

Bob's Card Models

www.bobscardmodels.altervista.org and www.zealot.com [Resources]



Grumman Albatross HU-16E 1:72

The Grumman HU-16 Albatross is a large twin-radial engine amphibious flying boat. Originally designated SA-16, it was renamed HU-16 in 1962.

The Albatross was designed to be able to land at sea in open ocean situations in order to effect the rescue of downed pilots. Its deep-V cross-section and substantial length helped make it possible for it to land in wavy conditions.

The US Coast Guard is regularly provisioned by the US Navy and the US Air Force. The Albatross is used for rescue but also for scientific purposes, environmental protection, oceanographic research, surveillance of fishing zones, and sources of marine pollution.

The model is based on the excellent art of the late aviation artist Keith Frewell published in the French "l'encyclopédie illustrée de l'AVIATION", no; 175,

General characteristics

Crew: two, pilot and co-pilot
Capacity: up to 30 passengers
Length: 62 ft 10 in (19.16 m)
Wingspan: 80 ft 0 in (24.4 m)
Height: 25 ft 10 in (7.8m)
Wing area: 883 ft² (82 m²)

Empty weight: 20,000 lb ()
 Max takeoff weight: 33,000 lb (15,000 kg)
 Powerplant:
 2 or 4× 15KS1000 rocket, 1,000 lbf () each
 2× Wright R-1820-76 Cyclone 9 radial engine, 1,425 hp (1,063 kW) each
 *Fuel Capacity :1,075 gal plus 2-300 US gal drop tanks (4,000 L plus 1,100 L drop tanks)

Performance

Maximum speed: 205 knots (236 mph, 380 km/h)
 Cruise speed: 130 knots (150 mph, 241 km/h)
 Range: 2,477 nm (2,850 mi, 4,587 km)
 Service ceiling 21,500 ft (6,553 m)
 Additional lift utilizing two or four RATO 15KS1000 units with 15 seconds of solid propellant.



Building Instructions

Print all sheets on between 160 and 230g card, except Instructions and Sheet 12 which should be printed on 80 - 90g Paper.

Always carefully fit parts together before gluing, and make minor adjustments if necessary.

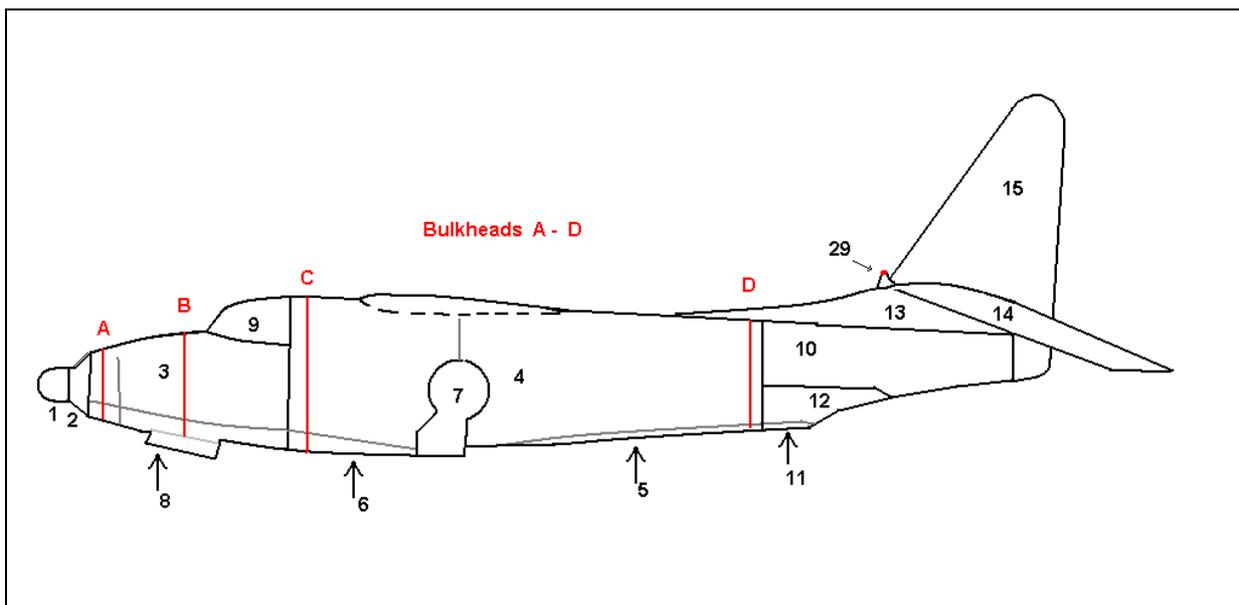
When gluing card parts at right-angles to another piece (eg bulkheads to the outer skin), holding together with fingers until dry usually results in the 'skeleton' image of the bulkheads - not nice! Hold together with 2 flat pieces of wood or plastic.

NOTE: Insert the bulkheads using a cocktail stick or tooth-pick (or even better, I use a long screw) pushed into a tight hole in the centre of each bulkhead. The fit of the bulkhead must be flush, not tight, otherwise ugly "ribbing" will be visible on the fuselage after gluing. NEVER force the bulkheads into position, rather snip a bit of card off the outline. Don't glue them on, just tack them on with a minimum of glue at about 4 points around the bulkhead. They must just keep the form of the fuselage, and not slip sideways.

Green areas must be cut out, BUT only after gluing any folds. The Instructions will tell you when!

Although the model is relatively small, bulkheads have also been used to keep the correct cross-sectional form of the fuselage.

Fuselage



1. Cut out fuselage parts 3 to 8. Hull parts 5, 6 and 8, should be folded longitudinally to a flat V, with both halves slightly rounded (use a 5-15mm diameter rod), to give the correct hull form.
2. Bend all tabs on the sides of each part, but not the tabs on the front and rear of each part.

3. Round part **4** as shown on the sheet, and glue the 2 vertical side tabs, to give the correct profile.
4. Glue **5** onto **4**, then **6** (bend down step at rear, 90°) onto **4**, in both cases one at a time.
5. Glue step of **6** onto **5**.
6. Cut out the green area green (for the main wheel wells.), and slit along the green lines below the wheel wells. Bend down 90° the lower flap of the wheel wells.
7. Cut out the wheel wells **7**, fold tabs as shown, glue, glue the back onto a piece of card for extra stability,
8. Pierce the green dots (for the struts) so that a tooth-pick can pass through. Cut off the 4 or 5 tabs at the base of each wheel well. Glue in place inside the fuselage.
9. Insert/glue (tack) bulkhead **D** at rear of fuselage, countersunk 5mm.
10. Insert/glue (tack) bulkhead **C** at front of fuselage, countersunk 5mm.
11. **NB: Make sure that the tabs on 3 are bent at right-angles before gluing on 8 otherwise the 2 parts will not seem to fit!** . Cut out, fold, glue **8** to **3**.
12. Insert/glue bulkhead **A** as far as it will go in **3**.
13. Cut out **2**, slightly fold the hull portion, close/glue the tab. Cut out, round and glue part **1**, and glue in place inside **2** by passing from the rear through **1**.
14. Glue unit **1/2** onto **3**. Snip off any protruding overlap.
15. Snip the gores of **1**, round to a bulb and glue.
16. Cut front wheel compartment flaps along green lines in **8**. Fold down flaps carefully.
17. Insert/glue bulkhead **B** in place, so that it is visible in the middle of the front wheel well.
18. Place/glue a mass of 5-10 g inside **3** (roughly in the middle will do - I glue a nut on the back of bulkhead **B**).
19. Cut out large green area - location of cockpit **9**.
20. Cut out cockpit **9** and bend main tabs upwards, insert through **3** and glue in place with cockpit tabs under the fuselage nose.
21. Glue unit onto tabs of **4**.
22. Rear portion of fuselage : Cut out **10**, round the top portion, close form by gluing the main tab only. When dry, cut out **11**, bend down the small tabs, and fold sharply in 2 halves.
23. Cut out the 2 parts **12**, bend down fully the tabs on the one, and glue the other half on to these tabs. Glue the unit onto the tabs provided on **10**.
24. Glue on part **11**, forcing the 2 sides of **12** apart (so as to accommodate **11**)
25. Glue whole unit **10** onto the fuselage (part **4**).
26. Cut out the rear top moulding **13**, fold in two along the dotted line, cut out green area, bend down the 4 tabs.
27. Cut out the green area marking the position of the wings, do not bend the remaining tabs.

