



# Rag Rat Resins

1:72 multi-media kit of the



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## 1926 DH 66 Hercules airliner

History, Notes and  
Assembly Instructions

## History

The DH 66 Hercules was designed to be a long-range aircraft, with a good payload (for its day), capable of operating out of the 'hot-and-high' airfields of the Empire Air routes. It was intended to be used by Imperial Airways when that company took over the Empire Air Mail services from the Royal Air Force.

Five aircraft were initially ordered (G-EBMW - G-EBNA), and G-EBMW (the subject of this kit) departed from Croydon on 18th December 1926, on the first airmail flight. This aircraft was named 'City of Cairo' by King Faud on Egypt in February 1927.

In July 1928 West Australian Airways received an air mail contract, and ordered four DH 66 aircraft (G-AUJO - G-AUJR), and the first two were test flown at Perth in May 1929. These aircraft differed from the original Imperial Airways machines by having fourteen passenger seats, an enclosed cockpit, and a tail wheel in place of the original skid.

When the India route was extended to Delhi, Imperial Airways ordered another aircraft (G-AAJH), which, like the Australian aircraft had an enclosed cockpit. On 6th September 1929 G-EBMZ crashed with the loss of three lives, following which Imperial Airways ordered a replacement aircraft (G-AARY) - this was the eleventh and last Hercules built.

On 20th January 1932, the Cape service was inaugurated with Hercules aircraft operating the Kisumu - Cape Town section, via Nairobi, Moshi, Dodoma, Mbeya, Broken Hill, Salisbury, Bulawayo, Pietersburg, Johannesburg, Kimberly, and Victoria West.

During 1933 Armstrong Whitworth Atalantas began to replace the DH 66s and three aircraft were sold to the South African Air Force as 260, 261 and 262. Although only eleven aircraft were built, it was a vitally important aircraft in pioneering the first services to India and South Africa, and also in developing the air service across Southern Australia.

## References

De Havilland Aircraft since 1909

A J Jackson

Putnam

De Havilland - the golden years 1919-1939

R J Riding

IPC Transport Press (Flight)

Aeroplane Monthly - November 1986

## Introduction

This Rug Rat Resins kit is cast in urethane resin using one- and two-piece moulds. Because of the limitations of the moulding techniques, there may be a few small air bubbles in the components, but these can be filled using any of the proprietary fillers (Green Stuff, Milliput, etc.).

**WARNING - THE DUST FROM URETHANE RESIN IS TOXIC. WEAR A MASK, OR SAND IT WET.**

**WARNING - OBEY ALL MANUFACTURERS SAFETY INSTRUCTIONS WHEN YOU USE GLUE, PAINT, OR OTHER MATERIALS.**

Resin parts can be shaped with a scalpel fitted with a stout blade, or a modelling knife, and can be cut with a razor saw. It is glued using superglue (cyanoacrylate) or 5 minute epoxy. We favour the use of superglue, but be warned: if your mating surfaces are well prepared, the superglue bond will be immediate and permanent. Any attempt to reposition the parts may result in breakage. Resin is a relatively brittle material and rough treatment of thin components will lead to breakage. Resin can be filed, sanded, wet-and-dried, and polished, just like polystyrene, but remember that the dust is an irritant (similar to sawdust). Wear a mask, or sand it wet. Green stuff and similar fillers that rely on evaporation are only suitable for 'skimming' and minor filling operations that need to be sanded with a minimum of delay. An alternative is automotive two-pack filler or Milliput.

Before starting assembly, wash the resin parts in a good benign solvent such as isopropanol or warm soapy water. This will remove the mould release agent from the parts. Do not use hot water because the parts may soften and distort. You can use this to advantage however if you have a warped component, or want to adjust or 'tweak' something. Heat the component with hot water or a fan heater and gently adjust it. When it cools it will keep its modified shape. If you are unhappy with any of the parts, send them back to us for free replacement.

In addition to the resin parts, the kit also contains cast metal parts and vacuum-formed transparencies. Use superglue for the cast metal, and read the detailed instructions for advice on gluing the transparencies.

