40cm Giant Optical Illusion Wind Wheel (15,75" diameter)

PanicCarefully

VIEW IN BROWSER

updated 30. 4. 2024 | published 30. 4. 2024

Summary

the largest Optical Illusion Wind Wheel you can get for a 25×21 cm (9,84"×8,3") built plate (e.g. Prusa MK3x/MK4)

Household > Outdoor & Garden

Tags: toys giant garden big balcony wind opticalillusion illusion windwheel

********** Update 30.04.2024 **********

I've just puplished a redesigned version of this windwheel

NoGlue Giant Optical Windwheel (40cm/15,75" diameter)

This is a **no glue** version! So every part can be exchanged individually, the others parts remain. Easy to built, easy to fix!

****

Inspired by my remix Optical Illusion wind wheel (original by Dynamite) I wanted to make the largest optical wind wheel I could print on my Prusa MK3/MK4- and here it is:

(approx. 40cm/15,75" in diameter, it is a massive built and a hypnotic point of view in your garden or on your balcony)

This is a timewise massive, no easy built. Due to the size and overall weight, the wind wheel will not be so wind sensitive than a smaller windmill (e.g. Optical Illusion wind wheel). So don't be dissapointed when the wheel won't move with every small breeze.

Also the type/qualitiy of the used ball bearing does have a massive effect on the aggility - I've used sealed APEC 9 bearing from a good inlineskater OEM. I also noticed that the ball bearings need some time to work proberly.

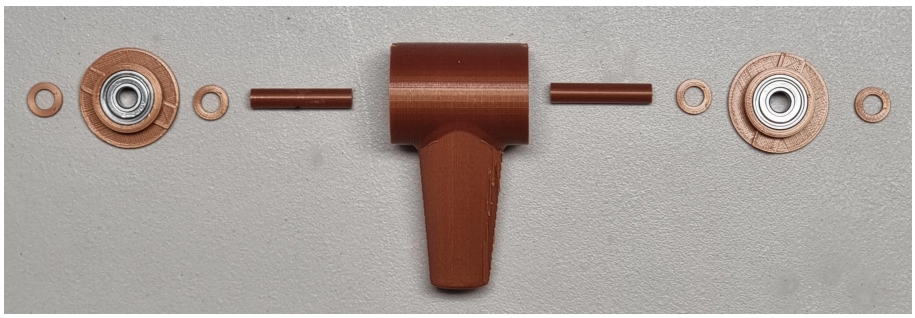
Overall Structure

The whole windwheel consists of three major groups:

The first group is the “closed”rotor with it's 8 wings and the central hub - I call it “closed” because the wings are facing to table, away from ther viewer.

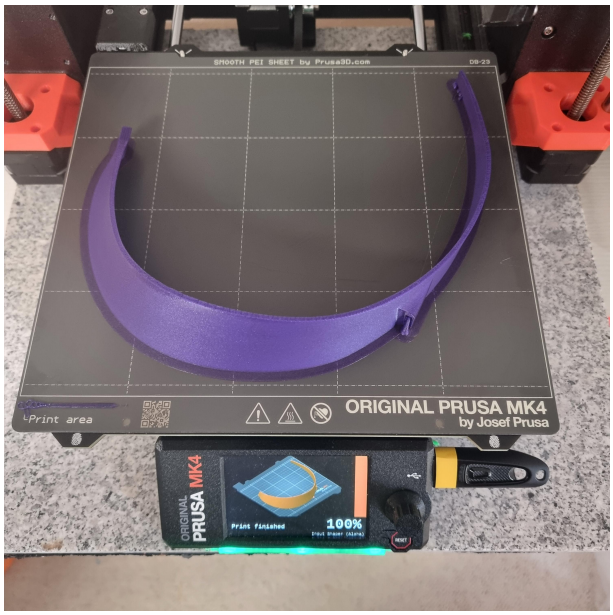
The first group is the “open”rotor with it's 8 wings and the central hub - I call it “open” because the wings facing the open sky.

The second group is the housing and the bearing.



