

Paperwarbirds



Pfalz DR1 100mm x 5mm 1/32 scale

General Construction

Tools you will need:

- A good pair of scissors
- A scalpel or craft knife with a sharp blade.
- A surface to cut safely on
- PVA based glue, cyano acrylate based glue (superglue)
- Tooth picks or cocktail sticks for applying glue
- Half a dozen hair clips for retaining components
- A pair of small round nosed pliers
- Fine emery paper
- A metal ruler for scribing and cutting straight lines - and measuring distances
- A box to protect unfinished components from crushing.
- A circle cutter.
- A pair of tweezers



Additional materials you will need

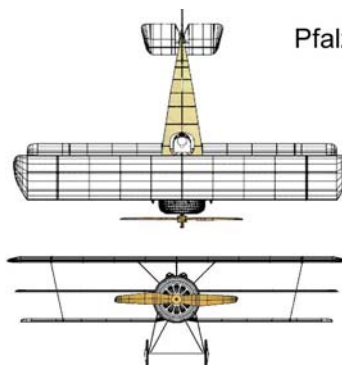
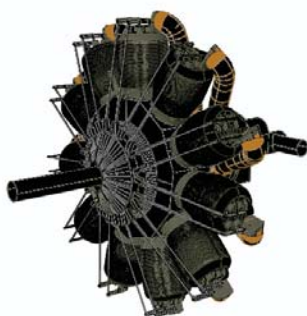
About 70 cm of 20 gauge wire (about 0.5 mm diameter) for load bearing struts

26-gauge wire for rigging (about 0.3mm diameter)

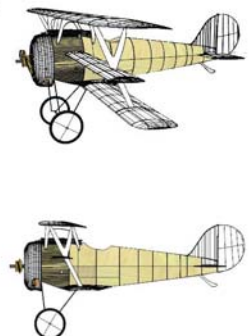
The windshield can be made from 2cm x 2cm Clear acetate (which can be taken from any packaging material).

Set your printer to print without scaling the image. Parts are laid out 25mm to 20mm from the edge of the page. Allow the printed pages to dry properly before attempting to cut out parts to avoid smudging.

1. Print the plan parts at 300 dpi or letter on 90- 100 gm 2 paper.
2. Back the formers onto 230 micrometer card stock (160 gm- 2) or the side of a cereal carton.
3. Cut down the middle of the black line for all components.
4. Allow all sub assemblies to dry before proceeding to the next step.
5. Construct major sub - assemblies and allow them to dry.
6. "Dry fit" all components before committing them together with glue.
7. Use a cocktail stick or similar to apply glue and to induce compound curves in the paper parts.



Pfalz DR 1

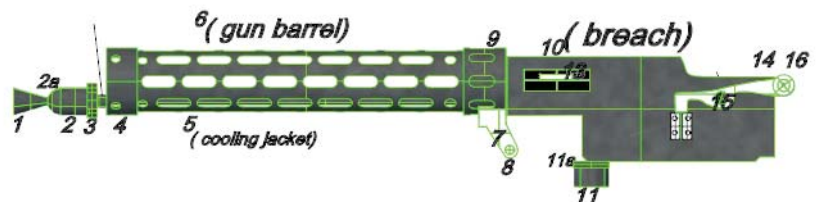
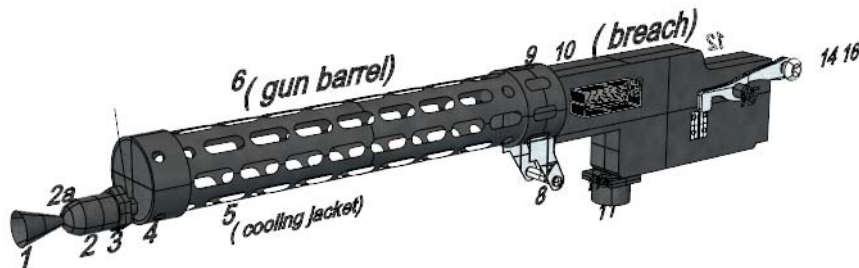


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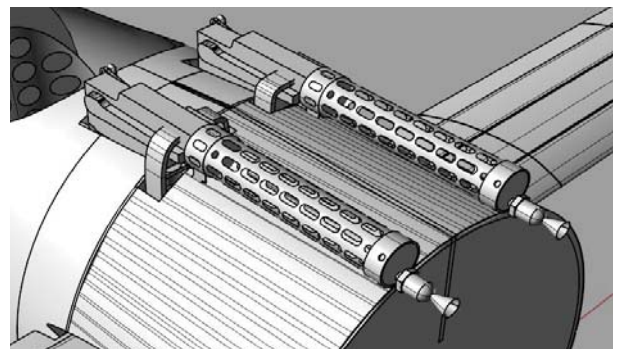
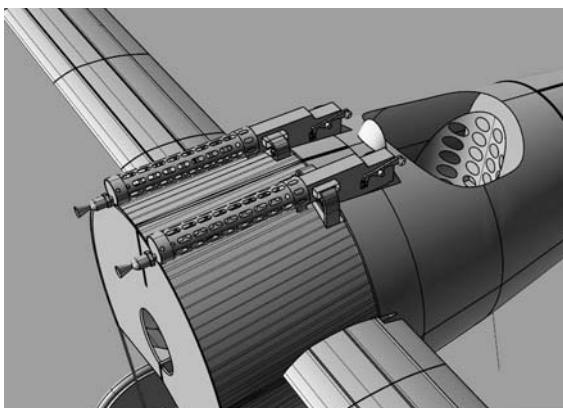
Spandau machine gun.