## Parts List

### ResinCast Metal-continued

Fuselage-left . . . . .	1 off
Fuselage-right . . . . .	1 off
Fin . . . . .	3 off
Tailplane-lower . . . . .	1 off
Tailplane-upper . . . . .	1 off
Upper wing-left . . . . .	1 off
Upper wing-c/section . . . . .	1 off
Upper wing-right . . . . .	1 off
Lower wing-left . . . . .	1 off
Lower wing-right . . . . .	1 off

### Cast Metal

Cabin air intake . . . . .	1 off
Cabin heater . . . . .	1 off
Engine . . . . .	3 off
Exhaust-fuselage . . . . .	2 off
Exhaust-nacelle . . . . .	4 off
Landing gear leg . . . . .	2 off
Landing gear s/brace-L1 off	
Landing gear s/brace-R1 off	
Main wheel . . . . .	2 off
Propellers . . . . .	3 off
Radio set . . . . .	1 off
Seat - navigator . . . . .	1 off
Seat - pilot . . . . .	1 off
Seat - radio operator . . . . .	1 off
Starting engine . . . . .	1 off

### Cast Metal - continued

Strut-aileron . . . . .	2 off
Strut-outboard . . . . .	4 off
Strut-inboard forward . . . . .	2 off
Strut-inboard rear . . . . .	2 off
Strut-'vee' forward . . . . .	1 off
Strut-'vee' rear . . . . .	1 off
Tail skid . . . . .	1 off

### Etched Brass

A Rear cabin bulkhead . . . . .	1 off
B Passenger seat . . . . .	8 off
C Control Wheel . . . . .	1 off
D Heater matrix . . . . .	2 off
E Compass bowl . . . . .	2 off
F Compass ring . . . . .	1 off
G Compass bezel . . . . .	1 off
H Instrument panel . . . . .	1 off
I Bellcrank - small . . . . .	2 off
J Bracket . . . . .	2 off
K Column & rudder pedals 1 off	
K† Propeller doubler plate . . . . .	3 off
L Fuel gauge . . . . .	2 off
M Exhaust bracket-fuselage 2 off	
N Passenger seat base . . . . .	8 off
O Fuel line . . . . .	2 off
P Cable harness . . . . .	2 off
Q Engine instrument panel 2 off	

### Etched Brass - continued

R Hat rack-right . . . . .	1 off
S Right window frame-inner . . . . .	1 off
T Ventilator grill . . . . .	2 off
U Windscreen . . . . .	1 off
V Cabin step . . . . .	1 off
W Right window frame - outer . . . . .	1 off
X Left window frame - inner . . . . .	1 off
Y Exhaust bracket - nacelle . . . . .	4 off
Z Forward cabin bulkhead . . . . .	1 off
a Bellcrank - large . . . . .	2 off
b Cabin heater mounting bracket 1 off	
c Tailplane strut - forward . . . . .	2 off
d Tailplane strut - rear . . . . .	2 off
e Left window frame - outer . . . . .	1 off
f Curtains - right . . . . .	1 off
g Hatrack - left . . . . .	1 off
h Curtains - left . . . . .	1 off
h† Fire extinguisher . . . . .	2 off
i Light fitting . . . . .	8 off
j Pitot head . . . . .	1 off
2A Aileron push rod . . . . .	2 off
2B Navigation light . . . . .	2 off

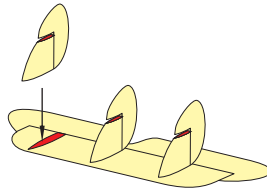
### Miscellaneous

Decals . . . . .	1 sheet
Instructions . . . . .	1 set
Thick transparency (windows) . . . . .	1 sheet
Thin transparency (windshield) . . . . .	1 sheet

## Assembly

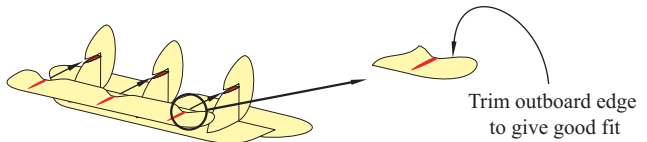
Note: always remove all paint from any area which is to be bonded with adhesive.

