

PGS Transmissions Toyota R154 Dog Engagement Gearset Installation Instructions.

!! Please see the additional instructions in the end of this instruction manual every time you see the *HD* mark after the instruction text in the photo !!

1. Install the 3rd gear sprocket into the main shaft with the needle bearing installed inside it. Put some oil on the needle bearing
2. Install the spline bushing and the locking ring. *HD*



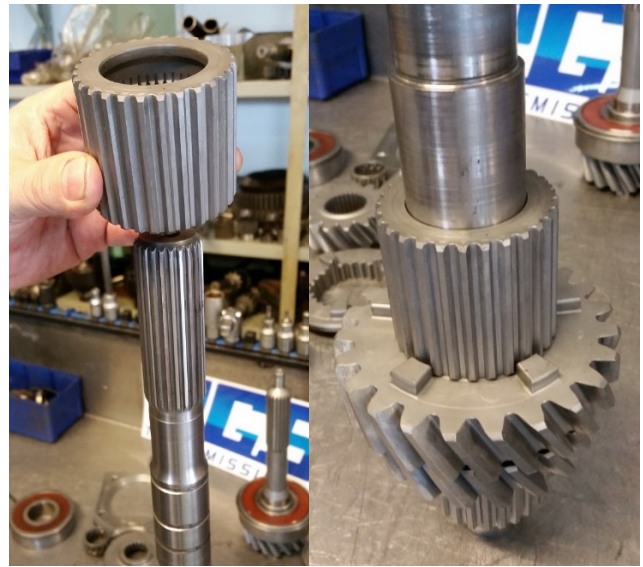
3. Install the 2nd gear needle bearing in the main shaft from the rear side. Remember to put some transmission oil around it to ensure the lubrication



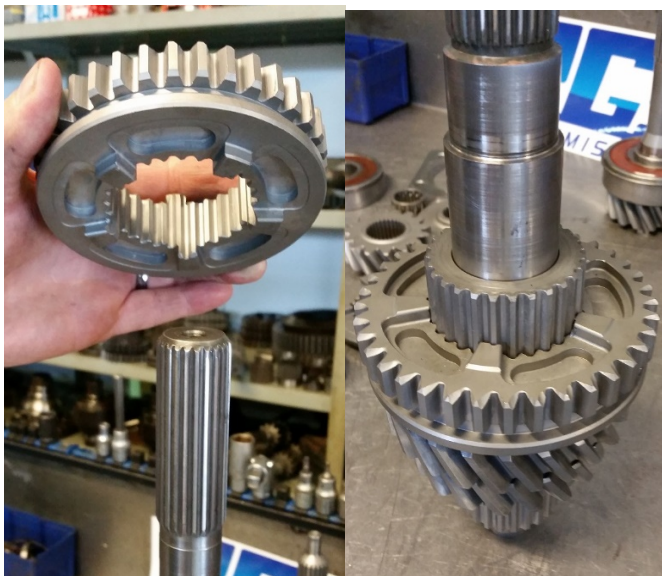
4. Install the 2nd gear sprocket in the main shaft



5. Install the 3/4 gear dog ring spline bushing in the main shaft



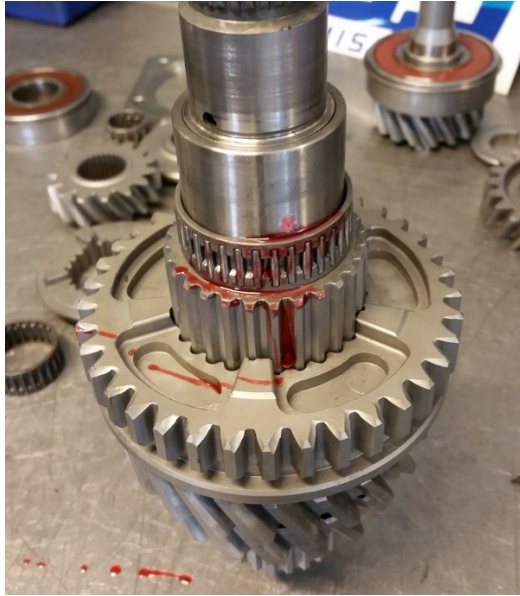
6. Install the 1-2 gear dog ring / main shaft reverse gear sprocket.



