

## 4:1 gear set for FPV Rover 2.0

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VIEW IN BROWSER

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### Summary

A 4:1 bevel gear drive set for the FPV Rover 2.0

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A 4:1 bevel gear drive set for the FPV Rover 2.0

I have built the FPV Rover 2.0 and used both original 2:1 bevel gear set and the in-line planetary gearbox variation (<https://www.prusaprinters.org/prints/96512-re-mix-of-rover-20-planetary-gearbox-parts>). I wanted to try a different bevel gear set to get better torque than the original 2:1 gear set, but easier to maintain than using the in-line 4:1 planetary gearbox for a 8:1 overall. This is a 4:1 bevel gearset using a helical tooth profile with a 15° inclination.

**ETA: a gear set with a 25° inclination is also included. It has been mounted & had initial function testing but is not yet field tested.**

Part of the design consideration was an altered height of the wheel gear over the drive cog axle connection to get a proper mesh with the pinion gear. This was different for the two gear sets. I used a 6mm offset for the 15 degree gear set and a 7.5mm offset for the 25 degree gear set, measuring from tooth base to the cog axle connection.

Testing so far has been limited. I cannot speak to long term durability. It does significantly improve low end torque over the original design, but is nowhere near the torque when using the in-line planetary gearbox.

**ETA: It definitely provides a longer time before maintenance compared to a PLA planetary gearbox version. No tooth damage to date, the only "fixes" required have been to re-tighten the set screws. I need to "Loktite" the set screws & see how much high power operation is possible before needing other service.**

Gear design was done using the SCAD package of gear profiles by Dr Jörg Janssen (Getriebe.scad) see thing:1604369. The products were then tweaked using Tinkercad for use on the Rover 2.0. Both gears have a 3mm axial bore & the pinion is configured to use a 2mm cap head nut & screw to secure the gear on the motor shaft flat (assuming a "D" profile shaft).

The tinkercad constructs are available at <https://www.tinkercad.com/things/csZUgiaoR9m>  
there is also a version with a 25° tooth inclination here:  
<https://www.tinkercad.com/things/9BP3cfg70pw>

ETA Note: I had to replace the uploaded pinion gear (which has a larger collar than the original) to to allow use of a countersunk 6mm 2mm screw. Use of an 8mm long screw ran into interference with the motor mount cap head screws.

\*\*Addendum: I have included a re-mix of the motor mount with a relief for cap head screws to reduce the chance for interference if longer set screws are used.

I also added pinion versions intended for use with M3 8mm grub screws. They do not involve an inset nut.

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Category: R/C Vehicles

## Model files

wheel\_44-bevel\_15\_incl.stl



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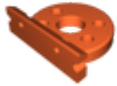
**pinion-11\_hel-bevel\_25\_deg\_incl\_v2.stl**



**pinion\_11\_bevel\_15\_incl\_grub.stl**



**wheel\_44\_bevel\_25\_deg\_incl.stl**



**rover-2-motor-mount.stl**



**pinion\_11\_bevel\_25\_deg\_incl\_grub.stl**



**pinion-11\_hel-bevel\_15\_deg\_incl\_v2.stl**

[Find source .stl files on Thingiverse.com](https://www.thingiverse.com)

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