- 1 Empennage (Refer to Figure 1)
  - A Remove all flash from the slots in the leading edge of each of the three fins. Make sure that the upper horizontal stabilizer is a good fit in each slot, without causing any distortion of the parts.
  - B Remove any flash from all other empennage parts. Make sure that the base of each fin is flat and square.
  - C Attach the three fins to the lower horizontal stabilizer (Refer to Figure 1). Make sure that the three fins are vertical.



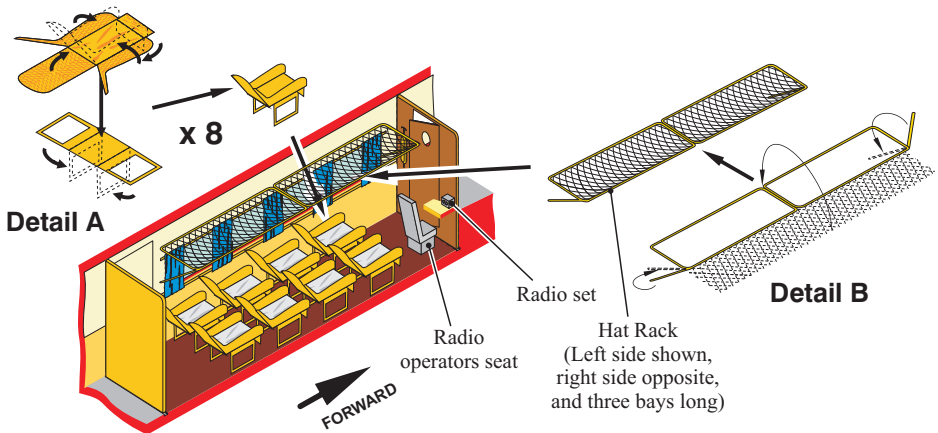
**Figure 1**

- D Trim the outboard edge of each recess for the outboard fins of the upper horizontal stabilizer, until it fits easily, with the fins vertical, and without any distortion (Refer to Figure 2).



**Figure 2**

- (5) Attach the radio operator's seat to the floor, and the radio set to the table.
- (6) Fold the hat racks as shown in detail B. Scrape the paint away in the attachment areas. Attach the short hat rack to the left fuselage and the long hat rack to the right fuselage half, above the windows. Note: The diagonal support at the end of each hat rack is folded down. The mesh is folded through 180 degrees, and then curved into a catenary.



**Figure 5**

#### 4 Fuselage assembly

- A Make sure that the socket on top of the tail cone is clear, and that the lug on the bottom of the empennage assembly is a good fit in the socket.
- B Cut pieces of the thick transparency to fit into the recesses in each fuselage half, and attach them.
- C When the adhesive has cured, fill the joints, to give a smooth finish.  
Note: Put some masking tape over the clear area of the windows for protection, before filling and sanding the joints.
- D Make sure that the mating faces of the two fuselage halves are a good fit, then bond them together with epoxy cement, or cyano acrylate (super glue).
- E When the adhesive has set, fill the joint, and sand it smooth.

#### 5 Cockpit (Refer to Figure 6)

- A Instrument Panel (Refer to Detail A)
  - (1) On the lower edge of the instrument pane, fold the shelf for the compass through 90°.
  - (2) If necessary, separate the etching of the side stays from the instrument panel, then fold the two side stays up through 90°.
  - (3) Attach the compass bezel, compass ring, and two compass bowl laminations together, then attach this sub-assembly to the shelf (of the instrument panel).
  - (4) Paint the instrument panel aluminium, with black and white instrument faces. The compass is natural brass, with a white compass card.
  - (5) Attach the instrument panel to the forward face of the cockpit structure.
- B Paint the pilot's and navigators seat covers dark brown (to simulate leather), then attach them to the cockpit floor.
- C Control Wheel and Rudder Pedals Assembly (Refer to Detail A)
  - (1) Fold the rudder pedals up through 90°.  
Note: Make sure that the etched 'DH' is on the rear face of each pedal after it is bent up.
  - (2) Fold the column up through 90°.
  - (3) Paint the rim and spokes of the control wheel gloss black. Paint the column, upper face of the base plate, and rudder pedals aluminium.
  - (4) Attach the control wheel to the aft face of the column.
  - (5) Attach the control column and rudder pedals assembly to the cockpit floor.