7. Install the bushing into the main shaft.



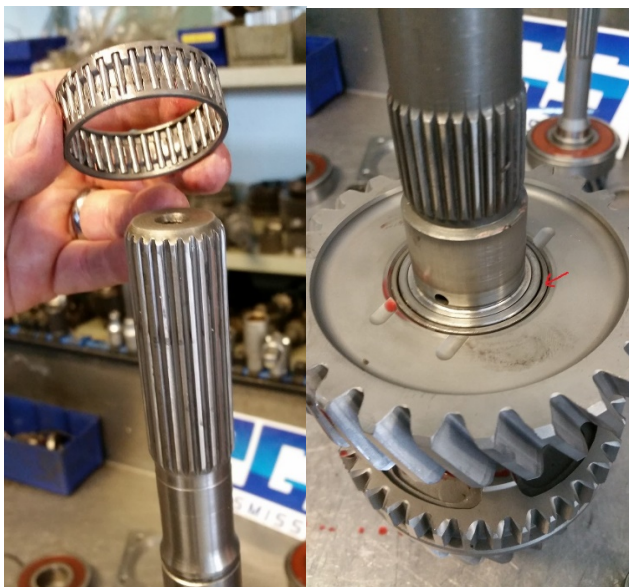
8. Install the needle bearing on the bushing.
Remember to put some transmission oil
on it to ensure the lubrication



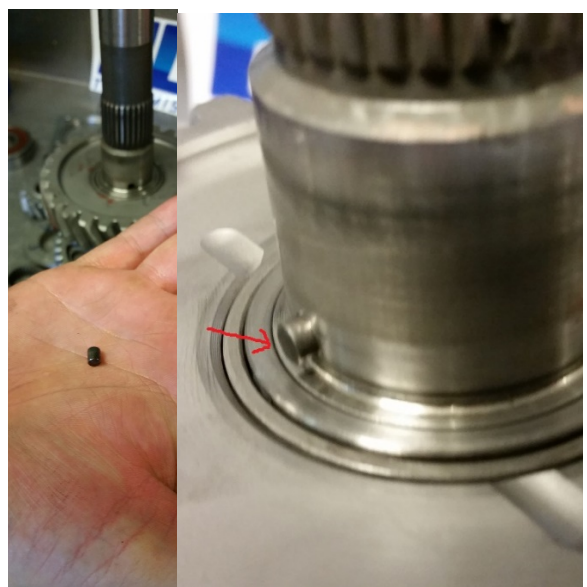
9. Install the 1st gear sprocket



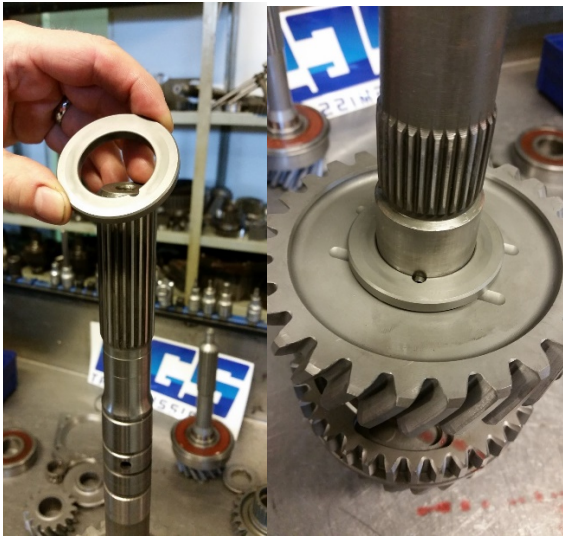
10. Install the needle bearing for the
1st gear sprocket



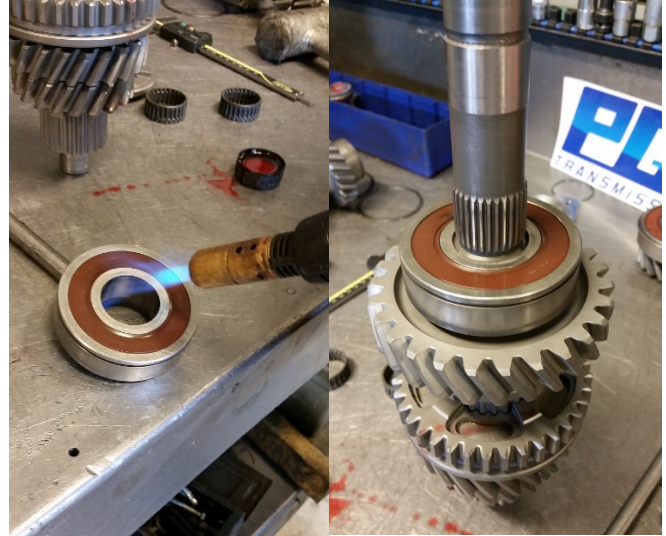
11. Install the thrust washer bearing
locking pin in the hole in the main
shaft



12. Install the 1st gear thrust washer
Please, check the photo carefully
to install the thrust washer the
correct way. *HD*



