STYR-01: The Self-Stabilizing Rolling Robot

Judhini Prints

VIEW IN BROWSER

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Summary

STYR-01 is a small, charming rolling robot whose head stays upright as it moves—fun to print and play with!

Toys & Games > Other Toys & Games

Tags: robot diy 3dprinting mechanism robotics robottoy counterweight rollingrobot pasivestabilization

STYR-01 is a compact and charming rolling robot that fits in the palm of your hand. It features a **passive stabilization system** using an internal counterweight. Thanks to this mechanism, its head always remains upright while rolling, creating a **dynamic and eye-catching effect**. The design is inspired by the concept art of BB-8 (Star Wars) and WALL-E, blending an expressive look with a structure **optimized for FDM 3D printing**.

Important Instructions:

Assembly & Functionality

- It is crucial to follow the **instructions in the attached notes**. **If not followed correctly, the mechanism will not work.**

- The structure is designed to be assembled **without glue**, but you can use it to reinforce the pieces if desired.

Customization & Dual-Color Printing

- If you want to print the body in **two colors**, like in the images, you must change the filament at the mark included in the model.
- If using a **0.2 mm layer height**, the filament change should be done at **layer 17**.

⚙ Optimizing Performance

- To improve the mechanism’s efficiency, it is recommended to **lubricate the counterweight axle areas**, reducing friction and ensuring smoother movement.

STYR-01 is perfect for robotics enthusiasts, 3D printing makers, and mechanical design lovers, offering a fun experience in both printing and operation.

Update of tolerances and small adjustments (v4 files)!!

Thank you all for helping improve the model and for pointing out the issues in the earlier versions. Based on many of your comments, I've re-uploaded the files with modified overall tolerances and added an extra bottom and top layer to the SRYT-01_FACE file. I hope this update fixes the overly loose tolerances so that you no longer need to use glue—although you’re still welcome to use it if you want to secure the pieces further. I’m hesitant to reduce the tolerances more, as that could make it difficult for some of you to fit the parts together.

In version 3 (3.mf files) there were errors due to the export process and the file type, which is why I have re-uploaded the files in STL (ASCII) format. When reviewing the old files, I noticed that they worked fine in Ultimaker Cura; however, in PrusaSlicer or OrcaSlicer issues did occur, and I’m not sure why. Nonetheless, for version 4 I have verified in both slicers that everything functions correctly, so you should not encounter any problems.

In summary, the changes that have been made since version 1 are the following:

- The tolerance of the parts has been reduced for a firmer fit.
- A top and bottom layer has been added to the SRYT-01_FACE file.
- Errors in the files have been corrected and it has been verified that they work well in various slicers.

I'm always open to new suggestions. Thanks again, everyone!

Model files

styr-01_wheel_v4.stl

0,2mm layer height, 0,4mm line width, don´t use horizontal expansion

styr-01_counterweight_v4.stl

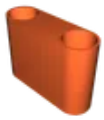
0,2mm layer height, 0,4mm line width, set infill density to 99-98%

styr-01_counterweight2_v4.stl

0,2mm layer height, 0,4mm line width

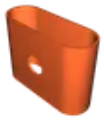
styr-01_arm_v4.stl

0,2mm layer height, 0,4mm line width



styr-01_face_v4.stl

0,2mm layer height, 0,4mm line width, don´t use horizontal expansion, increase flow to 105%



styr-01_head_v4.stl

0,3mm layer height, 0,6mm line width, don´t use horizontal expansion, increase flow to 105%

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