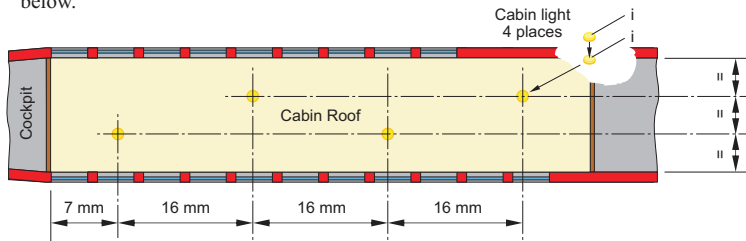
E Attach the upper horizontal stabilizer (Refer to Figure 2).

2 Passenger Cabin Interior

Note: We have been unable to find any information on colours, so the colours mentioned are only a suggestion.

A Cabin Lights (Refer to Figure 3)

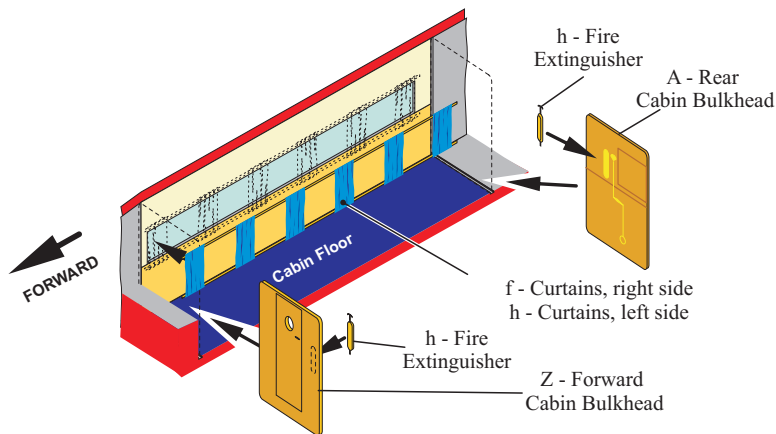
- (1) Remove any irregularities from the edges of the cabin window cutouts in the fuselage mouldings.
- (2) Paint the interior of the fuselage halves. We suggest ivory or cream above the waist line, a light buff below the waistline, and dark blue for the floor.
- (3) Scrape the paint off the bond areas, then attach the lights to the cabin roof as shown in the sketch below.



**Figure 3**

B Curtains, Fire Extinguishers, and Bulkheads (Refer to Figure 4)

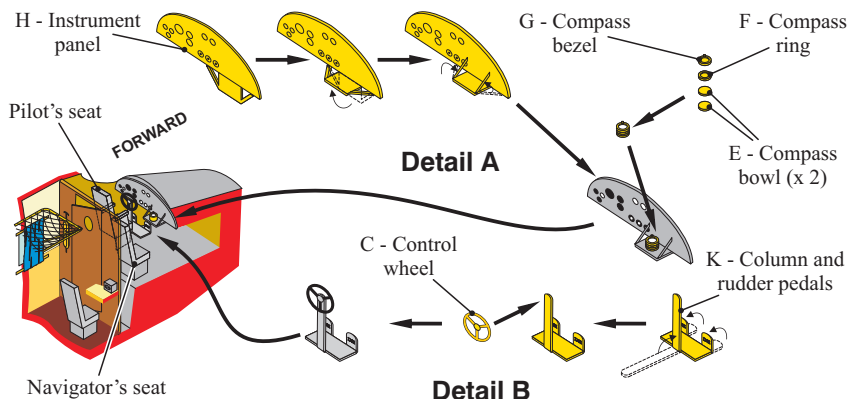
- (1) Paint the curtain areas of the curtains - right side, and curtains - left side a medium blue, but leave the curtain rails natural brass, then attach these items to the fuselage sides over the window openings.
- (2) Paint both faces of the forward bulkhead, and the forward face of the aft bulkhead a medium brown (to represent a wood finish). Do not paint the fire extinguisher attachment area of each bulkhead.
- (3) Attach a fire extinguisher to each cabin bulkhead, then attach the two bulkheads in position in one fuselage half. Fold the cabin door (in the front cabin bulkhead) into an open position if required.