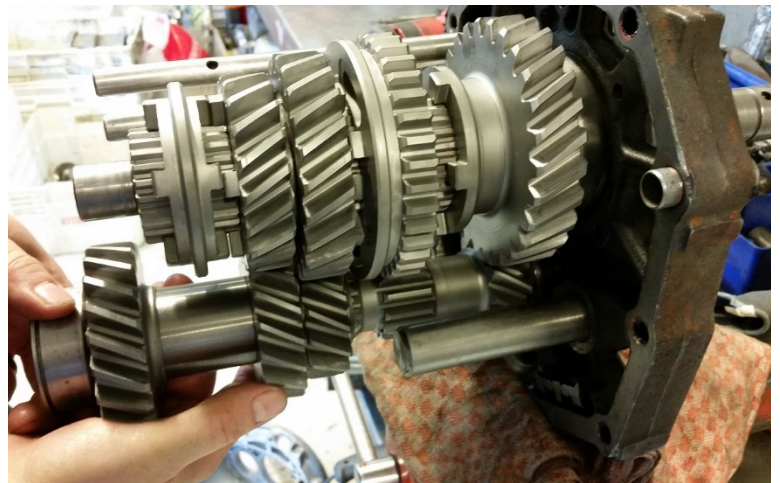
13. Heat the center plate bearing with a heater
(maximum 120 degrees Celsius) so that it'll
fit easily through the main shaft until the
thrust washer bearing.



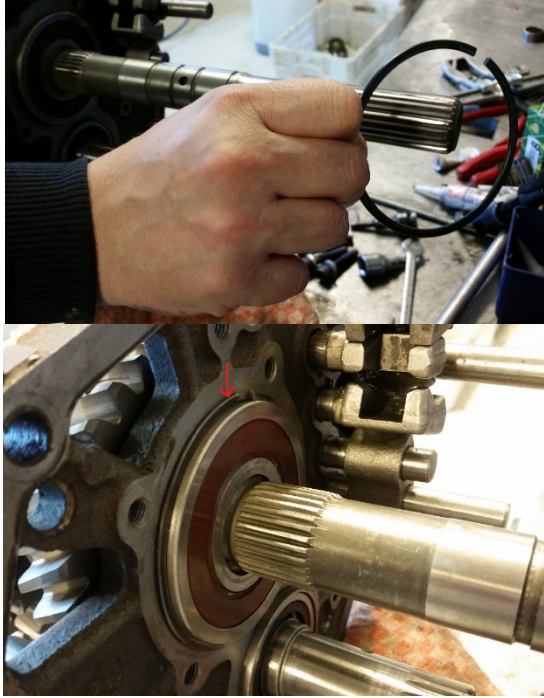
14. Install the $\frac{3}{4}$ gear dog ring.
Please note that the taller dog teeth
side must be facing front (towards
the input shaft). *HD*



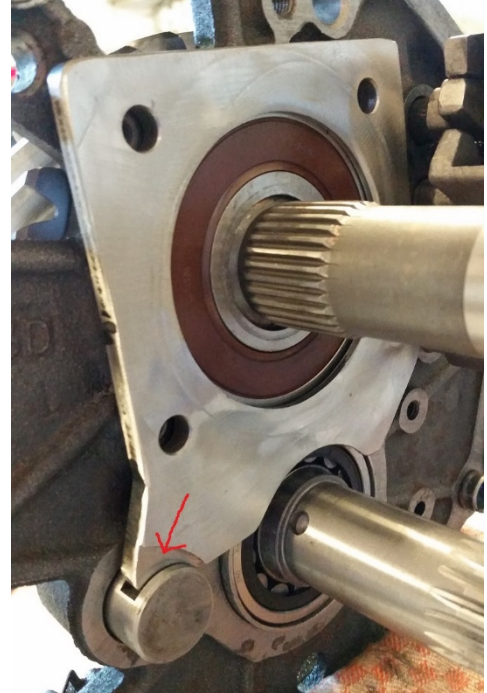
15. Install both shafts in the center plate (from
the front side). They must be installed
together. Be careful not to harm the center
plate bearings. *HD*



16. Install the center plate bearing locking ring. Make sure it'll drop into the groove.



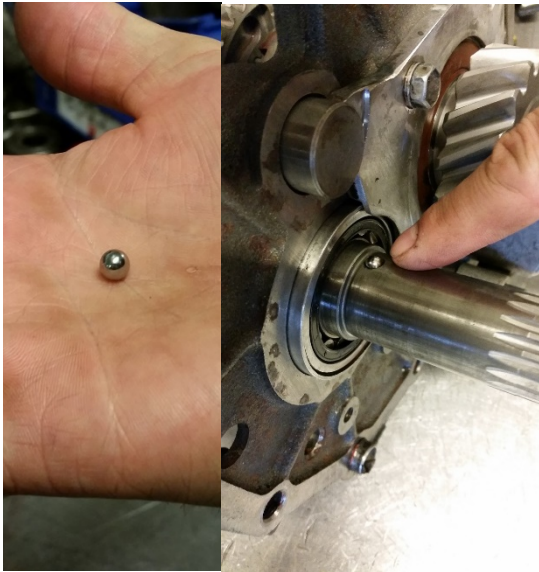
17. Install the bearing cover plate. Make sure the lip in the left down locks the reverse shaft.



