



Strong Flying Propeller / Pull Copter (No Supports)



Meister Edel

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Summary

Pull Copter for the kids :) Strong and easy to print.

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Update 10.02.2023:

I remixed the rotor with the toroidal design :) Feel free to test it out!

<https://www.printables.com/model/394700-toroidal-rotor-4-strong-flying-propeller>

In addition, there are now many other great remixed propellers from other users. You can find them connected to this print or my toroidal propeller.



Hi

Recently my son came home very sad because a friend had such a fancy flying propeller from the 1€ shop.

Of course I had to sit down directly at the computer and after the first prototype was already well working I designed an improved version.

This toy should be very stable and last a long time! Also, it's very easy to use and grab for the smaller ones among us!

Put the pulling rod in the place **marked by the arrows**. Otherwise the propeller wants to fly downwards.

Have fun! :)

Note: The prop will fly long distances/ very high. So better use it in a place without trees and no obstacles. **Hold the Toy away from the face!** - otherwise the propeller will fly into it :D

Print instructions/ tips:

- **Axis:** Print the axis with at least 3-4 perimeters!
- **Propeller:** Print the propeller with a not too brittle material! (I used tough PLA or even better: Nylon + Carbon Filament) - Low infill: The lighter the better ,-) I also tried TPU. It works but if you pull too hard it may deform too much and cause a malfunction. The lower you choose the layer height the less friction the prop will cause. (I printed in 0,15mm)
- **Gear & Bearings:** Use filament that can withstand kinda low tolerances. PLA will do the job. If you have a seam cut it off after printing. To avoid a bad surface dont "fill the gaps".
- **Pulling rod:** Print the Classic+ Rod with 3 Perimeter.
- It is possible to separate the file into parts with your slicer ,)

- I also like to break the corners of all parts by scraping over these areas with a knife. That makes the action smooth and gives a good handfeel :)
- Power of Scaling: If you have difficulties inserting the axis you may reprint it scaled down a little. If it is too loose scale it up a little so it fits tight enough.
- It is not necessary but I lubricated all mechanical pieces with some **paraffin wax**. A drop of Oil will do the job too but may be messy.
- You can print all parts without support and put the parts together very easy.

Attention: Don't use damaged Propeller!! A disbalance in the Rotation might destroy the Propeller and parts could fly Off. Especially with brittle Material Like PLA.

New Mechanics Update: This is the right way to assemble the toy!

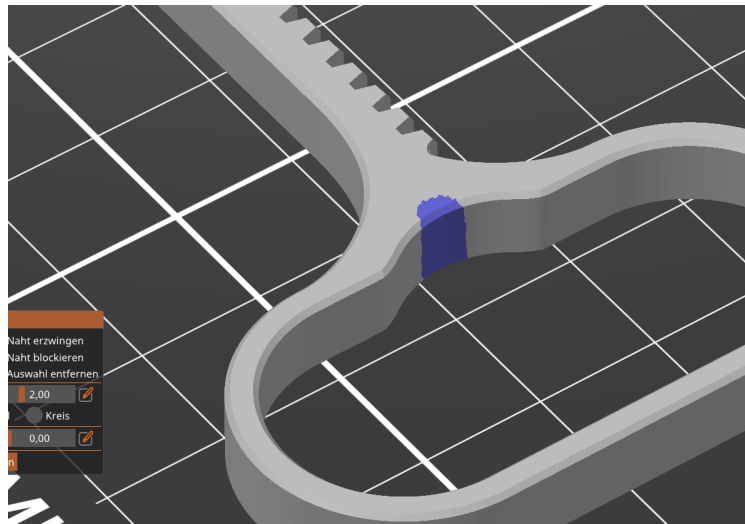
Since the design optimization of the internal mechanics there is no glue needed at all!

I have also provided other beautiful designs for kids for free. For example, my latest is the **ocarina** to make music!

<https://www.printables.com/model/623853-music-instrument-kids-ocarina-pig-necklace>

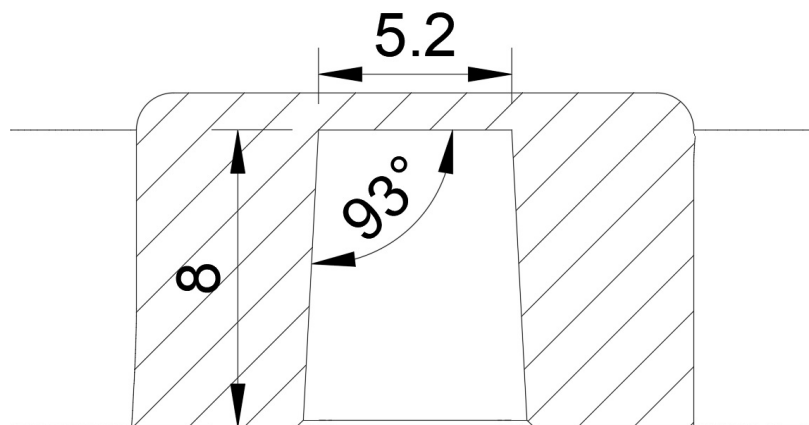


To get the most strength out of the pulling rods locate the seam to this location: (It is possible with the Prusa Slicer for example)



Remix Culture

I think this simple design is very open for you to bring in your designs too! So be invited to create even better propellers! (I uploaded the .step file of the core piece. [mm])



Update 06.07.2022

Added a new (hopefully) more aerodynamik prop. This one flies even higher!

(Added in standard download & single)

Update 28.05.2023

Increased the strength of the prop a little by adding a radius connecting the wings with the outer ring.

Update 23.02.2023:

NEW PULLING RODS!

Some had problems with a breaking pulling Rod. So I beefed up the old one (Classic+) and also designed 2 totally new ones (Ergonomic & Hook). For the Ergonomic one you will need a M3 x 20+ Screw for assembling. I tested all with PLA in the local kindergarten and they withstand even rough abuse :P

Update 27.09.2023:

Due to different manufacturing tolerances the press fit does not always work directly (scaling the axle can work wonders) I have slightly reworked the inner mechanics. I'm happy about any short feedback on the new design!

If you like my work I would be very happy if you share it with others and leave a like :)

<https://www.paypal.com/paypalme/MeisterEdel>

Model files

 **Sets** 2 files

 **flyinprop.3mf**

 **flyinprop.stl**

 **Pulling Rods** 6 files

 **pulling_rod_classic.stl**



pulling_rod_hook.stl



pulling_rod_ergonomic.stl



pulling_rod_classic_short.stl



pulling_rod_hook_short.stl



pulling_rod_ergonomic_short.stl



Single Parts Handle

5 files



handle.stl



axis.stl



bearing_bottom.stl



gear.stl



bearing_top.stl



Props

5 files



140mm_04mm_nozzle_3mf.3mf



140mm_04mm_nozzle_stl.stl



140mm_06mm_nozzle_3mf.3mf



140mm_06mm_nozzle_stl.stl



medium_prop_3blade_120mm.stl



Step Files

2 files

flying_prop.step

☐ All parts of the handle construction and the short hook pulling rod.

center_piece.step

☐ Center piece to remix some propeller!

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