



Tamiya TL-01 Crawler/Scaler/ Trail/Truck/ bigwheel reduction Gearbox



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Summary

a gearbox to make a bigwheeled TL-01 chassis go slower on big wheels

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My friend Timo from germany came up with the idea to do a bigwheeled RC car using basic on road TL-01 (not "B") chassis. The space between the motor and the wheel is pretty narrow on this chassis, so using a planetary gearbox is not an option. He tried a lot of stuff, also a BMW whiper motor was part of this search for a good solution. At the same time I bought two TL-01 chassis (probably clones) so I decided to join his idea.

The damper bridges have been done quick and a friend of mine gave me a set of long Absima shocks for free which I made softer using shortened Grasshopper front springs.

To lock the diffs I used some hot glue which might be reversible as soon it is removed.

The Gearbox has been a little challenging, searched a lot for some suitable Tamiya gears but finally I found that Wltoys gears that are available made from steel and plastic, can be used with ball bearings and allow to be fitted to a 5mm rod.

A 19t M0.6 gear with 5mm diameter will be used to be attached to the gearbox. You can also for one of the other options.

First step : get the bearings mentioned in the BOM and print the bearings test part to see which diameter suits your printer. The version that is online at the moment has 12.3mm for the larger bearings and 11.2mm for the smaller ones. This has been a good fit on my Prusa Mini.

The test file starts with 12mm/11mm and does steps of 0.1mm up to 12.4/11.4mm

If you require any other diameter set, just let me know and I will upload it.

The 5mm axle needs some grinding/filing at the spots where the small setscrew will be placed. A small flat spot is enough.

To fix the gearbox I'm not sure if the 27mm motor mount screws screws of the tamiya Chassis are long enough, I did not have them so I used M3x30 instead.

If you have any questions, just let me know.

I have used the 17t module 0.8 pinion that came with the Wltoys spur gear, I also added a second set of mounting holes to fit a 15t pinion but have not tested this.

Gear Ratio of my gearbox is $1/3.64$ with a 17t pinion or $1/4.13$ with a 15t pinion.

So with a 17t motor pinion an a 19t pinion on the output shaft you should get approximately 12km/h top speed when using 130mm tires and a silvercan motor, but lots of torque. I had a very cheap 45t crawler motor around which I used for this car and it fits pretty good using these large tires.

Motor adapter is the only part that needs support (print tamiya gearbox side on the bed).

Printed all parts with PETG with 100% infill... less and PLA might also be fine.

Want to thank Timo for his beautiful idea that gave me lots of hours figuring out how we can make it work and for sharing his knowledge to make it even better.

Model files



gearbox-housing.stl



test-diameter-bearings.stl



cover-bearings.stl



motor-adapter.stl



distance-plate-motor.stl



cover-gearbox.stl

Other files

bom.pdf

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