Building the rotor (valid for both rotors)

First of all you have to print the 8 wings and glue them into the rotor



The closed rotor

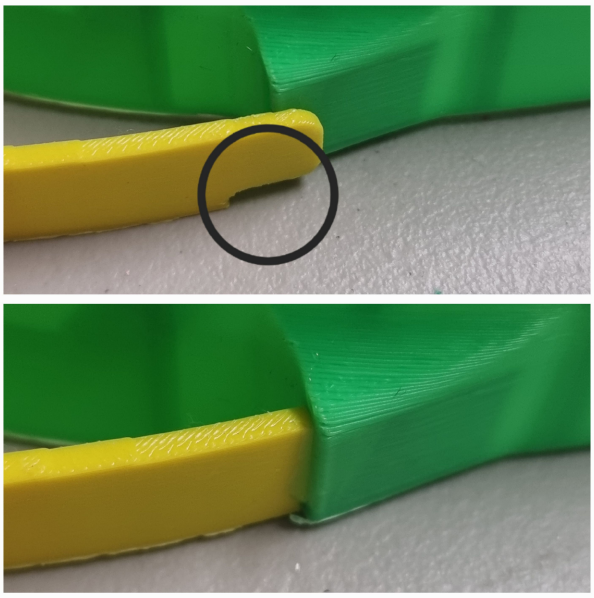
The open rotor:

To get a good qualitiy result I can give following tips:

- to get a light rotor it's important to print light wings. I've printed the wings with 1 perimeter and 5% infill. The rotor was printed with 2 perimeters and 15% infill
- I highly recommend to use brims - I know they are a pain, but otherwise you risk that the wingends detaches from the plate while printing
- let the wing cool down on the print bed before removing
- It's vital, that wings are ALL on one level - do the glueing on a table. **I strongly recommend to glue all wings into the hub first before connecting the wings.**

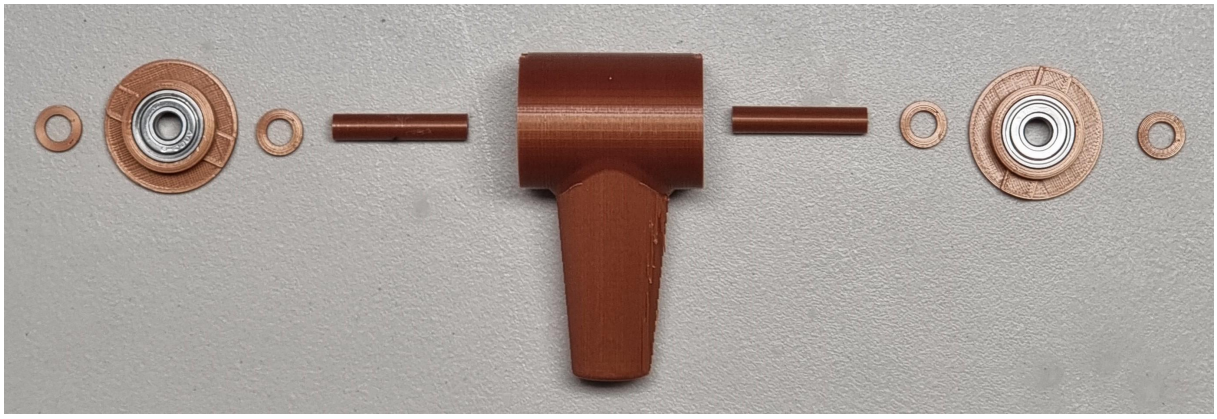
- the wings are connected by sticking the one end of a wing in a pouch of another wing (use glue). The end should easily slip into the pouch

without any resistance or putting any twist to the whole rotor structure. If you experience any resistance and work on the part (making the end thinner) inidicated by the black circle.

