H.M.A. R101 - 1930

British intercontinental airship in 1:700 or 1:600 scale

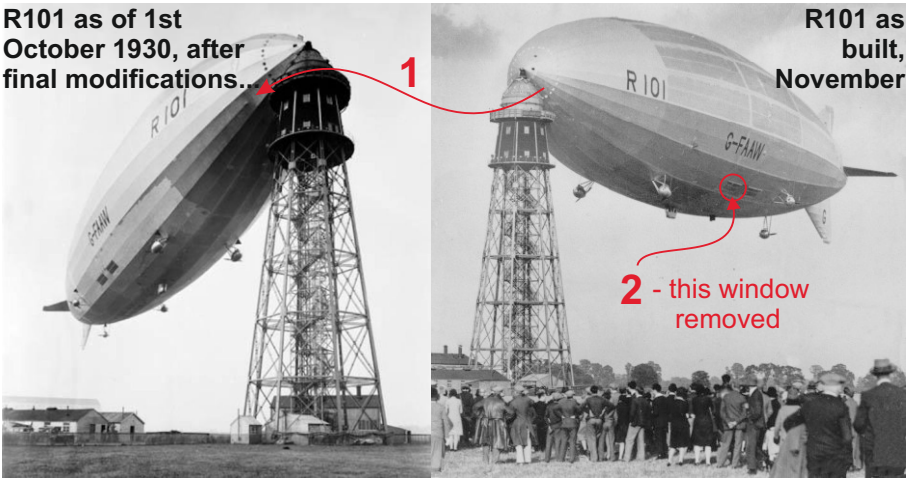
R101 in brief:

(see www.airshipsonline.com/airships/r101 for much more information)

His Majesty's Airship R101 was arguably the most beautiful of the big intercontinental passenger airships of the inter-war period and sadly one of the most tragic. She was one of two designs chosen to launch the British Government's Imperial Airship Scheme, an ambitious plan to link the then enormous British Empire with a passenger and mail airliner service. **R101** was built at the state owned Royal Airship Works in Cardington, Bedfordshire, England whilst the other 'ship, the R100, was built by the privately funded Airship Guarantee Company (a subsidiary of Vickers), at Howden in Yorkshire. Since the government of the day was run by the Labour Party the public soon nicknamed the two as the "Capitalist Airship" and the "Socialist Airship" respectively. Perhaps inevitably, **R101's** design and operation were impacted heavily by government interference from the outset, but a lot of superb workmanship went into her construction. Many innovative and interesting design features managed to survive the government-imposed controls but too little time was ever allowed for testing them out. Ironically her fate was sealed by official demands that very wide safety margins be built into all of her systems. This of course increased her weight and catastrophically reduced the most necessary margin of all for an airship - maximum useful lift. On completion in October 1929, the 'ship was the largest man made object ever to fly and had superb passenger accommodation. **R101** was conceived as a lavish floating hotel with wonderful luxuries, even when judged by today's standards. The open promenade decks and public spaces were unique in the skies. In fact the large British airships were the first to adopt the idea of constructing the passenger accommodation within the envelope. The only contemporary which was offering a passenger service was the German LZ127 - Graf Zeppelin, which accommodated just 20 passengers in a stretched forward gondola hung beneath the envelope. **R101** boasted two decks of space including a dining room which could seat 60 people at a time and a smoking room which could seat 20. The promenade decks with their massive windows gave the passengers undreamt of views as they traversed the earth. Compared to the noisy, smelly and very tiring travel experience offered by contemporary aeroplanes, the airships delivered pure luxury, with service comparable to that of the greatest ocean liners. In October 1930, after just one sixteen-hour test flight following a major rebuild to increase her lift, the crew and controllers of **R101** were urged on to make her maiden voyage to Karachi in that part of India which was to become modern Pakistan. The then Secretary of State for Air for the British government, Lord Thomson memo'd "I must insist on the programme for the Indian flight being adhered to, as I have made my plans accordingly." At 18h24 on 4 October 1930, **R101** backed away from the mooring mast at Cardington and headed into a night of increasingly heavy rain and strong headwinds. Some observers thought that she was struggling to gain height even as she left Cardington field. Just after 2 am the following morning, **R101** crashed into a hillside in Beauvais, northern France. There were only six people who survived, 48 crew and passengers died, and with them the hopes and dreams of the British "Imperial Airship Scheme".

