



# Cessna 180



Herr Engineering Corp. HRR205



## 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

1	Plan Sheet	1	Instruction Manual	1	Decal Sheet
1	Gray Tissue	1	1/32"x8" Landing Gear Wire	3	2"x3 1/2" Window Plastic
18	1/16" sq.x12" Balsa Strip	2	3/32" sq.x12" Balsa Strip	4	1/16"x3/16"x12" Balsa Strip
1	1/16" Round Tooth Pick	1	Plastic Propeller	1	Propeller Shaft
2	Brass Washer	2	Brass Eyelets	1	Thrust Bead
2	Wheels	1	1/8"x24" Rubber Strip	4	Laser Cut Sheets

### Tools and Building Supplies

You will need the following items to assemble this model. You must read and follow all of the manufactures instructions provided with these items!

**-Glue**

CA, White Glue, Siment or Ambroid all work well.

**-Cutting Tools**

A hobby knife with a #11 blade is used for general cutting. A single edge razor blade is also a useful cutting tool.

**-Clear Dope, Thinner & paint brush**

**-320 and 400 grit sandpaper**

**-Straight Pins**

**-Wax Paper**

**-Needle nose pliers**

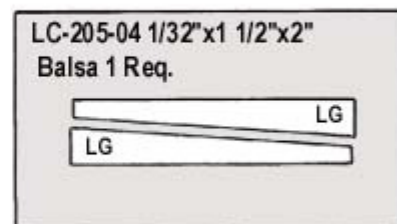
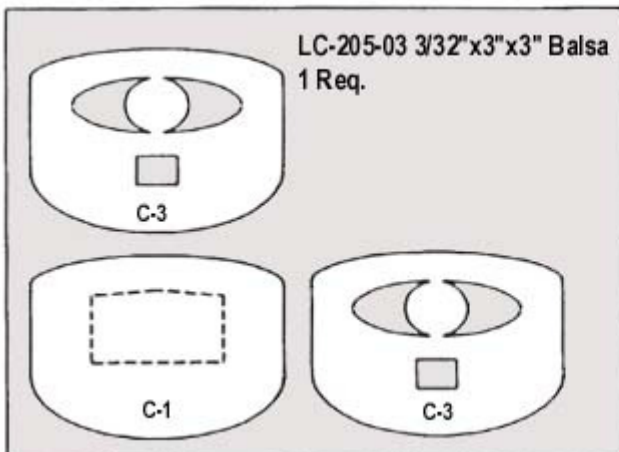
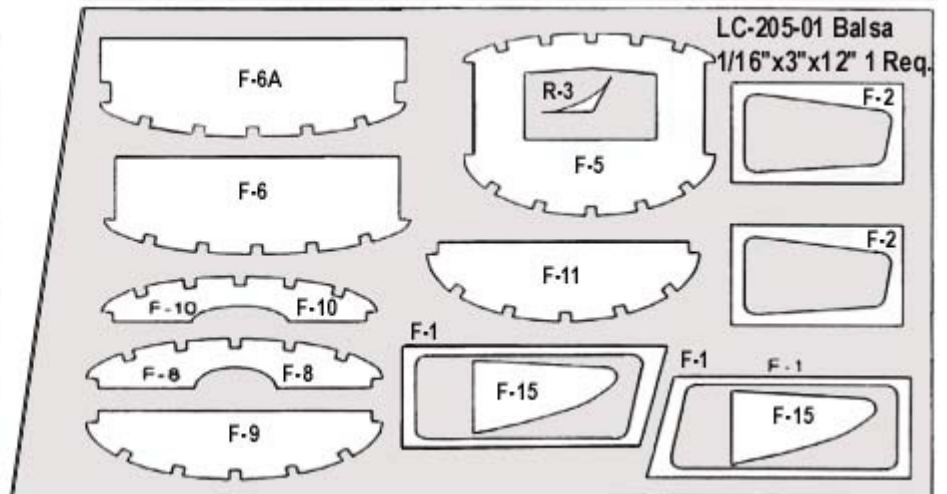
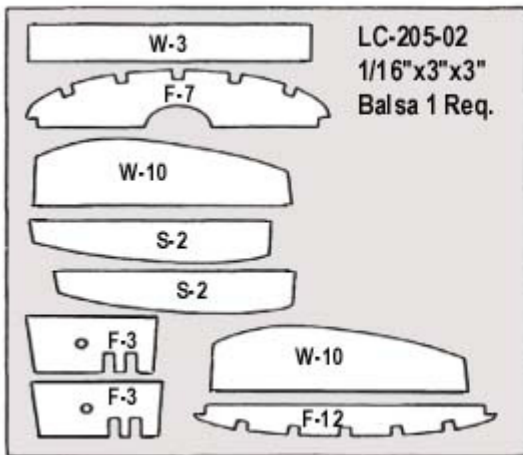
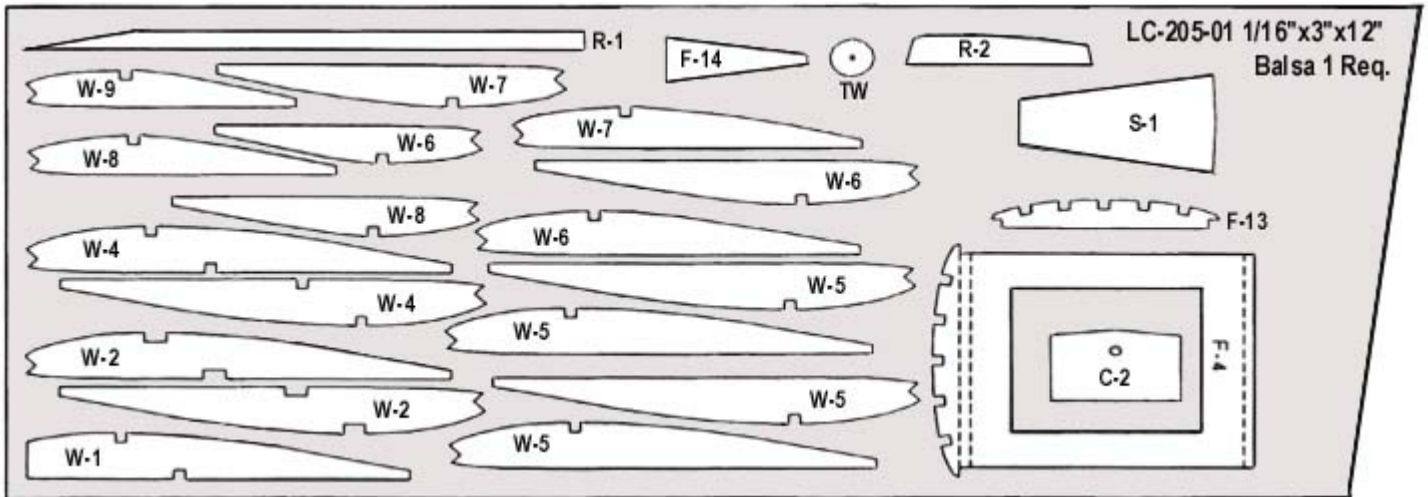
**-1/16" and 1/32" Drill Bits**

