

Assembly Instructions for the R-100

About the R-100

In the mid-1920s the British government developed the Imperial Airship Scheme. At the time the only way to carry mail and passengers across the oceans was by ship, and it was felt that an air service would be an attractive alternative.

By connecting the far-flung Dominions, the new service would help bind the British Empire, and be a source of national prestige. The plan began with the contracting of two huge dirigibles, R-100 and R-101. The R-100 was constructed by the Airship Guarantee Company, a subsidiary of Vickers. The chief designer, Barnes Wallis, was later famous as the inventor of the “bouncing bomb” used against the Ruhr dams during World War II. The companion ship R-101 was designed and built by a competing government-owned organization.

The R-100, like other rigid airships, was constructed of a light framework of rings and longitudinal girders. Lift was provided by huge balloon-like cells filled with hydrogen gas, and the entire structure was covered with doped fabric. Living quarters for the crew and the 100 passengers were located in the lower part of the hull, with the control car directly underneath. Six Rolls-Royce Condor engines generated 3900 horsepower for a maximum speed of 81 miles per hour — faster than most airships of the day. The completed ship was the size of an ocean liner, over 700 feet long, and was stored in a massive hangar when not in service.

The R-101 was the first of the ships to be completed, but was found to have poor handling and lift, and had to be lengthened to add extra gas cells. Thus it was R-100 that made the first international flight in July and August 1930, crossing the Atlantic on a visit to Canada. During her stay the great airship attracted huge crowds, and in spite of the failure of an engine and other minor problems the journey was considered a success. Upon returning to England the R-100 was prepared for further flights, but tragedy intervened. R-101, her handling problems still not resolved, was sent on her maiden voyage to India in October, and while crossing France lost altitude in a storm and crashed into a hillside. The flammable hydrogen gas ignited and the ship was destroyed with the loss of 48 lives.

The R-101 disaster spelled the end of the Imperial Airship Scheme. Though her airworthiness had been proven, the government decided it had no further use for the R-100, and she was broken up for scrap in late 1931. Henceforth the passenger airship field was dominated by Germany until the loss of the *Hindenburg* in 1937.

The Model

This model builds into a 1/700 scale replica of the R-100 as she appeared during her transatlantic voyage. A word of caution: this model is not suitable for assembly by young children, due to the use of sharp tools and the complexity of some assembly steps. Previous experience with card modeling is recommended. If you have any comments or suggestions regarding this kit, I can be reached by e-mail at models@currell.net

Model parts are contained in the document **r100prts.pdf**. Print out the parts document on 8.5"x11" or A4 size white card stock suitable to your printer (67 lb. cover stock recommended).

Tools

Before beginning, you will need the following tools and materials:

- a) white glue
- b) a glue applicator such as wooden toothpicks or a small paintbrush
- c) scissors (optional)
- d) a sharp knife for cutting
- e) a flat cutting surface
- f) a ruler or straight edge
- g) a scoring tool or blunt knife for creasing the fold lines

Hints

- a) Select a well-lit, comfortable work area that will remain undisturbed when you are not there.
- b) Keep your hands and tools clean when working, to avoid getting glue on visible parts of the model.
- c) It's easier to stay organized if you only cut out those parts you need for each step.
- d) Make sure your knife is sharp. When cutting straight lines, use a straight-edge. Scissors, if used carefully, can be used for large curved parts.
- e) Study the diagrams carefully, and always test-fit the parts before applying glue.
- f) You may wish to colour the edges of the parts to make seams less visible. Pencil crayon or paint applied with a fine brush can be used (experiment on scrap pieces to see what works best).

Assembly

In these instructions, the directional terms are given assuming the model is horizontal (fins at back). “Port” and “starboard” refer to left and right sides respectively. Scoring of parts is indicated by thin black lines outside the part’s outline or by dashed lines on the part’s surface. Score parts *before* cutting them out. In the diagrams, subassemblies are identified by a number within a circle (e.g. ②), corresponding to the step in which it was assembled.