**Figure 4**

C Passenger Seats, Radio Operator's Position, and Hat Racks (Refer to Figure 5)

- (1) Fold the eight passenger seats and eight bases as shown in Detail A, then attach each seat to a base.
- (2) Paint the seats a light tan (to represent 'wicker-work'), and paint the squab of each seat white.
- (3) Attach four seats in each fuselage half.
- (4) Paint the radio operators seat dark brown, the table (integral with the right fuselage half) brown to match the bulkheads, and the radio set matt black.



**Figure 6**

**6 Airframe Assembly (Refer to main exploded view and 3-view drawing supplied)**

**A Upper Wing Assembly**

- (1) Make sure that the mating faces of the upper center section and outer planes are clean, and a good fit.
- (2) Prepare suitable shims or packers to hold the outer planes at the correct dihedral of  $3^\circ$  until the adhesive has set.
- (3) Attach the center section to a smooth, flat work surface with adhesive tape.
- (4) **CAUTION:** Make sure that the wings are correctly aligned, and symmetrical before the adhesive sets.

Apply adhesive to the mating faces of the outer planes, and attach them to the center section, with shims or packers (prepared in step 6 A (2)) under each wing tip. Attach them to the work surface with adhesive tape until the adhesive has set.

**B Lower Wing Assembly**

- (1) Make sure that the tongue on each lower wing root is a good fit in its socket in the fuselage.
- (2) Prepare suitable shims or packers to hold the lower wings at the correct dihedral of  $3^\circ$  until the adhesive has set.
- (3) Put a suitable packer under the fuselage (to compensate for the depth of the nacelle on each lower wing), and attach it to a smooth, flat work surface with adhesive tape.
- (4) **CAUTION:** Make sure that the wings are correctly aligned, and symmetrical before the adhesive sets.

Apply adhesive to the mating faces of the lower wings, and attach them to the fuselage, with shims or packers (prepared in step 6 B (2)) under each wing tip to give the correct dihedral of  $3^\circ$ . Attach them to the work surface with adhesive tape until the adhesive has set. Do not remove the fuselage from the work surface until the upper wing is attached to the lower wing.

**C Upper/Lower Wing Assembly**

- (1) Remove all flash from the interplane struts, and make sure that they fit correctly in their correct positions.
- (2) Make a cradle from cardboard to hold the upper wing in the correct position.
- (3) **CAUTION:** Make sure that the wings are correctly aligned, and symmetrical before the adhesive sets.

Attach the upper wing to the lower wing and fuselage with the interplane and wing/fuselage struts. Do not touch the assembly until the adhesive is completely cured

**D Empennage/Fuselage Assembly**

- (1) Make sure that the empennage sub-assembly is a good fit on the top of the tail cone.
- (2) **CAUTION:** Make sure that the empennage sub-assembly is correctly aligned, and symmetrical before the adhesive sets.

Attach the empennage sub-assembly to the fuselage.

## 7 Landing Gear Assembly

### A Tail Skid

- (1) Drill a hole in the under side of the rear fuselage for the pin on the tail skid.
- (2) Remove all flash from the tail skid, and make sure it is a good fit in the rear fuselage.
- (3) Attach the tail skid to the rear fuselage.

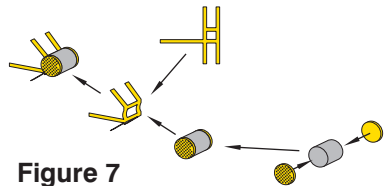
### B Main Landing Gear

- (1) Remove all flash from the main landing gear components.
- (2) Attach a main landing gear leg to the under side of each nacelle.
- (3) Attach a side brace to the wing root and to the applicable main landing gear leg. Make sure that the aerofoil section of each side brace is correct, with the thin trailing edge facing aft.
- (4) Attach a main wheel to each axle.