Length (after extension) = 777 feet
Gas Volume = 5,509,753 cubic feet
Diameter = 131.3 feet

IMPERIAL AIRSHIP SCHEME

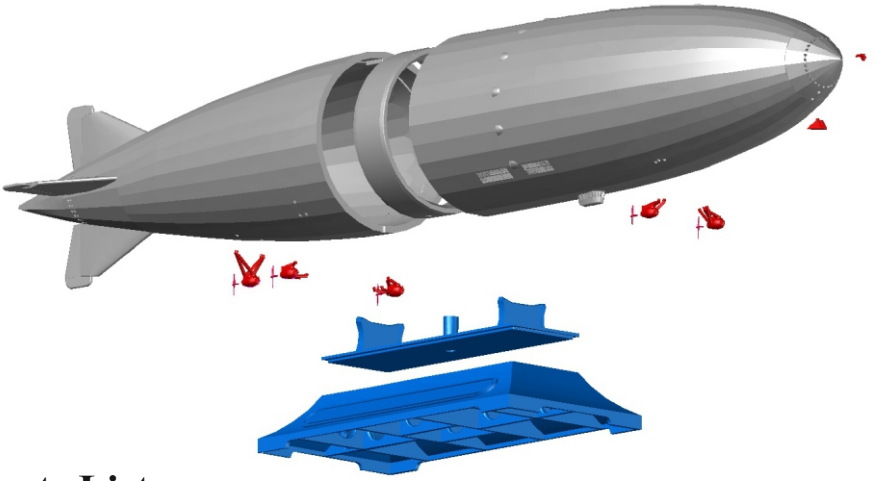


This model is of R101 as she was after her final rebuild which included several modifications to increase her useful lift. Chief amongst these was an additional 35ft bay inserted centrally complete with a new main gas bag. Despite this extra length it is difficult to spot before and after versions in photographs and the above photographs illustrate the two most striking visual differences to look out for:

1 There were adjustable reefing booms between the main longitudinal girders to keep the fabric covering of the envelope taught, these were removed entirely from the nose section.

2 A part of the port side passenger accomodation was removed and the forward half of the viewing platform and forward panoramic window on that side were removed. By chance, very few photos of the port side of R101 taken after the rebuild exist, so spotting the missing window is difficult!

R101 in 1:700 or 1:600 scale



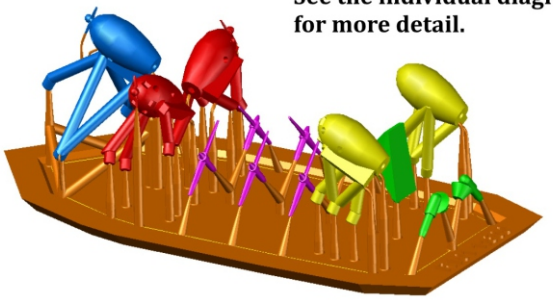
Parts List:

Envelope Front Half
Envelope Rear Half
Envelope joining Sleeve
Set of Detail Parts*
Display Stand Base
Display Stand Lid
Decal Sheet

*Detail Parts:

The Engine Cars, Propellers, Nose Pin and Gangplank arrive still connected to their print supports which need to be carefully snipped away.

See the individual diagrams for more detail.



NOTE that the print is actually in ONE colour. Everything shown in brown is discarded.

Detail Parts trim diagrams...

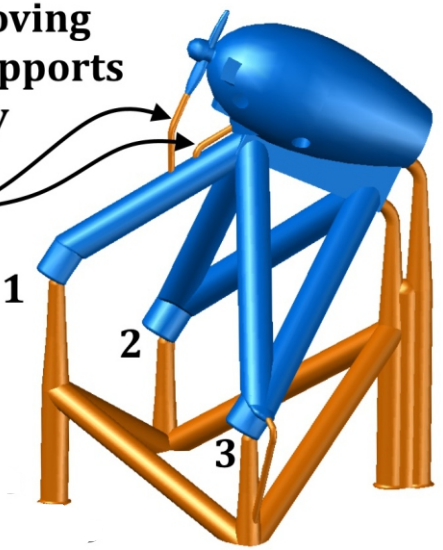
To keep these tiny parts safe they are supplied still attached to the print 'raft' and need to be carefully separated from it using sprue cutters or flush face snips.