Assemble the body sections (**steps 1–4**). The body (excluding the nose and tail) is made up of eight assemblies. These assemblies comprise an outer surface segment (the “skin” of the airship), a connecting strip and an internal former to provide strength and maintain the segment’s shape. Note that the cross-section of the airship is a 16-sided polygon, and the outer surface part must be scored before cutting out. To construct a typical assembly, carefully cut out the parts and glue the connecting strip to the inside of the surface segment. This strip must be lined up so that the shaded areas protrude beyond the edge of the surface part (see the diagrams). The segment is then folded along the scored lines so the edges butt together and are held by the connecting strip. Once dry, the former ring is glued inside the connecting strip, ensuring it does not protrude into the notched part of the strip. When joining the completed sections to each other, ensure the longitudinal seams line up.

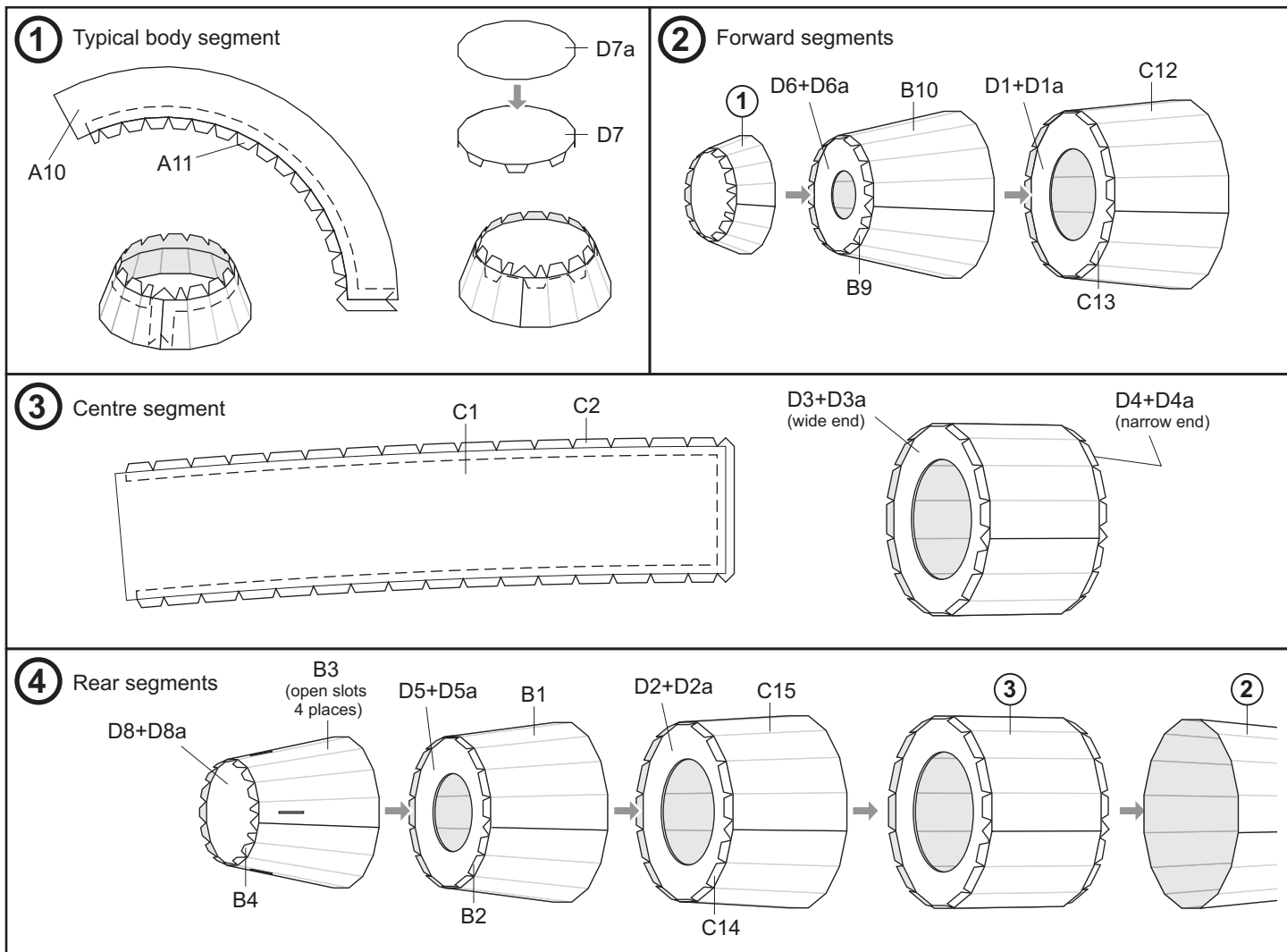
(**Step 5**) assemble the tail cone in the same manner as the body segments. Carefully bend together the “leaves” at the tail end and glue to form a rounded shape, then attach to the body assembly. Assemble the nose section parts A9 and B11 (**step 6**), connector plate B12/B13 and mooring cone B14/B15. Attach the mooring cone to the shaded area in the centre of the connector plate. The coloured areas printed on the connector plate will act as locating guides when bending the leaves on the nose section to form a rounded shape. Position the connector plate in the front of the nose segment and carefully glue the end of each leaf to the plate. Glue first to the four red shapes, then the gray shapes, then the uncoloured areas, taking care to position each leaf exactly on the coloured shape.