## 8 Detail Parts (Refer to main explodes view and 3-view drawings)

### A Attach these detail parts:

- (1) To the nose fuselage:
  - A small bellcrank (I) to each side of the nose
  - A large bellcrank (a) to each side of the nose
  - A bracket (J) below each side of the cockpit
  - A cable harness (P) to each side of the fuselage below and forward of the cabin windows.
- (2) Attach an engine instrument panel (Q) to the inboard face of each inboard, forward interplane strut.
- (3) Attach the pitot head (j) to the inboard face of the left outboard, forward interplane strut.
- (4) Attach the cabin windows
  - (a) Paint the inner and outer window frames midnight blue, with aluminium frames to the sliding windows.
  - (b) Put the right outer window frame (W) over the right inner window frame (S) and bond the two together.
  - (c) Put the left outer window frame (e) over the left inner window frame (X) and bond the two together.
  - (d) Attach the window frames to the transparent areas of the cabin sides. Make sure you align them correctly with the curtains and window cut-outs.
- (5) Fold the cabin step (V), and attach it below the cabin door.
- (6) Assemble and attach the cabin heater:
  - (a) Make sure that both ends of the cabin heater are flat and true.
  - (b) Attach a heater matrix (D) to each end of the cabin heater.
  - (c) Fold the cabin heater mounting bracket (b), and attach it to the fuselage.
  - (d) Attach the cabin heater to the mounting bracket.
- (7) Attach the cabin air scoop to the fuselage, behind the cockpit.
- (8) Attach the fuel gauges (L) to the center section of the upper wing, and to the forward wing/fuselage strut.
- (9) Attach the fuel lines (O) between the center section of the upper wing, and the fuselage.
- (10) Drill 0.020 inch/0.05 mm diameter holes for the locating pins and attach:
  - (a) An aileron push rod (2A) below each lower wing.
  - (b) A navigation light (2B) above each upper wing tip.