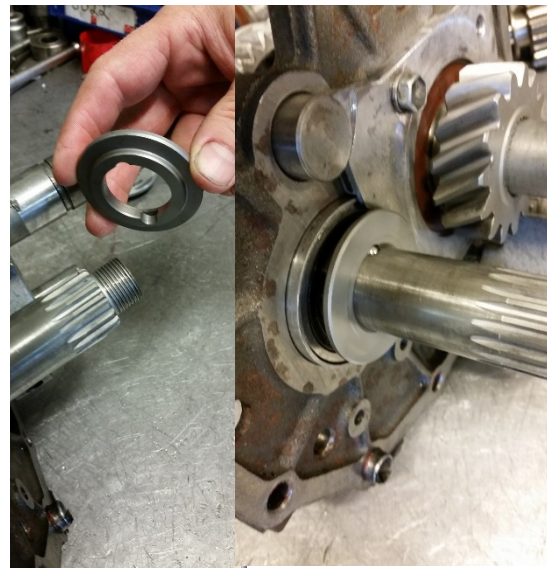
18. Install the 5th gear sprocket on the main shaft until the center plate bearing. Please, check that it will be installed the correct side facing the bearing.



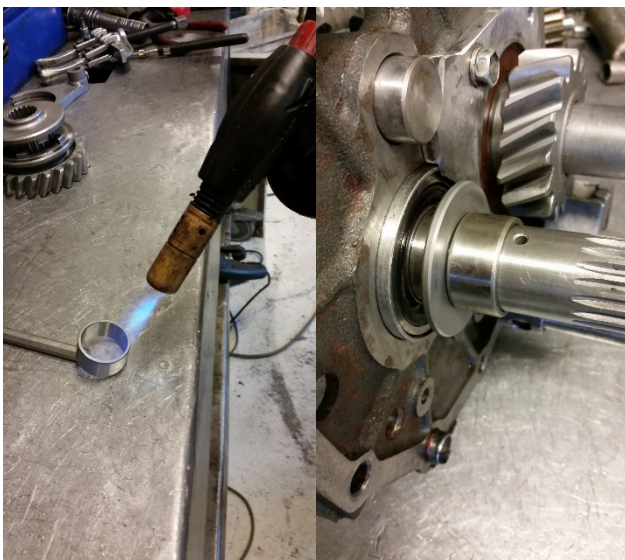
19. Install the locking ball into the counter shaft hole.



20. Install the 5th gear thrust washer bearing so that the ball locks it.



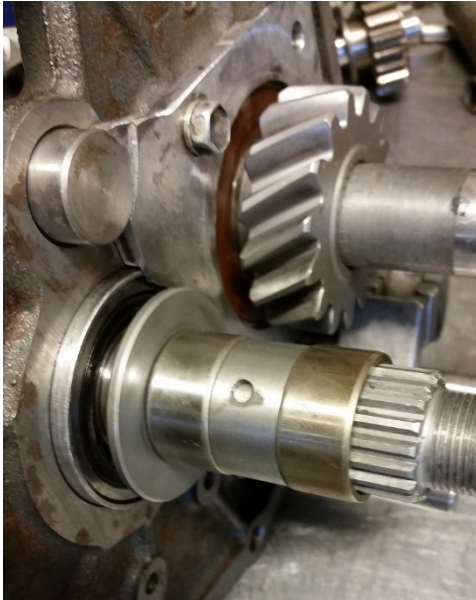
21. Install the counter shaft 5th gear bearing bushing. Remember to heat it well (maximum 120 degrees Celsius) before installing it to confirm it goes to it's place without needing to use any force.



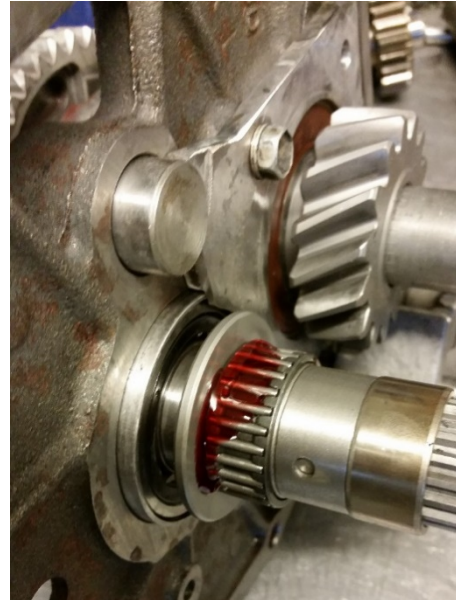
22. Install the oil bushing on the counter shaft.



