



Fully 3d printable

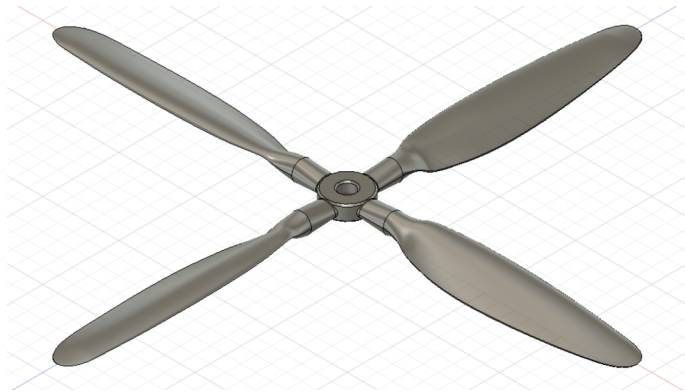
Scale Propeller for Spitfire Mk.IX

by Philip Simmes

In look and performance, the airplanes from 3DLabPrint are some of the best airplane models you anyway can get, like the Spitfire. For everyone who just like me thinks, that a beautiful plane like this needs a fitting airscrew I have created this set. This propeller is the completion for the perfect Warbird look of your Spitfire. It is fully 3D printable and can be customized as a three- or a four-blade version. The plug system allows you to replace a single blade if one should get damaged.

1. Included

- Stl files for Simplify3D,



- factory files for Simplify3D
- Gcodes, optimized for the original PrusaI3
- PDF and [video](#) userguide

2. Parameters

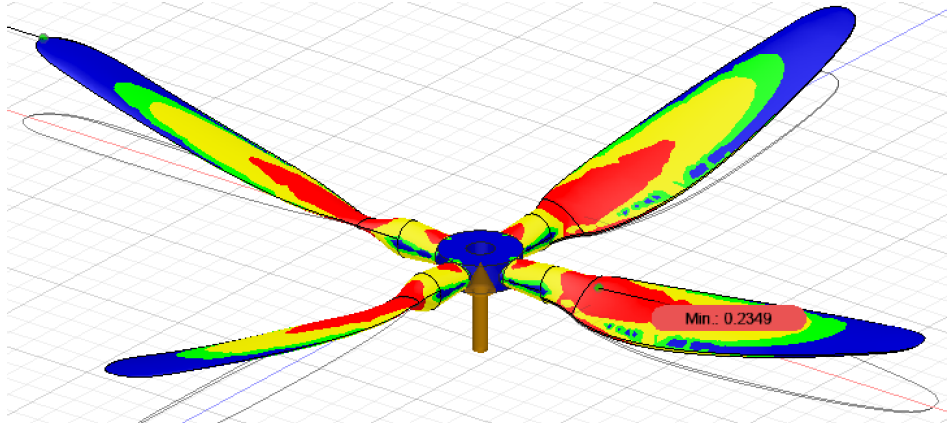
- Blade count: 3-4
- Diameter: 15 inch
- Pitch: 8 inch

3. Requirements

- 3d Printer with 0.4mm nozzle
- Simplify3d (or any other Slicer-programme)
- PLA Filament: 116g for three-blade version
148g for four-blade version

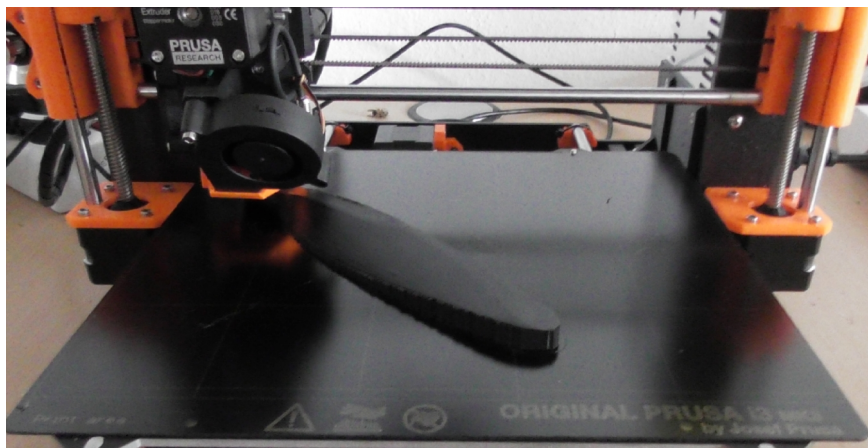
4. Print settings

During flight, high forces affect the propeller.



That means, high printing quality and a strong layer bond are important. Use a printer with which you can reach the best printing result because any non-conformance in printing makes the propeller less reliable.

For the maximum strength of the blades, place them as flatly as possible on the printing surface. The STL model is already aligned in the right position.



As layer height, use the measure of 0.1mm. The infill has to be full for maximum strength. Printing speed should be specified individually for each printer. You need to use support structure with a resolution of 2mm.

The layer height for the hubs is 0.2mm with 70% infill.

To guard warping, use hairspray or adhesive. Any warping makes the print unusable.

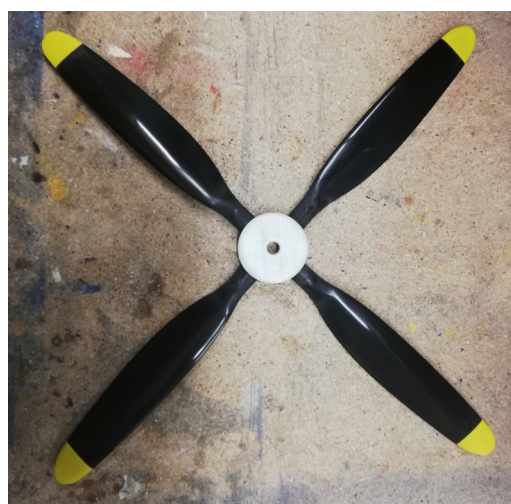
5. Rework and Assembly instructions

For the best aerodynamic performance, a smooth surface of the blades is necessary. Therefore, a rework is highly recommended. The advice for the best result, is an even sanding with sandpaper and a finish with fine steel wool and polish if you want.

After the rework scale each blade. The weight has to be nearly the same, otherwise the propeller runs roughly.



Assembling is pretty easy. Just plug all the blades in one hub part and close the hub with the other half. Don't worry about the gap between the hub parts. It won't cause any problems.



Mount the finished propeller on the motor. Tighten it and make sure that no blade can move inside the hub. As the propeller is exposed to high dynamic radial forces, always work in high quality.

6. Preparing for flight

Before each flight you should always do two tests on the ground:

The engine speed test, in which you test the hub for the maximum radial forces by increasing the thrust slowly to full speed.

The dynamic test, in which you test all parts for the dynamic forces while maximum acceleration. Directly increase the power to the maximum.

ALWAYS STAY BEHIND THE PLANE WHILE TESTING and make sure that no other person is in the line of rotation or in front of the airplane to prevent any injury! Should the propeller crash, the fragments may fly forward and on the plane of rotation.

Now check the CoG. If everything is alright you are ready to fly.

Have Fun!