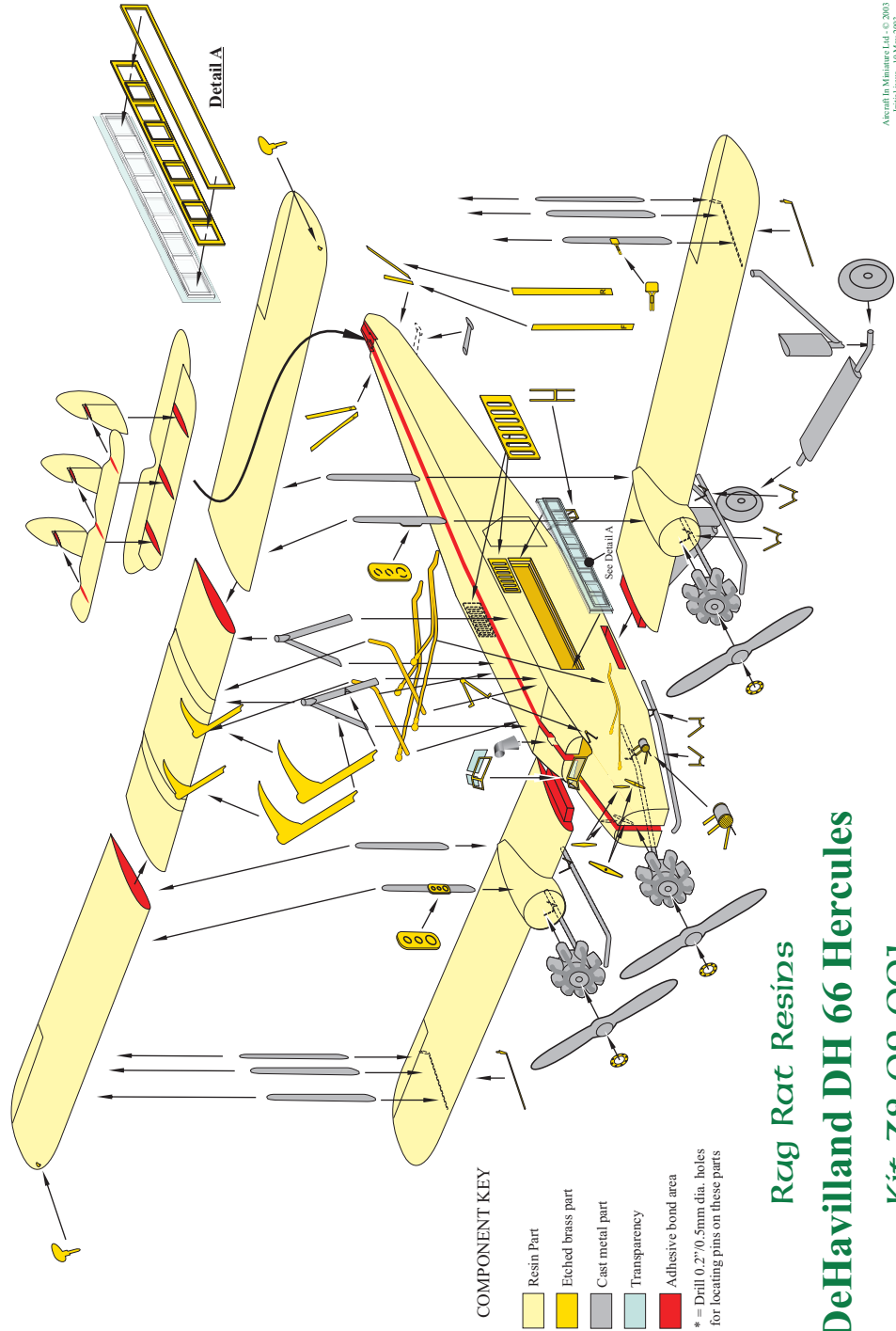
**Figure 7**

### D Attach the ventilation grills to the fuselage sides above the left rear cabin window, and in an equivalent position on the right side of the fuselage.

### E Attach the forward tailplane struts (c) and rear tailplane struts (d) from the rear fuselage to the horizontal stabilizer.

## 9 Engine and Propeller Assemblies

- A Paint each engine with black cylinders, a grey crankcase, and bronze exhaust pipes and collector ring.
- B Paint the propellers a light tan, to represent varnished wood, and paint the front face of each propeller doubler plate (K4) aluminium.
- C Attach a propeller doubler plate (K4) to the front hub of each propeller.



**COMPONENT KEY**

- Resin part
- Etched brass part
- Cast metal part
- Transparency
- Adhesive bond area

\* = Drill 0.27/0.5mm dia. holes for locating pins on these parts

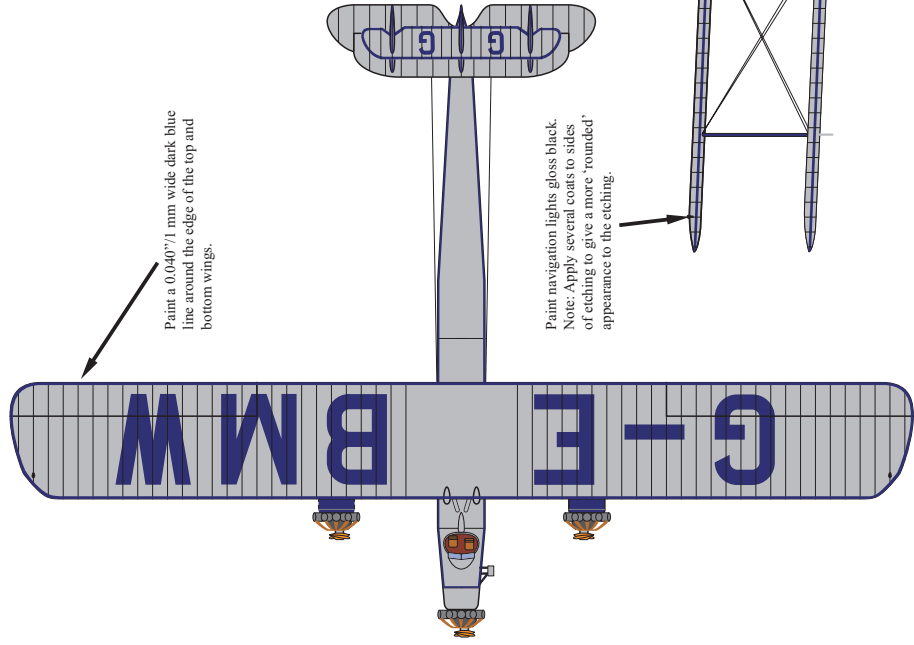
**Rat Rat Resins**  
**DeHavilland DH 66 Hercules**  
**Kit 72-09-001**



