Printables by JOSEF PRUSA

# Filament Roller Bearing

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VIEW IN BROWSER

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## Summary

A fully 3D-printable parametric roller bearing!

Hobby & Makers > Mechanical Parts

Tags: parametric spinner filament spin rolling fidget fidgettoy mechanical part fidgetspinner bearing roller bearings spinning roll needle slip component needles friction

This roller bearing is entirely 3D-printable, using segments of standard 1.75mm filament as the rollers/needles. It's a full complement design, meaning there is no cage to space the rollers apart; they rub against each other lightly. Nonetheless, this bearing rolls quite freely once the clearances are dialed in. The base model is a drop-in replacement for a 6000-series bearing (26mm OD, 10mm ID). It should be noted that this bearing is designed for radial loading—in thrust loading, it resorts to plastic-on-plastic sliding.

### Demonstration video

I've provided a STEP file for those looking to adjust clearances for their printer. I've also provided the original Fusion360 parametric CAD file for those who want a different size bearing.

There is also a small jig to help cut filament segments to the correct size (using side cutters).

Admittedly, it is a pain to get all the little rollers in there. If you have grease, it becomes much easier. If not, here is the general order of things:

1. Make a thumbs-up with your non-dominant hand.
2. Place the Cap on your thumb, flange side down.
3. Drop the Outer Race over the Cap.
4. Orient your thumb almost horizontally and support the Outer Race with your index and middle fingers.
5. Using tweezers or needlenosers, drop in one roller next to your index finger (squeeze to hold it there).
6. Drop in another roller at your middle finger (squeeze to hold it there).
7. Fill in the gap between the first two rollers.
8. Begin stacking rollers on either side, slowly.
9. Painstakingly get all 34 rollers into the channel.
10. Carefully slip your thumb out of the Cap, making sure not to let the Outer Race slip off.
11. Press the Inner Race into the Cap, sealing the rollers in.
12. Press the Ring into the groove formed between the Inner Race and Cap.

If you have grease:

1. Apply grease to the outer surface of the Cap cylinder.
2. Stick 34 rollers onto the greased surface of the Cap.
3. Slip the Outer Race onto the Cap, over the rollers.
4. Continue from step 11 above.

# Model files

**outer-race.3mf**

Print on either side

**cap.3mf**

Print flange down

**inner-race.3mf**

Print flange down

**ring.3mf**

Print wide side down

**jig.3mf**

Print on either side

**6000-filament-bearing.step**

For clearance tuning

**filament-bearing.f3d**

For parametric remodeling

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