You have a number of options here. Rolling the parts into good cylinders is the hardest part. The gun barrel (6) could be substituted with plastic or metal rod. The jacket (5) may be painted black on the inside. Remove white areas from part 5 before attempting to roll it. If you find cutting out the holes in the jacket too fiddly, then they can be left intact. The breech (10) will benefit from packing with card or paper shims. You could leave the flash suppressor assembly (1,2,3) off all together.

The breech has sharp bends. These are best achieved using a straight edge and an empty ball point pen or scoring tool, to score along the panel lines on the printed surface. Using a metal rule, the part can then be bent into the appropriate shape.

Ring sights do not lend well to the printing process, but can be fashioned from fuse wire or indeed photo - etched versions can be purchased from many hobby shops.



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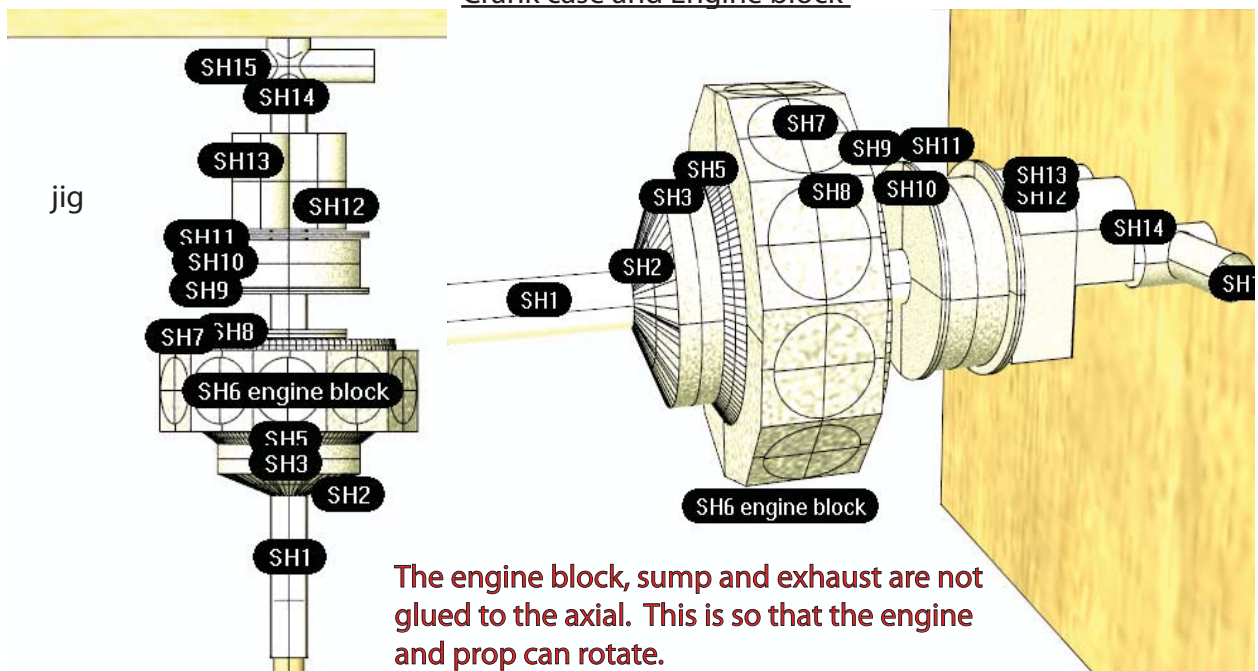


Pfalz DR1 100mm x 5mm 1/32 scale

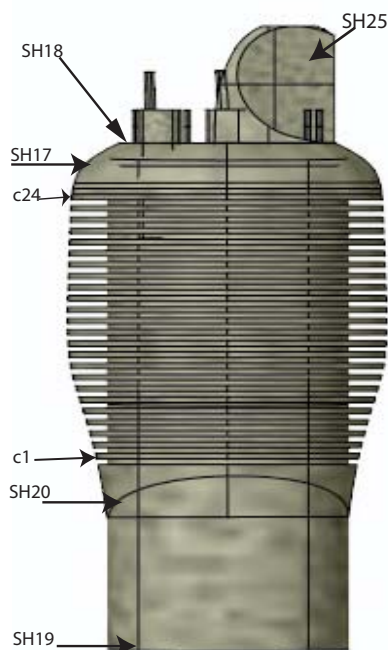
Siemens Halske Sh III rotary

This is really a miniature kit in its own right. Attention paid to the engine will have a great impact on the finished kit. Parts are supplied for cylinder cooling rings. These are best dealt with using a hole punch. A jig made of a piece of balsa and a piece of dowel will aid greatly in forming the engine. the diameter of the axial is 1.8 mm at 1/32 scale. The Cylinders are 8.7mm in height and 4mm wide. Smaller parts may be omitted if wished.

