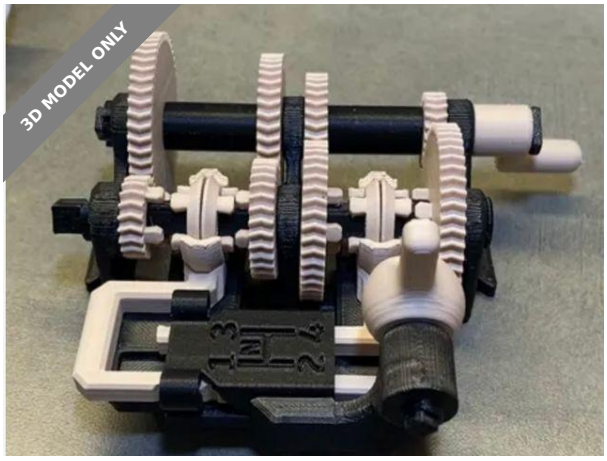


4 Speed "Constant Mesh" Manual Transmission. 100% 3D Printed!

MW-Mechanical

VIEW IN BROWSER

updated 6. 7. 2023 | published 6. 7. 2023

Summary

Fun mechanical project using nothing but your 3D printer!

Learning > Engineering

Tags: design constant gears transmission sculpture mechanism model mesh fully enigneering

UPDATE: The main spacers were missing from the file list and have now been added. The hole in the hand crank has been adjusted to fit the input shaft.

This is my rendition of a “constant mesh” 4 speed manual transmission gearbox. A ball-joint based selector positions the racks which mate the dog clutch disks with the driven gears, transferring their energy into the output shaft. Progresses through gear ratios of 2.5:1, 2:1.5, 1.5:2, and 1:2.5. Post your makes and comments!! **Slicing orientations in photos.**

Slicing notes-

Use support material for the crank and selector. “Qty” relates to the number of instances for a given part. I don't recommend scaling this model due to its precise tolerances.

Assembly video through the following link-

Lego L motor attachment-

Output fan attachment-

Model files

housing.stl

main-spacer-qty2.stl

crank.stl

☐ use this hand crank if excluding L motor

selector.stl

☐ print-in-place! slice this file with the ball already seated in the socket

selector-shaft.stl

selector-snap-ring.stl

l-motor-housing.stl

l-motor-housing-clip.stl

- [ ] use this clip to install L motor housing

l-motor-adapter.stl

fan.stl

- [ ] output mechanism for displaying gear ratios

fan-spacer.stl

fan-output-shaft.stl

- [ ] use this shaft to include the output fan.

stand-alone-output-shaft.stl

- [ ] use this shaft to exclude any output mechanism

l-motor-input-shaft.stl

- [ ] use this shaft to include Lego L motor

hand-crank-input-shaft.stl

- [ ] use this shaft to include the crank

main-snap-ring-qty2.stl

guide.stl

rack-1.stl

rack-2.stl

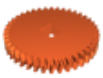
clutch-qty4.stl

☐ 4 identical clutch disks

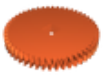
i-20.stl

☐ 20 tooth input gear

i-30.stl



i-40.stl

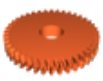


i-50.stl

o-20.stl

☐ 20 tooth output gear

o-30.stl



o-40.stl

o-50.stl

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