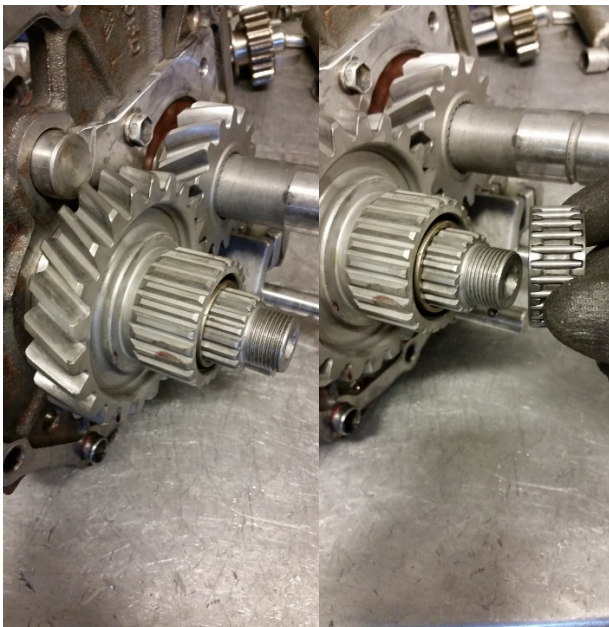
23. Install the 2nd bushing.
Remember to heat this one the same way as the 1st bushing to ensure it'll fit in without needing to force it.



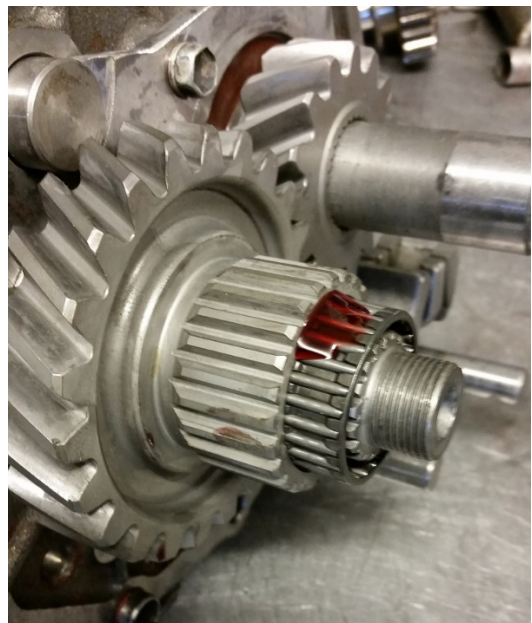
24. Install the 5th gear counter shaft needle bearing



25. Install the 5th gear sprocket into the counter shaft.
Install the 5th gear needle bearing



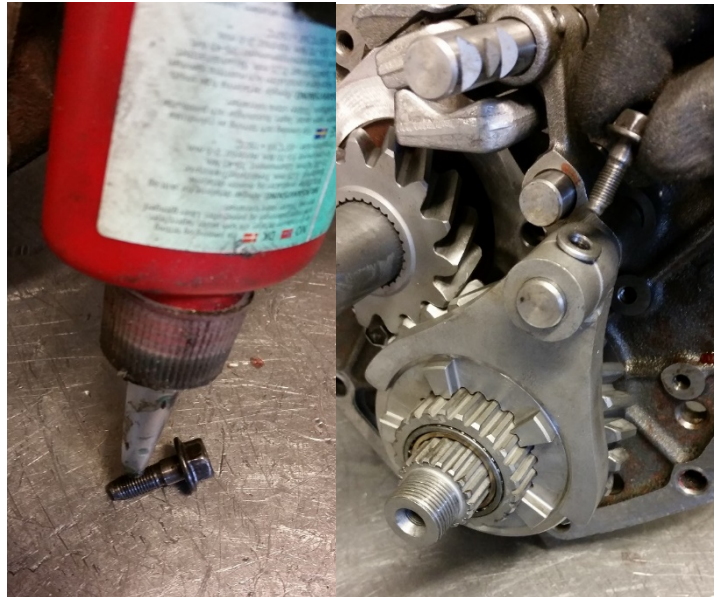
26. Install the 5th gear needle bearing inside the sprocket and remember to put some transmission oil on it to ensure the lubrication.