Crank case and Engine block

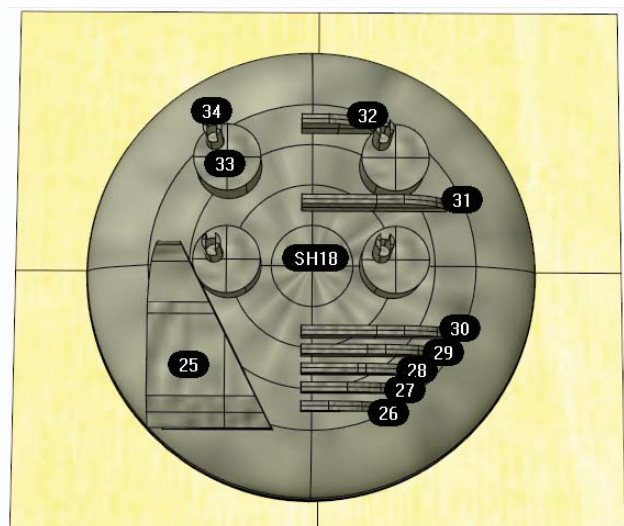


The engine block, sump and exhaust are not glued to the axial. This is so that the engine and prop can rotate.



Layout of cylinder head

this includes the valve heads and manifold inlet



The gap between cooling rings at 1/32 scale is 0.1mm. A cylindrical jig 4mm in diameter by 8.5mm in height will aid building the cylinders.

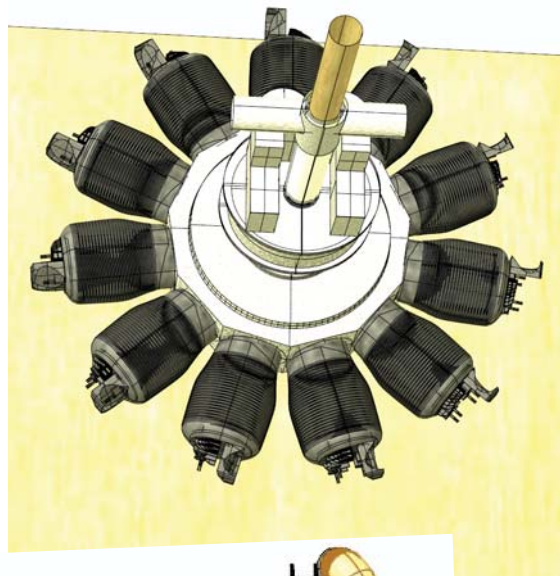
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Pfalz DR1 100mm x 5mm 1/32 scale

