

Changing high range gears in LT95 gearbox on 101

Land Rover 101, was made to pull a 105mm canon, 6 soldiers and ammunition, while sometimes even towing another trailer with further ammunition. It shares the gearbox with the Range Rover Classic, but because it was asked to do all this it was geared lower in high range. And further more is the differentials lower geared than the RRC, so it is really low geared.



My 101 is from Luxemburg, and they fitted a warning plate that it only drives 60 kmh (40 mph), this also about the comfortable top speed, if engine noise and revs should be tolerable. Not that it is absolute top speed. I have had mine up to 110 kmh (70 mph) on the freeway, but that is not in any way comfortable or recommendable.

I and most civilian 101 owners do not tow 2 ton behind it all day long, neither do we carry 1 ton of ammunition and 6 persons. So it makes good sense to gear it up using RRC gears. You only need two gears with part number [FRC4050](#) and [FRC4032](#), they cost 90€ and 26€ at [www.lrseries.com](#). You can also as I did buy a complete LT95 gearbox from an old RRC. This also gave me the possibility of playing with this gearbox before messing up the one in the 101.

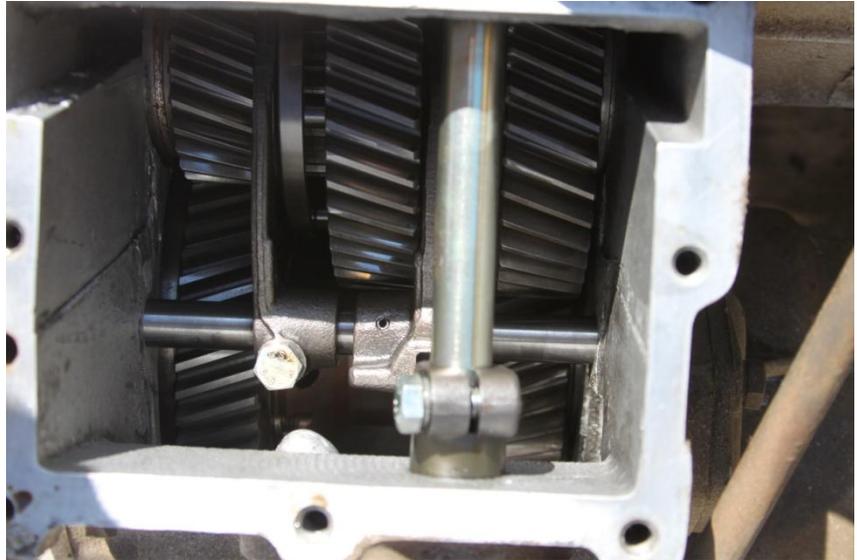
I found one at 50€ from a club member, that another friendly delivered to my address on his way home from an event in the club.

First you need to remove the rear propshaft. This is easiest done by lifting one wheel using a bottle jack so that you can get to all the bolts by turning the wheel. You can get a special socket for your impact wrench, and with a bit of practice it only takes 5-10 minutes.



The LT95 both a main and transfer gearbox build together in one, with the transfer part in the back. When you take the lid of the gearbox you have a direct look at the gears. Here you look into the gearbox from the RRC with the back of the gearbox to the left:

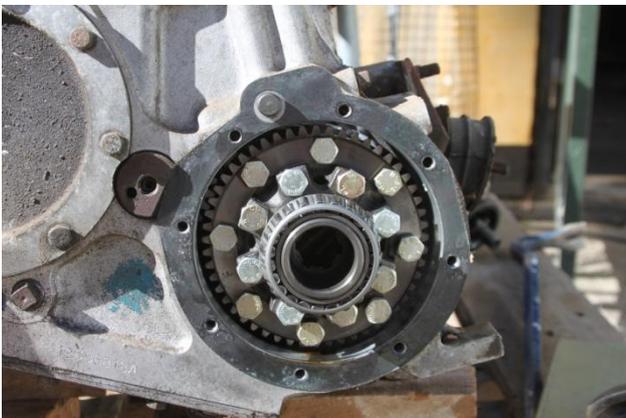
At the top you have the intermediate gears that are selected by the gearstick. The middle is input from the main gearbox, and to the left is low range gears, and to the right high range gears, these are the one we need to get change.



To ease assembly it is strongly advised to lock the centre differential, and make sure it is engaged. This is easy to establish now that you have removed the rear propshaft, because the car will not move before it is engaged.

Drain the transfer part of the gearbox from oil.

Now you remove the handbrake link, and remove the 8 bolts securing the handbrake and output flange to the gearbox, and you have direct access to the output shaft and differential:



In theory you can now pull out the shaft and differential (it is a bit heavy). On the RRC I had no problems, but in the 101 the gear in the other end of the shaft did not want to slide off, so it needed a bit of persuasion from a screwdriver while turning the shaft. This can be done either from the top or bottom inspection cover.



Then it looks something like this:

After removing the gasket, you can pull the intermediate shaft using a crowbar by inserting a bolt from the flange. Do not pull it out, just get it loose, and the rest is done by hand:



You can get the gears out either by removing the front output shaft or bottom inspection plate. I removed the front output shaft on the RRC gearbox, because it was lying on a pallet, but removed the gears via the bottom inspection plate from the gearbox in the car. Here you can also see that the diff locking gear deep in the gearbox has fallen down because I could not lock it on the RRC gearbox.

The gears fall out when you pull the intermediate shaft, so be ready to grab them, and only pull the shaft enough to get the high range gear off, and push it back to prevent the others from falling off. You should get these parts: Gear, roller bearing, two rings with grooves to lead oil to the bearing, and a spacer with tab, that goes into a groove in the gearbox casing, to prevent it from spinning:



Now you should have 2 different set of gears like this, where the top is from the 101 and the other from RRC. The difference is clear, it is just like the gears on a bike, where the bigger the difference the higher the gear, so the 101 is like not being on biggest front gear and smallest back gear.



Here I have put both the gear from the RRC and 101 on the output shaft to show the difference, with the RRC gear to the left, and 101 to the right:



Now you just need to put it all back together with the RRC gears in the 101 box, and fill it up with new 20/50 oil.

You cannot get the output shaft in the gearbox with the gears on, so you need to hold the gear in the bow while sliding the shaft in. It is now that you are glad that you locked the differential, because there are enough gears and bearings to hold in the right place at the same time, while turning the gears and axel to get the gears to slide together. I had problems getting the gears off in the 101 box, and similar problems getting it fully together, so I had do push it together by gradually tightening all the bolts on the output flange / handbrake assembly:



When all is back together it is time to enjoy that you now can cruise relatively comfortably at over 50 mph compared to earlier 40 mph.

At the same time does 1. Gear now makes some kind of sense to use, but you can still start in 2. Gear if you like.