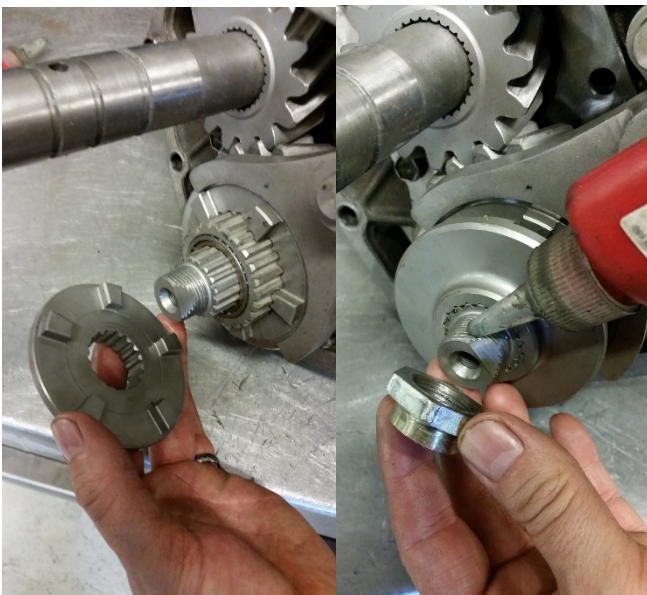
27. Install the 5th gear dog ring and the shift fork as a package



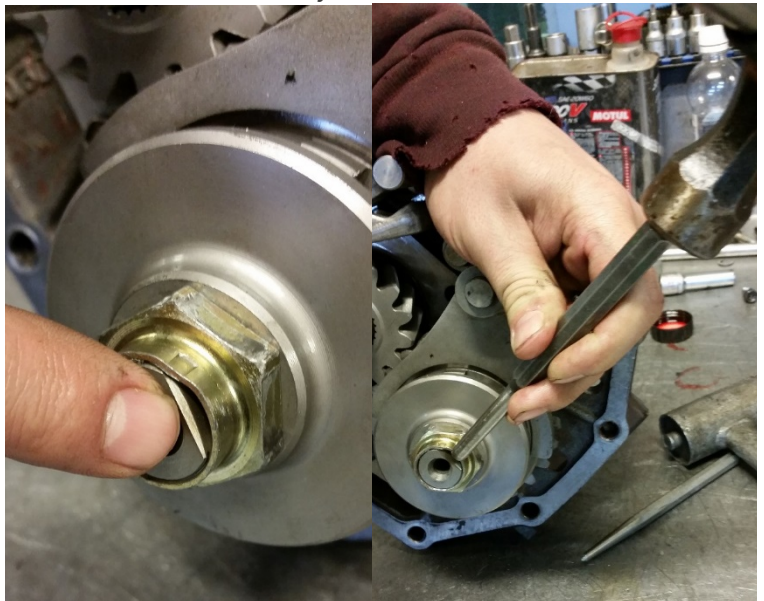
28. Install the shift fork / dogring package on the counter shaft on the 5th gear sprocket and install the screw and tighten it into the 5th gear shift bar. *HD* Remember to use the **GREEN EXTRA STRONG** screw locking glue!! We even recommend to tack weld the bolt to the shift fork to fully secure it.



29. Install the 5th gear dog plate and the nut. Use screw locking glue for securing the nut.



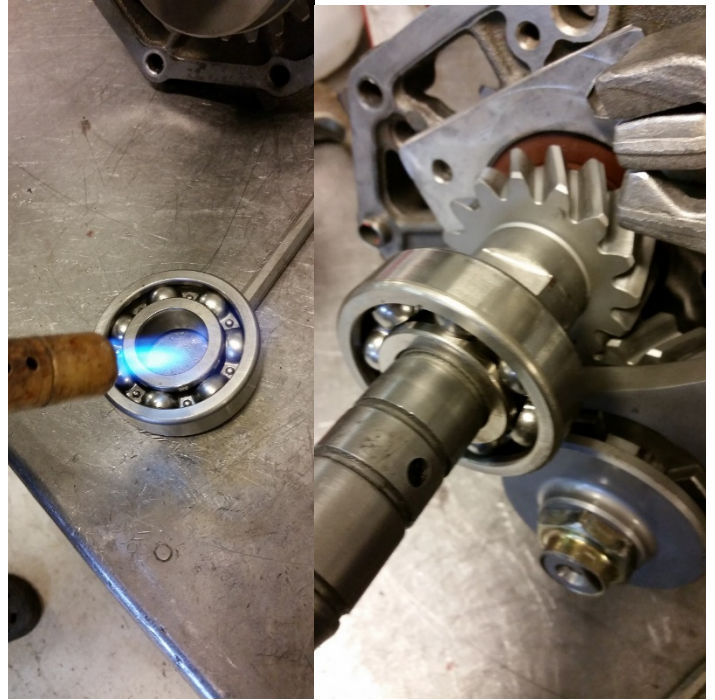
30. Hit the corner of the nut by using a hammer until it touches the flat part of the counter shaft end to secure that the nut doesn't come off by accident.