Tailplane

28. Cut out tailplane **15**, snip and fold as per the instructions on the sheet. Glue the leading edge of the fin, and the leading edges and tips of the wings.
29. Bend the 2 large tabs to about 45° inclined, slip through the slit in the moulding **13** and glue the tabs to the inside of **13**.
30. When dry, add a bead of glue on both sides of the fin, at the join fin-wing, to stabilise.
31. Glue unit **4-5** onto the tail **10**, inserting/gluing the 4 tabs into the rear, and pinching them closed until dry (eg clothes-peg).

Main Wings

- NOTE: The lower wing surface has a width of 98% of that of the upper surface; this gives the correct wing profile.
32. Assemble wings **16**, cut out tabs linking wings (lower tab is 3x thick, to give the lower wing a straight profile).
 33. Before/closing/gluing the wings, cut out the 2 outer slits for the supports **17** of the wing-underslung floats and reserve fuel tanks, and glue them in place - Beware! the supports should be correctly glued in place with the small tabs through the lower wing surface, and the vertical of the support towards the leading edge, thus the inclined of the support towards the trailing edge - see Photo. Close/glue wing. Also cut out the 2 slits for the reserve fuel tank supports **19** are glued in place later.
 34. Pierce the leading edge of the engine position for the propeller on the green dot.
 35. Close/glue the floats **18**, cut green slit, and slip on vertical struts, glue in place.
 36. Reserve fuel tanks - cut out parts **20**: Close/glue **a** to **e**. Glue on tabs of **a** and slide **a** through **b**. Likewise glue tabs on **d** and slide **d** through **c**. Glue tab **e** inside either **b** or **c**, and join the 2 halves. Repeat for second tank. Glue on tiny strut **19**, and glue in place in the slit provided under the wing.
 37. Glue wing in position on the fuselage with the aid of rubber bands until dry.

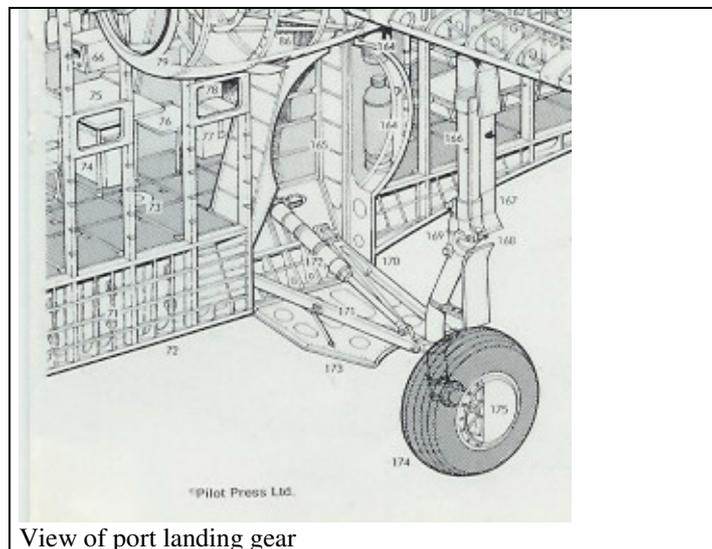
38. Difficult! Glue on the filets **32** to give a round appearance the join wing-fuselage. Tip: Cut out the filet, round a bit longitudinally. Glue first only the middle portion, when dry, glue both ends in place. When dry, snip to size with scissors and glue the tips to marry with the fuselage. .

Engines

39. Cut out the engine parts **21** to **23**.
 40. Round/glue **21**, insert **23** in the position marked, and glue in place.
 41. Round/glue the 3 parts labelled **22**. Glue onto **21**.
 42. Cut out the portions marked green, as well as the small rectangle (for the landing gear vertical strut).
 43. Cut out the (3-bladed) propeller **24**, glue the back part on the front, and whilst the glue is not quite totally dry, bend/form the curvatures. Prick a hole in their centres, and glue on a tooth-pick so that about 2-3mm of the tooth-pick protrudes.
 44. Roll/glue the nose cones **25** (best around a pin), and glue in place on the 2-3 protrusions of the tooth-picks.
 45. Insert the propeller/tooth-pick into the engine making sure that the tooth-pick enters the wing in the hole provided.

Undercarriage

46. Roll/glue all 4 wheels (front **26**, rear **27**).
 47. **Main Wheels:** Take a tooth-pick, carefully bend (after soaking in water for a few minutes) 2-4 of the tip to an angle of about 30°. Glue the bend and join tooth-pick/wheel liberally.
 48. Take a Axle Sleeve **28** and cut to a length of 30mm, and slip on tooth-pick.
 49. Insert axle in the hole of wheel compartment, and glue liberally, so that the axle gives an angle of about 25-30° with the horizontal (the positioning of the 2 axle/wheels should be such to give a clearance of the hull bottom-> ground is about 5mm). When dry, glue the lower side of the tooth-pick axle so that it adheres to the lower flap of the wheel well.
 50. Left and right of the inclined strut, add a thin strut **31**, resting on the flap (glue), and meeting the main inclined axle at the wheel. If necessary, adjust the length of **31** by snipping at both ends.
 51. Glue the wheel caps **26A** and **27A** on the wheels.
 52. Add the vertical strut **30**, joining the nacelle with the landing gear just next to the wheels, snip to length, and glue in place.

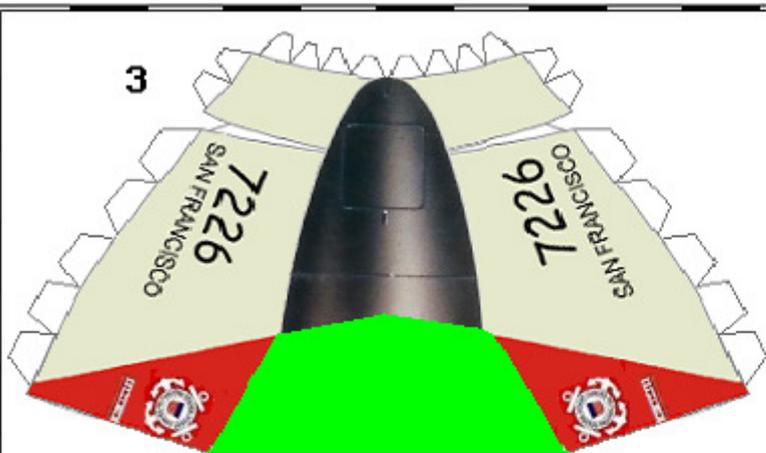


View of port landing gear

53. **Front Wheels:** Cut a tooth-pick to total length 35mm. Glue together on the sharpened end of the tooth-pick. Slip on a wheel axle sleeve **28** cut to length of 12mm.
 54. Put glue on the top 20mm of the tooth-pick, and insert into the front wheel compartment, to glue in place on the front side of bulkhead **B**.

