Gearbox Disassembly

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Конференция "Обменяемся опытом. Нива"
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It´s convenient to clamp the gearbox in a vice with the bottom cover facing upwards to perform the disassembly procedure. It is also possible to put it on the bellhousing.

Remove the bottom cover: Ten 6mm studs with 10mm wrench nuts.

Try to shake the countershaft in longitudinal direction:

If there's any longitudinal movement either the countershaft or its bearings are faulty, due to heavy wear or destruction. This condition could be cause of a loud rumbling gearbox noise.

Remove the rear nut and take off the flexible coupling flange.

Remove the reverse light switch. Do not lose the copper sealing washer.

Shift the gearbox into reverse gear and remove the shifting mechanism assembly from the rear cover (three 6mm studs with 10mm wrench nuts). Be careful to only remove the outer nuts. Also remember the gearbox is turned:

Wipe from oil and examine the shifting mechanism for presence of cracks.

Remove the rear cover: Six 8 mm studs with 13mm wrench nuts, remember that one of the nuts is removed from inside the gearbox case:

Tap the rear cover with a rubber mallet to loosen its gasket and pull the cover out with a turn to clear the gear cluster, using only the hand's force:

Two outer bearing races must remain in the rear cover casting. If the inner race of the rear main shaft bearing remains in the bearing itself, removal of the rear cover will be impossible. In this case it will be necessary to push the inner race with a screwdriver so it can remain on the shaft.

It's not mandatory to remove the bearings from the rear cover. The condition of the bearings and need of their replacement can be defined by inspecting the roller cages. One will be removed later on the text; the other will remain on the gear cluster. If defects call for replacement the main shaft bearing can be removed after removing the rear oil seal. The countershaft rear bearing is removed after taking the black plastic cover out.

Remove the bellhousing: Six 10mm studs with 17mm wrench nuts and one 8mm stud with a 13mm wrench nut. Force down the gasket and remove completely by hand:

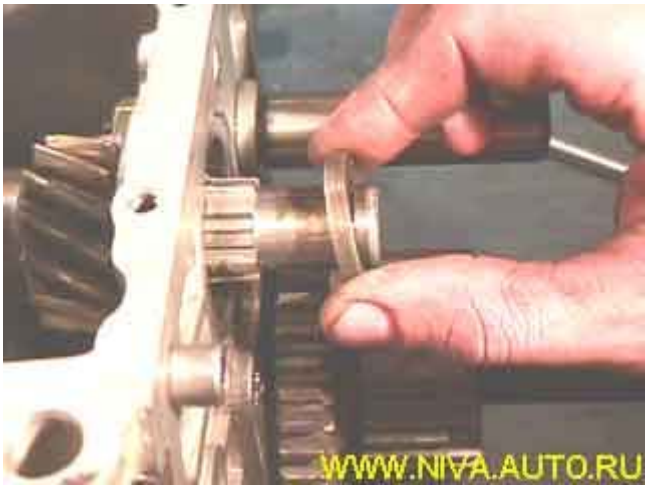
Wipe and inspect the spring (thrust) washer. It may look intact, but we check it by breaking and twisting:

Start the disassembly of the rear part with the removal of the secondary shaft rear bearing inner race, the spacer bushing and the oil slinger.

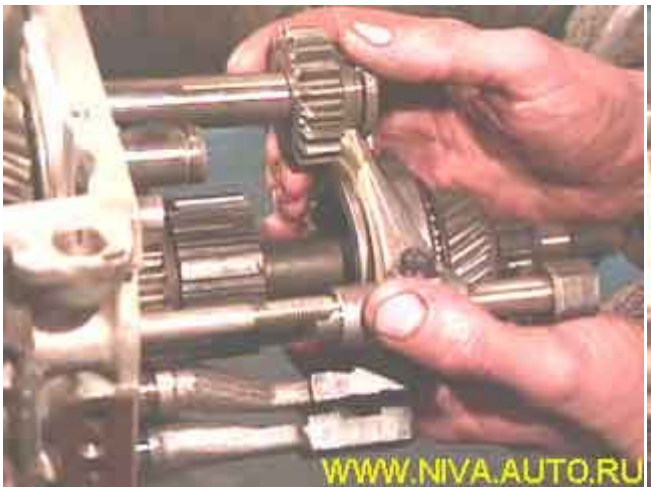
Remove the shift rail detent cover (two 8mm bolts, 13mm wrench).Take out the three detent springs. The 5th-reverse detent spring is longer than the other two (first from the left in the right picture):

Shift the 5th-reverse gear shift rail into neutral. Insert a piece of soft metal between the countershaft and main shaft gears and turn off the gear cluster bolt with a 17 mm wrench or socket. Insert the soft metal piece on the other side of the gears and turn off the countershaft front bolt with a 19 mm wrench or socket:

Remove the gear cluster and the bearing race ring:

