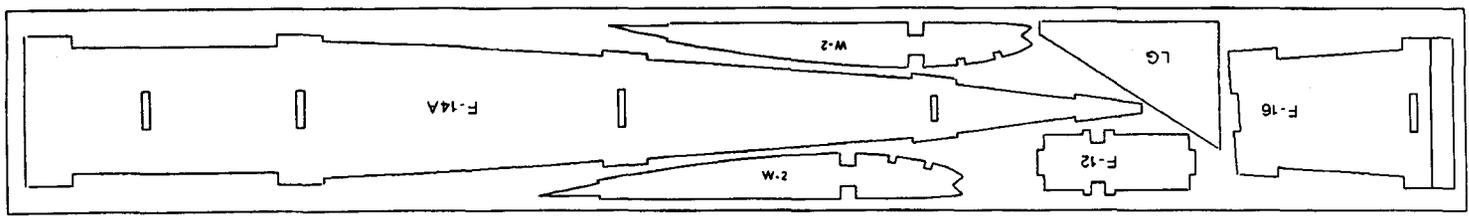
✓ LC-505-03 3/32" X 4" X 24" BALSA 1 REQD.



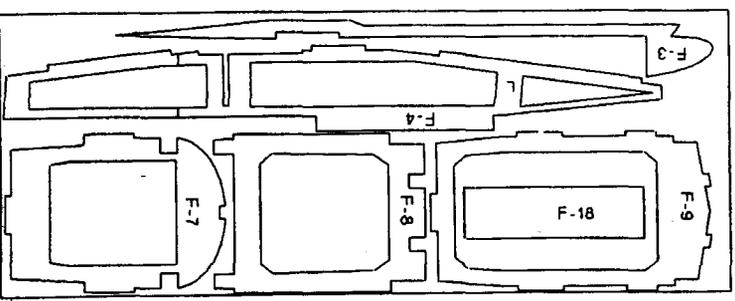
✓ LC-505-04 3/32" X 4" X 24" BALSA 1 REQD.



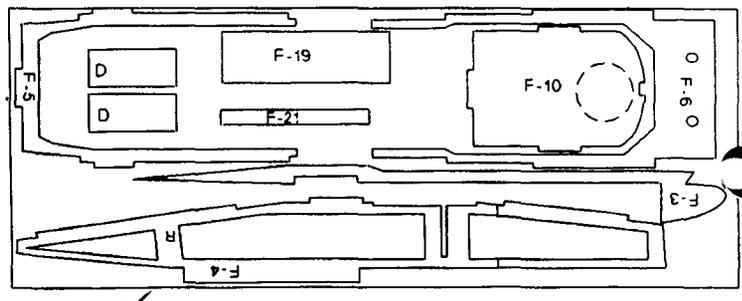
LC-505-05 3/32" X 4" X 24" BALSA 1 REQD.



✓ LC-505-06 3/32" X 4" X 24" BALSA 1 REQD.



✓ LC-505-07 3mm X 6" X 12" POPLAR PLY 1 REQD.



✓ LC-505-08 3mm X 6" X 12" POPLAR PLY 1 REQD.

Building Instructions:

General Note: Cover the plans with wax paper before assembling your model to prevent the parts from sticking to the plan.

Building the Tail Surfaces:

- 1...Join R-2 and R-3 together over the plan to make the rudder. Temporarily hinge the rudder to the fin (R-1). Do not glue the hinges at this time.
- 2...Join the elevators using the 1/8" dowel. Use the plan of the stabilizer as a guide. Trim the dowel if required to achieve the proper length.
- 3...Temporarily hinge the elevators to the stabilizer. Do not glue the hinges at this time.
- 4...Sand the tail surfaces smooth and round all of the edges except the bottom edge of the fin.