Varia

52. Add the red rear light **29** on top of the fuselage, just in front of the fin.
 53. If desired, the Stand **33** on Sheet 8 can be cut out and glued.



LEFT

Bend tabs backwards



Bend tabs forwards

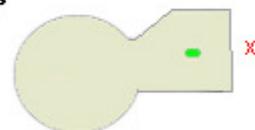


7
Wheel wells

Bend tabs backwards

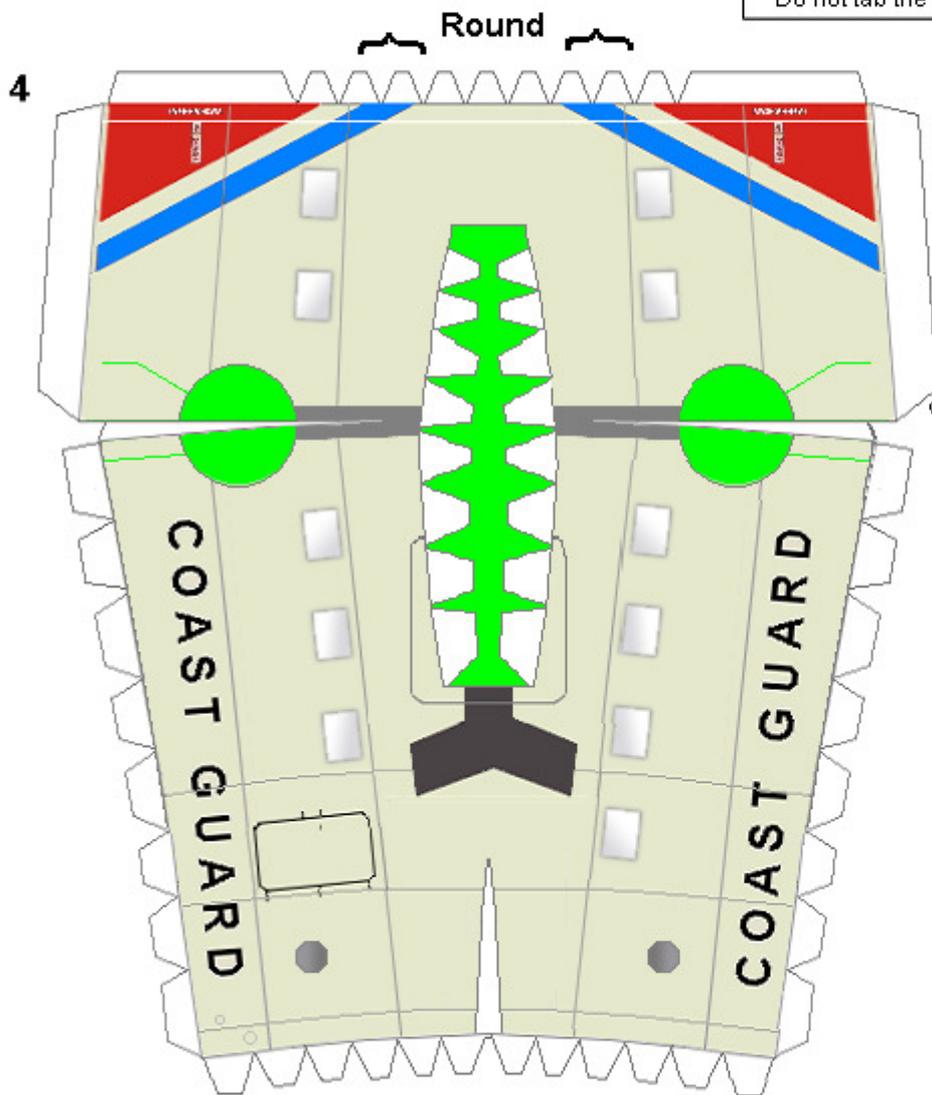


Bend tabs forwards

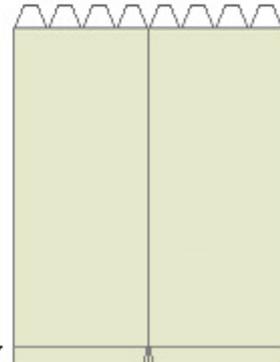


RIGHT

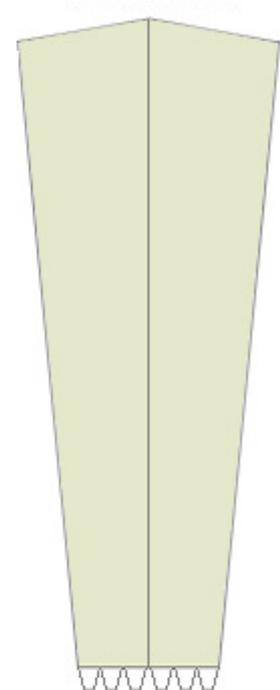
Do not tab the sides marked **x**



do not bend tabs



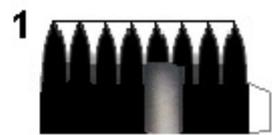
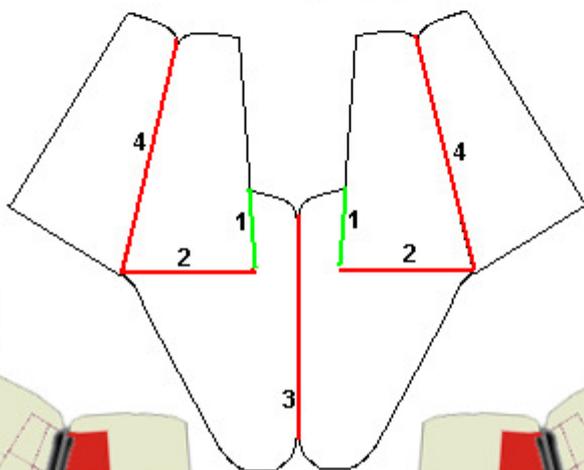
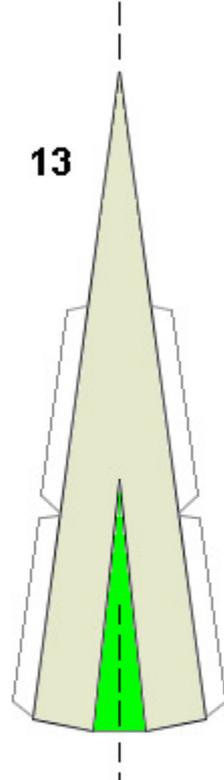
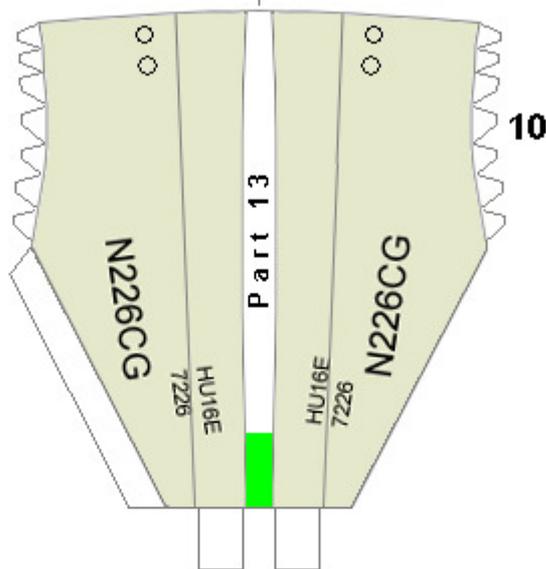
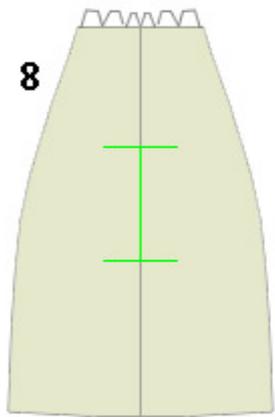
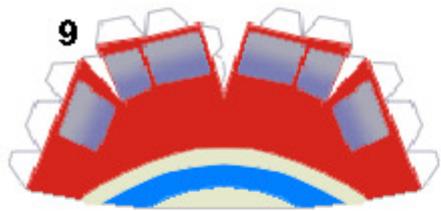
Bend down 90°