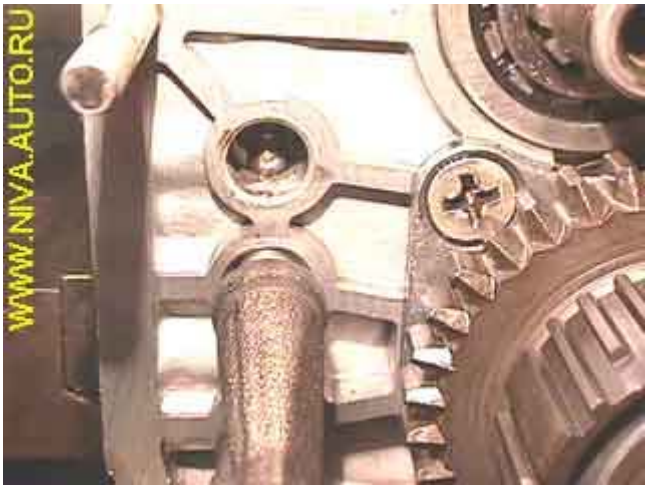


Remove simultaneously the 5th-speed gear, the 5th-reverse gear shift fork and rail and the reverse idler gear:



Inspect the 5th-speed gear. For this purpose remove the locking ring and then remove the synchronizer and its spring:

Push the detent ball of the 5th-reverse shift rail into the shift rail bore and remove it from the rear end of the bore:



Turn off the 3rd-4th gear shift fork with a 10 mm socket:

Turn the 3rd-4th shift rail horizontally so as the small interlock retainer doesn't fall off; and pull the shift rail out a little:

Take the retainer out and pull the shift rail completely out. Remove the fallen interlock retainer through the 3rd-4th shift rail bore:

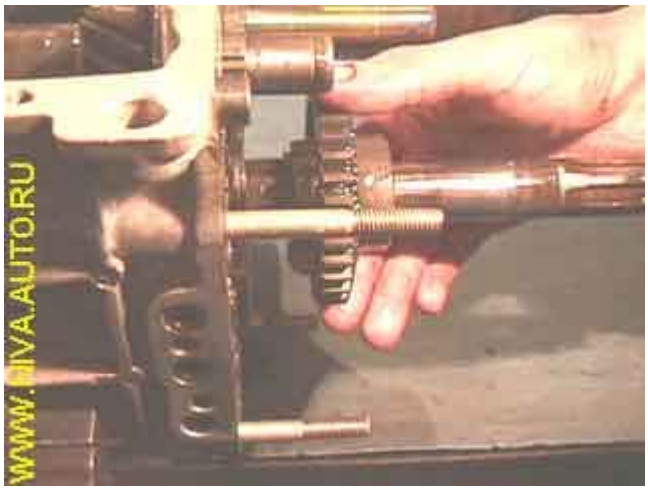
Remove the 3rd-4th shift rail detent ball.

Similarly turn off the 1st-2nd gear shift fork bolt, take out the shift rail, the interlock retainer and detent ball.

The gear retaining/locking mechanism: Interlock retainers, detent balls, springs and the cover plate bolts:

Insert the 5th-reverse shift rail in its place and turn off the fork fastening bolt:

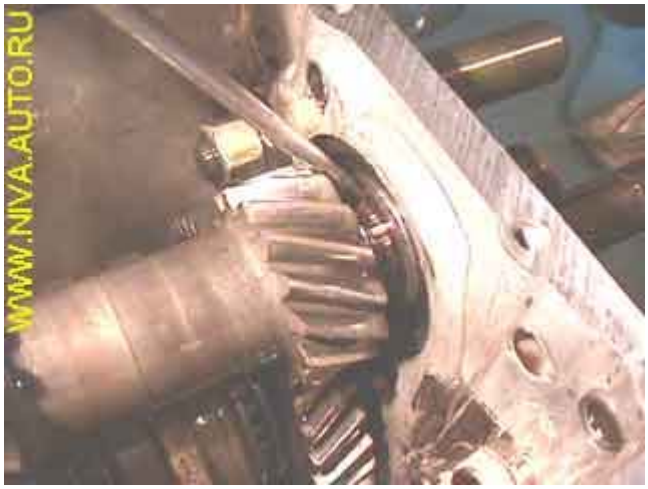
Remove the reverse drive gear:



Check that the gear key has no play in the main shaft groove. This play could cause the reverse gear to jump out spontaneously.

The main shaft intermediate bearing retainer plate is removed with the aid of an impact screwdriver:

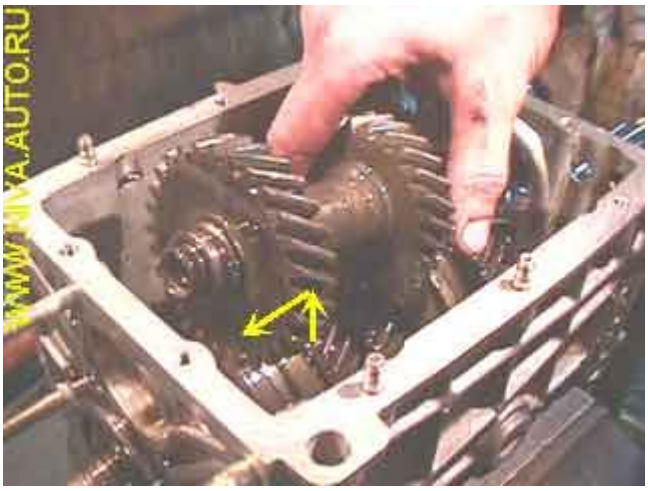
Use a flat screwdriver to push out the countershaft rear bearing from the casing:



Caution! Do not rest the screwdriver against the countershaft gear teeth as they may break.