Building the Fuselage:

- 5...Assemble the right fuselage side. Glue parts F-1(R), F-1A (R) and F-2 (R) together as shown on the plan. The letter "R" is on the inside of the right fuselage side parts and should face up on all the parts. When the glue is dry, Glue parts F-3 and F-4(R) into position on the inside of the right fuselage side. Now glue the 3/32" sq. win dow frame into the notches in the fuselage side.
- 6...Build the left fuselage side as you did the right. The parts for the left fuselage side are marked with an "L" on the inside of each piece.
- 7...Cut two strips from two of the 3/32" x 1/4" wing struts and glue to the front face of F-11.
- 8...Lay the right fuselage side on the building board and glue former F-5 into position 90 degrees to the fuselage side.
NOTE: Do not pin the fuselage side to the building board as the formers have a slight angle near the bottom and the fuselage side will not be flat from top to bottom when the formers are glued into position.
- 9...Glue former F-6 into position 90 degrees to the fuselage side.
- 10...Tack glue former F-7 to the fuselage side with several spots of glue.
- 11...Place F-8 into position. The lower tabs fit into the notches in F-7. Do not glue at this time.
- 12...Glue F-9 into position 90 degrees to the fuselage side.
- 13...Place the left fuselage side into position on the the formers. Hold the fuselage in your hands while doing this. Now glue the formers to the left fuselage side starting with F-5 and then F-6, F-7 and F-9. Now glue F-8 to both fuselage sides and to F-7 and F-6.
- 14...Glue the 1/16" landing gear plate (F-13) into position in the notches in the fuselage sides. The word "top" on this part should be on the inside of the fuselage and be at the forward end.
- 15...Place F-10 into position and hold the fuselage sides together with a small rubber band. Place F-16 into position which will align the front end of the fuselage. The line marked on F-16 is on the outside/bottom when properly installed.
- 16...Glue F-10 to the fuselage sides and to the front of F-16. Glue F-16 to the fuselage sides back to F-7. Cut part way through F-16 at the line marked on the bottom and press the aft end against F-13 and glue into position.
- 17...Place F-11 into position and tack glue with a small spot of glue at the top and bottom on each side.
- 18...Place F-12 into position and tack glue with a small spot of glue at the top and bottom on each side.
- 19...Place the fuselage bottom (F-14A) into position and glue to the fuselage sides from the front back to F-12.
- 20...Pinch the rear fuselage sides together and glue them together and to the aft end of F-14A. Now glue the formers F-11 and F-12 to the fuselage sides and to F-14A.
- 21...Place F-14B into position and glue to the fuselage sides, F-14A and F-13.
- 22...Glue the fuselage top (F-15) into position. The line on the center should be on the outside and you should crack F-15 on this line slightly to allow it to match the angles on the top of the formers.
- 23...Glue F-18 into position at the top rear of the cabin area. Glue F-19 into position on the bottom of F-18.
- 24...Glue the two F-17's into position between F-18 and F-6. These pieces should be flush with the top of F-18 and F-3.

- 25...Glue the two F-20 fuel tank supports into position. Trim the forward one as required to fit.
- 26...Attach the motor mount to the front of F-10. Now mount the motor onto the mount.
- 27...Assemble the fuel tank and place it into the model.. Mark the front of F-10 for the locations of the fuel and vent lines as well as the throttle cable. Remove the tank and motor from the model and drill these holes with a 3/16" drill bit.
- 28...Cut the 1/4" sq. spruce servo rails and glue them into position using the servos to establish the proper spacing. Now mount the servos.
- 29...Put the fuel tank and motor back into position. Place the tank on a thin piece of foam rubber. Now install the throttle cable and fuel and vent lines.
- 30...Glue the 3/32" x 1/4" strip between F-7 and F-10. Cut this strip from one of the two remaining full length wing struts. Now sheet the top of the forward fuselage with 3/32" sheet.
- 31...Sand the fuselage;age smooth all over.
- 32...Glue the 3/8" sq. cowl blocks to the front of F-10. Be careful placing the top left block so that it will not be behind the dummy engine cylinders. Taper the blocks to match the angles of the fuselage sides. Now trim and test fit the plastic cowl to the fuselage.
- 33...Glue the stabilizer to the fuselage and then glue the fin into position. Temporarily place the elevators and rudder into position. Cut the slot for the lower rudder hinge into the fuselage and rudder and insert this hinge.
- 34...Install the control horns and pushrods at this time.
- 35...Glue F-21 across F-5 to support the front of the pushrod housings and secure the housings to F-5.
- 36...Mount the radio switch in the left fuselage side or on the bottom of the fuselage.

