



# Piper J-3 Cub



Herr Engineering Corp. HRR302



## ASSEMBLY INSTRUCTIONS

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

### COMPLETE KIT PARTS LIST

#### Wood Bag:

1 LC-302-01	1/16"x3"x24" Laser Cut Balsa	1 LC-302-02	1/16"x3"x24" Laser Cut Balsa
1 LC-302-03	1/16"x3"x24" Laser Cut Balsa	1 LC-302-04	1/16"x3"x24" Laser Cut Balsa
1 LC-302-05	1/16"x3"x24" Laser Cut Balsa	1 LC-302-06	1/32"x3"x12" Laser Cut Balsa
1 LC-302-07	3/32"x3"x12" Laser Cut Balsa	1 LC-302-08	3/32"x3"x12" Laser Cut Balsa
1 LC-302-09	3/32"x3"x12" Laser Cut Balsa	1 LC-302-10	1/16"x2.5"x4.5" Laser Cut Birch Ply
4 Trailing Edges	1/32"x1/2"x18" Balsa	2 Leading Edges	3/16"x3/16"x18" Balsa
4 Main Wing Spars	3/32"x1/4"x18" Balsa	4 Wing Struts	3/32"x3/16"x12" Balsa
5 Turbulator Spars & Former Braces	3/32"x3/32"x18" Balsa	1 Center Section Sheet	1/32"x3"x12" Balsa
1 Main Landing Gear	1/16"x12" Music Wire		

#### Misc. Parts Loose in Box:

1 PROPELLER		1 NYLON TIE WRAP	
1 K-302 PLAN A		1 K-302 PLAN B	
1 K-302 INSTRUCTIONS			

#### Hardware Bag:

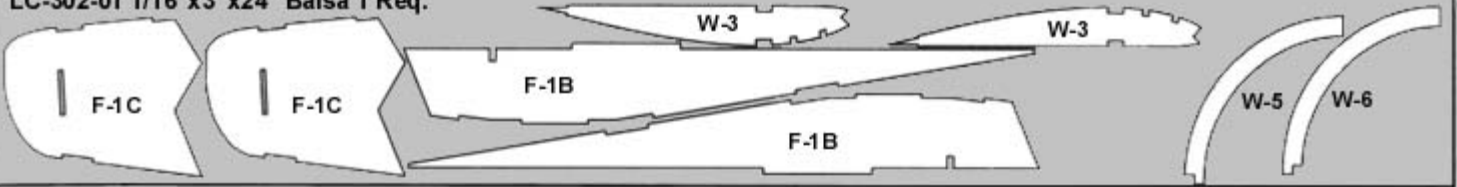
3 Wing Strut Wire	1/32"x3" Music Wire	6 Wing Strut Sockets	1/16"x1/4" ALUMINUM TUBE
3 Wing Hold Down & Elevator Joiner	1/8"x3" BIRCH DOWEL	1 Tail Wheel Assembly	
2 17/16" PLASTIC WHEEL		2 1/16" WHEEL RETAINER	

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.

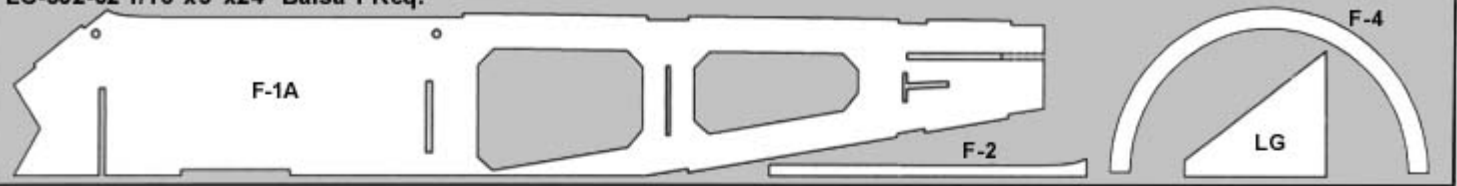
It is possible that several of the laser cut parts may not be completely cut through. If this is the case you can free the part from the sheet quickly using an X-acto knife.

NOTE: The slight discoloration on the edges of the laser cut parts may be removed by lightly sanding the edges with 400 grit sandpaper.