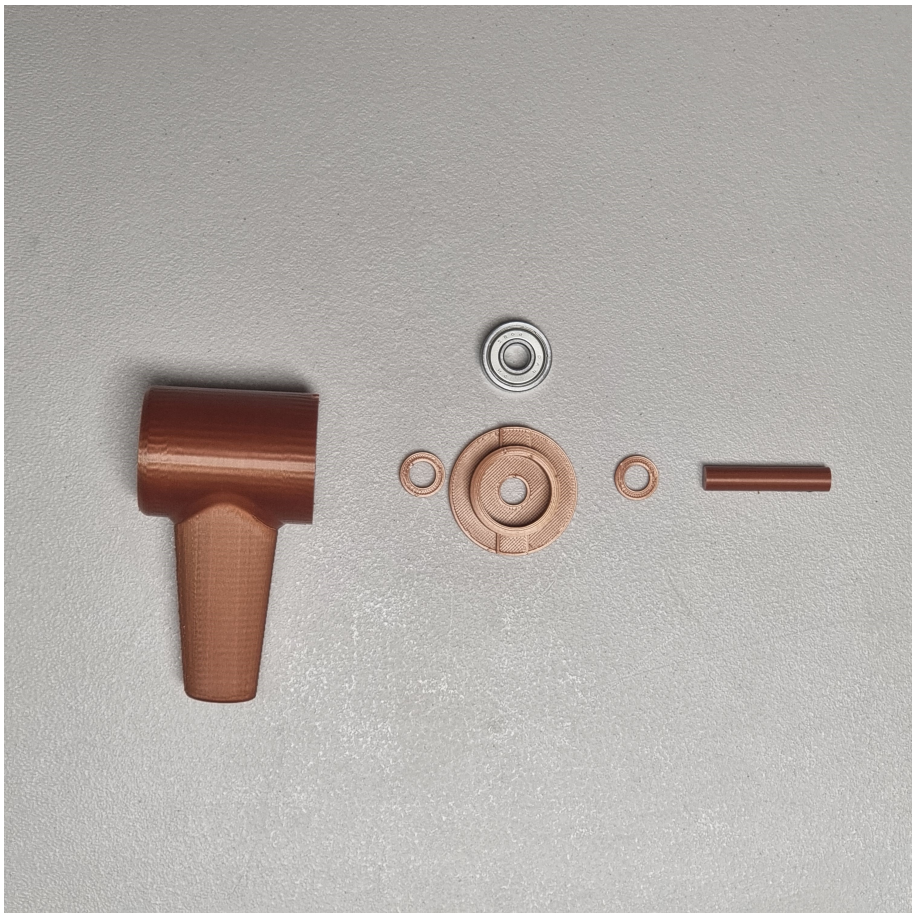


- it's vital that assembled rotor lies as flat as possible on the surface

The housing (attaching the rotor)



To make it easier to explain, I will focus on one side. The other side is done similar.



From left to right: single-housing, distance ring, **608 bearing** and shell, distance ring, axis

I've printed the single housing, the distance rings and the 608 ball bearing shell with 3 perimeters and 30% infill, the axis with 3 perimeters and 70% infill.

How to assemble those:

1. Insert the axis into the rotor (ensure a tight fit)
2. put on a distance ring onto the axis
3. but the ball bearing into it's shell (ensure a tight fit) and put this assembly onto the axis (ensure a tight fit) - facing the open ball bearing side away from the rotor
4. put on a distance ring and to the axle (I recommend it to glue this ring to the axis but be carefull - never apply glue to the ball bearing itself or into location, where the glue can get into the ball bearing… that sucks)
5. connect the rotor and bearing assembly to the single-housing (use some glue)
6. **DONE**

Do the same on the other side and you have succesfully assembled the the Giante Optical Illusion Wind Wheel - Congratulations.

Assembly notes:

- I've experimented with many tolerances and finally came to the conclusion, that I print the parts a little smaller and achieve the thight fit by putting on a textile glue tape before putting the parts together. This proofed to me more easily and keeps me more calm
- The mounting hole of the housing is 16mm

Presentation

So now you can puntit on top a pole (16mm whole in the housing available) and mount it to your balcony or put it in the garden

I think this will give you a good impression of the available sizes:

from left to right:
40cm diameter : this page (40cm Giant Optical Illusion Wind Wheel (15,75" diameter))
30cm diameter: 30cm Large Optical Illusion Wind Wheel (11,8" diameter)
20cm diameter: Optical Illusion wind wheel remixed for Prusa MK3/4

Note: I'm currently working on a 20cm multiwing version (similar to the 40cm and the 30cm) version

I hope you can use this design and would be very thankfull if you give me a like, a comment or even better post a make of your built. Stay curious and enjoy life!

If you are interested in a one rotor wind wheel version of the size of:

40cm diameter: 40cm Giant Wind Wheel (approx 15,75" diameter)
30cm diameter: 30cm Wind Wheel (approx 11,8")

Model files

open_wing_v78.3mf

open_rotor_v78.3mf

closed_wing_v78.3mf

closed_rotor_v78.3mf

dual-housing_v78_prusa.3mf

License ©

This work is licensed under a **Standard Digital File License**.

Digital files have a strict non-commercial, personal use only license.

You shall not share, sub-license, sell, rent, host, transfer, or distribute in any way the digital file or 3D printed versions of this object, nor any other derivative work of this object in its digital or physical format (including remixes of this object).

You can not host these files on other digital platforms, web stores or cloud repositories.
The objects may not be used in any way whatsoever in which you charge money, collect fees.

✖ | No sharing or redistributing in any way of the 3D files or derivatives
✖ | No remixing
✖ | Non-commercial Use (only for personal use)