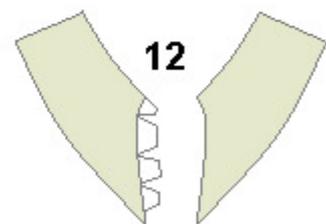
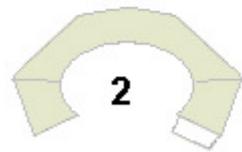
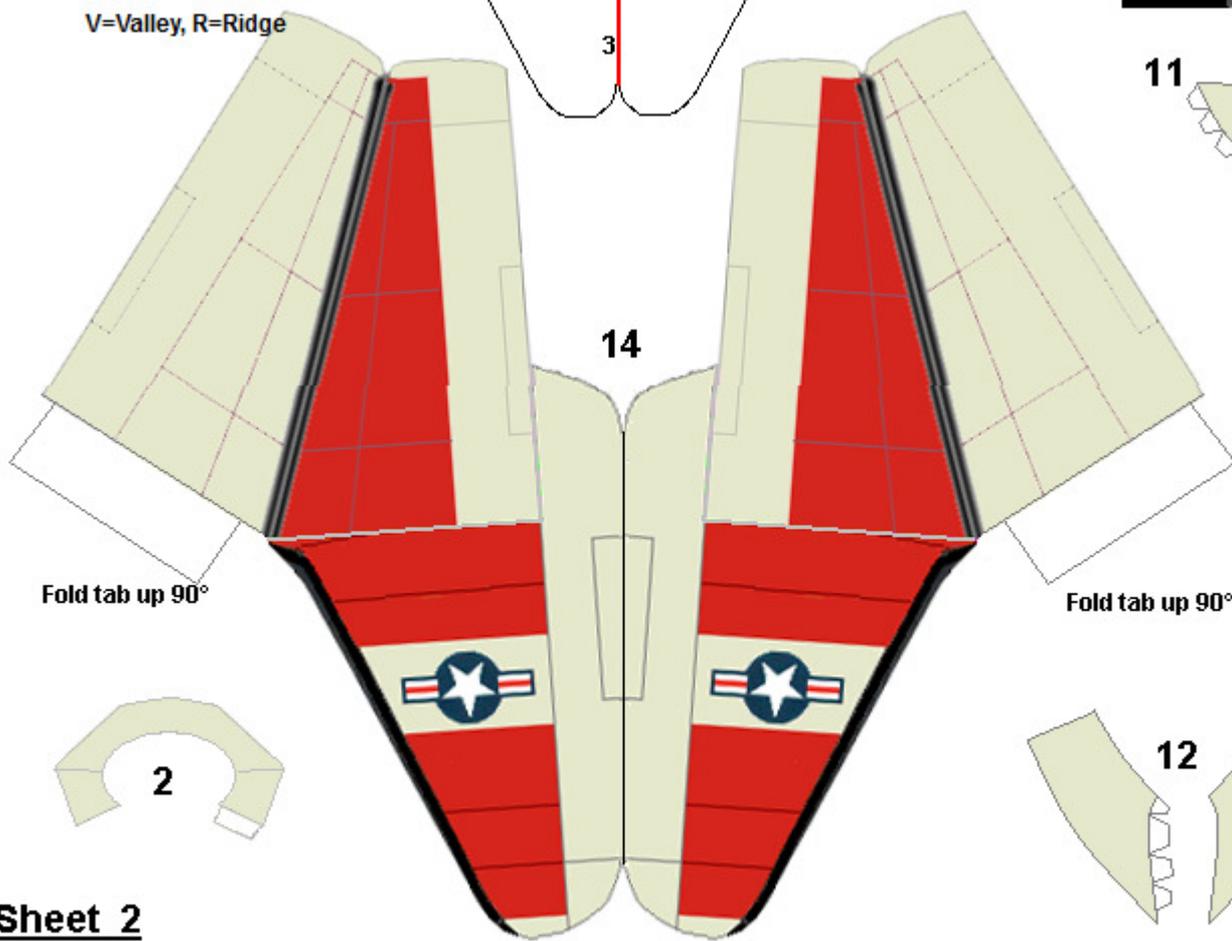
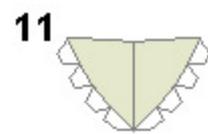
Sheet 1