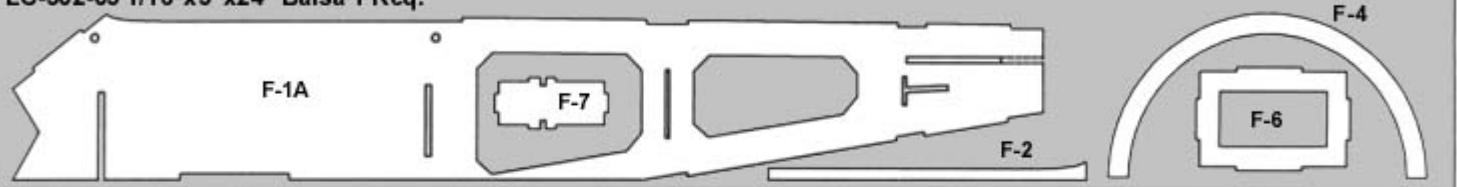
LC-302-01 1/16"x3"x24" Balsa 1 Req.



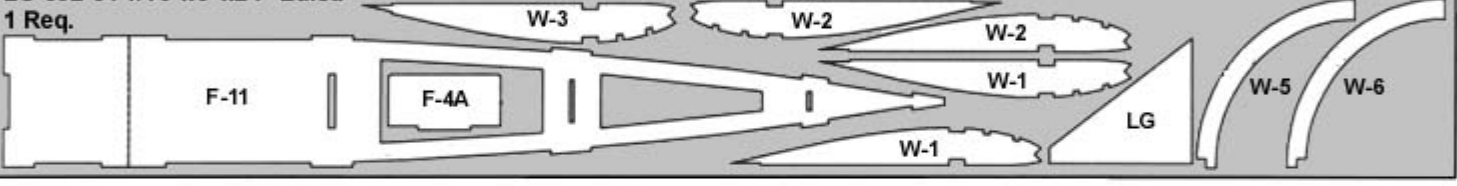
LC-302-02 1/16"x3"x24" Balsa 1 Req.



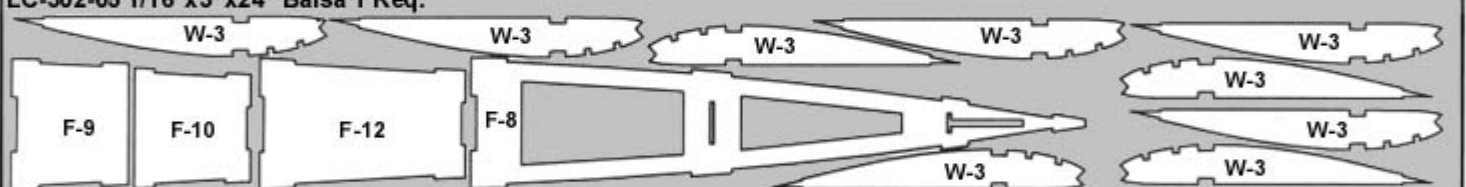
LC-302-03 1/16"x3"x24" Balsa 1 Req.



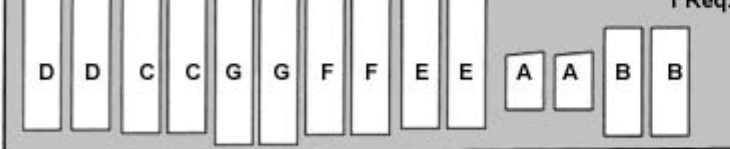
LC-302-04 1/16"x3"x24" Balsa 1 Req.



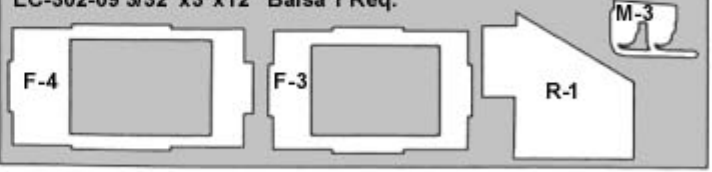
LC-302-05 1/16"x3"x24" Balsa 1 Req.



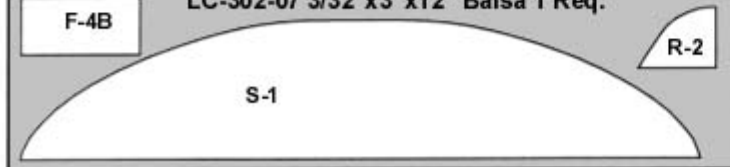
LC-302-06 1/32"x3"x12" Balsa 1 Req.