With the help of two flat screwdrivers the countershaft front bearing is removed:

Raise the countershaft a little, move it backwards so the 1st countershaft gear gets through the casing bore and finally incline and raise to remove the countershaft out from the gearbox casing:



Use a cold chisel to force out the front bearing inner race remaining in the countershaft:

Remove the 1st -2nd and 3rd-4th gear shift forks. Pull out the input shaft and remove the bearing lockring:

If the ring is hard to remove, it is possible to loosen it out by striking gently with a chisel to relieve the pressure imposed by the spring washer.

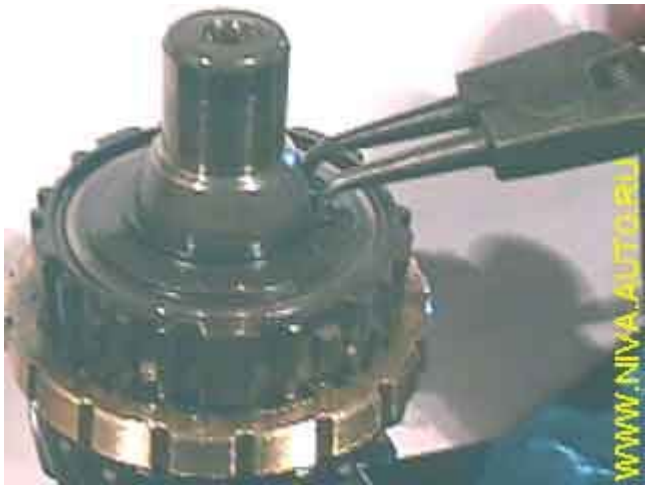
The input shaft bearing can be removed in two ways: Using a puller with long paws or striking with a hammer as shown in the left picture. Use pliers to remove the snap ring from the bearing groove:

We check the integrity of the needle bearing plastic cage and the needles themselves for signs of pitting or scoring:

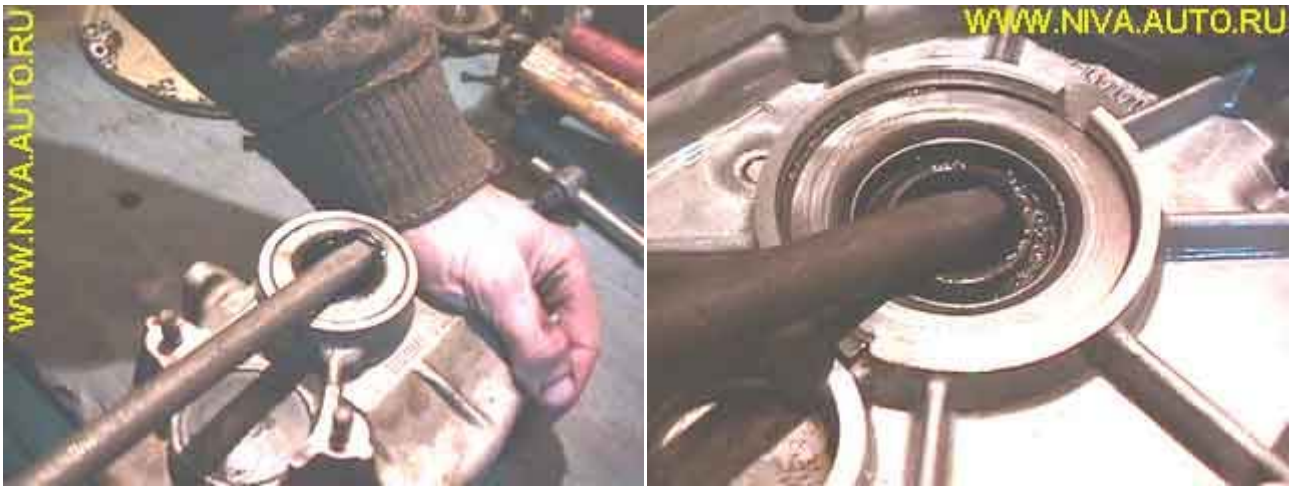
Shaking and displacing back the main shaft, take the intermediate bearing out of the casing:

Move the main shaft backwards, incline and raise it out of the gearbox casing:

Remove the 1st speed gear, the 1st-2nd gear synchronizer sleeve and hub, the 2nd speed gear and the 3rd-4th gear synchronizer sleeve. The 3rd-4th gear hub and the 3rd gear sprocket will remain on the main shaft; they are removed only in case of malfunctions in the 3rd and/or 4th speed gears. For this purpose it's necessary to remove the locking and spring washer:



Remove the oil seals if they're damaged:



Volodjushka, 13.03.03.