GrumAlb

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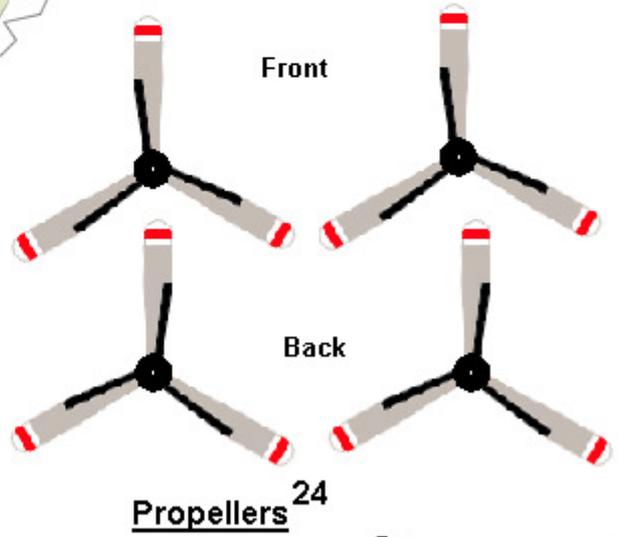
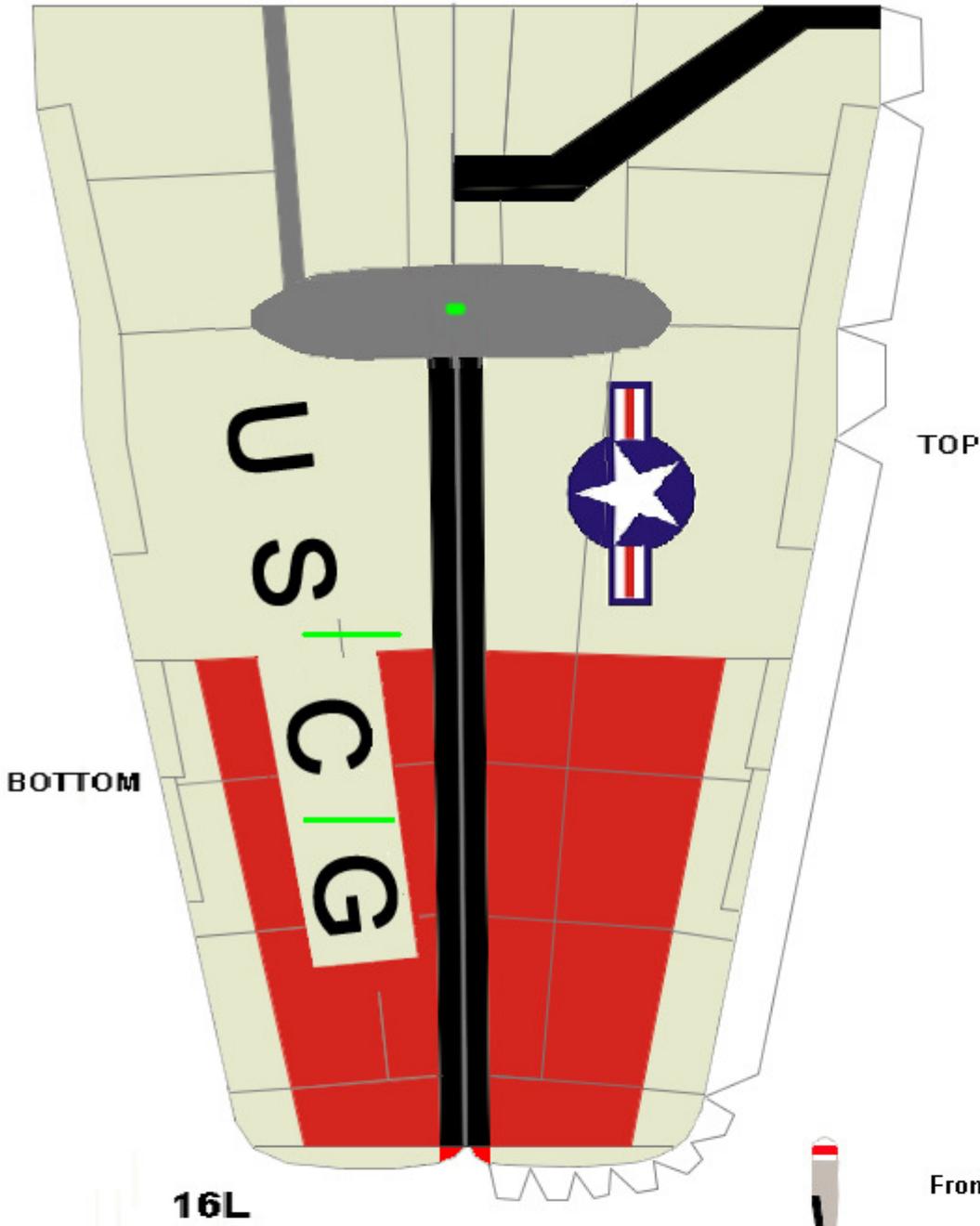
1. Slit green lines.
 2. Fold red lines 90° V
 3. Fold red line 180° R
 4. Fold red lines 180° R
- V=Valley, R=Ridge