**-Building Board**

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.



## Beginners Note

These instructions were written assuming that the builder has previous building experience. If this is your first model then we recommend that you purchase a copy of the following book:

### Rubber Powered Model Airplanes By: Don Ross

This excellent book covers basic building and flying procedures and provides valuable information about all aspects of building and flying rubber powered model airplanes.

## Building the Tail Surfaces

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1. Pin the plan to your building board and cover it with a sheet of wax paper to prevent the glue from sticking the parts to the plan.
2. Build the stabilizer over the plan using parts S-1, and S-2. The remaining structure is made from 1/16" sq. balsa strip.
3. Build the rudder over the plan using parts R-1, R-2 and R-3. The remaining structure is made from 1/16" sq. balsa strip.
4. Remove the rudder and the stabilizer from the plan. Sand the leading and trailing edges round and then sand the parts smooth all over.

## Building the Fuselage

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5. Build the two fuselage side frames over the plan using parts F-1, F-2 and F-3. The remaining structure is made from 1/16" sq. balsa strip.
6. Cut two 1/16" strips to length and glue them to the rear face of part F-4 as shown on the plan.
7. Position F-4 onto one of the side frames. Hold it 90 degrees to the side frame and carefully tack glue it into position with one small spot of glue at the top and bottom.
8. Place F-6 into position and glue it to the fuselage side frame.
9. Glue the opposite side frame to parts F-4 and F-6. Make sure that the fuselage assembly remains true and square during assembly.
10. Glue part F-5 into position.
11. Glue parts F-7, F-8, F-9, F-10, F-11, F-12 and F-13 into position.
12. Pull the aft end of the fuselage sides into contact and glue them together.
13. Glue the 1/16" sq. cross braces into position as shown on the plan in the cabin and aft fuselage areas.
14. Glue part F-14 into position. Glue two F-15s together and glue into position on the rear of the fuselage.
15. Glue the 1/16" sq. strips into position between F-5 and F-7.
16. Bend the landing gear wire to the shape shown on the plan. Glue the landing gear wire into position and then glue part F-6A into position. Now glue the 1/16" sq. stringers into position on the bottom of the fuselage from F-4 and the last lower cross piece at the rear of the fuselage.
17. Glue the 1/16" sq. rudder support between the cross pieces on the top rear fuselage.
18. Glue the removable nose block parts C-1, C-2 and C-3 together. Test fit the nose block to the front of the fuselage but do not glue into place.

19. Drill a 1/32" hole in the nose block for the propeller shaft. Be sure to maintain the proper right thrust and down thrust when drilling this hole.
20. Sand the nose block to shape and sand the entire fuselage smooth all over.