STUDY the trim diagram for each part carefully ***before cutting*** to avoid losing any of the detail.

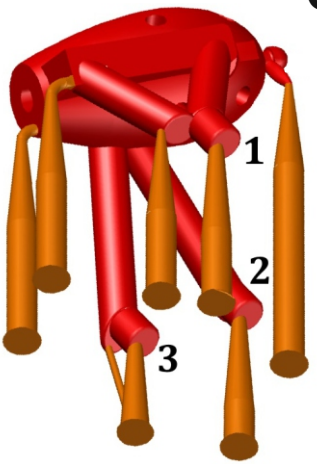
Do not twist sprues off unless advised otherwise in the diagram.

Rear Engine Car

Take care in removing these "thread" supports near the auxiliary generator drive propeller.



Midships Engine Cars

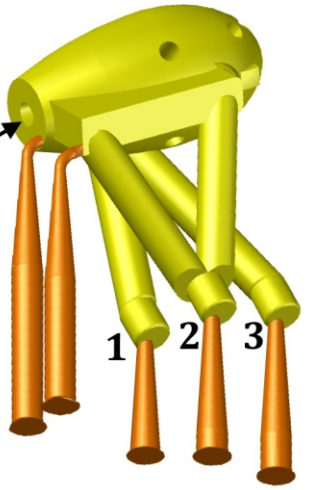


Note that all of the Engine Cars have 3 pins that locate in holes in the Envelope.

ONLY the Rear and Midships Cars have the nose mounted wind driven auxiliary generators and propellers.

Forward engine Cars

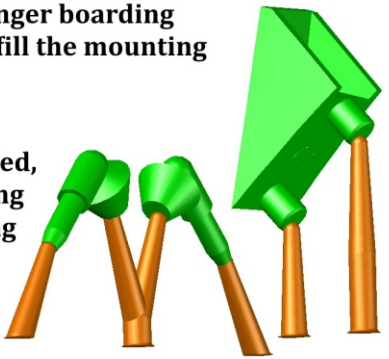
For all of the engine cars, check that the prop shaft hole is clear.

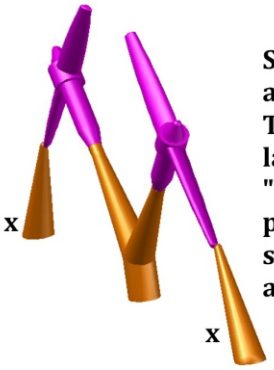


Propellers, Nose Pin and 'Gangplank'

The nose mounted passenger boarding "gangplank" is optional (fill the mounting holes if not required.)

Two nose pins are provided, one is a spare. When fitting carefully align the docking cone to hang vertically (in line with the gangplank holes.)

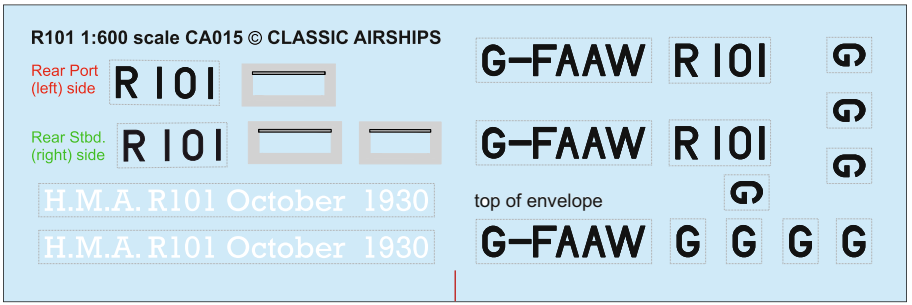




Six propellers are provided with one as a spare.
Tip: Leave removing the props until last and leave them on their central "Y" supports for painting. Before painting also remove the smaller supports "x" by cutting at their bases and twisting away.