Sheet 2

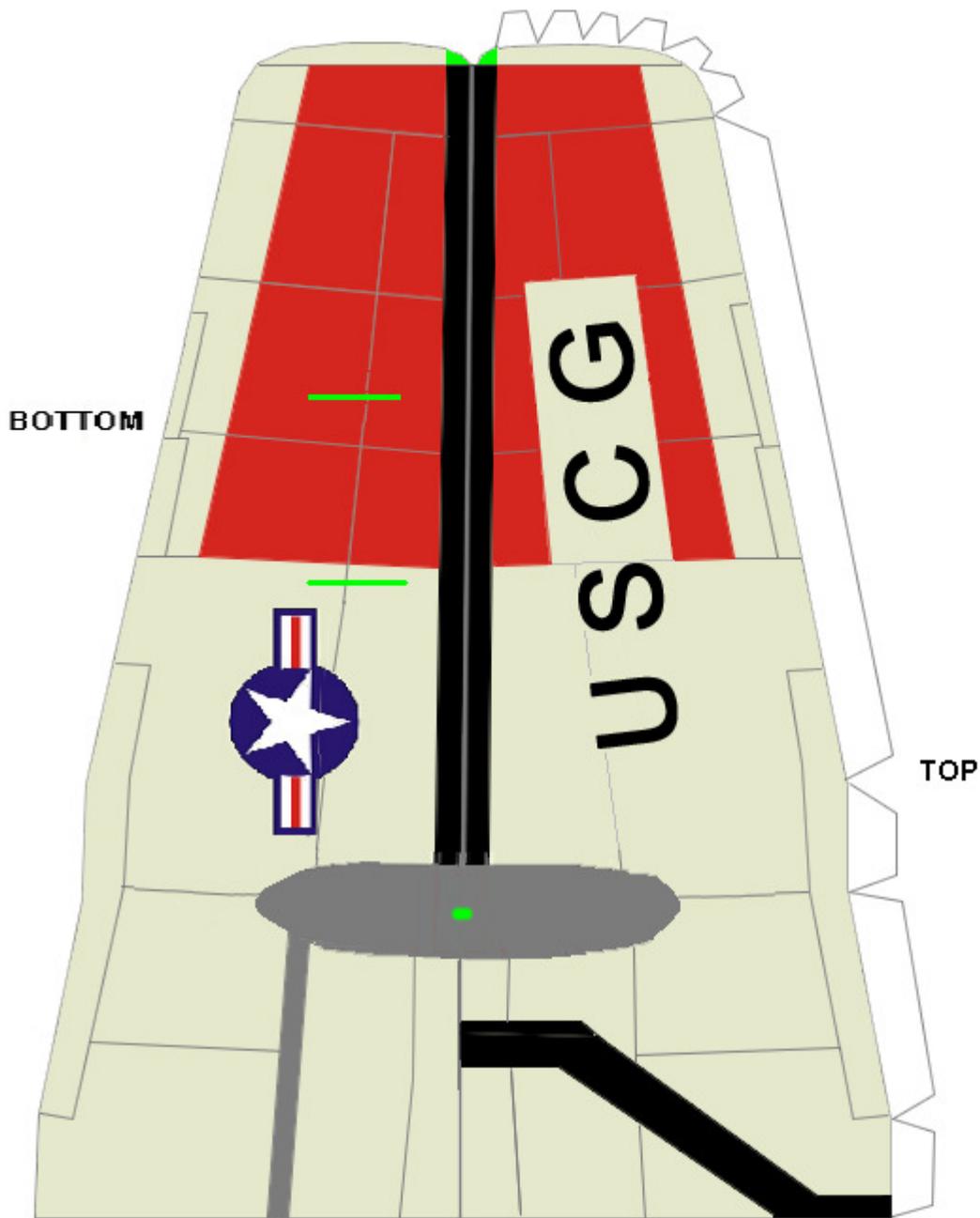
Upper tab linking wings

Lower tab linking wings
make 3x thick

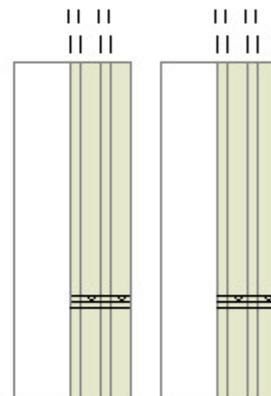


Sheet 3

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16R



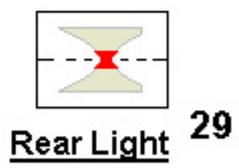
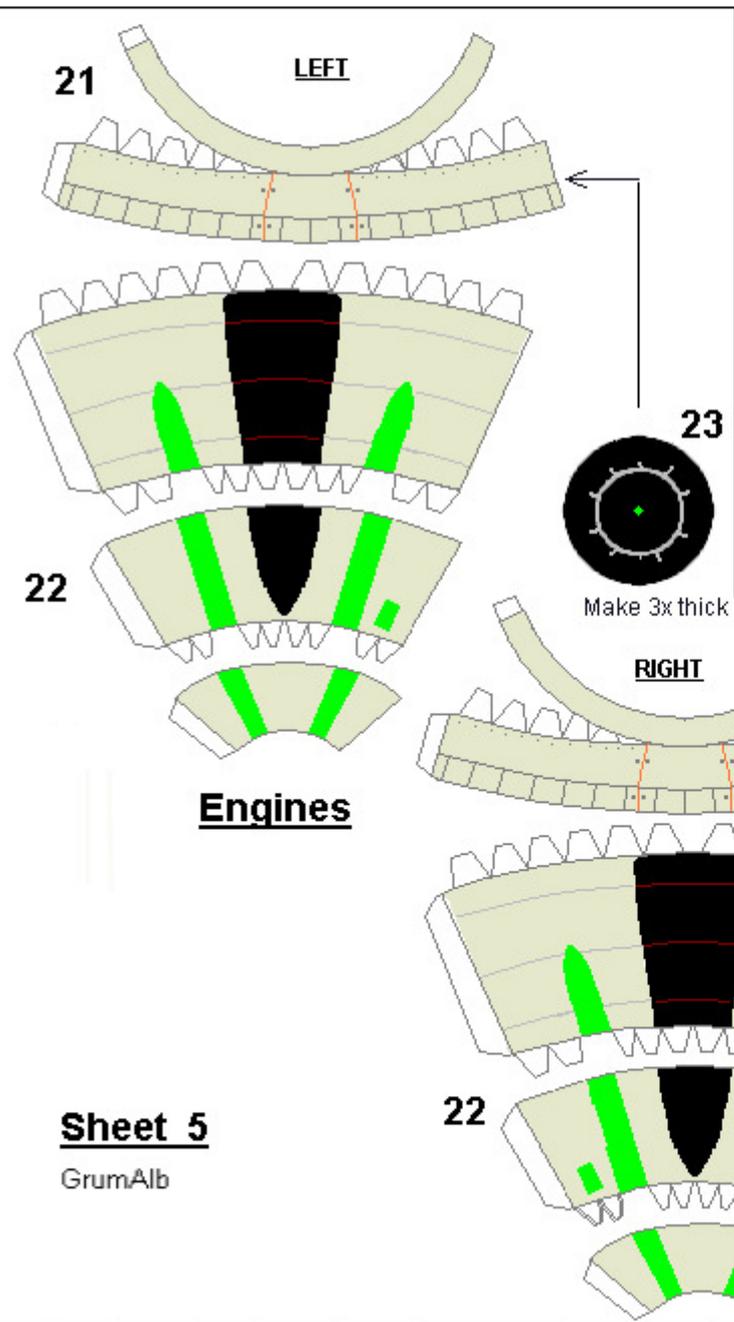
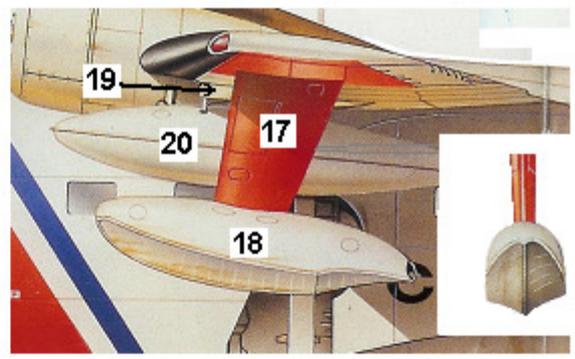
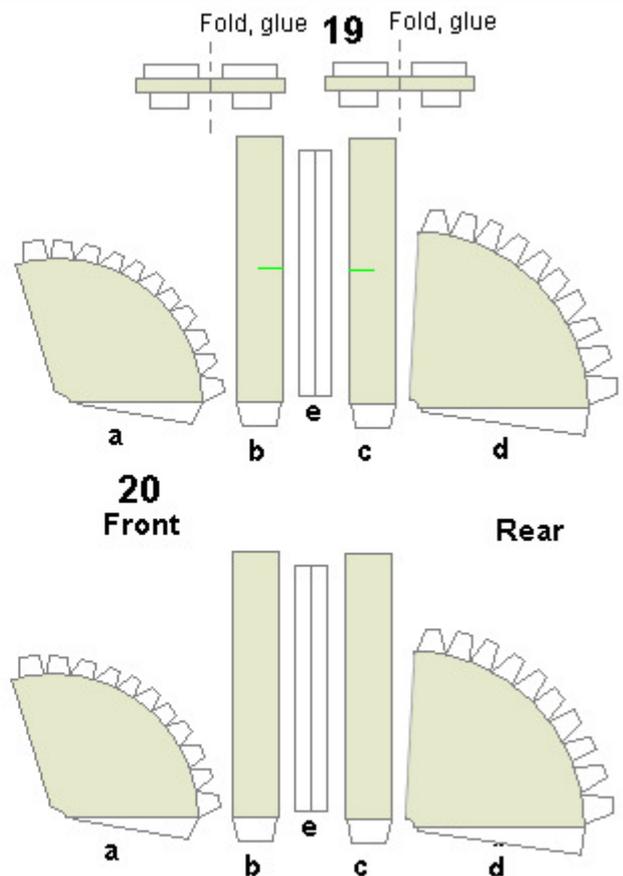
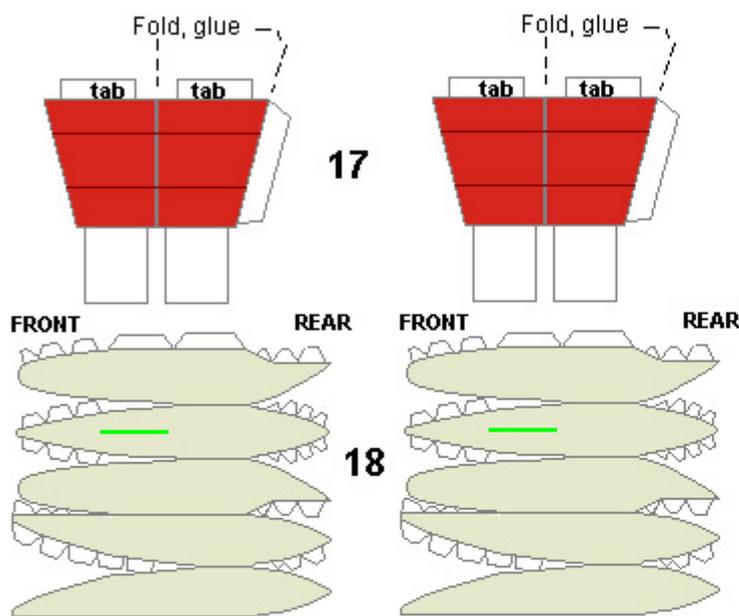
Vertical struts³⁰