Building the Wing:

- 37...Cut the lower 1/4" sq. main spar and the 1/16" x 1" trailing edge for the center section to length and pin into position on the plan.
- 38...Glue the four lower plywood dihedral braces to the front and back of the lower spar.
- 39...Glue the three W-5 ribs into position on the lower spar and trailing edge. These ribs should be 90 degrees to the building board. Glue the top 1/16" x 1" trailing edge into position.
- 40...Cut the forward top 1/4" sq. cross piece (NOT THE MAIN SPAR) to length and glue it into position in the notches at the front of the F-5 ribs.
- 41...Remove the center section from the plan. Glue the lower front 1/4" sq. cross piece into position and sheet the bottom of the center section with 1/16" sheet. The sheet goes between the trailing edge and the rear dihedral braces and from the front dihedral braces to the front of the forward 1/4" sq. cross piece.
- 42...Cut two pieces of the 1/4" x 1" tapered filler strip and glue into position between the top and bottom trailing edges on either side of the center W-5 rib.
- 43...Glue pieces "D" into position against the rear of the 1/4" sq. front cross pieces.
- 44...Pin the left hand lower outboard 1/4" sq. main spar and the lower left trailing edge into position on the plan. These pieces end at the last W-2 rib.
- 45...Place the wing center section into position against the left lower spar and trailing edge and rock it so that the dihedral braces are in contact with the lower spar and are flat on the building board. Glue the dihedral braces to the main spar and glue the trailing edge to the center section.
- 46...Glue the two W-1 ribs into position.
- 47...Glue the six W-2 ribs into position.
- 48...Glue the 1/4" sq. leading edge into position on the ribs. The outboard end should extend past the last W-2 rib by several inches.
- 49...Glue the top 1/16" x 1" trailing edge into position. It stops at the last W-2 rib.
- 50...Trim the outboard end of the top 1/4" sq. main spar to the angle shown on the plan and place it into position.
- 51...Place the wing tip into position. The aft end should rest on the plan and the forward end should be raised so that it is centered on the leading edge. While holding this position, angle the outboard end of the tip up and slide the top spar into contact with the tip. Now glue the tip to the wing in this position.

- 52...Trim the inboard end of the top spar to length and then glue the spar to the wing tip and to the W-2 ribs. Do not glue the spar to the W-1 ribs at this time.
- 53...Trim the outboard end of the 1/8" sq. leading edge strips and then glue into position to the wing tip and the ribs.
- 54...Remove the wing from the plan. Crack the leading edge at the last W-2 rib and angle it up to match the wing tip and glue into position. Trim the leading edge to match the wing tip.
- 55...Now build the right wing as you did the left. When you place the center section / left wing into position you should support the left wing at the proper angle so that the dihedral braces for the right wing are flat against the building board.
- 56...Cut the top center section main spar to length and glue it and the four top dihedral braces into position. Glue the top outboard spars to the W-1 ribs at this time.
- 57...Sheet the bottom of the wing with 1/16" sheet out to the second W-1 rib as you did the center section. Glue parts "A", "B", and "C" into position on the rear of the main spar. Now sheet the top of the wing.
- 58...Glue W-6 to the front of the wing center section.
- 59...Test fit the wing onto the fuselage. You can sand the front of W-6 or the trailing edge if the fit is too tight. If there is any gap between the leading edges of the outboard panels and the fuselage you can glue a piece of 1/16" sheet to the outside of the W-1 rib and sand it for a perfect fit.
- 60...Use a 3/16" drill bit to drill through the holes in F-6 and into the wing leading edge. These holes should go through W-6 and parts "D" in the wing.
- 61...Remove the wing from the model and glue the two wing dowels into position. They should stick out from W-6 about 1/4"
- 62...Place the wing back on the model and mark the position of the rear hold down screws. Drill these two holes with a 1/8" drill bit. Drill all the way through the trailing edge and parts F-18 and F-19.
- 63...Remove the wing and glue the two W-8's into position on the top of the trailing edge, centered over the 1/8" holes. Now open these holes up to 3/16"
- 64...Squirt some thin C/A into the 1/8" holes in F-18/19. Run a 10-32 tap down through the holes to cut the threads for the screws. Put a little more thin C/A onto the threads and then clean them out one last time with the tap.
- 65...Mount the wing back on the model and bolt into place with the nylon screws.
- 66...Make W-7 by gluing a small scrap of 3/32" balsa sheet to the trailing edge at the fuselage and sanding to match the angle of F-15. Trim the top of W-7 by 1/16" and then cut and glue the two triangle fairings into position. Trim them to clear the wing screws.
- 67...Remove the wing from the model. Sand the leading edge round and sand the wing smooth all over.