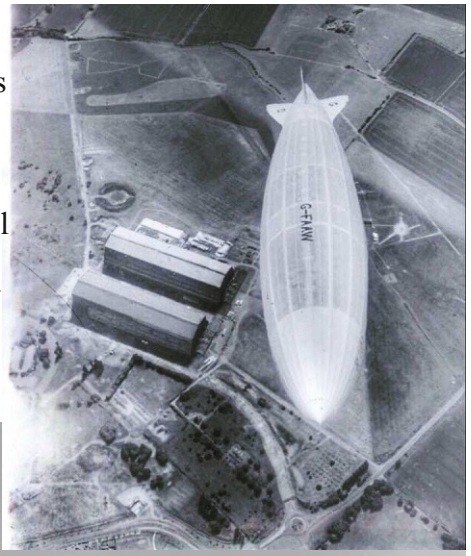
Waterslide Decals

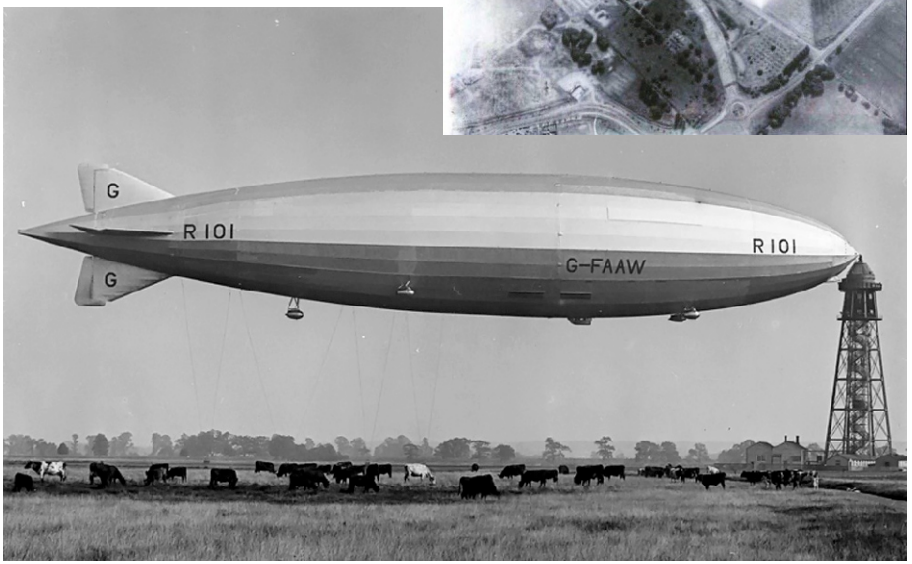
Use sharp scissors to cut around each marking just within the dotted gray line (or just outside the gray border of the window decals.)



1:600 scale decals shown; 1:700 scale are similar.

Note that the rear ‘R101' markings are different according to the side where they are applied.
The country registation letter ‘G’ (United Kindom) on the horizontal tailplanes is positioned with the bottom of the ‘G’ toward the body of the airship.





Applying Waterslide Decals

The ultimate success of a model depends very much on how nicely its' decals are applied. The keys to this success are first to have just a few essential tools to hand and second, to be ready to be patient.

TOOLS REQUIRED:

Sharp scissors.
Shallow dish or saucer.
Soft artists' brush, around size 5.
Pointed tweezers.
Decal softener (such as Revell "DECAL Soft" or Tamiya "MARKFIT STRONG")
Soft cloth or paper towel.
PLUS, for models with a lot of surface detail or irregular finishes, a fine needle and a sharp straight blade scalpel or craft knife.

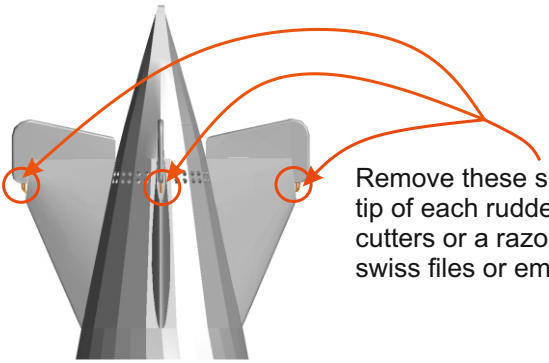
- Cut out the decals individually and only as they are needed.
- Part fill the dish with room temperature water and submerge the decal.
- Use the brush to wet the area where the decal is to be applied **with decal softener**.
- In just a few seconds the decal will start to lift from its' backing paper. Before it does, remove it from the water using the tweezers and offer it up to the model in position as close as possible to the one required.
- Hold the decal in position with the tip of a finger and gently pull the backing paper from underneath it using the tweezers.
- If there is still a lot of water around the decal 'wick ' some of it away with an edge of the paper towel.
- Using gentle strokes of the brush over its' surface, move the decal into it's final position - be patient, each stroke of the brush may move the decal only very slightly but movement will be there.
- Once in position carefully dab the decal with the paper towel to squeeze out any water still remaining beneath it. For larger decals use a squeegee action to smooth the decal from its' center outwards.
- If adhesion of the decal does not appear to be very good load the brush again with a little decal softener and paint it over the decal. Wait a few seconds and then dab it again with the towel and smooth the decal from the center out towards its edges.
- If the decal is covering small details or irregular surfaces, use the needle to pierce the decal film to release air from any hole; use the scalpel to cut small slits as necessary. Brush with a little softener and use the tissue to push the decal onto the surface.
- Do not be afraid to 'refloat' the decal on the model if you are unable to get it into position first time: load the brush with a little water and apply it around the edge of the decal. Tease the edge of the decal with the bristles of the brush and water will get under it again and 'lift' it off of the surface of the model; use the brush to push the decal into the correct position and then wick away the excess water with the paper towel, ready to start the fixing process again.