### **Building the Wing Center Section**

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21. Pin the 1/16" x 3/16" trailing edge into position on the plan. Pin the 1/16" sq. bottom spar into position.
22. Glue rib W-1 into position.
23. Glue the two W-2 wing ribs into position.
24. Glue the 1/16" sq. top spar into position. The ends can extend slightly past the W-2 ribs.
25. Glue W-3 to the front of the W-1 rib and to the W-2 ribs.
26. Remove the wing center section from the plan.

### **Building the Right and Left Wing Panel**

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27. Pin the 1/16" x 3/16" trailing edge into position.
28. Pin the 1/16" sq. lower spar into position.
29. Position and glue ribs W-4, W-5, W-6, W-7, W-8 and W-9 into position.
30. Glue the 3/32" sq. leading edge into position.
31. Glue the wing tip W-10 into position. Be sure to raise the end to match the height of the top 1/16" sq. spar as shown on the plan.
32. Cut a bevel on one end of the 1/16" sq. top spar and glue it into position. The inboard end can be slightly longer than shown on the plan.
33. Remove the wing panel from the plan. Now build the Left wing panel in the same manner as you did the Right.

### **Joining the Wing**

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34. Pin the center section back onto the plan. Place the left and right panels into position. Raise the wing tips for the proper dihedral shown on the plan. This should be 1/2" under the last wing rib. Do a final check to ensure that everything is aligned properly and then glue the left and right wing panels to the center section.
35. Remove the wing from the plan and sand it smooth. Sand the leading edge round and sand a taper on the trailing edge.

### **Cover the Model**

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36. Sand the entire model smooth with 400 grit sandpaper. Test fit the wings to the fuselage. Test the tail surface with the fuselage. Make any adjustments necessary to achieve the proper fit.
37. Coat the edges and surfaces that will touch the tissue covering with two coats of clear dope.
38. Attach the tissue to the model with clear dope mixed 50/50 with thinner.
39. Lightly mist the model with water to shrink the tissue.

40. Apply two coats of thinned dope to the entire model.
41. Carefully apply the decal's to the model.
42. Draw additional details on the model with a waterproof marker.

## **Final Assembly**

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43. Glue the wing to the model making sure that it is straight and true to the fuselage.
44. Glue the stabilizer to the fuselage making sure that it is properly aligned.
45. Glue the rudder to the model making sure that it is 90 degrees to the stabilizer.
46. Cut the paper windshield pattern from the plan and test fit it to the model. Adjust the shape as necessary to achieve a good fit the model. Now cut the plastic windshield to match the pattern and glue it to the model. Cut, fit and glue the side windows into position.
47. Sand the landing fairings (LG) smooth and cover with tissue. Now glue these fairings into position on the model. Install the wheels and retain them by bending the axles up 90 degrees. Cut off any excess axle wire.
48. Paint the tail wheel (TW) black. Bend a straight pin to the shape of the tail wheel wire and glue the tail wheel onto it. Now glue the tail wheel assembly to the rear of the model.
49. Cut and fit the wing struts to fit your model. Sand them smooth and cover them with tissue. Now glue the wing struts to the model making sure that you do not induce a twist in the wing.
50. Glue the two brass eyelets to the removable nose block. Assemble the propeller to the nose block using the parts shown on the plan.
51. Tie the rubber motor and install in in the model. The rear end is held by the round toothpick in the two F-3's. The front end is attached to the propeller shatt. The toothpick and the nose block are not glued Into place.
52. Balance the model at the point shown on the plan. Add small amounts of modeling clay to the nose or tail if required to achieve the proper balance.
53. Your model is now finished. Read and follow the safety rules that follow. We hope that you enjoy many fine flights with your model.

## **Your First Flights**

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54. Make sure that all flying surfaces are straight and warp free.
55. Wind the rubber motor about 100 turns.
56. Point the nose of the model into any gentle breeze that may be blowing.
57. Release the propeller and after it starts turning gently toss the model at a point on the ground 100' in front of you. Adjust the model to circle while increasing the number of turns in the motor. Adjustments can be made by gently bending the tail surfaces and wing trailing edge.
58. A properly trimmed model will circle to the lett while climbing under power, level out as the power runs down and transition into a right hand gliding circle.

## Safety Rules

1. Fly your model in a large open area that is free of obstructions, people or their property.
2. Do not fly your model in the vicinity of power lines, trees, streets or buildings.
3. Never try to retrieve any model stuck in power lines, in trees or on a roof or other high place. Never run onto the street to retrieve your model.
4. Position yourself at least 150' from spectators before launching model.
5. Never launch model directly at another person or other object.
6. Never stick your fingers into a spinning propeller. Do not try to stop a spinning propeller with your hand or fingers. Never stick any object into a spinning propeller.
7. Fly your model only on calm days. Do not fly when the wind is blowing.
8. Get proper permission before retrieving your model from private property.

## 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.

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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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