Siemens Halske Sh III rotary

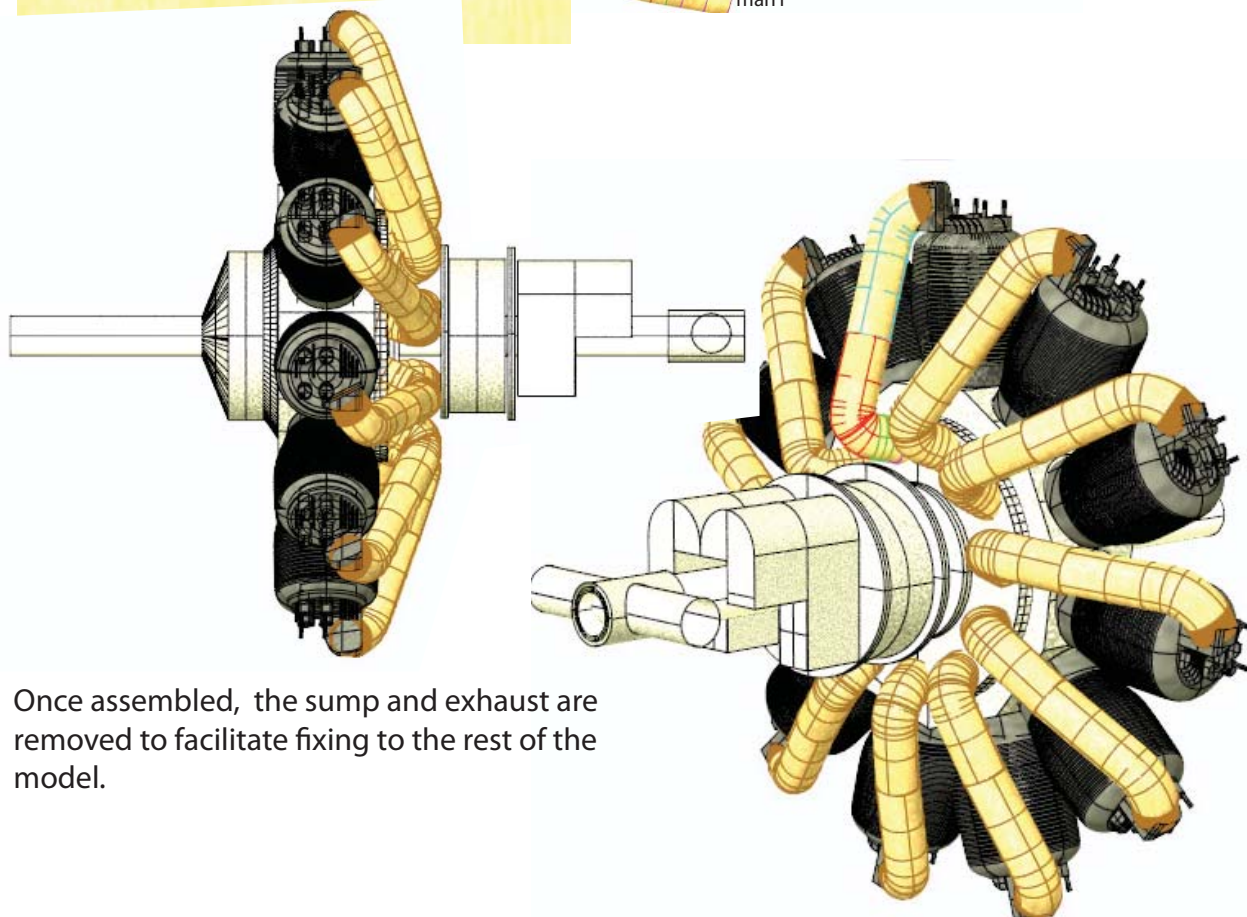
Once the cylinders and engine block have been constructed, the manifolds can be made. Remove the part completed engine from the jig and replace it the other way round. Good results can be had by wrapping the paper part around thin wire. alternatively you can fashion replacement parts from thicker copper wire.



Manifold

At 1/32 scale the manifold is 1.8mm in diameter. This is equivalent to 13 gauge, 0.0920 SWG or 0.0720 AWG. About 20 cm (8" of wire of this gauge would be needed.

Eleven manifolds are needed.



Once assembled, the sump and exhaust are removed to facilitate fixing to the rest of the model.

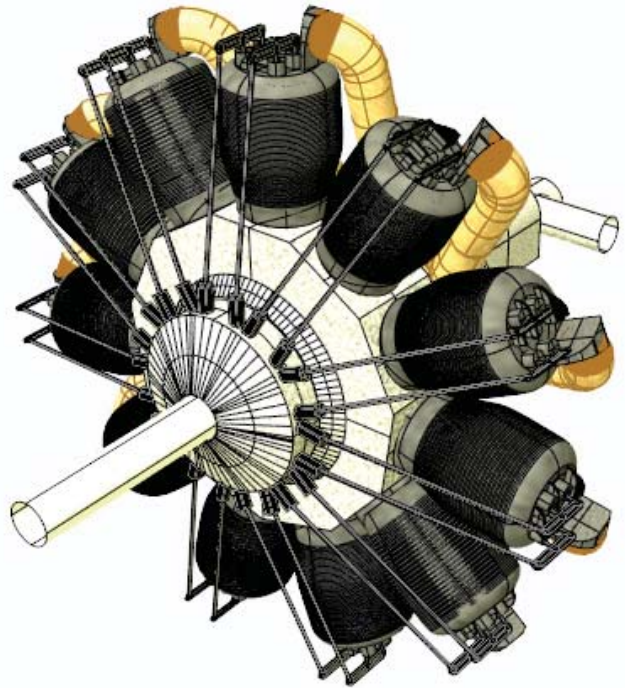
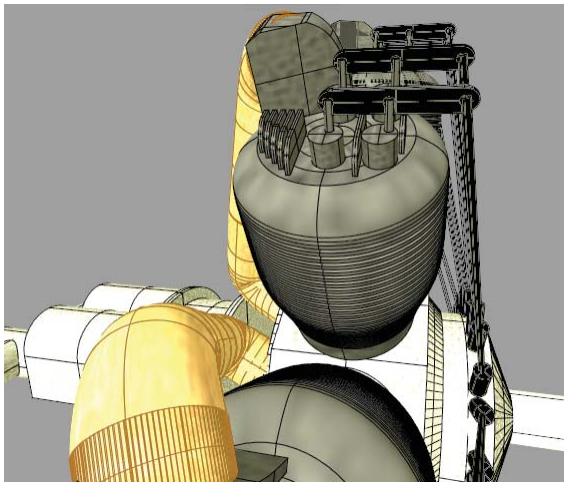
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Pfalz DR1 | 100mm x 5mm | 1/32 scale

Siemens Halske Sh III rotary

Detailing the engine can be done with the provided small parts or using wire. The pushrod in 1/32 scale is 0.02mm in diameter. This is equivalent to 36 gauge, 0.193 SWG or 0.1270 AWG. The engine is best placed on a jig.