R101 CONSTRUCTION Guide and suggestions:

A Sanding the envelope

The envelope halves arrive with the 3D print supports removed however, the joining faces need to be sanded smooth to ensure a good fit. This is easily done using a sheet of 240 grit emery paper held flat on a perfectly smooth surface (e.g. toughened glass table top, shelf, bathroom scales...) by scotch-taping it at the four corners. Hold the envelope half like an upside down cup and move in circles over the paper applying light pressure as evenly as possible. Turn it occasionally in your hand to help ensure a uniform effect over the sanded face.
Check the face to determine when all of the support marks have been erased. The whole exercise takes no more than a minute or two per envelope half.
The joining sleeve does NOT need this treatment. Blow away any debris from the two halves, particularly around the key and check the sleeve for fit.

B Tailplane desprueing



Remove these small print supports at the tip of each rudder and elevator. Use flush cutters or a razor saw and clean up with swiss files or emery paper/board

C Envelope assembly

Before assembling the envelope ensure that the halves are completely clean of dust inside which might otherwise spill out and ruin a perfect paint finish later on. Use SuperGlue (cyanoacrylate adhesive) for assembly, preferably one that has some viscosity so that hairline gaps are filled. ‘Mitreapel’ is one such brand but do not use the accelerator supplied as recommended because even a hint of it on the joining surfaces will result in an immediate bond, removing any ‘wiggle room’ for getting the best possible fit. Even so, normal air drying is pretty rapid (the less glue the faster it is) so make sure to do a dry run first so that you are confident as to how things fit together. This particular glue has about the same hardness as the resin which makes sanding the join smooth straightforward.

D

It’s a good idea to put the envelope aside now to harden thoroughly while you tackle the display stand: Check around the bottom outside edge of the stand base for any print supports that might not have been properly removed and clean up with a craft knife or scalpel.

D cont. Display Stand assembly

The Display Stand lid is supported in the 3D printer along the edge of one of its' long sides and also with a few supports on that same side of the three uprights.
Using the taped down sheet of 240 grit emery paper again, hold the lid at right angles to it whilst applying even pressure along the long side to remove all traces of the print supports that might have been there. Check the uprights and clean them up as necessary.
Note that the tallest upright goes to the rear of the central pillar through which a screw can locate with the hole that is in the bottom of the envelope.
A screw is not supplied with the kit but it is a good idea to fit one so that the stand can be semi-permanently attached and provide protection for the Engine Cars and other details once they are in place. Without the stand attached it also serves as a very useful 'handle' for when the model is being painted.
The screw can be of any wood or self tapping type between 2.5mm and 3.5mm outside diameter and a minimum of 25mm long. The hole in the envelope is a nominal 2mm diameter - ream it out as necessary to match the outside diameter of your screw MINUS 0.5mm. Gently drive the screw into the Envelope allowing it to cut a thread. If the hole is not big enough or the screw is tightened too aggressively to begin with, there is a danger of the Envelope halves being forced apart around the hole, resulting in cracks that need to be filled and smoothed over.
Check the lid for fit on the base and be ready to hold it firmly in position after the SuperGlue has been applied. (Be careful of using tight elastic bands for this - they can cause local deformations of the lid that will be visible after the glue is set.