Cut out each rectangle, fold 90° along the 4 dotted lines to form a rectangular cross-section, glue. When dry, cut off white portion

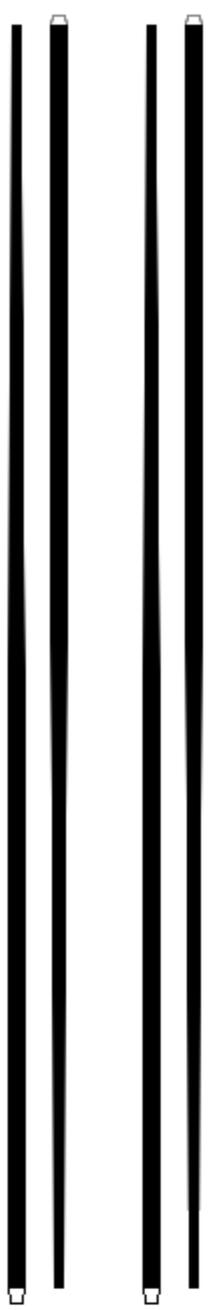
Sheet 4

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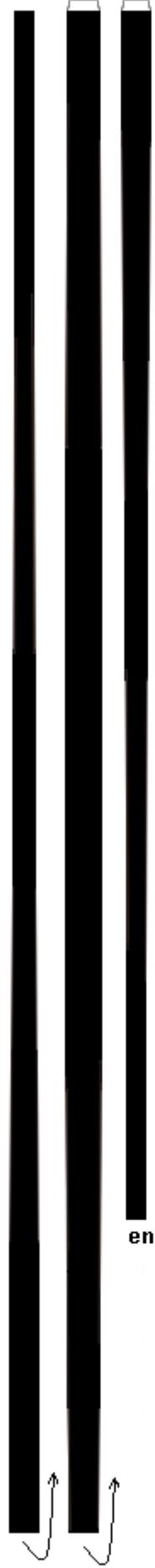
Sheet 5
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2 Front wheels 26



Hub Caps 26A

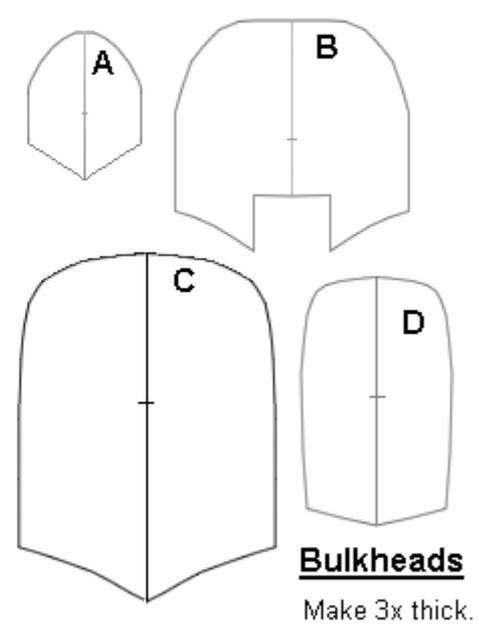
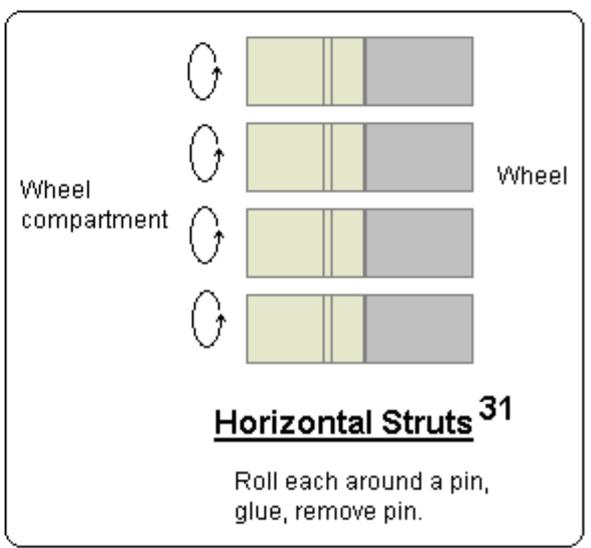
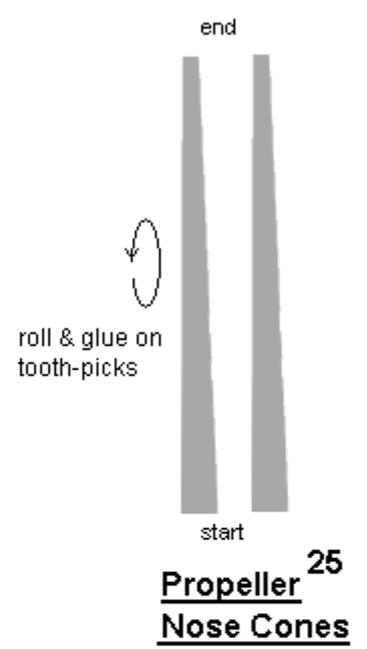