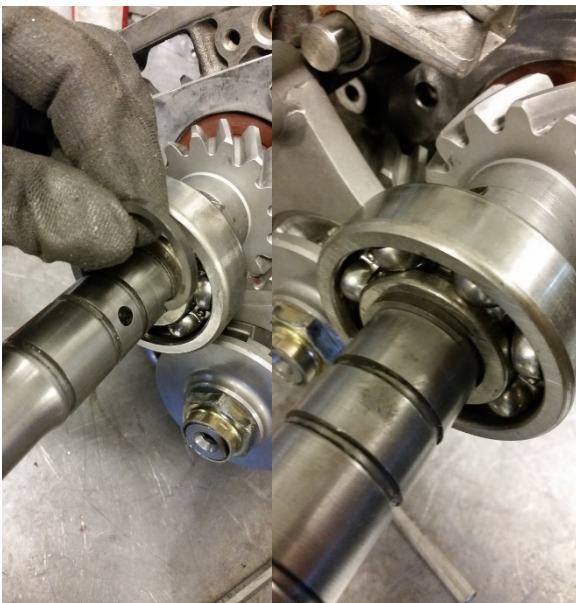
31. Install the socket on the main shaft *HD*



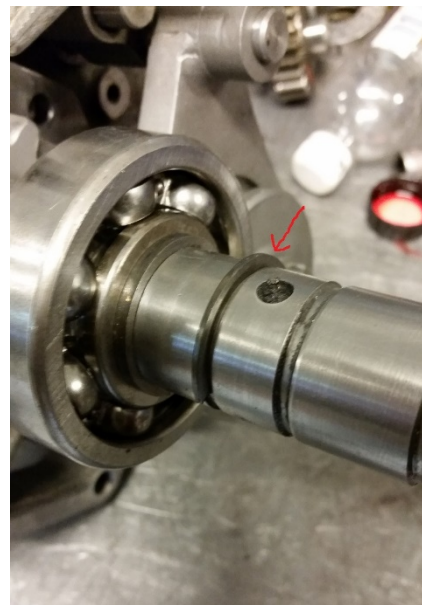
32. Install the bearing until it touches the socket. Remember to heat it with a heater (max. 120 degrees Celsius) to ensure it will fit in it's place without force needed. The locking ring groove must be visible after the installation.



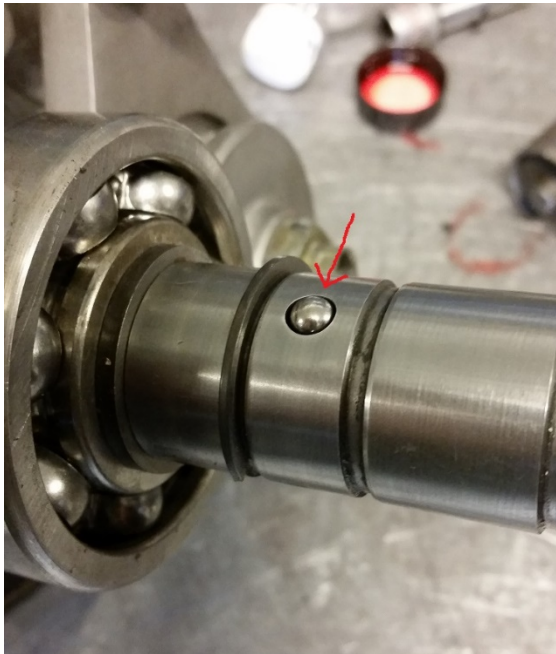
33. Install the locking ring into the groove next to the bearing to lock the bearing.



34. Install the speedometer reader locking ring into the second groove.



35. Install the speedo meter reader locking ball in the main shaft hole.



36. Install the speedo meter reader.



37. Install the locking ring on the other side of the speedo meter reader



38. Install the ring into the front end of the main shaft.



39. After that Install the input shaft needle bearing.



40. Install the input shaft bearing by heating it first to ensure the easy fitment (max. 120 degrees Celsius).

Please, make sure that the locking ring groove on the bearing is facing front (facing up in this photo).

Also, make sure that the bearing goes until the very bottom of the input shaft (towards the input shaft sprocket).



41. Install the input shaft. Input shaft can be also installed after the casing is already installed. The input shaft bearing should have been installed at this point but is missing from this particular photo.