E Sanding the Envelope join

Check the Envelope join for gaps and fill as necessary. (The Mitreapel type of glue is good for this - using the accelerator this time!- because it is viscous enough to stay within the cracks and hardens quickly enough to be sanded almost immediately. Some acrylic based fillers do not sand particularly well and tend to be 'pulled' out of position by the sanding process.)
Sanding the join has to be done carefully, avoiding 'rounding off' or even removing the detail of the longitudinal girders of the airship. As a face is sanded check the impact on the adjoining two faces to see if the line of the girders has been altered. If so, sand these faces accordingly. Manicurist emery boards can be particularly useful for this job although they tend to be a bit coarse at around 180 grit. After using them improve the surface finish with 240 grit paper or finer.
Check the entire Envelope for print layer lines spoiling the surface finish in places and lessen their impact using 240 grit paper . These layer lines can become more apparent after priming and they can be tackled again at that point. (See stage G.)
Decide now if the model is to have the passenger 'gangplank' in position under the nose or not. If not, fill and sand smooth the two holes provided for it. If yes glue it in position now.

F Trimming

Consult the Trim Diagrams on pages 5 and 6 and carefully remove the Engine Cars from the print raft. Remove one of the Propellers (one is a spare) and make sure that the connecting sprue is completely removed from its' prop shaft. Then use this to check that the holes in each Engine Car are clear.
Offer each Car up to its' approprate position on the Envelope and check that the mounting pins fit properly in the holes provided. Clean the holes and pins as necessary.
Choose how each Engine Car will be held for painting - e.g.: 'helping hands', self-grip tweezers, cocktail sticks (prop shaft hole) loop of wire through the mounting struts, etc. - and set them safely aside.

G Priming

The choice of paint type is very much down to personal choice but I strongly recommend acrylics and can testify that Vallejo colors are an excellent option. Everything can be painted by hand however, spray painting particularly using an airbrush if you are lucky enough to have one, has to be the best method.
Gather the Envelope, the Display Stand and the Detail parts including the Engine Cars together, ready for paiting with a primer. The model shown in the photographs was primed with a few light coats of black polyurethane primer. (Vallejo 74.602)
The primer will show up unwanted layer lines that were missed earlier that can be sanded away now, as required and reprimed. Leave the primer to cure for 12 hours before starting a top coat.

H Painting

The model illustrated was finished with two to four light coats of acryllic paint as follows (all before final assembly.)...

Envelope : Vallejo 'Metal Color' 77.706 White Aluminium
Engine Cars : Vallejo 'Metal Color' 77.707 Chrome
(main prop blades and the Nose Pin are steel gray, generator blades are black)
Display Stand : Vallejo 'Premium' 62.020 Black

No attempt has been made to give the model a special paint finish or weathering because the model is to illustrate what any enthusiast can easily achieve without having to master any advanced techniques.

I Waterslide Decals

Apply all of the decals ***before*** fitting the Fine Detail items to the Envelope.
Study Page 7 **carefully**: it gives details of the decal sheet plus positioning notes and photos.
The Display Stand decals are simply centered within the panels provided on the base.
Page 8 gives advice on how to best apply decals.

J Engine Cars

With all of the decals applied and the display stand ready for use, the Engine Cars, Propellers, Passenger Gangplank and Nose pin can now be fitted. Do a dry run again to check that everything is a smooth fit. Do NOT to use glue for fitting these item. Use instead thinned (normal airbrush consistency) paint of the same color as used for the Envelope.
Load a size 00000 brush with enough paint to twirl it around and coat the sides of each hole (don't let it spill out onto the outer surface of the Envelope.) If the hole is then covered over with a surface tension 'bubble', that is exactly right. Push the part home. If significant paint oozes out then you have overdone things a little - the ideal is for it to simply seal all of the gap between each mounting pin and its' location hole. Under normal household temperatures the paint will dry rapidly gripping the parts in place.
For the Nose Pin ensure that the docking cone is hanging down vertically and in line with the center line of the Gangplank
With everything fitted, fit the Display Stand to the Envelope so that the completed model can be safely set down without risking damage to the Control Cars and their Propellers.

After allowing 24 hours for everything to dry and ensuring that the model is dust free, its' paint finish and decals can now be protected with a spray coating of good quality varnish.

K Finished!

MANY CONGRATULATIONS
on completing your superb model of the **R101**.

Dorek