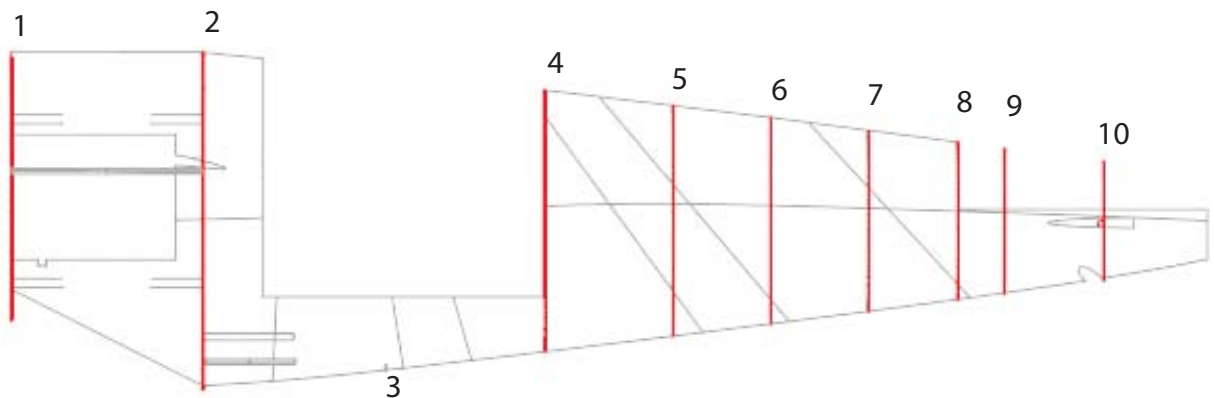
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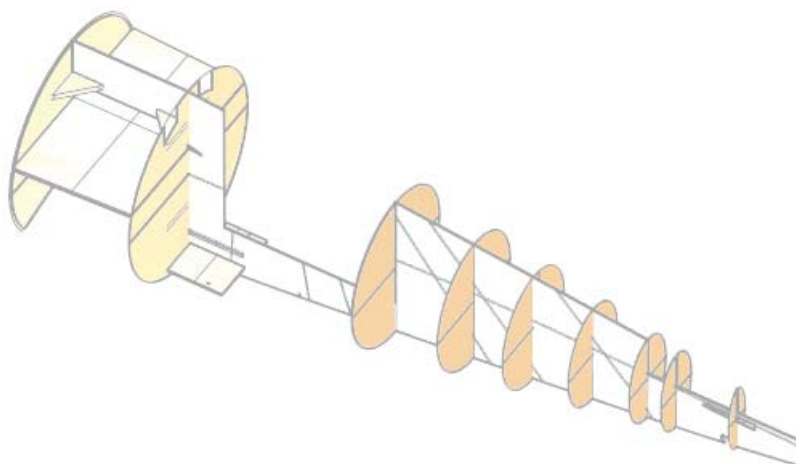
Pfalz DR1 100mm x 5mm 1/32 scale

Main construction

The model of the Pfalz DR1 uses a card keel and formers to hold the shape of the fuselage and wings and is skinned with paper panels. Wire is again used to support the model on its undercarriage. UHU gum based glue gives good results, as does tacky PVA. It is important to work cleanly, especially on the all white Dr1, to avoid fingerprints and other blemishes to the surface. Minor filling can be done using typing correction fluid, or "Red Devil" pre mixed filler also helps pack parts well. Construction of the fuselage starts with making the keel and formers..



Care taken at this stage to make all joins right angles will pay off later. Formers can be reinforced with scrap card