# Rag Rat Resins

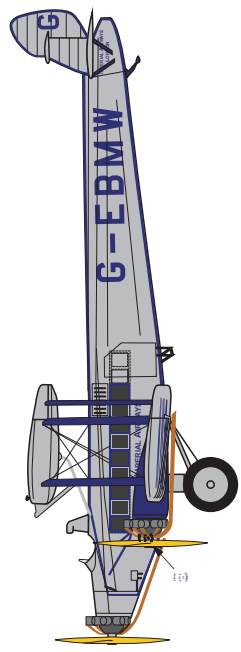
## DeHavilland DH 66 Hercules

### Kit 72-09-001






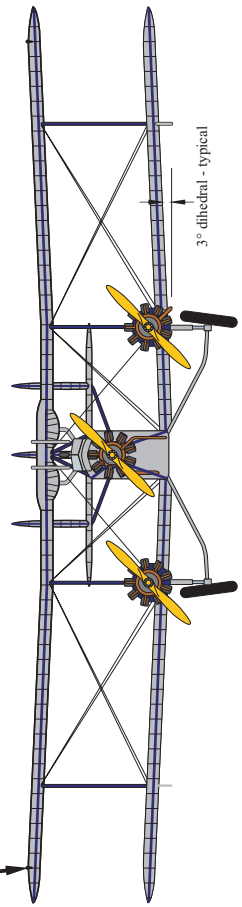
Paint a 0.040" / 1 mm wide dark blue line around the edge of the top and bottom wings.

Paint navigation lights gloss black.  
Note: Apply several coats to sides of etching to give a more 'rounded' appearance to the etching.



#### COLOUR KEY

-  Aluminum Dope
-  Midnight Blue  
- decal supplied & Xtracolor X357
-  Black



3° dihedral - typical

10 Paint the model (refer to the section headed 'Finishing and Decorating the Model').

- A The aircraft was aluminium dope overall, with the following detail parts and areas in midnight blue:
- Nacelles
  - Interplane and tailplane struts
  - Cabin heater mounting bracket (body was aluminium while matrices at each end of body were natural brass)
  - Bell cranks.
- B Paint the main wheel tyres matt black.
- C Paint the shoe of the tail skid medium tan, to represent wood.
- 11 Engines, Propellers, and Exhausts
- A Attach the engines to the nacelles and fuselage (there is an arrow on the rear face of each engine, which should point UP when the engine is attached).
- B Attach one fuselage exhaust brackets (M) to each side of the fuselage.
- C Attach one nacelle exhaust brackets (Y) to each side of each nacelle.
- D Attach two exhaust pipes to each engine, and to the applicable exhaust bracket.
- E Attach a propeller to each engine.
- F Paint the exhaust brackets aluminium, and the exhaust pipes brown.
- 11 Windscreen
- A Cut two pieces of thin transparency to fit behind the windscreen(W).
- B Fold the windscreen on its vertical center line.
- C Paint the front face of the windscreen aluminium.
- D Attach the transparencies to the windscreen frame.
- E Attach the windscreen to the fuselage.

## **Finishing and Decorating the Model**

### Finishing and Decorating

Follow the colour scheme information provided. When applying the decals, please note that they are very thin and will fold back on themselves given any chance at all. We have found it was best to wet the decal and place it (still on its backing paper) next to the area where it will go, then ease it into place with a wet paintbrush. If it folds, you can always move it back onto the paper, place in water and sort it out with a paintbrush while it is under water. We recommend extreme care! Always keep the decals very wet until they are in position. We do not recommend trimming the insides of the letters; they become too difficult to handle when wet. The decals tone in quite well with a silver finish.

### Colour Scheme

Markings were gloss or satin, not matt, and registration letters were applied across the top and bottom of both wings, and they were read from behind.

The fuselage, fins and rudders, and upper horizontal tailplane all had a thin blue outline to the edge. These are provided as decals, but it is necessary to touch up the edges where two decals meet at left/right, upper/lower, or fuselage corner surfaces with paint. The same dark blue paint will be necessary for finishing the nacelles, interplane struts, and bellcranks on the nose fuselage.

The positions of the various decals is shown on the 3-view drawing.

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*This kit is manufactured in the United Kingdom by*

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