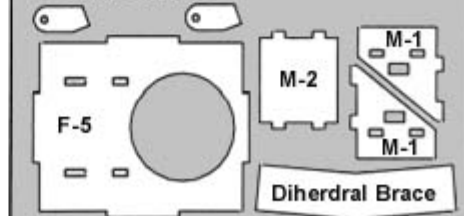
LC-302-09 3/32"x3"x12" Balsa 1 Req.



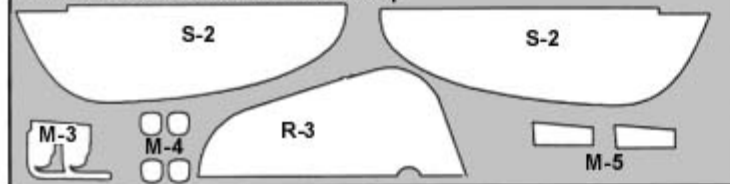
LC-302-07 3/32"x3"x12" Balsa 1 Req.



Control Horns



LC-302-08 3/32"x3"x12" Balsa 1 Req.



LC-302-10 1/16"x2.5"x4.5" Birch Ply 1 Req.

## 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.

1	Motor	6 Volt 280 Class Electric Motor
1	Radio	3 Channel Radio with micro servos & Receiver
1	Speed Control	5 Amp Electronic Speed Control with BEC
1	Battery	7 Cell 270mAh NiCAD Battery or 7 cell nOMah NiMH Battery
3	Hinges	Sig Easy Hinges #SH-710 or Du-Bro Kwik Hinge #537
2	Pushrods	Du-Bro #847 Micro Pushrod Assy.
1	Covering Material	1 Roll covering material Plus Trim Colors
4	Wing hold down Rubber bands	#32 rubber bands

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

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1. Glue 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. Sand one of the 1/8" dowels to 3/32" diameter. Join the elevators using this dowel. Use the plan of the stabilizer as a guide. Trim the dowel as 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

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5. Join parts F-1A, F-1B and F-1C together over the plan to make the fuselage sides.
6. Glue formers F-3 and F-4 into position on the right fuselage side. The formers should be 90 degrees to the fuselage side.
7. Glue the left fuselage side into position on the formers. Glue the F-2 doubler to the inside of the fuselage sides.
8. Pull the rear of the fuselage sides together and hold with a clothespin. Glue Former F-5 into position at the front of the fuselage.
9. Glue the 3/32" sq. reinforcement to the top and bottom of F-6 as shown on the plan.
10. Place formers F-6 and F-7 into position and glue into position. Glue the rear end of the fuselage sides together.
11. Glue F-8 into position on the top rear of the fuselage.
12. Glue F-9 and F-10 into position on the top front of the fuselage.
13. Glue F-11 to the bottom of the fuselage.
14. Bend the landing gear wire to the shape shown on the plan. Now glue the landing gear wire into position on the front of former F-4. Now glue parts F-4A and F-4B into position on the front of F-4 to capture the landing gear wire.
15. Glue F-12 to the bottom of the fuselage.
16. Glue the motor mount parts M-1 and M-2 together and to the front of F-5.
17. Sand the fuselage smooth all over and set aside until needed.

## Building the Wing

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18. Cover the wing plan with wax paper to prevent the parts from sticking to the plan.
19. Pin the lower spar and the lower trailing edge to the plan. Align the inboard ends with the wing center line. The outboard ends will extend past the last W-3 rib.
20. Glue rib W-2 into position 90 degrees to the building board.
21. Glue shear web "A" into position against the lower spar and rib W-2 as shown on the plan.
22. Glue rib W-1 into position. The top of the rib should angle slightly toward the wing tip.
23. Glue all of the W-3 ribs into position. They should be 90 degrees to the building board.
24. Glue the leading edge into place.
25. Glue parts W-5 & W-6 on top of part W-4 to make the wing tip.
26. Place the wing tip into position on the end of the wing. The back end rests on the plan and the front end is raised from the plan and is centered on the leading edge. Raise the outboard end of the wing tip 1/4" with a scrap of 3/32" x 1/4" balsa and glue the wing tip to the wing.
27. Glue the top spar, turbulator spars and the top trailing into position. Crack or cut these parts at the last W-3 rib to allow you to bend them down to contact the wing tip. Cut a bevel on the ends to match the angle of the wing tip as shown on the plan.
28. Remove the wing from the plan and glue the remaining shear webs into position.
29. Cut and glue the top center section sheet into position as shown on the plan.
30. Now build the right wing as you did the left.
31. Sand both wing panels smooth and sand the leading edges round. Lightly round the edges of the wing tips.
32. Cut slots in both W-1 ribs to accept the dihedral brace as shown on the plan.
33. Slide the dihedral brace into position in the left wing. Position it tightly between the spars and forward against the shear web and glue into position.
34. Glue the right wing onto the left. Now test fit the wing onto the fuselage and sand the wing as required to produce a good fit if needed.