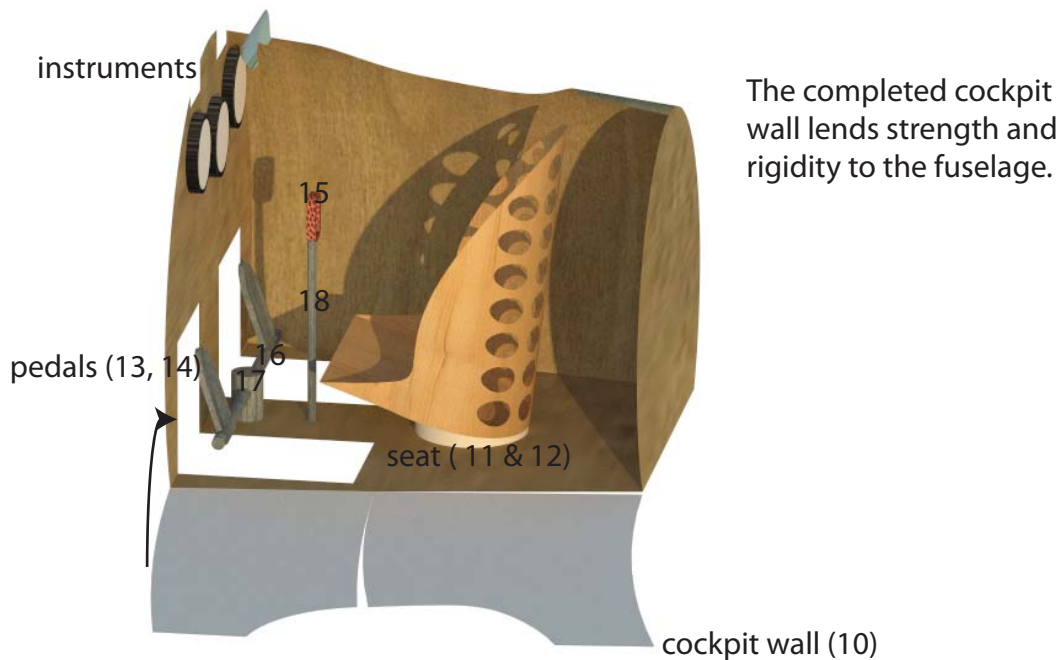


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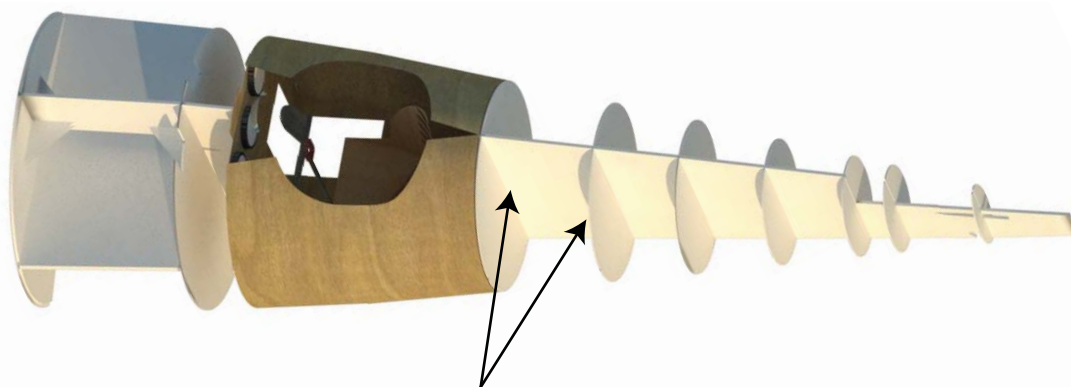
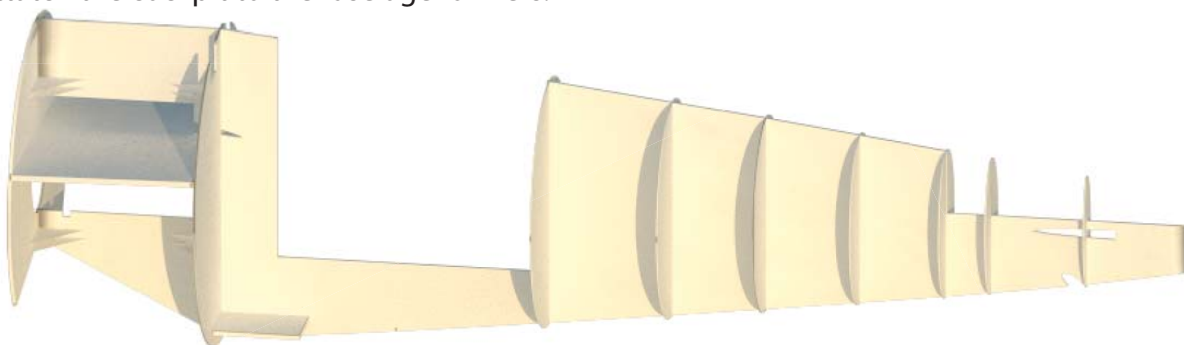


Pfalz DR1 100mm x 5mm 1/32 scale

Prepare the cockpit before applying the fuselage skins.



Attach the cockpit to the fuselage formers.