Covering:

- 68...Remove the engine, control surfaces, landing gear and other items. Sand the entire model smooth with 320 grit sandpaper.
- 69...Cover the model with your choice of iron on covering materials.
- 70...Apply the decals and other markings as desired. An ultra fine Sharpie Marker can be used to draw panel lines and other details. Paint the cowl and the F-21 landing gear retainers. Paint the front of F-10 with a fuel proof paint.

Final Assembly:

- 71...Install the elevators and then the rudder to the model and glue the hinges in place.
- 72...Install the pushrods and control horns and connect the pushrods to the servos.
- 73...Install the landing gear. Cover the parts LG and glue them to the landing gear struts with a small bead of silicone rubber. Wrap a small strip of covering material around the front to cover the landing gear wires.
- 74...Install the engine mount to the firewall and bolt the engine to the mount.
- 75...Install the throttle pushrod.

- 76...NOTE: By sanding the covering material lightly with 400 grit sandpaper you can use thin C/A glue to attach the windows to the covering material and achieve a good bond. You may also cut the covering material away and glue the windows to the wood.
- Cut the side windows from the plastic sheet. They should be about 1/16" oversize and glue them into position on the outside of the model. Cut the windshield to the pattern on the plan. This will be slightly oversize and will allow you to fit it to your model. Tape it down at the top of F-6. Wrap it around and tape the lower rear corners to fuselage sides. Mark and trim as required. The back edges should overlap the side windows on the fuselage slightly. Now glue the windshield to the model with thin C/A. Start at the top. When this is dry work your way slowly around the rest of the windshield.
- 77...Attach the wing to the model. Sand the plastic wing strut tube with 220 grit sandpaper. Cut the tube into 1/4" lengths. Mark the wing strut locations on the model and remove the covering from an area about 1/16" x 1/4". Glue the plastic tubes to these locations.
- 78...Bend and glue the wire to one end of one front wing strut. Place the strut into the plastic tube at the fuselage side and then trim the opposite end to length. Glue the wire to the top end of this strut so that it will fit into the tube mounted on the wing. With the front strut in place you make the top end of the rear strut and then trim the lower end and glue it to the rear of the front strut. When the wing struts are finished you can cover them.
- 79...Make the dummy engine using the drawing on the plan as a guide. Paint with a fuel proof dope and then glue to the cowl.
- 80...Install the receiver and battery pack so that the model balances at the point shown on the plan. Wrap the battery and receiver with foam rubber. If necessary, add weight to the nose or tail until the model balances at the point shown on the plan with the fuel tank empty. Mount the switch in the left fuselage side. Run the receiver antenna through the rear fuselage and out a small hole in the fuselage side just behind F-12 and below the stabilizer.
- 81...Set the control throws to the measurements shown on the plan.
- 82...Verify that the model balances at the point shown on the plan before flying. Verify that the control throws are set and that the controls move in the proper direction.
- 83...Always pre-flight your model thoroughly before each flight. It is your responsibility to verify that your model is airworthy. Always follow established safety guidelines while starting and operating the engine, radio and while flying the model.