



Gyroscopic Exercise Ball



LoboCNC

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Summary

This is my take on the venerable Dyna Bee gyroscopic exercise ball that came out in the late 1970's. It uses 48...

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This is my take on the venerable Dyna Bee gyroscopic exercise ball that came out in the late 1970's. It uses 48 pennies (US) as the flywheel mass. As a twist, I've added a geared zip starter to get the rotor spinning up to speed. From there, you keep it going with pure wrist power.

Aside from the 3D printed parts, you will need a 0.125" diameter steel rod and some superglue to put it together.

UPDATE: I've modified the shell to make it easier to align the zip starter with the slots in the side.

Print Settings

Printer:

UDIO

Rafts:

No

Supports:

No

Resolution:

0.2mm

Infill:

20%

Notes:

Print to two of the shell.STL, two of the rotor.STL, one of the ring.STL and one of the gear.STL. I've included two versions of the rack.STL (the zip starter) - one about 11" long and a shorter one about 7.5" long that should fit on a 250x250mm print bed.

You will also need a 0.125" diameter steel shaft (available from most hardware stores) that is 2.465" long, and also 48 US pennies, preferably new.

Post-Printing

Assembly

1. After printing, sand the top and bottom surfaces of the ring smooth. Also sand smooth the the surface of the shell that the ring rubs against.
2. Insert 6 US pennies into each cavity of both rotors (48 total). Use pennies all of the same type because different versions (with different back designs) have slightly different weights. Use a few drops of superglue to hold the pennies in place.
3. Insert your 0.125" diameter steel shaft into one of the rotor halves and position it so that it sticks out of the bottom side by exactly 0.750". Superglue the shaft in place.
4. Slide the gear over the other end of the shaft and superglue it in place too.
5. Slide the other rotor half over the shaft and superglue it to the gear, too.
6. Place the ring in one of the shell halves, and then place the rotor assembly such that the ends of the shaft fit into the notches in the ring.
7. Assemble the other shell half to the bottom half. If you are lucky the two will fit together with a satisfying click and will stay together. If the

fit is a little loose, Temporarily tape the two shell halves together until you know that everything works properly. Once you are sure it all works, you can glue the two shell halves together.

Use

The only real annoying thing with this design is that you have to align the rotor so that the gap in the center with the gear lines up with one of the zip starter slots in the top or bottom shell. You can use the tip of the zip starter to poke through one of the slots to rotate the rotor and ring into place.

Once aligned, insert the zip starter, teeth towards the center of the ball, into the slot - it should engage the central gear. Shove the starter all the way in and then pull it back out smartly. This should give you enough speed to start accelerating the rotor using a wrist wobbling motion. Check out this video to see it in use: <https://youtu.be/0vgsZctOkal>

Category: Mechanical Toys

Model files

ring.stl



shell_14.stl



rotor.stl



gear.stl



rack.stl



rack_short.stl



[Find source .stl files on Thingiverse.com](#)

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