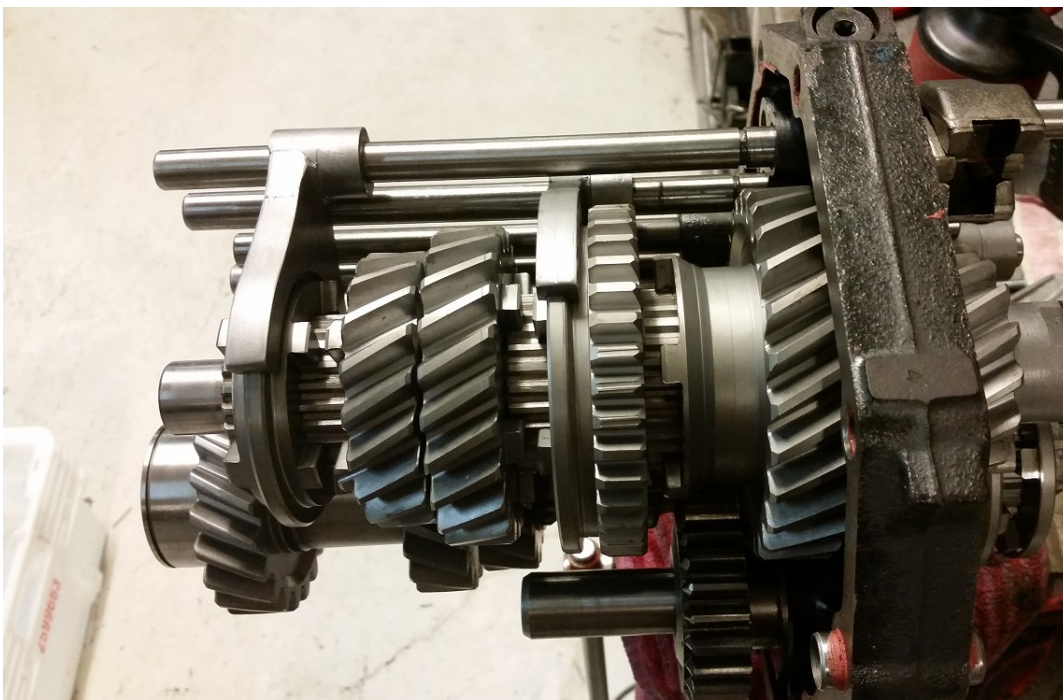
Then install the $\frac{1}{2}$ gear shift fork and $\frac{3}{4}$ gear shift fork in the shift bar and tighten the screws. Remember to use the GREEN EXTRA STRONG locking glue! If the gearset is in rough use we even recommend to tack weld the shift fork bolts. Shift bars need to be moved towards the back of the transmissions to be able to install the shift forks.

Remember to loosen the torx screws to be able to move the bars.

Beware that you won't let the $\frac{1}{2}$ shift bar pin fall from its hole when moving the bar towards back of the transmission.

Please install grease on the $\frac{1}{2}$ shift bar pin for it to hole in it's position when installing the shift bar back to it's original position.

Remember to use the locking glue for the shift fork tightening screw.



After everything is installed make sure that all the parts and shift bars move freely without needing a huge force.

Check that there is enough clearance between the parts.

If there are any issues with the clearances or any part is stuck DO NOT USE THE TRANSMISSION !!

In this case please contact PGS Transmissions at pgs.gearboxes@gmail.com

IMPORTANT !!

ADDITIONAL INFORMATION AND EXCEPTIONS FOR THE R154 HD MODEL INSTALLATION MARKED AS *HD*

Photo 2.

Please make sure that the locking ring sits tightly in the groove and that there is no extra clearance between the bushing and the locking ring.

If there is extra clearance use a shim plate under the locking ring as shown in the photo below. There is a shim plate with the gearset if it needs to be installed.



Photo 12.

The HD-model thrust washer is a bit different shape so please check that you install it facing the correct way. Please see the photos below for correct installation direction.



Photo 14.

In the R154 HD model the $\frac{3}{4}$ dog plate is identical from both sides so it doesn't matter which way around you install it. Therefore there is no "." mark.

Photo 15.

You need to install the ½ shift fork in the shift bar the same time you install the main shaft or otherwise you need to take the shift bar off.

It is easier way to install the ½ shift fork at this point.

Also, after you have installed the output shaft, ½ shift fork and the counter shaft install the reverse gear sprocket (comes with the gearset) into the reverse gear shaft.

Photo 28.

Please note that there are 3 extra hard custom shift fork bolts with the gearset.

Please use those for extra durability! Do NOT use the OEM shift fork bolts!

Photo 31.

The HD-model has a shorter socket which comes with the gearset because the OEM one is too long.

Please make sure that the socket sits tightly together with the bearing and the locking ring.

If it doesn't add a shim plate between the socket and the bearing to make it tight.

There are shim plates also for this purpose with the gearset.

Please see the photo below of how the installation should be.