Scrap card can be used here to keep the sections at right angles to the keel

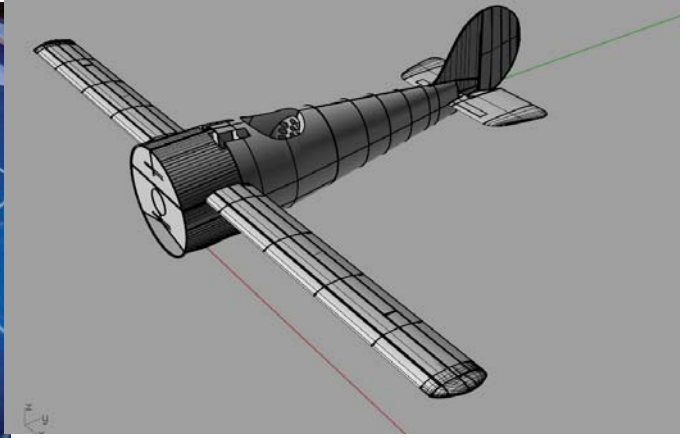
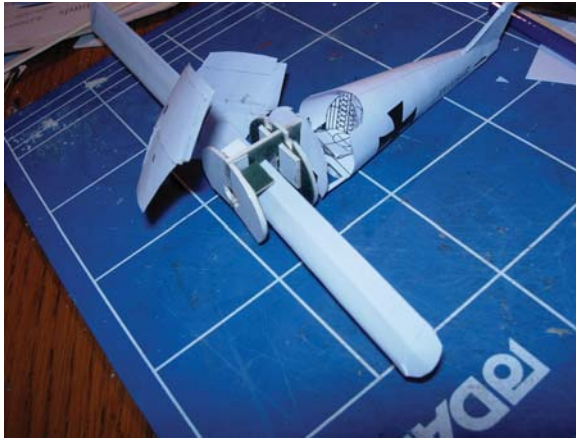
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Pfalz DR1 | 100mm x 5mm | 1/32 scale

Skinning the fuselage

The fuselage skinning starts from the tail post, working forwards to the cockpit area. The section around the middle wing will need separate attention if you plan to leave the central spar of the middle wing as one piece. If this is the case the completed middle wing will need to be threaded through the fuselage skin before the skin is fixed to the fuselage formers.



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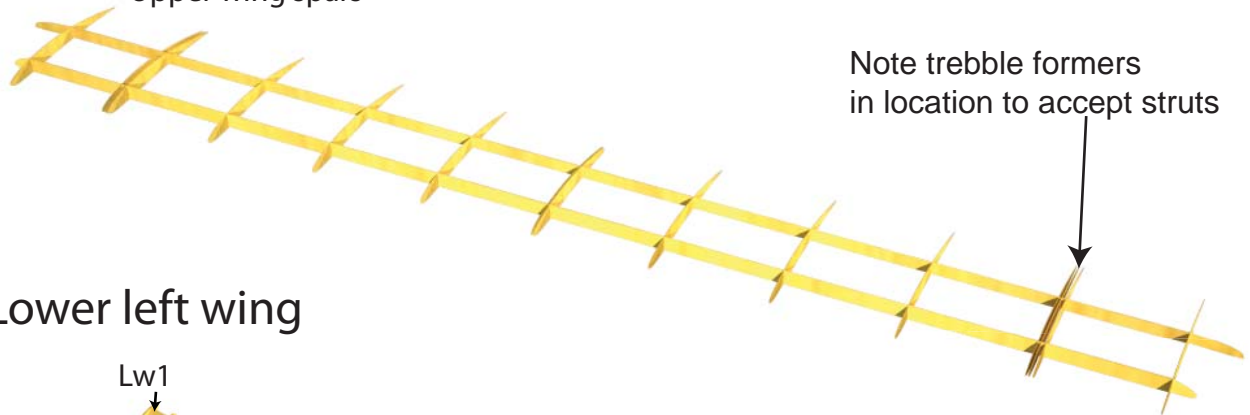


Pfalz DR1 | 100mm x 5mm | 1/32 scale

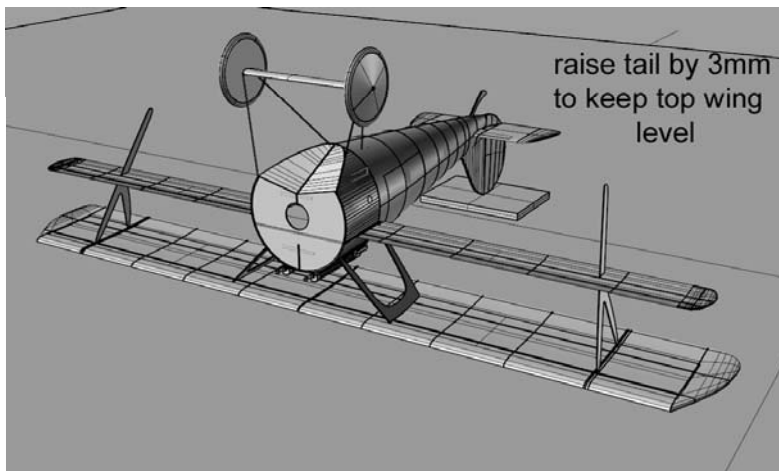
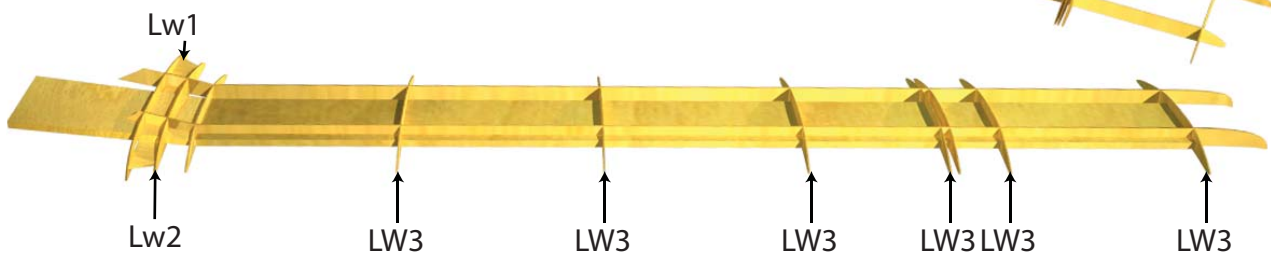
Wings