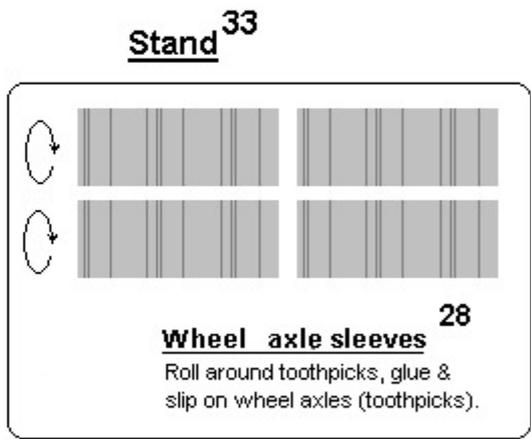
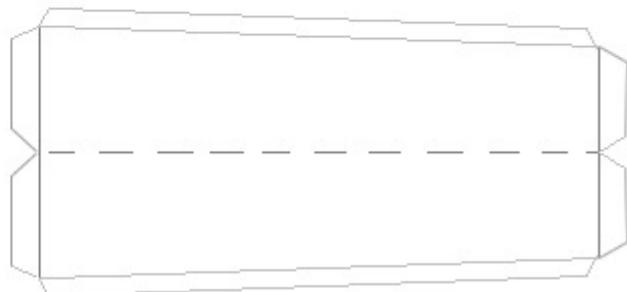
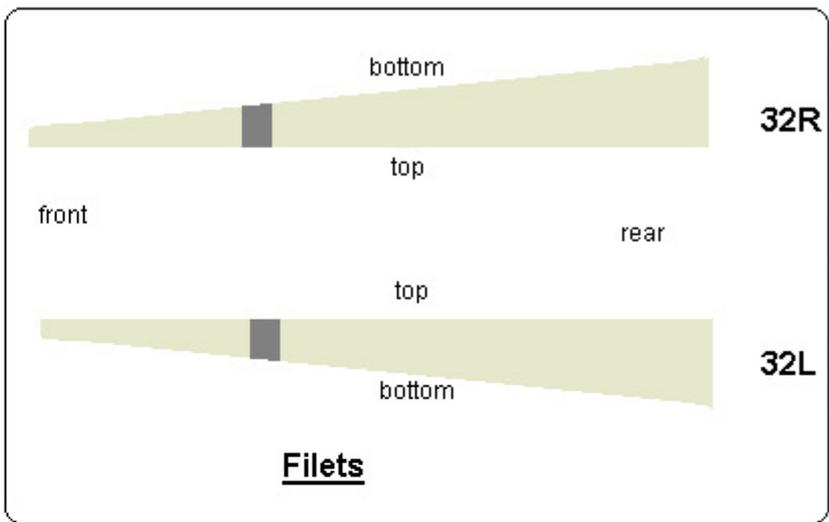
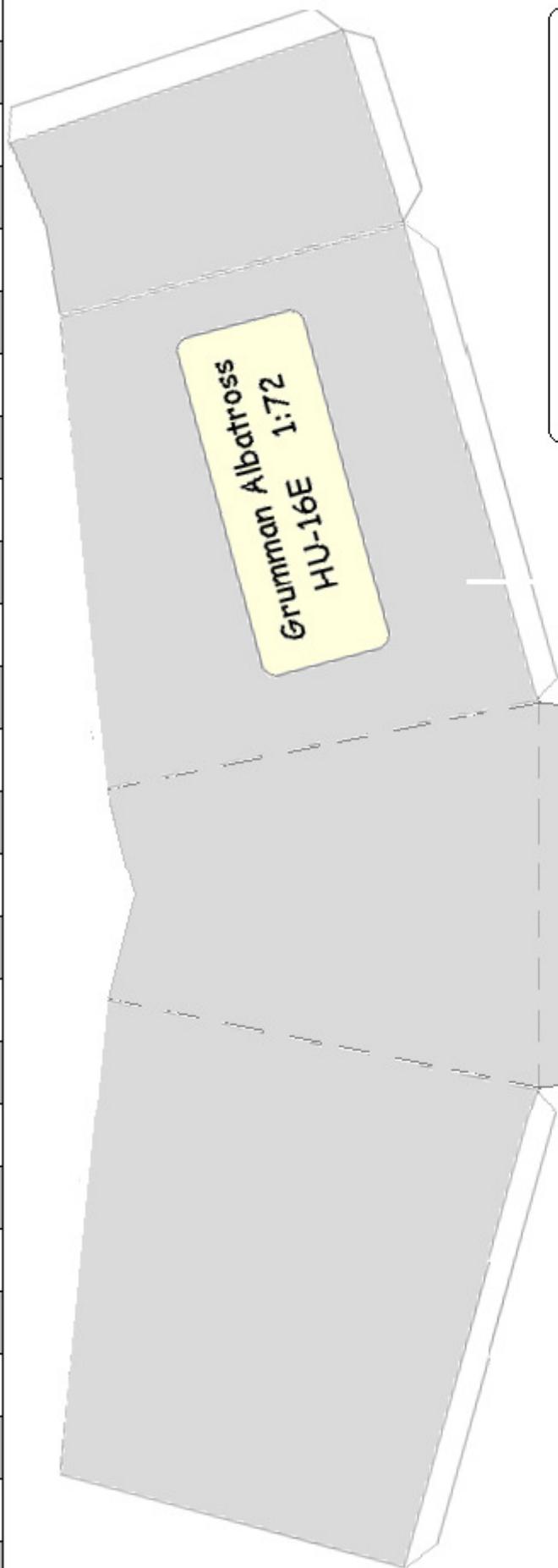
2 Main wheels 27



Hub Caps 27A

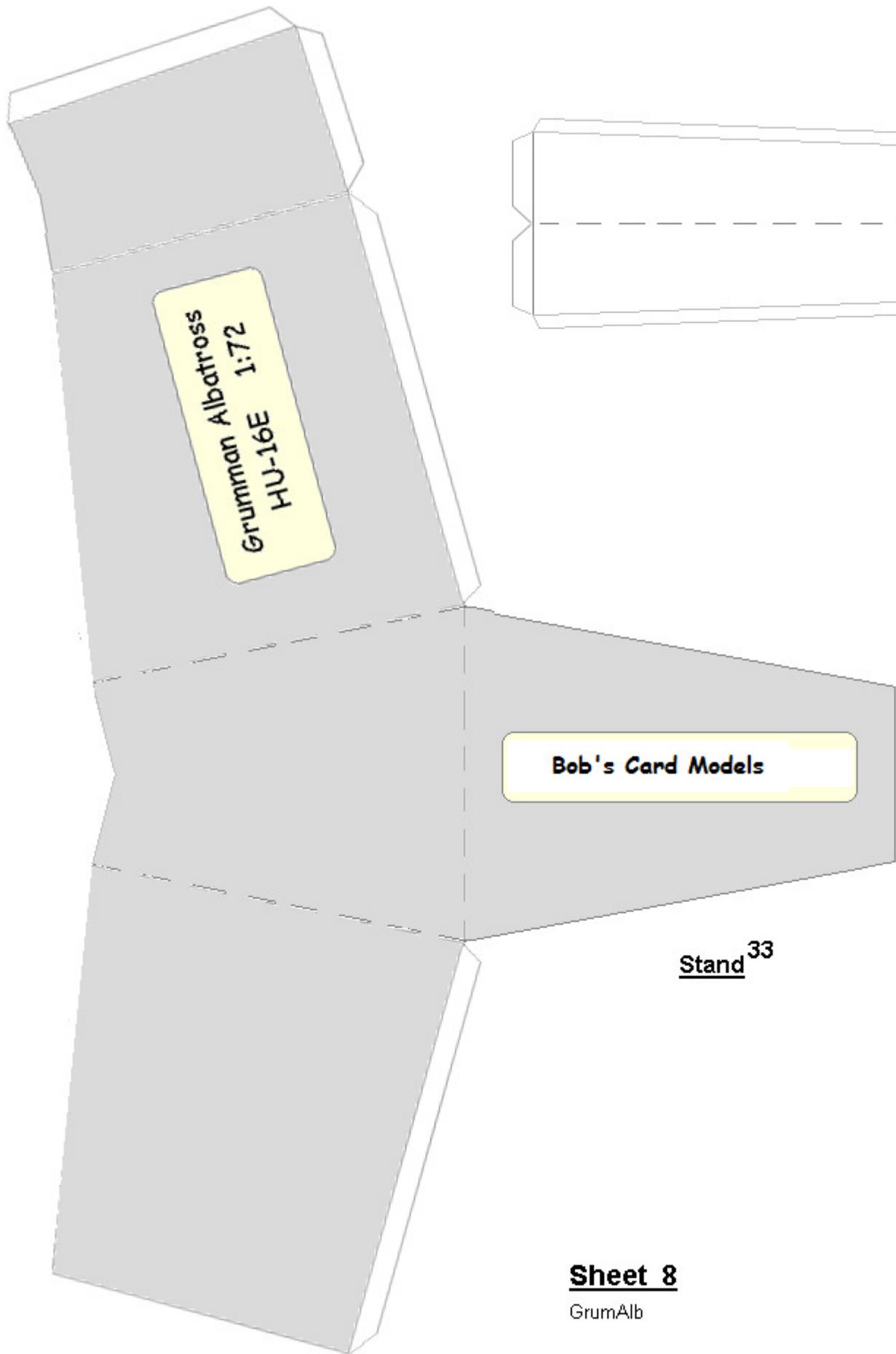
Sheet 7
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Sheet 8

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Bob's Card Models

Stand³³

Sheet 8

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