Assemble the control car (**step 7**) and attach to the blue printed shape on the bottom of the airship body.

Fold and cut out the horizontal fin stiffener A1 (**step 8**). Attach to the inside of fin surface A5 (lining up the bottom edges so that only the locating tabs protrude beyond the surface edge), and fold the surface around the stiffener to form the completed fin. Glue the outer edges of the fin surface together where they overhang the stiffener. Use the same procedure to assemble the upper (A1/A4) and lower (A2/A3) fins. Glue the fins to the airship body (**step 9**), ensuring they project at right angles to the body surface.

Assemble the display stand (**step 10**). This will allow you to set the airship down without damaging the engine assemblies in the following steps.

Assemble the port engine (**step 11**), ensuring the struts B5 and B6 are aligned as shown in the diagram. Assemble the starboard and rear engines (**step 12**). Attach engines (**step 13**) as indicated by the blue shapes printed on the body. Ensure the engine housings are aligned parallel to the long axis of the airship body. Finally, attach the propellers to the blue circles printed on the front and back of the engine housings (**step 14**), with the larger propeller C4 at the front end.



5 Tail cone

A12 (open slots 4 places)

A13 Do not block slot in A12.

Bend and glue leaves together to form rounded tail.

6 Nose segment

A9

B12 B13 B14 B15

B11

Attach leaves to coloured areas on the plate B12 to form rounded shape. Glue in this sequence: red, gray, uncoloured.

7 Control car

C5 C6

6

8 Horizontal fin (2 pieces)

A1 Fold to double thickness, then cut out shape.

A5

A1

Bend together overhanging edges of fin surface.

9 Attach fins to body

A1+A4 8 7

Assemble vertical fins in same manner as horizontal fins in step 8.

Attach fins at right angles to body surface.

8

A2+A3

10 Display stand

A6 A7 A8

Fold flap underneath as shown.

11 Port engine

C7 B6 B5 B8

C8

B8 Fold to double thickness, then cut out shape.

Port engine, viewed from front. Attach components as shown.

12 Starboard and rear engines

C7 B6 B5 C9 B8

B7 C11 C10 B8

Starboard engine (mirror image of port engine).

Rear engine.

13 Attach engines to body

9

14 Add propellers

C4 C3

Typical for all engines.