## Covering

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35. Sand all parts smooth with 200 grit sandpaper.
36. Cover the model using your choice of material. We used Top Flite Monokote and it works very well. However there are many other covering materials that can be used. We recommend using the lowest heat setting that will attach the covering to minimize the shrinkage and reduce the possibilities of warping the structure of the model.
37. Cut the windows & stripe from covering material using the patterns on the plan and apply to your model.

Note: After the model is covered you must check the tail surfaces and wing for warps or twists. If there are any they can be removed by twisting the parts straight and heating the covering.

## Final Assembly

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38. Cut the covering and wood away from the stabilizer slot in the fuselage. Carefully remove the covering from the stabilizer in the areas that it contacts the fuselage and glue the stabilizer to the fuselage.
39. Glue the fin in place on the fuselage.
40. Attach the elevators and rudder with the hinges and glue in place.
41. Mount the servos to the fuselage sides using servo tape at the location shown on the plan.
42. Cut small pockets in the elevator and rudder and glue the control horns into position. They should angle forward slightly so that the pushrod hole is aligned with the hinge line.
43. Install the pushrods. They connect to the servos using Du-Bro Mini E/Z Connectors.
44. Insert the wing hold down dowels and glue into place.
45. Mount the receiver to the fuselage side with a piece of servo tape.
46. Cover the landing gear fairings (LG) and attach to the landing gear wires by wrapping a strip of covering material around the wire.
47. Put the wheels on the model and press the wheel retainers into position. With the retainers in place, cut off the excess wire axle flush with the retainer.
48. Glue parts M-4, M-5 & M-6 together to make the dummy motors as shown on the plan. Be sure that you make one left hand and one right hand. Paint the dummy motors and glue to the front of the fuselage.  
  
NOTE: The wing struts are optional. The next several steps will detail their installation if you would like them on your model. Although the struts are shown on the plan, you must cut and fit them to your model and as such you will not build them over the plan but you will use the plan as a guide while assembling them on the model.
49. Roughen up the covering on the bottom of the wings in the location where the wing struts attach. Glue the small aluminum tubes to the wing in these locations using silicone rubber. The tubes should be angled toward the tube in the fuselage side.
50. Drill 1/16" holes in the fuselage sides at the location shown on the plan and glue the aluminum tubes into position.
51. Attach the wing to the fuselage. Cut the front strut to length to fit for the left wing. Bend and glue the wire into the ends of the strut. When the glue is dry you can install the front strut by flexing it to allow you to inset the wires into the aluminum tubes.
52. Glue the wire into one end of the rear strut and insert it into the rear aluminum tube. Mark and cut the inboard end of the rear strut so that it fits against the front strut as shown on the plan. Now glue the rear strut to the front strut.
53. Make the struts for the right side as you did the left.
54. Remove the struts from the model and sand the edges round. Cover or paint the struts to match the model.
55. Connect the motor to the electronic speed control. Apply a small drop of oil to the bearings at each end of the motor.
56. Place the motor in the mount. Apply a small drop of thick C/A glue or silicone rubber under the motor and secure to the mount with the nylon tie wrap.
57. Plug the speed control into the receiver. Charge and connect the battery and test the radio and power system WITHOUT THE PROPELLER ATTACHED.

58. Roughen up the motor shaft with sandpaper and apply a small amount of thick C/A glue and then press the propeller onto the shaft.
59. Find the proper balance point for the model with the wing attached by moving the battery forward & aft. Use a 1" sq. piece of velcro to attach the battery in the model at this position.
60. Adjust the control throws to the settings shown on the plan.
61. 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.

#### **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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