One of two methods can be used for making the wings. Parts are provided for both methods. The simplest method is to use the plain rectangular formers to form a core, around which the wing is wrapped. Alternatively, the individual spars and ribs can be laid out and the wing skinned after the framework has set properly. It really is a matter of choice. Wings can be reinforced using balsa strips if necessary.

Upper wing spars



Lower left wing



The top wing is added after the middle wing. the lower wing is added last. Strut points are marked on the wing surfaces and need to be opened up. the interplane strut passes right through the middle wing former. Allow each stage to dry completely before attempting to proceed. The undercarriage and guns can be added at this stage.

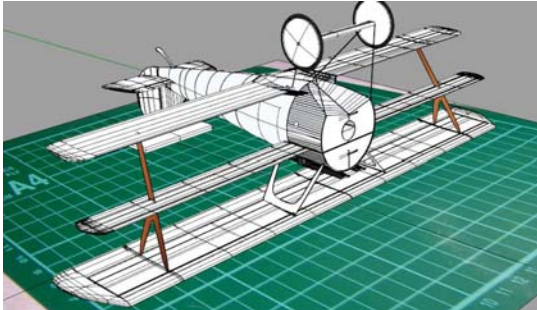


The wings all have zero dihedral and the main struts are 11.75 degrees from the vertical.

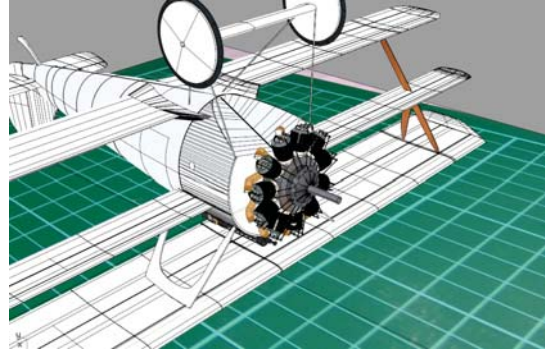
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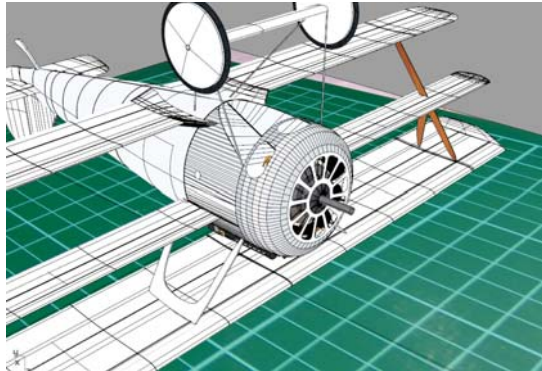
Pfalz DR1 | 100mm x 5mm | 1/32 scale



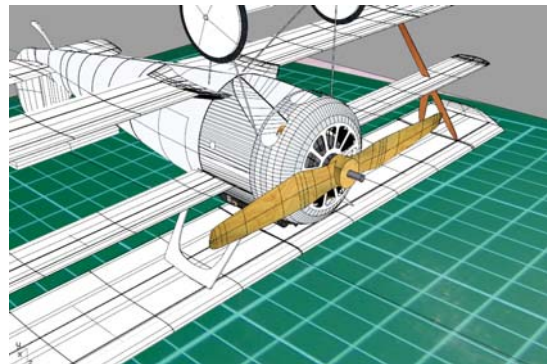
Add the lower wing and allow to dry.



Add the engine sub assembly.



add the cowl. Allow to dry. The cowl may be painted at this stage if desired. Acrylic paint such as the Tamaya® range works well.



Once the cowl is dry, the propeller can be attached. A short metal or plastic rod of about 1mm diameter will help .

